

**Giant Refining Company
Ciniza Refinery**

**Comprehensive
Groundwater Sampling
Report**

2001

**Prepared for
OCD Discharge Permit
GW-32 Renewal**



April 25, 2002

Mr. Roger Anderson
Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 So. St. Francis Drive
Santa Fe, New Mexico 87505

**RE: 2001 Comprehensive Groundwater Sampling Report
Submitted as Partial Requirement for Renewal of Discharge Plan/GW-32 Permit**

Dear Mr. Anderson:

As part of Ciniza Refinery's (Giant Refining Co.) renewal of its Groundwater Discharge Plan (GW-32) application, sixteen (16) groundwater wells located on the refinery property were sampled and analyzed in the Spring of 2001.

The parameters (compounds analyzed for) were discussed with Wayne Price via phone and email prior to sampling. The final list is given in Attachment A to this letter and includes general chemistry, total metals, radiochemistry, volatiles and semi-volatiles, PCB's, DRO and ORO petroleum hydrocarbons. All parameters listed in 20.6.2.3103 "Standards for Ground Water of 10,000 mg/l TDS or less" were tested for.

The following wells were sampled:

- MW 1, 2, 4, 5
- SMW 4
- OW 1, 2, 3, 7, 10, 11, 12, 13, 14, 29, 30

The following wells were not sampled:

- OW 9
- OW 24

Both of these wells have casings that are compromised (cracked, open to surface contamination). Giant recommends closing these and several other wells. Our rationale for well closures and addition of new monitoring wells will be provided in the Discharge Plan Application.

PHONE
505-722-3833
FAX
505-722-0210

ROUTE 3
BOX 7
GALLUP
NEW MEXICO
87301

The only well that showed evidence of contamination was OW 14. OW 14 is located north and down gradient of the Tank Farm and is drilled to the top of the Chinle shale formation. It is not drilled into the Sonsella Aquifer. All Sonsella wells are "clean". The following contaminants were detected in OW 14:

- 1,3,5 Trimethylbenzene – 9.5 ppb (ug/l)
- Benzene – 64 ppb (ug/l)
- MTBE – 8 ppb (ug/l)

The following historical data is provided for Well OW 14:

Date	Units	<i>Benzene</i>	<i>Toluene</i>	<i>Ethylbenzene</i>	<i>Xylene</i>	<i>MTBE</i>
5/2/91	ug/l	<5	<5	<5	<5	No analysis
2/6/96	ug/l	25	<0.5	2.8	1.7	<2.5
2/14/96	ug/l	34.2	ND	28.6	ND	No analysis
4/9/01	ug/l	64	ND	ND	ND	8

Date	Units	<i>Phenanthrene</i>	<i>1,3,5 Trimethylbenzene</i>	<i>1,2 Dichloroethane</i>	<i>1,2 Dichloropropane</i>
5/2/91	ug/l	No analysis	No analysis	<5	No analysis
2/6/96	ug/l	0.1	No analysis	3.4	0.2
2/14/96	ug/l	No analysis	No analysis	No analysis	No analysis
4/9/01	ug/l	<0.6	9.5	ND	ND

Contamination of OW 14 and plans for monitoring it and the surrounding area will be addressed in the GW Discharge Plan/Permit Renewal that is currently being developed.

Attachment B is a statement from Intermountain Lab regarding several issues that are analytical or laboratory related:

- The difference between Total Phenolics (by Method 420.1) and Phenol (by Method 8270)
- Laboratory contamination of Method blanks (MB01-100, MB01-094) and sample OW 11 in Method 8270 by bis(2-Ethylhexyl) phthalate
- Poor recoveries of surrogates in the acid extractable portion of Method 8270

Attachment C and D are Ciniza site maps:

- Attach. C - Site map showing evaporation ponds, RCRA Land Treatment Unit (LTU) and groundwater wells; Sonsella wells are identified with the color red, Chinle/Alluvium Interface wells are in green, and upper sand wells are in black.
- Attach. D - Site map showing evaporation ponds, groundwater wells (color coded), RCRA LTU, and Solid Waste Management Units (SWMUs)

If you have questions regarding this report, please do not hesitate to call me at 505-722-0227.
Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script, reading "Dorinda Mancini".

Dorinda Mancini
Environmental Manager, Ciniza Refinery

cc: Denny Foust, NMOCD – Farmington (w/binder)
Dave Cobrain, NMED, HMB (w/binder)
Steve Morris, Environmental Coordinator (w/o binder)
Dave Pavlich, Environmental Superintendent (w/o binder)

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Inter-Mountain Laboratories, Inc.2506 West Main Street
Farmington, NM 87401**Total Phenolics by Method 420.1**

A colorimetric method that determines phenol, ortho and meta - substituted phenols, and under proper conditions, para substituted phenols in which the substitution is a carboxyl, halogen, or sulfonic acid group. This method does not differentiate between phenol compounds.

Most interferences are eliminated by acidification and distillation, however, other organic compounds present may interfere.

Phenols by 8270

A gas chromatography method that separates all compounds based on elution order (boiling point and chemical reactivity) and identifies them based on time and mass spectral patterns. This method is specific to each phenolic compound. Because identification is by mass spectra, there are few interferences. Typically interferences in this method are caused by the reactivity of phenolic compounds to glassware causing low recoveries in the extraction process.

Method 8270

Contamination of method blanks by bis(2-ethylhexyl)phthalate. This compound is a common laboratory contaminant found in rubber stoppers and other rubber and plastic compounds.

Low Recoveries for Acid Extractables (Method 8270)

Typically interferences in this method are caused by the reactivity of phenolic (acid) compounds to glassware causing low recoveries in the extraction process. Surrogate compounds are added to each sample, blank, and quality control sample to monitor the extraction process. A low surrogate recovery in the blank but not the sample may indicate a potential problem with the particular flask used to extract the blank. Because the sample surrogate recoveries were acceptable the sample data is acceptable.



William Lipps
Laboratory Director - Inter-Mountain Labs



June 11, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on May 16, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING – CINIZA SPRING 2001 GROUNDWATER MW –1- 51401

Case Narrative

On May 16, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA – "Methods for Chemical Analysis of water and Wastes (MCAWW)", EPA 600/4-79-020 – March, 1983, "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

CASE NARRATIVE

Client: Giant Refining Company
Project: Ciniza Groundwater
Set number: 0301W02296
Date received: 05-16-01
Date reported: 06-07-01
Chain of Custody: 89808

Inter-Mountain Laboratories, Inc., Farmington, NM received the samples listed above for analysis in a cool, 4° C, and intact condition. Enclosed are the results of the sample analyses.

Comment:

The sample, MW-1-51401, was tested for Ethylene Dibromide initially by Method 8260B within the recommended holding time. The result of the Method 8260B analysis was None Detected to a MDL of 5 ug/L. A subsequent analysis of the sample was performed by Method 504 beyond the recommended holding time. The result of the Method 504 analysis was also None Detected to a MDL of 0.1 ug/L.

I apologize for the hold time exceedances and for any inconvenience this may have caused.

If you have any question concerning the data, please feel free to call the laboratory, (505) 326-4737.

Thank you.

Wes Harvey
Laboratory Director
IML-Farmington

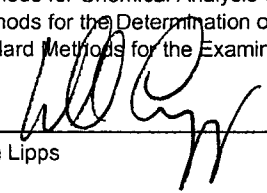
Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: MW - 1 - 51401
 Lab ID: 0301W02296
 Matrix: Water
 Condition: Intact

Date Received: 05/16/01
 Date Reported: 02/28/02
 Date Sampled: 05/14/01
 Time Sampled: 1330

Parameter	Analytical						Analysis		
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	9.0	s.u.			0.1	EPA 150.1	05/16/01	1230	ML
Electrical Conductivity	1,170	µmhos/cm			10	EPA 120.1	05/16/01	1230	ML
Solids - Total Dissolved	720	mg/L			10	EPA 160.1	05/16/01	1610	WL
Solids - Total Suspended	2	mg/L			2	EPA 160.2	05/17/01	1100	WL
Alkalinity (CaCO3)	340	mg/L			1	EPA 310.1	05/21/01	1100	MC
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	EPA 335.2	05/22/01	1300	KB
Hardness (CaCO3)	5	mg/L			1	EPA 200.7	06/08/01	1523	WL
Phosphorus - Ortho-P	0.10	mg/L			0.02	SM 4500P-E	05/16/01	1550	WL
Total Phenolics	0.03	mg/L			0.01	EPA 420.1	05/23/01	0800	KB
Major Anions									
Bicarbonate (HCO3)	415	mg/L	6.80	meq/L	1	EPA 310.1	05/21/01	1100	MC
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1100	MC
Chloride	57	mg/L	1.61	meq/L	1	EPA 300.0	05/25/01	1231	WL
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	05/25/01	1231	WL
Fluoride	0.7	mg/L	<0.01	meq/L	0.1	EPA 300.0	05/25/01	1231	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1100	MC
Nitrogen - Nitrate/Nitrite	11.4	mg/L	0.81	meq/L	0.05	EPA 353.2	06/12/01	1105	WH
Sulfate	148	mg/L	3.07	meq/L	5	EPA 300.0	05/25/01	1231	WL
Major Cations									
Calcium	1.5	mg/L	0.07	meq/L	0.2	EPA 200.7	06/08/01	1523	WL
Magnesium	0.2	mg/L	0.02	meq/L	0.2	EPA 200.7	06/08/01	1523	WL
Potassium	0.6	mg/L	0.01	meq/L	0.2	EPA 200.7	06/08/01	1523	WL
Sodium	267	mg/L	11.60	meq/L	0.2	EPA 200.7	06/08/01	1523	WL
Anion/Cation Balance QC Information									
Anion Sum			11.52	meq/L	0.01	SM 1030			
Cation Sum			11.70	meq/L	0.01	SM 1030			
Cation/Anion Balance			0.78	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


 William Lipps

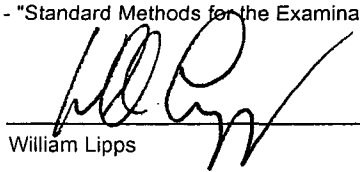
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW - 1 - 51401
Lab ID: 0301W02296
Matrix: Water
Condition: Intact

Date Received: 05/16/01
Date Reported: 02/28/02
Date Sampled: 05/14/01
Time Sampled: 1330

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	<0.05	mg/L			0.05	EPA 200.7	05/22/01	1509	WL
Arsenic	<0.005	mg/L			0.005	SM 3114B	06/01/01	1615	JG
Barium	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Boron	0.64	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	06/04/01	1050	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Copper	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Iron	0.02	mg/L			0.02	EPA 200.7	05/22/01	1509	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	06/05/01	0840	SW
Manganese	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	05/31/01	1000	BB
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Selenium	0.013	mg/L			0.005	SM 3114B	05/22/01	1509	WL
Silver	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1509	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	05/22/01	1509	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	05/22/01	1509	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
 Project ID: **Ciniza**
 Sample ID: **MW-1-51401**
 Laboratory ID: **0301W02296**
 Sample Matrix: **Water**

Date Reported: **06/07/01**
 Date Sampled: **05/14/01**
 Date Received: **NG**
 Date Extracted: **NA**
 Date Analyzed: **05/21/01**

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-1-51401**
Laboratory ID: **0301W02296**
Sample Matrix: **Water**

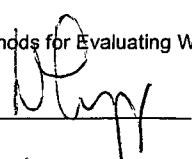
Date Reported: **06/07/01**
Date Sampled: **05/14/01**
Date Received: **NG**
Date Extracted: **NA**
Date Analyzed: **05/21/01**

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	89	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	97	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-1-51401**
Laboratory ID: **0301W02296**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/14/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-1-51401**
Laboratory ID: **0301W02296**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/14/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-1-51401
Laboratory ID: 0301W02296
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/14/01
Date Received: NG
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

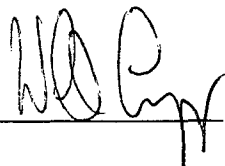
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	54	35 - 114
2-Fluorobiphenyl	64	43 - 116
2,4,6-Tribromophenol	81	10 - 123
Terphenyl-d14	84	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1

Received By: _____

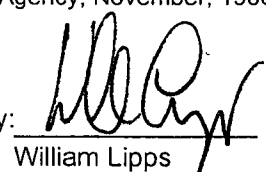


Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW - 1 - 51401
Lab ID: 0301W02296
Matrix: Water
Condition: Intact

Date Reported: 02/28/02
Date Sampled: 05/14/01
Date Received: 05/16/01
Date Extracted: 05/22/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.8	0.8	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: **Ciniza**
Sample ID: **MW-1-51401**
Laboratory ID: **0301W02296**
Sample Matrix: **Water**

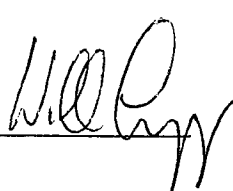
Date Reported: **06/07/01**
Date Sampled: **05/14/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/24/01**

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	64	50 - 150
Decachlorobiphenyl	78	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Revised By: 

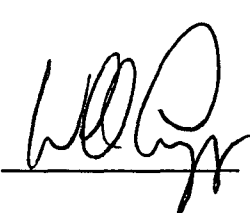
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-1-51401
Lab ID: 0301W02296
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/14/01
Date Received: 05/16/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

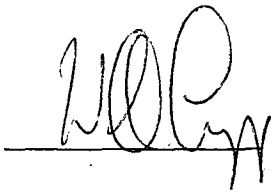
Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-1-51401
Laboratory ID: 0301W02296
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/14/01
Date Received: NG
Date Extracted: 05/17/01
Date Analyzed: 05/17/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	30	µg/L
Total Organic Halides (TOX)	2	ND	30	µg/L
Total Organic Halides (TOX)	3	ND	30	µg/L
Total Organic Halides (TOX)	4	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-1-51401
Laboratory ID: 0301W02296
Sample Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Analyzed: 06/11/01
Date Sampled: 05/14/01
Date Received: 05/16/01

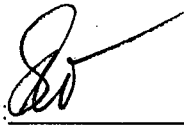
	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

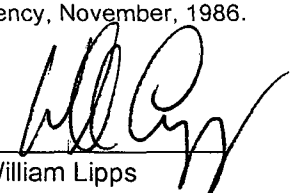
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW - 1 - 51401
Lab ID: 0301W02296
Matrix: Water
Condition: Intact

Date Reported: 02/28/02
Date Sampled: 05/14/01
Date Received: 05/16/01
Date Extracted: 05/21/01
Date Analyzed: 05/23/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	91	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

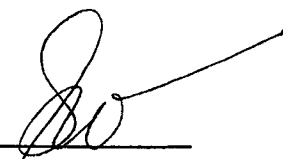
pH

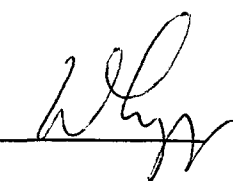
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-1-051401
Laboratory ID: 0301W02296
Sample Matrix: Water
Condition: Intact

Date Reported: 06/07/01
Date Analyzed: 05/16/01
Date Sampled: 05/14/01
Date Received: 05/16/01

	Result	MDL
Replicate #1	9.0	0.1
Replicate #2	9.0	0.1
Replicate #3	9.0	0.1
Replicate #4	9.0	0.1

Comments:

Reported By: 

Reviewed By: 

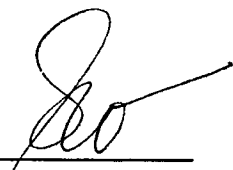
ELECTRICAL CONDUCTIVITY

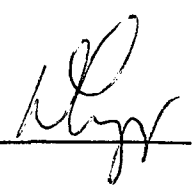
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-1-051401
Laboratory ID: 0301W02296
Sample Matrix: Water
Condition: Intact

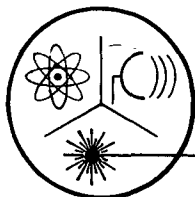
Date Reported: 06/07/01
Date Analyzed: 05/16/01
Date Sampled: 05/14/01
Date Received: 05/16/01

	Result	MDL
Replicate #1	1170	10
Replicate #2	1170	10
Replicate #3	1170	10
Replicate #4	1170	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

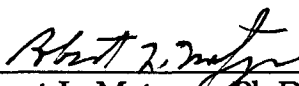
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: May 21, 2001
Samples Completed: June 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
MW-1-51401	< 0.2	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/16/01

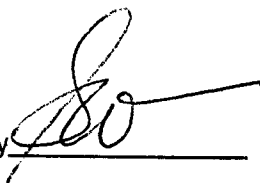
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

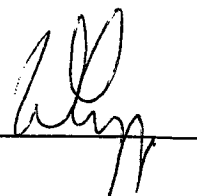
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/16/01

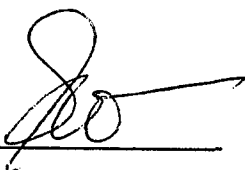
Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	1.27	0.75	0.50	104%
Arsenic	0.011	<0.005	0.010	111%
Barium	0.88	<0.01	1.00	88%
Boron	0.11	<0.01	0.10	107%
Cadmium	0.003	<0.001	0.003	100%
Chromium	0.10	<0.01	0.10	103%
Cobalt	0.09	<0.01	0.10	94%
Copper	0.10	<0.01	0.10	103%
Iron	1.19	0.66	0.50	106%
Lead	0.024	<0.005	0.025	95%
Manganese	1.68	1.10	0.50	116%
Mercury	0.002	<0.001	0.002	113%
Molybdenum	0.10	<0.01	0.10	98%
Nickel	0.10	<0.01	0.10	96%
Selenium	0.025	<0.005	0.025	99%
Silver	0.08	<0.01	0.10	81%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.110	<0.025	0.100	110%

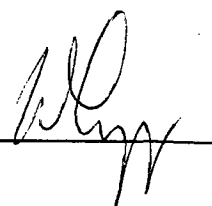
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/16/01

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.88	2.00	94%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.94	2.00	97%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	102%	mg/L
Chromium	1.97	2.00	99%	mg/L
Cobalt	1.91	2.00	96%	mg/L
Copper	1.85	2.00	93%	mg/L
Iron	1.88	2.00	94%	mg/L
Lead	0.051	0.050	103%	mg/L
Manganese	1.82	2.00	91%	mg/L
Mercury	0.003	0.003	108%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.95	2.00	98%	mg/L
Selenium	0.020	0.020	100%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.90	2.00	95%	mg/L
Zinc	1.92	2.00	96%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID:	Method Blank	Date Reported:	06/07/01
Laboratory ID:	V3MB01-141	Date Extracted:	NA
Sample Matrix:	Water	Date Analyzed:	05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

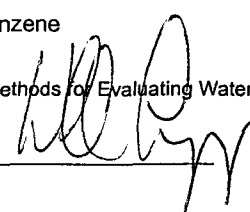
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	101	86 - 118
1,2-Dichloroethane-d4	94	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-141
 Sample Matrix: Water

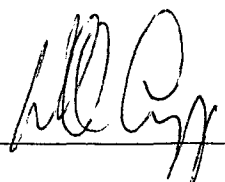
Date Reported: 06/07/01
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	52	105	53	106	1
Benzene	ND	50	48	96	47	94	1
Chlorobenzene	ND	50	56	112	54	108	4
Toluene	ND	50	50	101	49	97	4
Trichloroethene (TCE)	ND	50	50	101	51	102	1

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	100	102	86 - 118
1,2-Dichloroethane-d4	97	99	80 - 120
Toluene-d8	99	100	88 - 110
4-Bromofluorobenzene	102	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G01081MS
Sample Matrix: Water

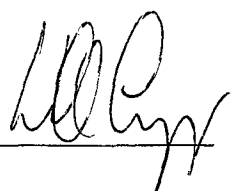
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	56	111
Benzene	ND	50	48	97
Chlorobenzene	ND	50	55	110
Toluene	ND	50	51	102
Trichloroethene (TCE)	ND	50	52	104

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	96	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

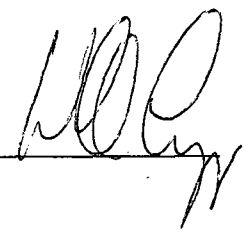
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	38	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	47	35 - 114
2-Fluorobiphenyl	55	43 - 116
2,4,6-Tribromophenol	74	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 19

Received By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

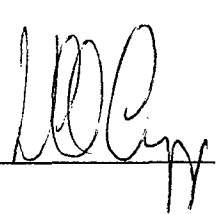
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	67	67	62	62	8
1,4-Dichlorobenzene	ND	100	59	59	54	54	9
2,4-Dinitrotoluene	ND	100	70	70	66	66	5
2-Chlorophenol	ND	200	129	65	119	60	8
4-Chloro-3-methylphenol	ND	200	124	62	117	59	5
4-Nitrophenol	ND	200	52	26	50	25	3
Acenaphthene	ND	100	65	65	62	62	6
N-Nitrosodi-n-propylamine	ND	100	80	80	76	76	6
Pentachlorophenol	ND	200	130	65	120	60	8
Phenol	ND	200	56	28	55	27	2
Pyrene	ND	100	95	95	92	92	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	46	41	21 - 100
Phenol-d6	30	28	10 - 94
Nitrobenzene-d5	62	57	35 - 114
2-Fluorobiphenyl	70	65	43 - 116
2,4,6-Tribromophenol	96	90	10 - 123
Terphenyl-d14	85	80	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W01023MS
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

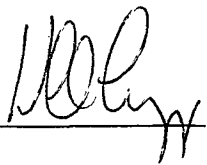
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	66	66
1,4-Dichlorobenzene	ND	100	57	57
2,4-Dinitrotoluene	ND	100	70	70
2-Chlorophenol	ND	200	126	63
4-Chloro-3-methylphenol	ND	200	124	62
4-Nitrophenol	ND	200	53	26
Acenaphthene	ND	100	65	65
N-Nitrosodi-n-propylamine	ND	100	79	79
Pentachlorophenol	ND	200	136	68
Phenol	ND	200	54	27
Pyrene	ND	100	94	94

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	60	35 - 114
2-Fluorobiphenyl	66	43 - 116
2,4,6-Tribromophenol	95	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 19

Received By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

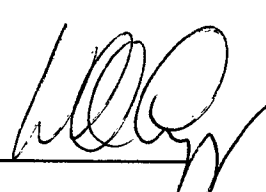
Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02296**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/16/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

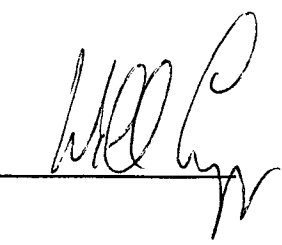
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02296**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/16/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	29.4	73	41-82
Acenaphthylene	40.4	29.8	74	43-91
Acenaphthene	40.4	31.1	77	48-85
Fluorene	4.1	3.07	75	48-87
Phenanthrene	3.07	2.47	80	60-86
Fluoranthene	1.92	1.72	90	72-96
Pyrene	3.85	3.52	91	73-96
Benzo(a)pyrene	0.253	0.247	98	66-118
Benzo(g,h,i)perylene	0.553	0.550	99	79-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	90	54.5-116

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/24/01

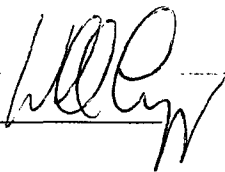
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	50	50 - 150
Decachlorobiphenyl	78	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____



ETHYLENE DIBROMIDE BY GC/ECD
Method Blank Analysis

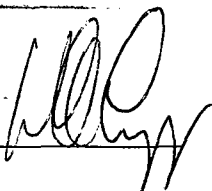
Sample ID: Method Blank
Laboratory ID: MB01-158
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____



ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

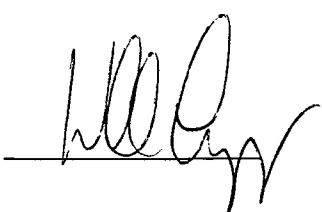
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-137
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2	2.1	105	2.3	115	9

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-137
Sample Matrix: Water

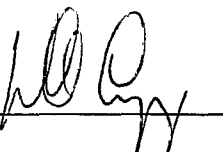
Date Reported: 06/07/01
Date Extracted: 05/17/01
Date Analyzed: 05/17/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By:



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-137
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/17/01
Date Analyzed: 05/17/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX	ND	50	60	121	54	108	11

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: WBA



GIANT REFINING – CINIZA SPRING 2001 GROUNDWATER MW - 2 - 051501

Case Narrative

On May 17, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

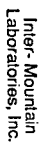
It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA – "Methods for Chemical Analysis of water and Wastes (MCAWW)", EPA 600/4-79-020 – March, 1983, "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

Client/Project Name <i>Spring Creek - 2001 Groundwater Event</i>				Project Location <i>Giant - Cima</i>		ANALYSES / PARAMETERS	
Sampler: (Signature) <i>SC Phillips</i>			Chain of Custody Tape No.				
Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	Remarks	
MW-2-S1501	5/13/01	1400	2398	Water	25	<i>See attached report for parameters</i>	
Relinquished by: (Signature) <i>SC Phillips</i>			Date 5/16/01		Time 0830		Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature)			Date		Time		Received by: (Signature)
Relinquished by: (Signature)			Date		Time		Received by laboratory: (Signature) <i>[Signature]</i>

Inter-Mountain Laboratories, Inc.

☐ 555 Absaraka Sheridan, Wyoming 82801 Telephone (307) 674-7506	☐ 1633 Terra Avenue Sheridan, Wyoming 82801 Telephone (307) 672-8945
☐ 1701 Phillips Circle Gillette, Wyoming 82718 Telephone (307) 682-8...	☒ 2506 West Main Street Farmington, NM 87401 Telephone (505) 326-4737
☐ 11183 State Hwy. 30 College Station, TX 77845 Telephone (979) 776-8945	89783

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated



CASE NARRATIVE

Client: Giant Refining Company
Project: Ciniza Groundwater
Set number: 0301W02348
Date received: 05-17-01
Date reported: 06-07-01
Chain of Custody: 69783

Inter-Mountain Laboratories, Inc., Farmington, NM received the samples listed above for analysis in a cool, 4° C, and intact condition. Enclosed are the results of the sample analyses.

Comment:

The sample, MW-2-51501, was tested for Ethylene Dibromide initially by Method 8260B within the recommended holding time. The result of the Method 8260B analysis was None Detected to a MDL of 5 ug/L. A subsequent analysis of the sample was performed by Method 504 beyond the recommended holding time. The result of the Method 504 analysis was also None Detected to a MDL of 0.1 ug/L.

I apologize for the hold time exceedances and for any inconvenience this may have caused.

If you have any question concerning the data, please feel free to call the laboratory, (505) 326-4737.

Thank you.

Wes Harvey
Laboratory Director
IML-Farmington

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: MW-2-051501
 Lab ID: 0301W02348
 Matrix: Water
 Condition: Intact

Date Received: 05/17/01
 Date Reported: 06/12/01
 Date Sampled: 05/15/01
 Time Sampled: 1400

Parameter	Analytical Result	Units	Units	PQL	Method	Analysis			
						Date	Time	Init.	
General Parameters									
PH	9.0	s.u.		0.1	EPA 150.1	05/17/01	1600	MC	
Electrical Conductivity	1,160	µmhos/cm		10	EPA 120.1	05/17/01	1600	MC	
Solids - Total Dissolved	704	mg/L		1	SW-846 8081	05/21/01	0800	MC	
Solids - Total Suspended	5	mg/L		2	EPA 160.2	05/22/01	1130	MC	
Alkalinity (CaCO3)	346	mg/L		1	EPA 310.1	05/21/01	1410	MC	
Cyanide (Total) - Colorimetric	<0.01	mg/L		0.01	EPA 335.2	05/23/01	0800	KB	
Hardness (CaCO3)	4	mg/L		1	EPA 200.7	06/08/01	1528	WL	
Phosphorus - Ortho-P	0.10	mg/L		0.02	SM 4500P-E	06/11/01	1409	MC	
Total Phenolics	0.02	mg/L		0.01	EPA 420.1	05/23/01	0800	KB	
Major Anions									
Bicarbonate (HCO3)	364	mg/L	5.96	meq/L	1	EPA 310.1	05/21/01	1410	MC
Carbonate (CO3)	29	mg/L	0.96	meq/L	1	EPA 310.1	05/21/01	1410	MC
Chloride	61	mg/L	1.73	meq/L	1	EPA 300.0	06/07/01	1600	WL
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	06/07/01	1600	WL
Fluoride	0.6	mg/L	<0.01	meq/L	0.1	EPA 300.0	06/07/01	1600	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1410	MC
Nitrogen - Nitrate/Nitrite	<0.05	mg/L	<0.01	meq/L	0.05	EPA 353.2	06/07/01	1600	WL
Sulfate	149	mg/L	3.10	meq/L	5	EPA 300.0	06/07/01	1600	WL
Major Cations									
Calcium	1.5	mg/L	0.07	meq/L	0.2	EPA 200.7	06/08/01	1531	WL
Magnesium	<0.2	mg/L	0.01	meq/L	0.2	EPA 200.7	06/08/01	1531	WL
Potassium	0.6	mg/L	0.02	meq/L	0.2	EPA 200.7	06/08/01	1531	WL
Sodium	276	mg/L	12.00	meq/L	0.2	EPA 200.7	06/08/01	1531	WL
Anion/Cation Balance QC Information									
Anion Sum			11.78	meq/L	N/A	N/A			
Cation Sum			12.09	meq/L	N/A	N/A			
Cation/Anion Balance			1.30	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.

SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By:

William Lipps

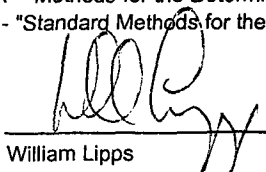
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-2-051501
Lab ID: 0301W02348
Matrix: Water
Condition: Intact

Date Received: 05/17/01
Date Reported: 06/11/01
Date Sampled: 05/15/01
Time Sampled: 1400

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	<0.05	mg/L			0.05	EPA 200.7	05/22/01	1529	WL
Arsenic	<0.005	mg/L			0.005	SM 3114B	05/31/01	1615	JG
Barium	0.02	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Boron	0.66	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	06/04/01	1050	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Copper	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Iron	0.02	mg/L			0.02	EPA 200.7	05/22/01	1529	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	06/05/01	0840	SW
Manganese	0.02	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	05/31/01	1000	BB
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Selenium	<0.005	mg/L			0.005	SM 3114B	05/22/01	1200	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	05/22/01	1529	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	05/22/01	1529	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	05/22/01	1529	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-2-51501
Laboratory ID: 0301W02348
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: MW-2-51501
 Laboratory ID: 0301W02348
 Sample Matrix: Water

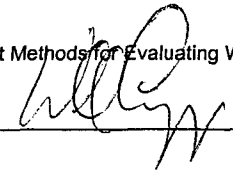
Date Reported: 06/07/01
 Date Sampled: 05/15/01
 Date Received: NG
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	104	86 - 118
1,2-Dichloroethane-d4	97	80 - 120
Toluene-d8	97	88 - 110
4-Bromofluorobenzene	96	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-2-51501**
Laboratory ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-2-51501**
Laboratory ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
2,4,6-Trichlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-2-51501**
Laboratory ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	36	21 - 100
Phenol-d6	28	10 - 94
Nitrobenzene-d5	49	35 - 114
2-Fluorobiphenyl	57	43 - 116
2,4,6-Tribromophenol	95	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

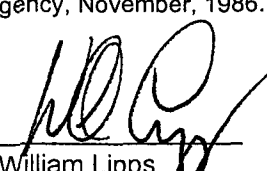
Analyst: _____

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-2-051501
Lab ID: 0301W02348
Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/22/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.8	0.8	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: **Ciniza**
Sample ID: **MW-2-51501**
Laboratory ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/24/01**

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	86	50 - 150

* - Out of Limits

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: 

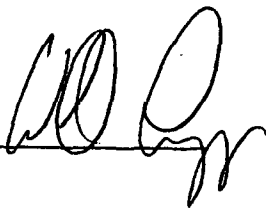
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-2-51501
Lab ID: 0301W02348
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-2-51501
Laboratory ID: 0301W02348
Sample Matrix: Water

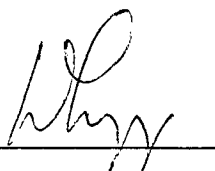
Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX	1	ND	30	µg/L
Total Organic Halides (TOX	2	ND	30	µg/L
Total Organic Halides (TOX	3	ND	30	µg/L
Total Organic Halides (TOX	4	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW - 2- 51501
Laboratory ID: 0301W02348
Sample Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Analyzed: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result mg/L	MDL
Replicate #1	ND	2.00
Replicate #2	ND	2.00
Replicate #3	ND	2.00
Replicate #4	ND	2.00

ND - Analyte not detected

* - This sample was subcontracted to an outside Laboratory.

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

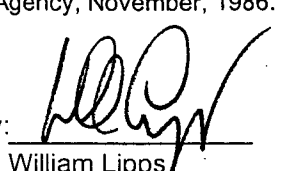
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-2-051501
Lab ID: 0301W02348
Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/25/01
Date Analyzed: 05/25/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	92	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: _____

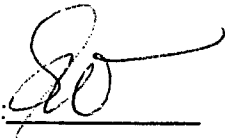
pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-2-051501
Laboratory ID: 0301W02348
Sample Matrix: Water
Condition: Intact

Date Reported: 06/07/01
Date Analyzed: 05/17/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result	MDL
Replicate #1	9.0	0.1
Replicate #2	9.0	0.1
Replicate #3	9.0	0.1
Replicate #4	9.0	0.1

Comments:

Reported By: 

Reviewed By: 

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **MW-2-051501**
Laboratory ID: **0301W02348**
Sample Matrix: **Water**
Condition: **Intact**

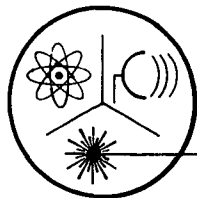
Date Reported: **06/07/01**
Date Analyzed: **05/17/01**
Date Sampled: **05/15/01**
Date Received: **05/17/01**

	Result	MDL
Replicate #1	1160	10
Replicate #2	1160	10
Replicate #3	1160	10
Replicate #4	1160	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

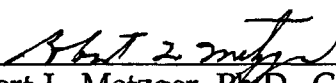
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: May 21, 2001
Samples Completed: June 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
MW-2-51501	< 0.3	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/17/01

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	1.27	0.75	0.50	104%
Arsenic	0.011	<0.005	0.010	111%
Barium	0.88	<0.01	1.00	88%
Boron	0.11	<0.01	0.10	107%
Cadmium	0.003	<0.001	0.003	100%
Chromium	0.10	<0.01	0.10	103%
Cobalt	0.09	<0.01	0.10	94%
Copper	0.10	<0.01	0.10	103%
Iron	1.19	0.66	0.50	106%
Lead	0.024	<0.005	0.025	95%
Manganese	1.68	1.10	0.50	116%
Mercury	0.002	<0.001	0.002	113%
Molybdenum	0.10	<0.01	0.10	98%
Nickel	0.10	<0.01	0.10	96%
Selenium	0.025	<0.005	0.025	99%
Silver	0.08	<0.01	0.10	81%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.110	<0.025	0.100	110%

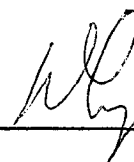
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/17/01

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.88	2.00	94%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.94	2.00	97%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	102%	mg/L
Chromium	1.97	2.00	99%	mg/L
Cobalt	1.91	2.00	96%	mg/L
Copper	1.85	2.00	93%	mg/L
Iron	1.88	2.00	94%	mg/L
Lead	0.051	0.050	103%	mg/L
Manganese	1.82	2.00	91%	mg/L
Mercury	0.003	0.003	108%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.95	2.00	98%	mg/L
Selenium	0.020	0.020	100%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.90	2.00	95%	mg/L
Zinc	1.92	2.00	96%	mg/L

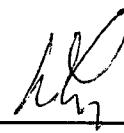
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Method Blank Analysis

Sample ID: Method Blank
 Laboratory ID: V3MB01-141
 Sample Matrix: Water

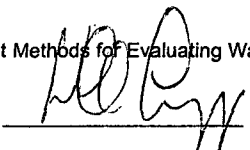
Date Reported: 06/07/01
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	101	86 - 118
1,2-Dichloroethane-d4	94	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-141
 Sample Matrix: Water

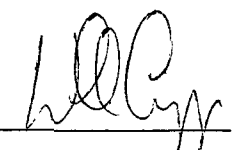
Date Reported: 06/07/01
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	52	105	53	106	1
Benzene	ND	50	48	96	47	94	1
Chlorobenzene	ND	50	56	112	54	108	4
Toluene	ND	50	50	101	49	97	4
Trichloroethene (TCE)	ND	50	50	101	51	102	1

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	100	102	86 - 118
1,2-Dichloroethane-d4	97	99	80 - 120
Toluene-d8	99	100	88 - 110
4-Bromofluorobenzene	102	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G01081MS
Sample Matrix: Water

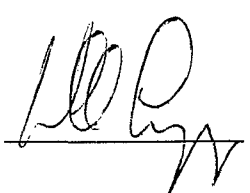
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	56	111
Benzene	ND	50	48	97
Chlorobenzene	ND	50	55	110
Toluene	ND	50	51	102
Trichloroethene (TCE)	ND	50	52	104

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	96	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzenzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

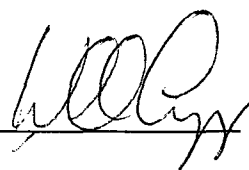
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	38	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	47	35 - 114
2-Fluorobiphenyl	55	43 - 116
2,4,6-Tribromophenol	74	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

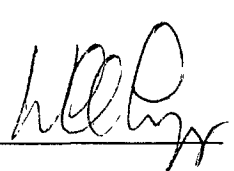
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	67	67	62	62	8
1,4-Dichlorobenzene	ND	100	59	59	54	54	9
2,4-Dinitrotoluene	ND	100	70	70	66	66	5
2-Chlorophenol	ND	200	129	65	119	60	8
4-Chloro-3-methylphenol	ND	200	124	62	117	59	5
4-Nitrophenol	ND	200	52	26	50	25	3
Acenaphthene	ND	100	65	65	62	62	6
N-Nitrosodi-n-propylamine	ND	100	80	80	76	76	6
Pentachlorophenol	ND	200	130	65	120	60	8
Phenol	ND	200	56	28	55	27	2
Benzene	ND	100	95	95	92	92	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	46	41	21 - 100
Phenol-d6	30	28	10 - 94
Nitrobenzene-d5	62	57	35 - 114
2-Fluorobiphenyl	70	65	43 - 116
2,4,6-Tribromophenol	96	90	10 - 123
Terphenyl-d14	85	80	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID:	Matrix Spike	Date Reported:	06/07/01
Laboratory ID:	1301W01023MS	Date Extracted:	05/18/01
Sample Matrix:	Water	Date Analyzed:	05/30/01

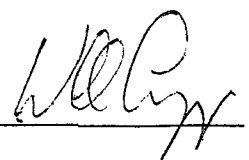
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	66	66
1,4-Dichlorobenzene	ND	100	57	57
2,4-Dinitrotoluene	ND	100	70	70
2-Chlorophenol	ND	200	126	63
4-Chloro-3-methylphenol	ND	200	124	62
4-Nitrophenol	ND	200	53	26
Acenaphthene	ND	100	65	65
N-Nitrosodi-n-propylamine	ND	100	79	79
Pentachlorophenol	ND	200	136	68
Phenol	ND	200	54	27
Pyrene	ND	100	94	94

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	60	35 - 114
2-Fluorobiphenyl	66	43 - 116
2,4,6-Tribromophenol	95	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/17/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02348**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/17/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	29.4	73	41-82
Acenaphthylene	40.4	29.8	74	43-91
Acenaphthene	40.4	31.1	77	48-85
Fluorene	4.1	3.07	75	48-87
Phenanthrene	3.07	2.47	80	60-86
Fluoranthene	1.92	1.72	90	72-96
Pyrene	3.85	3.52	91	73-96
Benzo(a)pyrene	0.253	0.247	98	66-118
Benzo(g,h,i)perylene	0.553	0.550	99	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	85	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

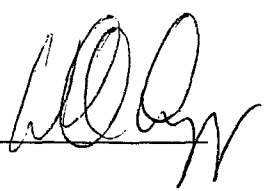
Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	50	50 - 150
Decachlorobiphenyl	78	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: _____ Method Blank
Laboratory ID: MB01-158
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____



ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

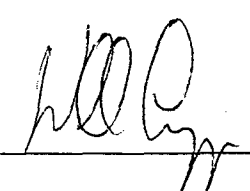
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-137
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2	2.1	105	2.3	115	9

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

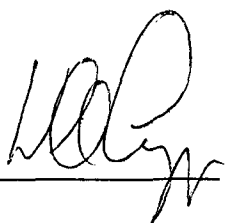
Sample ID: --- Method Blank ---
Laboratory ID: MB01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

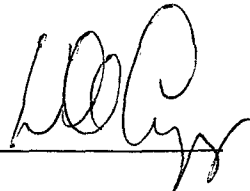
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	53	106	58	117	10

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

May 4, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on April 11, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script that reads 'Sharon Williams'.

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING CO. SPRING 2001 GROUNDWATER MW-4-4901

Case Narrative

On April 11, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: MW-4-4901
 Lab ID: 0301W01687
 Matrix: Water
 Condition: Intact

Date Received: 04/11/01
 Date Reported: 02/28/02
 Date Sampled: 04/09/01
 Time Sampled: 1030

Parameter	Analytical						Analysis		
	Result	Units		Units	PQL	Method	Date	Time	Init.
General Parameters									
PH	8.3	s.u.			0.1	EPA 150.1	04/11/01	1700	AG
Electrical Conductivity	1,210	µmhos/cm			10	EPA 120.1	04/11/01	1700	AG
Solids - Total Dissolved	730	mg/L			10	EPA 160.1	04/12/01	0900	AG
Solids - Total Suspended	3	mg/L			2	EPA 160.2	04/12/01	1730	AG
Alkalinity (CaCO3)	468	mg/L			1	EPA 310.1	04/20/01	1600	ML
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	SM 4500-CN E	05/02/01	0800	WN
Hardness (CaCO3)	5	mg/L			1	EPA 200.7	05/01/01	1148	WL
Phosphorus - Ortho-P	0.52	mg/L			0.02	EPA 365.3	04/11/01	1600	AG
Total Phenolics	<0.01	mg/L			0.01	EPA 420.1	04/12/01	0800	TH
Major Anions									
Bicarbonate (HCO3)	571	mg/L	9.36	meq/L	1	EPA 310.1	04/20/01	1600	ML
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/20/01	1600	ML
Chloride	17	mg/L	0.48	meq/L	1	EPA 300.0	05/01/01	1152	WL
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	05/01/01	1152	WL
Fluoride	0.45	mg/L	<0.01	meq/L	0.05	EPA 300.0	05/01/01	1152	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/20/01	1600	ML
Nitrogen - Nitrate/Nitrite	0.23	mg/L	0.02	meq/L	0.05	EPA 353.2	04/16/01	1357	WH
Sulfate	147	mg/L	3.05	meq/L	5	EPA 300.0	05/01/01	1152	WL
Major Cations									
Calcium	1.6	mg/L	0.08	meq/L	0.2	EPA 200.7	05/01/01	1148	WL
Magnesium	0.2	mg/L	0.02	meq/L	0.2	EPA 200.7	05/01/01	1148	WL
Potassium	0.8	mg/L	0.02	meq/L	0.2	EPA 200.7	05/01/01	1148	WL
Sodium	279	mg/L	12.13	meq/L	0.2	EPA 200.7	05/01/01	1148	WL
Anion/Cation Balance QC Information									
Anion Sum			12.89	meq/L	0.01	SM 1030			
Cation Sum			12.25	meq/L	0.01	SM 1030			
Cation/Anion Balance			2.55	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

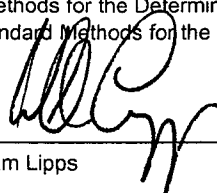
William Lipps

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-4-4901
Lab ID: 0301W01687
Matrix: Water
Condition: Intact

Date Received: 04/11/01
Date Reported: 02/28/02
Date Sampled: 04/09/01
Time Sampled: 1030

Parameter	Analytical		Units	PQL	Method	Analysis		
	Result	Units				Date	Time	Init.
Total Metals								
Aluminum	<0.05	mg/L		0.05	EPA 200.7	04/16/01	1315	WL
Arsenic	<0.005	mg/L		0.005	SM 3114B	04/17/01	1730	JG
Barium	0.02	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Boron	0.36	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Cadmium	<0.001	mg/L		0.001	EPA 200.9	04/17/01	1150	SW
Chromium	<0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Cobalt	<0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Copper	0.05	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Iron	<0.02	mg/L		0.02	EPA 200.7	04/16/01	1315	WL
Lead	<0.005	mg/L		0.005	EPA 200.9	04/23/01	1200	SW
Manganese	0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Mercury	<0.001	mg/L		0.001	EPA 245.1	04/21/01	0800	JG
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Nickel	<0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Selenium	<0.005	mg/L		0.005	SM 3114B	04/17/01	1730	JG
Silver	<0.01	mg/L		0.01	EPA 200.7	04/16/01	1315	WL
Uranium	<0.3	mg/L		0.3	EPA 200.7	04/16/01	1315	WL
Zinc	0.032	mg/L		0.025	EPA 200.7	04/16/01	1315	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By: 

William Lipps

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/19/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/19/01

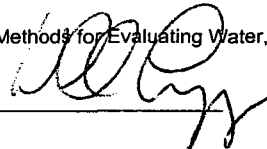
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	117	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	83*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: _____

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzdine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	33	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	52	35 - 114
2-Fluorobiphenyl	60	43 - 116
2,4,6-Tribromophenol	71	10 - 123
Terphenyl-d14	89	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____

Analyst: _____

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-4-4901
Lab ID: 0301W01687
Matrix: Water
Condition: Intact

Date Reported: 05/04/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.6	0.6	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.6	0.6	µg/L
Fluorene	<0.6	0.6	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

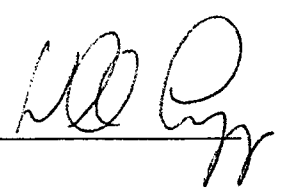
Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

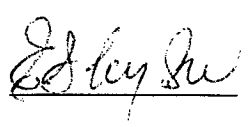
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	79	50 - 150
Decachlorobiphenyl	108	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

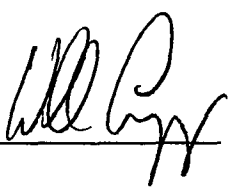
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-4-4901
Lab ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/19/01
Date Analyzed: 04/19/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-4-4901
Laboratory ID: 0301W01687
Sample Matrix: Water
Condition: Intact

Date Reported: 04/30/01
Date Analyzed: 04/18/01
Date Sampled: 04/09/01
Date Received: 04/11/01

	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: SW

Reviewed By: [Signature]

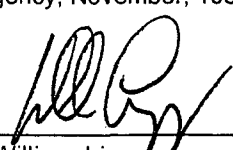
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-4-4901
Lab ID: 0301W01687
Matrix: Water
Condition: Intact

Date Reported: 05/02/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/18/02
Date Analyzed: 04/25/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	88	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

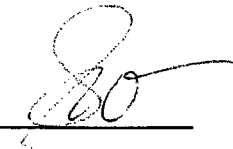
pH

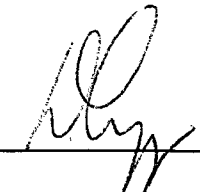
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **MW-4-4901**
Laboratory ID: **0301W01687**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **05/04/01**
Date Analyzed: **04/11/01**
Date Sampled: **04/09/01**
Date Received: **04/11/01**

	Result	MDL
Replicate #1	8.3	0.1
Replicate #2	8.3	0.1
Replicate #3	8.3	0.1
Replicate #4	8.3	0.1

Comments:

Reported By: 

Reviewed By: 

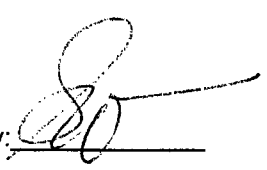
ELECTRICAL CONDUCTIVITY

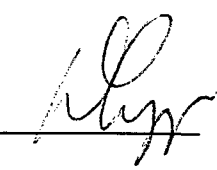
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **MW-4-4901**
Laboratory ID: **0301W01687**
Sample Matrix: **Water**
Condition: **Intact**

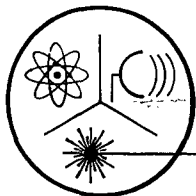
Date Reported: **05/04/01**
Date Analyzed: **04/11/01**
Date Sampled: **04/09/01**
Date Received: **04/11/01**

	Result	MDL
Replicate #1	1210	10
Replicate #2	1210	10
Replicate #3	1210	10
Replicate #4	1210	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

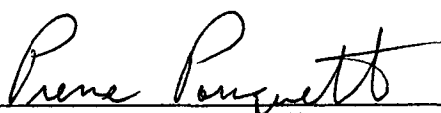
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 12, 2001
Samples Completed: May 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
WO1687	< 0.3	< 1.0	< 1.0


Pierre Pouquette, Staff Chemist



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

QUALITY CONTROL / QUALITY ASSURANCE

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-109
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: NA
Date Analyzed: 04/19/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Method Blank Analysis

Sample ID: Method Blank
 Laboratory ID: V3MB01-109
 Sample Matrix: Water

Date Reported: 04/26/01
 Date Extracted: NA
 Date Analyzed: 04/19/01

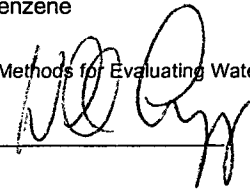
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

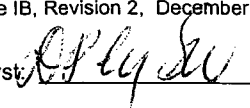
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	109	86 - 118
1,2-Dichloroethane-d4	117	80 - 120
Toluene-d8	97	88 - 110
4-Bromofluorobenzene	79*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

Date Reported: 04/26/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

Analyst: _____

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

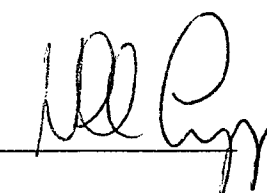
Date Reported: 04/26/01
Date Extracted: NA
Date Analyzed: 04/09/01

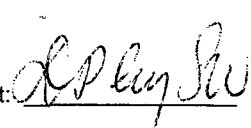
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

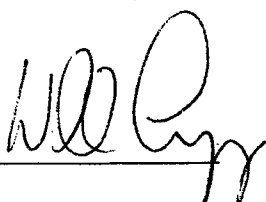
ND - Compound not detected at stated Detection Limit.

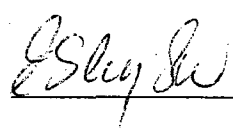
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	27	21 - 100
Phenol-d6	20	10 - 94
Nitrobenzene-d5	45	35 - 114
2-Fluorobiphenyl	52	43 - 116
2,4,6-Tribromophenol	65	10 - 123
Terphenyl-d14	89	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

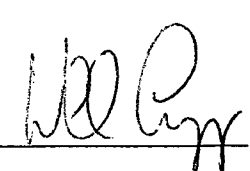
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

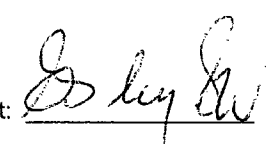
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By:

Analyst:

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01687**
Sample Matrix: **Water**

Date Reported: **05/04/01**
Date Analyzed: **04/20/01**
Date Received: **04/11/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: SL

Reviewed By: Ways

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01687**
Sample Matrix: **Water**

Date Reported: **05/04/01**
Date Analyzed: **04/20/01**
Date Received: **04/11/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	23.3	58	41-82
Acenaphthylene	40.4	25.2	62	43-91
Acenaphthene	40.4	26.6	66	48-85
Fluorene	4.1	2.66	65	48-87
Phenanthrene	3.07	2.29	75	60-86
Fluoranthene	1.92	1.61	84	72-96
Pyrene	3.85	3.15	82	73-96
Benzo(a)pyrene	0.253	0.226	89	66-118
Benzo(g,h,i)perylene	0.553	0.487	88	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	90	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SL

Reviewed By: [Signature]

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	67	50 - 150
Decachlorobiphenyl	111	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

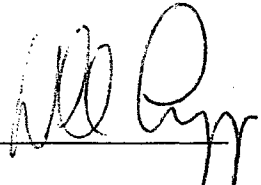
Date Reported: 04/26/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

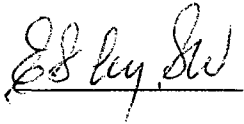
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-109
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/19/01
Date Analyzed: 04/19/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By:

Analyst:

ETHYLENE DIBROMIDE BY GC/ECD

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00767MS
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/19/01
Date Analyzed: 04/19/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
8260B Benzene	ND	2.0	2.3	115

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____

Analyst: _____

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-110A
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By:

Analyst:

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-110
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	50	100	51	102	3

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

Analyst: _____



June 11, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on May 17, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,



Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



CHAIN OF CUSTODY RECORD

Client/Project Name Spring 2001 Groundwater Event				Project Location Grant - Ciripa		ANALYSES / PARAMETERS			
Sampler: (Signature) <i>SC Abbott</i>		Chain of Custody Tape No.							
Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	Remarks <i>See attached report for parameters</i>			
<i>MU-5-51501</i>	<i>5/14/01</i>	<i>1530</i>	<i>Q346</i>	<i>Water</i>	<i>25</i>				
						<i>See attached report for parameters</i>			

Relinquished by: (Signature) <i>SC Abbott</i>	Date <i>5/16/01</i>	Time <i>0900</i>	Received by: (Signature) <i>[Signature]</i>	Date <i>5/16/01</i>	Time <i>0900</i>
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

☐ 555 Absaraka
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☐ 1633 Terra Avenue
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Telephone (307) 672-8945

☐ 1701 Phillips Circle
Gillette, Wyoming 82718
Telephone (307) 682-XXXX

Inter-Mountain Laboratories, Inc.

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

11183 State Hwy. 30
College Station, TX 77845
Telephone (979) 776-8945

68807

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated



GIANT REFINING – CINIZA SPRING 2001 GROUNDWATER MW - 5 - 51501

Case Narrative

On May 17, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA – "Methods for Chemical Analysis of water and Wastes (MCAWW)", EPA 600/4-79-020 – March, 1983, "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

CASE NARRATIVE

Client: Giant Refining Company
Project: Ciniza Groundwater
Set number: 0301W02346
Date received: 05-17-01
Date reported: 06-07-01
Chain of Custody: 89807

Inter-Mountain Laboratories, Inc., Farmington, NM received the samples listed above for analysis in a cool, 4° C, and intact condition. Enclosed are the results of the sample analyses.

Comment:

The sample, MW-5-51501, was tested for Ethylene Dibromide initially by Method 8260B within the recommended holding time. The result of the Method 8260B analysis was None Detected to a MDL of 5 ug/L. A subsequent analysis of the sample was performed by Method 504 beyond the recommended holding time. The result of the Method 504 analysis was also None Detected to a MDL of 0.1 ug/L.

I apologize for the hold time exceedances and for any inconvenience this may have caused.

If you have any question concerning the data, please feel free to call the laboratory, (505) 326-4737.

Thank you.

Wes Harvey
Laboratory Director
IML-Farmington

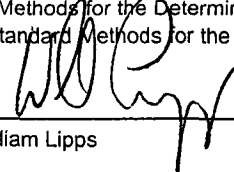
Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: MW-5-51501
 Lab ID: 0301W02346
 Matrix: Water
 Condition: Intact

Date Received: 05/17/01
 Date Reported: 06/08/01
 Date Sampled: 05/15/01
 Time Sampled: 1530

Parameter	Analytical						Analysis		
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	9.0	s.u.			0.1	EPA 150.1	05/17/01	1600	WL
Electrical Conductivity	1,160	µmhos/cm			10	EPA 120.1	05/17/01	1600	WL
Solids - Total Dissolved	660	mg/L			10	EPA 160.1	05/22/01	0722	ML
Solids - Total Suspended	4	mg/L			2	EPA 160.2	05/22/01	1130	MC
Alkalinity (CaCO3)	350	mg/L			1	EPA 310.1	05/21/01	1410	MC
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	EPA 335.2	05/29/01	0800	KB
Hardness (CaCO3)	4	mg/L			1	EPA 200.7	06/08/01	1526	WL
Phosphorus - Ortho-P	0.12	mg/L			0.02	SM 4500P-E	06/11/01	1407	MC
Total Phenolics	0.04	mg/L			0.01	EPA 420.1	05/23/01	0800	KB
Major Anions									
Bicarbonate (HCO3)	383	mg/L	6.28	meq/L	1	EPA 310.1	05/21/01	1410	MC
Carbonate (CO3)	22	mg/L	0.72	meq/L	1	EPA 310.1	05/21/01	1410	MC
Chloride	65	mg/L	1.85	meq/L	1	EPA 300.0	05/29/01	1027	WL
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	05/29/01	1027	WL
Fluoride	0.7	mg/L	<0.01	meq/L	0.1	EPA 300.0	05/29/01	1027	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1410	MC
Nitrogen - Nitrate/Nitrite	<0.05	mg/L	<0.01	meq/L	0.05	EPA 353.2	06/07/01	1600	WL
Sulfate	154	mg/L	3.21	meq/L	5	EPA 300.0	05/29/01	1027	WL
Major Cations									
Calcium	1.4	mg/L	0.07	meq/L	0.2	EPA 200.7	06/08/01	1526	WL
Magnesium	<0.2	mg/L	0.01	meq/L	0.2	EPA 200.7	06/08/01	1526	WL
Potassium	0.8	mg/L	0.02	meq/L	0.2	EPA 200.7	06/08/01	1526	WL
Sodium	273	mg/L	11.86	meq/L	0.2	EPA 200.7	06/08/01	1526	WL
Anion/Cation Balance QC Information									
Anion Sum			12.08	meq/L	0.01	SM 1030			
Cation Sum			11.95	meq/L	0.01	SM 1030			
Cation/Anion Balance			0.54	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

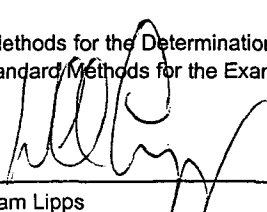

 William Lipps

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-5-51501
Lab ID: 0301W02346
Matrix: Water
Condition: Intact

Date Received: 05/17/01
Date Reported: 06/11/01
Date Sampled: 05/15/01
Time Sampled: 1530

Parameter	Analytical		Units	PQL	Method	Analysis			
	Result	Units				Date	Time	Init.	
Total Metals									
Aluminum	<0.05	mg/L		0.05	EPA 200.7	05/22/01	1523	WL	
Arsenic	<0.005	mg/L		0.005	SM 3114B	05/31/01	1615	BB	
Barium	0.02	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Boron	0.69	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Cadmium	<0.001	mg/L		0.001	EPA 200.9	06/04/01	1050	SW	
Chromium	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Cobalt	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Copper	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Iron	0.05	mg/L		0.02	EPA 200.7	05/22/01	1523	WL	
Lead	<0.005	mg/L		0.005	EPA 200.9	06/05/01	0840	SW	
Manganese	0.08	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Mercury	<0.001	mg/L		0.001	EPA 245.1	05/31/01	1000	BB	
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Nickel	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Selenium	<0.005	mg/L		0.005	SM 3114B	05/22/01	1430	JG	
Silver	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1523	WL	
Uranium	<0.3	mg/L		0.3	EPA 200.7	05/22/01	1523	WL	
Zinc	0.026	mg/L		0.025	EPA 200.7	05/22/01	1523	WL	

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By: 

William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-5-51501
Laboratory ID: 0301W02346
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-5-51501
Laboratory ID: 0301W02346
Sample Matrix: Water

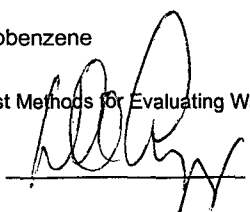
Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	105	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	100	88 - 110
4-Bromofluorobenzene	97	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-5-51501**
Laboratory ID: **0301W02346**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-5-51501**
Laboratory ID: **0301W02346**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: MW-5-51501
Laboratory ID: 0301W02346
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

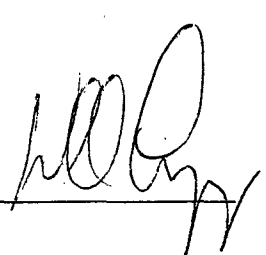
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	33	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	47	35 - 114
2-Fluorobiphenyl	55	43 - 116
2,4,6-Tribromophenol	84	10 - 123
Terphenyl-d14	88	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-5-51501
Lab ID: 0301W02346
Matrix: Water
Condition: Intact

Date Reported: 06/08/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/22/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<0.8	0.8	µg/L
Anthracene	<0.02	0.02	µg/L
Benzo(a)anthracene	<0.05	0.05	µg/L
Benzo(b)fluoranthene	<0.03	0.03	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.02	0.02	µg/L
Benzo(k)fluoranthene	<0.2	0.2	µg/L
Chrysene	<0.04	0.04	µg/L
Dibenz(a,h)anthracene	<0.3	0.3	ug/L
Fluoranthene	<0.8	0.8	µg/L
Fluorene	<0.08	0.08	µg/L
Indeno(1,2,3-cd)pyrene	<2.5	2.5	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: MW-5-51501
Laboratory ID: 0301W02346
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: 05/18/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

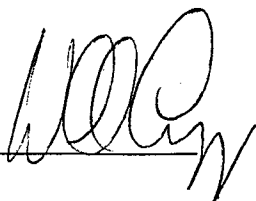
Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	48*	50 - 150
Decachlorobiphenyl	84	50 - 150

* - Out of Limits

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: _____



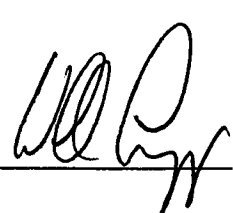
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-5-51501
Lab ID: 0301W02346
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **MW-5-51501**
Laboratory ID: **0301W02346**
Sample Matrix: **Water**

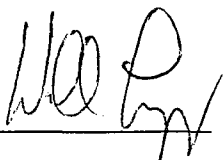
Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/24/01**
Date Analyzed: **05/24/01**

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	30	µg/L
Total Organic Halides (TOX)	2	ND	30	µg/L
Total Organic Halides (TOX)	3	ND	30	µg/L
Total Organic Halides (TOX)	4	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-5-51501
Laboratory ID: 0301W02346
Sample Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Analyzed: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01

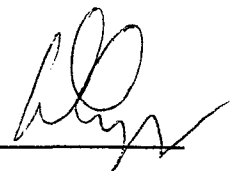
	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

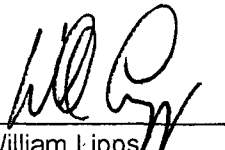
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: MW-5-51501
Lab ID: 0301W02346
Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/25/01
Date Analyzed: 05/25/01

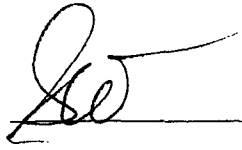
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	99	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-5-051501
Laboratory ID: 0301W02346
Sample Matrix: Water
Condition: Intact

Date Reported: 06/07/01
Date Analyzed: 05/17/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result	MDL
Replicate #1	9.0	0.1
Replicate #2	9.0	0.1
Replicate #3	9.0	0.1
Replicate #4	9.0	0.1

Comments:

Reported By: 

Reviewed By: 

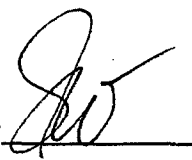
ELECTRICAL CONDUCTIVITY

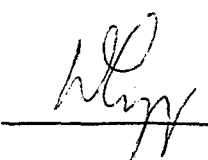
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: MW-5-051501
Laboratory ID: 0301W02346
Sample Matrix: Water
Condition: Intact

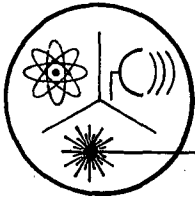
Date Reported: 06/07/01
Date Analyzed: 05/17/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result	MDL
Replicate #1	1160	10
Replicate #2	1160	10
Replicate #3	1160	10
Replicate #4	1160	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

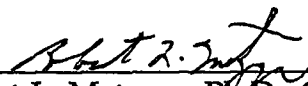
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: May 21, 2001
Samples Completed: June 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
MW-5-51501	< 0.1	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

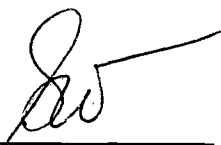
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

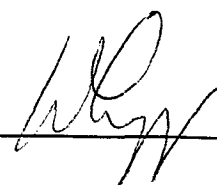
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 06/05/01
Date Received: 05/17/01

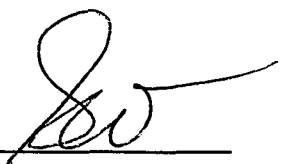
Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	1.27	0.75	0.50	104%
Arsenic	0.011	<0.005	0.010	111%
Barium	0.88	<0.01	1.00	88%
Boron	0.11	<0.01	0.10	107%
Cadmium	0.003	<0.001	0.003	100%
Chromium	0.10	<0.01	0.10	103%
Cobalt	0.09	<0.01	0.10	94%
Copper	0.10	<0.01	0.10	103%
Iron	1.19	0.66	0.50	106%
Lead	0.024	<0.005	0.025	95%
Manganese	1.68	1.10	0.50	116%
Mercury	0.002	<0.001	0.002	113%
Molybdenum	0.10	<0.01	0.10	98%
Nickel	0.10	<0.01	0.10	96%
Selenium	0.025	<0.005	0.025	99%
Silver	0.08	<0.01	0.10	81%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.110	<0.025	0.100	110%

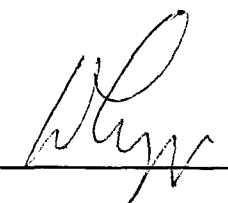
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

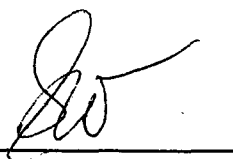
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.88	2.00	94%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.94	2.00	97%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	102%	mg/L
Chromium	1.97	2.00	99%	mg/L
Cobalt	1.91	2.00	96%	mg/L
Copper	1.85	2.00	93%	mg/L
Iron	1.88	2.00	94%	mg/L
Lead	0.051	0.050	103%	mg/L
Manganese	1.82	2.00	91%	mg/L
Mercury	0.003	0.003	108%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.95	2.00	98%	mg/L
Selenium	0.020	0.020	100%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.90	2.00	95%	mg/L
Zinc	1.92	2.00	96%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

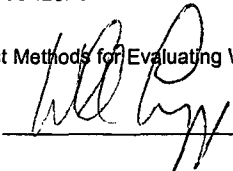
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	101	86 - 118
1,2-Dichloroethane-d4	94	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-141
 Sample Matrix: Water

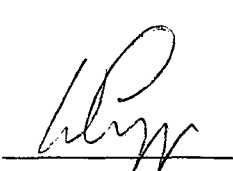
Date Reported: 06/07/01
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	52	105	53	106	1
Benzene	ND	50	48	96	47	94	1
Chlorobenzene	ND	50	56	112	54	108	4
Toluene	ND	50	50	101	49	97	4
Trichloroethene (TCE)	ND	50	50	101	51	102	1

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	100	102	86 - 118
1,2-Dichloroethane-d4	97	99	80 - 120
Toluene-d8	99	100	88 - 110
4-Bromofluorobenzene	102	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G01081MS
Sample Matrix: Water

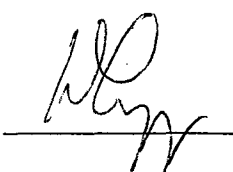
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	56	111
Benzene	ND	50	48	97
Chlorobenzene	ND	50	55	110
Toluene	ND	50	51	102
Trichloroethene (TCE)	ND	50	52	104

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	96	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzenzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

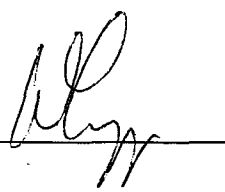
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	38	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	47	35 - 114
2-Fluorobiphenyl	55	43 - 116
2,4,6-Tribromophenol	74	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

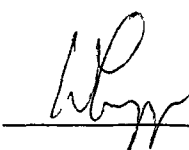
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	67	67	62	62	8
1,4-Dichlorobenzene	ND	100	59	59	54	54	9
2,4-Dinitrotoluene	ND	100	70	70	66	66	5
2-Chlorophenol	ND	200	129	65	119	60	8
4-Chloro-3-methylphenol	ND	200	124	62	117	59	5
4-Nitrophenol	ND	200	52	26	50	25	3
Acenaphthene	ND	100	65	65	62	62	6
N-Nitrosodi-n-propylamine	ND	100	80	80	76	76	6
Pentachlorophenol	ND	200	130	65	120	60	8
Phenol	ND	200	56	28	55	27	2
Pyrene	ND	100	95	95	92	92	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	46	41	21 - 100
Phenol-d6	30	28	10 - 94
Nitrobenzene-d5	62	57	35 - 114
2-Fluorobiphenyl	70	65	43 - 116
2,4,6-Tribromophenol	96	90	10 - 123
Terphenyl-d14	85	80	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W01023MS
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

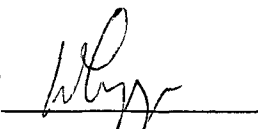
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	66	66
1,4-Dichlorobenzene	ND	100	57	57
2,4-Dinitrotoluene	ND	100	70	70
2-Chlorophenol	ND	200	126	63
4-Chloro-3-methylphenol	ND	200	124	62
4-Nitrophenol	ND	200	53	26
Acenaphthene	ND	100	65	65
N-Nitrosodi-n-propylamine	ND	100	79	79
Pentachlorophenol	ND	200	136	68
Phenol	ND	200	54	27
Pyrene	ND	100	94	94

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	60	35 - 114
2-Fluorobiphenyl	66	43 - 116
2,4,6-Tribromophenol	95	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

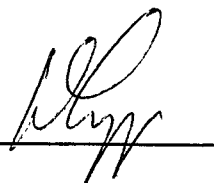
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02346**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/17/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: _____



Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

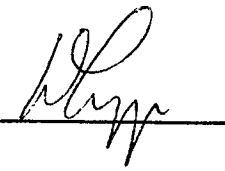
Client: **Giant Refining - Ciniza**
Project: Spring 2001 GW
Lab ID: 0301W02346
Sample Matrix: Water

Date Reported: 06/08/01
Date Analyzed: 05/24/01
Date Received: 05/17/01

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	29.4	73	41-82
Acenaphthylene	40.4	29.8	74	43-91
Acenaphthene	40.4	31.1	77	48-85
Fluorene	4.1	3.07	75	48-87
Phenanthrene	3.07	2.47	80	60-86
Fluoranthene	1.92	1.72	90	72-96
Pyrene	3.85	3.52	91	73-96
Benzo(a)pyrene	0.253	0.247	98	66-118
Benzo(g,h,i)perylene	0.553	0.550	99	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	93	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	50	50 - 150
Decachlorobiphenyl	78	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-137
Sample Matrix: Water

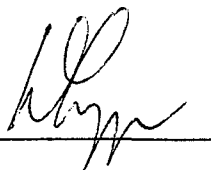
Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2	2.1	105	2.3	115	9

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B							
Total Organic Halides (TOX)	ND	50	53	106	58	117	10

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 



GIANT REFINING – CINIZA SPRING 2001 GROUNDWATER SMW - 4 - 51501

Case Narrative

On May 17, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA – "Methods for Chemical Analysis of water and Wastes (MCAWW)", EPA 600/4-79-020 – March, 1983, "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated



CASE NARRATIVE

Client: Giant Refining Company
Project: Ciniza Groundwater
Set number: 0301W02347
Date received: 05-17-01
Date reported: 06-07-01
Chain of Custody: 89811

Inter-Mountain Laboratories, Inc., Farmington, NM received the samples listed above for analysis in a cool, 4° C, and intact condition. Enclosed are the results of the sample analyses.

Comment:

The sample, SMW-4-51501, was tested for Ethylene Dibromide initially by Method 8260B within the recommended holding time. The result of the Method 8260B analysis was None Detected to a MDL of 5 ug/L. A subsequent analysis of the sample was performed by Method 504 beyond the recommended holding time. The result of the Method 504 analysis was also None Detected to a MDL of 0.1 ug/L.

I apologize for the hold time exceedances and for any inconvenience this may have caused.

If you have any question concerning the data, please feel free to call the laboratory, (505) 326-4737.

Thank you.

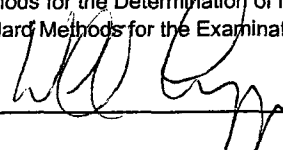
Wes Harvey
Laboratory Director
IML-Farmington

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: SMW-4-51501
 Lab ID: 0301W02347
 Matrix: Water
 Condition: Intact

Date Received: 05/17/01
 Date Reported: 06/12/01
 Date Sampled: 05/15/01
 Time Sampled: 1000

Parameter	Analytical		Analysis						
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	8.7	s.u.		0.1	EPA 150.1	05/17/01	1600	WL	
Electrical Conductivity	1,200	µmhos/cm		10	EPA 120.1	05/17/01	1600	WL	
Solids - Total Dissolved	740	mg/L		10	EPA 160.1	05/21/01	0800	MC	
Solids - Total Suspended	24	mg/L		2	EPA 160.2	05/22/01	1130	MC	
Alkalinity (CaCO3)	390	mg/L		1	EPA 310.1	05/21/01	1410	MC	
Cyanide (Total) - Colorimetric	<0.01	mg/L		0.01	EPA 335.2	05/23/01	0800	KB	
Hardness (CaCO3)	10	mg/L		1	EPA 200.7	06/08/01	1528	WL	
Phosphorus - Ortho-P	0.19	mg/L		0.02	SM 4500P-E	06/11/01	1608	MC	
Total Phenolics	0.05	mg/L		0.01	EPA 420.1	05/23/01	0800	KB	
Major Anions									
Bicarbonate (HCO3)	476	mg/L	7.80	meq/L	1	EPA 310.1	05/21/01	1410	MC
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1410	MC
Chloride	62	mg/L	1.76	meq/L	1	EPA 300.0	05/29/01	1027	WL
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	05/29/01	1027	WL
Fluoride	0.7	mg/L	<0.01	meq/L	0.1	EPA 300.0	05/29/01	1027	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	05/21/01	1410	MC
Nitrogen - Nitrate/Nitrite	<0.05	mg/L	<0.01	meq/L	0.05	EPA 353.2	06/07/01	1600	WL
Sulfate	144	mg/L	3.00	meq/L	5	EPA 300.0	05/29/01	1027	WL
Major Cations									
Calcium	2.7	mg/L	0.14	meq/L	0.2	EPA 200.7	06/08/01	1528	WL
Magnesium	0.8	mg/L	0.06	meq/L	0.2	EPA 200.7	06/08/01	1528	WL
Potassium	0.7	mg/L	0.02	meq/L	0.2	EPA 200.7	06/08/01	1528	WL
Sodium	284	mg/L	12.36	meq/L	0.2	EPA 200.7	06/08/01	1528	WL
Anion/Cation Balance QC Information									
Anion Sum			12.59	meq/L	0.01	SM 1030			
Cation Sum			12.58	meq/L	0.01	SM 1030			
Cation/Anion Balance			0.04	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By: 

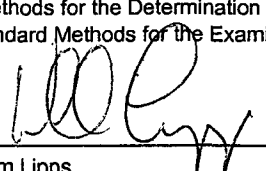
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: SMW-4-51501
Lab ID: 0301W02347
Matrix: Water
Condition: Intact

Date Received: 05/17/01
Date Reported: 06/11/01
Date Sampled: 05/15/01
Time Sampled: 1000

Parameter	Analytical		Units	PQL	Method	Analysis		
	Result	Units				Date	Time	Init.
Total Metals								
Aluminum	0.86	mg/L		0.05	EPA 200.7	05/22/01	1526	WL
Arsenic	<0.005	mg/L		0.005	SM 3114B	05/31/01	1615	BB
Barium	0.03	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Boron	1.27	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Cadmium	<0.001	mg/L		0.001	EPA 200.9	06/04/01	1050	SW
Chromium	0.02	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Cobalt	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Copper	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Iron	0.37	mg/L		0.02	EPA 200.7	05/22/01	1526	WL
Lead	<0.005	mg/L		0.005	EPA 200.9	06/05/01	0840	SW
Manganese	0.04	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Mercury	<0.001	mg/L		0.001	EPA 245.1	05/31/01	1000	BB
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Nickel	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Selenium	<0.005	mg/L		0.005	SM 3114B	05/22/01	1200	JG
Silver	<0.01	mg/L		0.01	EPA 200.7	05/22/01	1526	WL
Uranium	<0.3	mg/L		0.3	EPA 200.7	05/22/01	1526	WL
Zinc	<0.025	mg/L		0.025	EPA 200.7	05/22/01	1526	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **SMW-4-51501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **NA**
Date Analyzed: **05/21/01**

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **SMW-4-51501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **NA**
Date Analyzed: **05/21/01**

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	106	86 - 118
1,2-Dichloroethane-d4	98	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	97	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: WLL

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **SMW-4-51501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzo(a)benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
 Project ID: **Ciniza**
 Sample ID: **SMW-4-51501**
 Laboratory ID: **0301W02347**
 Sample Matrix: **Water**

Date Reported: **06/07/01**
 Date Sampled: **05/15/01**
 Date Received: **NG**
 Date Extracted: **05/18/01**
 Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
o-chlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **SMW-4-51501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/30/01**

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

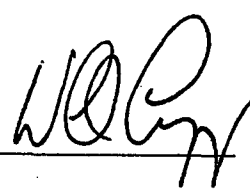
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	37	21 - 100
Phenol-d6	26	10 - 94
Nitrobenzene-d5	53	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	89	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

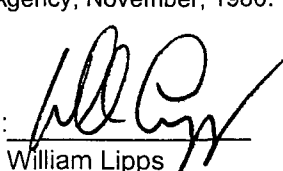
Reviewed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: SMW-4-51501
Lab ID: 0301W02347
Matrix: Water
Condition: Intact

Date Reported: 06/08/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/22/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<0.8	0.8	µg/L
Anthracene	<0.02	0.02	µg/L
Benzo(a)anthracene	<0.05	0.05	µg/L
Benzo(b)fluoranthene	<0.03	0.03	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.02	0.02	µg/L
Benzo(k)fluoranthene	<0.2	0.2	µg/L
Chrysene	<0.04	0.04	µg/L
Dibenz(a,h)anthracene	<0.3	0.3	ug/L
Fluoranthene	<0.8	0.8	µg/L
Fluorene	<0.08	0.08	µg/L
Indeno(1,2,3-cd)pyrene	<2.5	2.5	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: **Ciniza**
Sample ID: **SMW-4-51501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/07/01**
Date Sampled: **05/15/01**
Date Received: **NG**
Date Extracted: **05/18/01**
Date Analyzed: **05/24/01**

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	60	50 - 150
Decachlorobiphenyl	76	50 - 150

* - Out of Limits

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Revised By: _____

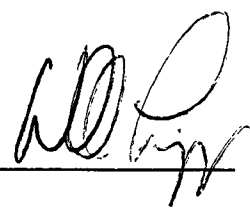
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: SMW-4-51501
Lab ID: 0301W02347
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

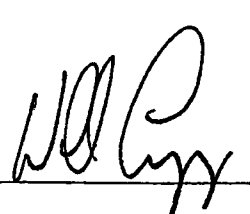
Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: SMW-4-51501
Laboratory ID: 0301W02347
Sample Matrix: Water

Date Reported: 06/07/01
Date Sampled: 05/15/01
Date Received: NG
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	30	µg/L
Total Organic Halides (TOX)	2	ND	30	µg/L
Total Organic Halides (TOX)	3	ND	30	µg/L
Total Organic Halides (TOX)	4	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

TOTAL ORGANIC CARBON

Client: Giant Refining - Ciniza
Project: Spring 2001 Groundwater
Sample ID: SMW-4-51501
Laboratory ID: 0301W02347
Sample Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Analyzed: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

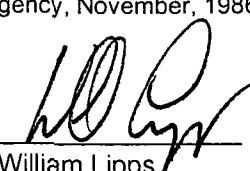
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: SMW-4-51501
Lab ID: 0301W02347
Matrix: Water
Condition: Intact

Date Reported: 06/11/01
Date Sampled: 05/15/01
Date Received: 05/17/01
Date Extracted: 05/25/01
Date Analyzed: 05/25/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	95	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

pH

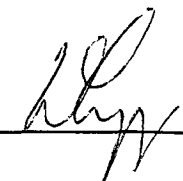
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: SMW-4-051501
Laboratory ID: 0301W02347
Sample Matrix: Water
Condition: Intact

Date Reported: 06/07/01
Date Analyzed: 05/17/01
Date Sampled: 05/15/01
Date Received: 05/17/01

	Result	MDL
Replicate #1	8.7	0.1
Replicate #2	8.7	0.1
Replicate #3	8.7	0.1
Replicate #4	8.7	0.1

Comments:

Reported By: 

Reviewed By: 

ELECTRICAL CONDUCTIVITY

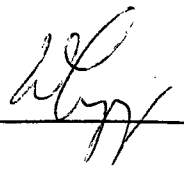
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **SMW-4-051501**
Laboratory ID: **0301W02347**
Sample Matrix: **Water**
Condition: **Intact**

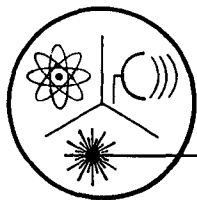
Date Reported: **06/07/01**
Date Analyzed: **05/17/01**
Date Sampled: **05/15/01**
Date Received: **05/17/01**

	Result	MDL
Replicate #1	1200	10
Replicate #2	1200	10
Replicate #3	1200	10
Replicate #4	1200	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

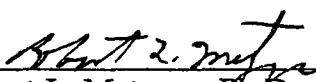
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: May 21, 2001
Samples Completed: June 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
SMW-4-5-15-01	< 0.2	< 0.5	< 0.5


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

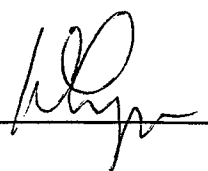
Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	1.27	0.75	0.50	104%
Arsenic	0.011	<0.005	0.010	111%
Barium	0.88	<0.01	1.00	88%
Boron	0.11	<0.01	0.10	107%
Cadmium	0.003	<0.001	0.003	100%
Chromium	0.10	<0.01	0.10	103%
Cobalt	0.09	<0.01	0.10	94%
Copper	0.10	<0.01	0.10	103%
Iron	1.19	0.66	0.50	106%
Lead	0.024	<0.005	0.025	95%
Manganese	1.68	1.10	0.50	116%
Mercury	0.002	<0.001	0.002	113%
Molybdenum	0.10	<0.01	0.10	98%
Nickel	0.10	<0.01	0.10	96%
Selenium	0.025	<0.005	0.025	99%
Silver	0.08	<0.01	0.10	81%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.110	<0.025	0.100	110%

References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by 

Reviewed by 

QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **06/05/01**
Date Received: **05/17/01**

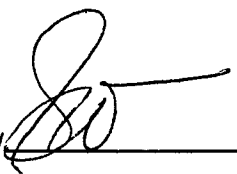
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.88	2.00	94%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.94	2.00	97%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	102%	mg/L
Chromium	1.97	2.00	99%	mg/L
Cobalt	1.91	2.00	96%	mg/L
Copper	1.85	2.00	93%	mg/L
Iron	1.88	2.00	94%	mg/L
Lead	0.051	0.050	103%	mg/L
Manganese	1.82	2.00	91%	mg/L
Mercury	0.003	0.003	108%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.95	2.00	98%	mg/L
Selenium	0.020	0.020	100%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.90	2.00	95%	mg/L
Zinc	1.92	2.00	96%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-141
Sample Matrix: Water

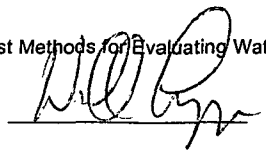
Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Ethylene Dibromide	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	101	86 - 118
1,2-Dichloroethane-d4	94	80 - 120
Toluene-d8	98	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-141
 Sample Matrix: Water

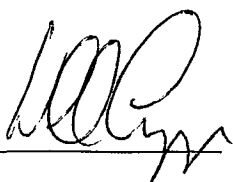
Date Reported: 06/07/01
 Date Extracted: NA
 Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	52	105	53	106	1
Benzene	ND	50	48	96	47	94	1
Chlorobenzene	ND	50	56	112	54	108	4
Toluene	ND	50	50	101	49	97	4
Trichloroethene (TCE)	ND	50	50	101	51	102	1

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	100	102	86 - 118
1,2-Dichloroethane-d4	97	99	80 - 120
Toluene-d8	99	100	88 - 110
4-Bromofluorobenzene	102	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G01081MS
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: NA
Date Analyzed: 05/21/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	56	111
Benzene	ND	50	48	97
Chlorobenzene	ND	50	55	110
Toluene	ND	50	51	102
Trichloroethene (TCE)	ND	50	52	104

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	96	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzenzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

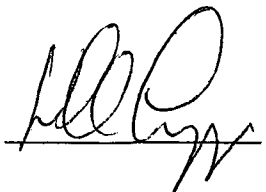
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	38	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	47	35 - 114
2-Fluorobiphenyl	55	43 - 116
2,4,6-Tribromophenol	74	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

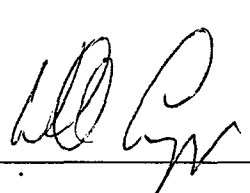
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	67	67	62	62	8
1,4-Dichlorobenzene	ND	100	59	59	54	54	9
2,4-Dinitrotoluene	ND	100	70	70	66	66	5
2-Chlorophenol	ND	200	129	65	119	60	8
4-Chloro-3-methylphenol	ND	200	124	62	117	59	5
4-Nitrophenol	ND	200	52	26	50	25	3
Acenaphthene	ND	100	65	65	62	62	6
N-Nitrosodi-n-propylamine	ND	100	80	80	76	76	6
Pentachlorophenol	ND	200	130	65	120	60	8
Phenol	ND	200	56	28	55	27	2
Borene	ND	100	95	95	92	92	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	46	41	21 - 100
Phenol-d6	30	28	10 - 94
Nitrobenzene-d5	62	57	35 - 114
2-Fluorobiphenyl	70	65	43 - 116
2,4,6-Tribromophenol	96	90	10 - 123
Terphenyl-d14	85	80	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W01023MS
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/30/01

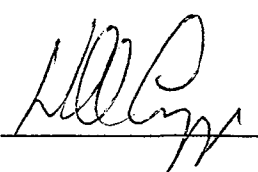
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	66	66
1,4-Dichlorobenzene	ND	100	57	57
2,4-Dinitrotoluene	ND	100	70	70
2-Chlorophenol	ND	200	126	63
4-Chloro-3-methylphenol	ND	200	124	62
4-Nitrophenol	ND	200	53	26
Acenaphthene	ND	100	65	65
N-Nitrosodi-n-propylamine	ND	100	79	79
Pentachlorophenol	ND	200	136	68
Phenol	ND	200	54	27
Pyrene	ND	100	94	94

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	60	35 - 114
2-Fluorobiphenyl	66	43 - 116
2,4,6-Tribromophenol	95	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

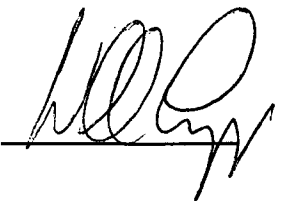
Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W02347**
Sample Matrix: **Water**

Date Reported: **06/08/01**
Date Analyzed: **05/24/01**
Date Received: **05/17/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
 Project: **Spring 2001 GW**
 Lab ID: **0301W02347**
 Sample Matrix: **Water**

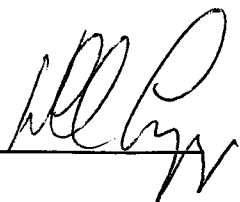
Date Reported: **06/08/01**
 Date Analyzed: **05/24/01**
 Date Received: **05/17/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	29.4	73	41-82
Acenaphthylene	40.4	29.8	74	43-91
Acenaphthene	40.4	31.1	77	48-85
Fluorene	4.1	3.07	75	48-87
Phenanthrene	3.07	2.47	80	60-86
Fluoranthene	1.92	1.72	90	72-96
Pyrene	3.85	3.52	91	73-96
Benzo(a)pyrene	0.253	0.247	98	66-118
Benzo(g,h,i)perylene	0.553	0.550	99	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	99	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reviewed By: _____



EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-138
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/18/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	50	50 - 150
Decachlorobiphenyl	78	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____



ETHYLENE DIBROMIDE BY GC/ECD
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-158
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reviewed By: 

ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

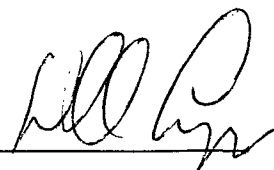
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-137
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 06/07/01
Date Analyzed: 06/07/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2	2.1	105	2.3	115	9

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

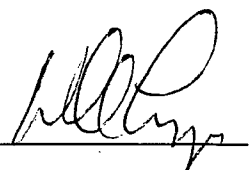
Sample ID: Method Blank
Laboratory ID: MB01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result	PQL	Units
9020B			
Total Organic Halides (TOX)	ND	30	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

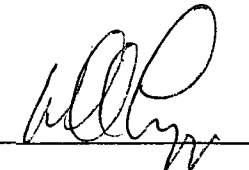
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-144
Sample Matrix: Water

Date Reported: 06/07/01
Date Extracted: 05/24/01
Date Analyzed: 05/24/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	53	106	58	117	10

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 



April 18, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on March 29, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script, reading "Sharon Williams", is written over a horizontal line.

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

OW-1

Case Narrative

On March 29, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

Client/Project Name

Project Location

ANALYSES / PARAMETERS

Sampler: (Signature)

Chain of Custody Tape No.

Remarks

Sample No./ Identification

Date

Time

Lab Number

Matrix

No. of Containers

The attached report for parameters

W-1032601

3/26/01

1315

1493

Water

25

Relinquished by: (Signature)

Date

Time

Received by: (Signature)

Date

Time

Relinquished by: (Signature)

Date

Time

Received by: (Signature)

Date

Time

Relinquished by: (Signature)

Date

Time

Received by laboratory: (Signature)

Date

Time

Inter-Mountain Laboratories, Inc.

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

☐ 1701 Phillips Circle
Gillette, Wyoming 82718
Telephone (307) 682-8945

☒ 2506 West Main Street
Farmington, NM 87401
Telephone (505) 326-4227

☐ 1160 Research Dr.
Bozeman, Montana 59715
Telephone (406) 586-8450

☐ 11183 SH 30
College Station, TX 77845
Telephone (409) 776-8945

4/1/01

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

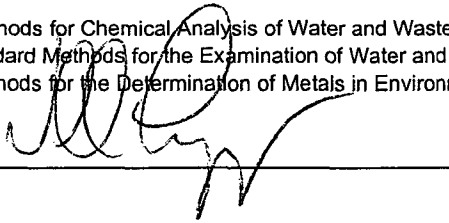
note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-1-32601
 Lab ID: 0301W01493
 Matrix: Water
 Condition: Cool/Intact

Date Received: 03/29/01
 Date Reported: 04/19/01
 Date Sampled: 03/26/01
 Time Sampled: 1315

Parameter	Analytical		Analysis						
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	8.6	s.u.		0.1	EPA 150.1	03/29/01	1220	KA	
Electrical Conductivity	1,450	µmhos/cm		10	EPA 120.1	03/29/01	1220	KA	
Solids - Total Dissolved	870	mg/L		10	EPA 160.1	03/29/01	1600	AG	
Solids - Total Suspended	8	mg/L		2	EPA 160.2	03/29/01	1300	KA	
Alkalinity (CaCO3)	415	mg/L		1	EPA 310.1	04/03/01	1330	KA	
Cyanide (Total) - Colorimetric	<0.01	mg/L		0.01	SM 4500-CN E	04/08/01	1221	CM	
Hardness (CaCO3)	6	mg/L		1	EPA 200.7	04/02/01	1400	WL	
Phosphorus - Ortho-P	0.05	mg/L		0.02	EPA 365.3	03/29/01	1235	KA	
Total Phenolics	0.04	mg/L		0.01	EPA 420.1	04/12/01	0800	TH	
Major Anions									
Bicarbonate (HCO3)	478	mg/L	7.83	meq/L	1	EPA 310.1	04/03/01	1330	KA
Carbonate (CO3)	14	mg/L	0.46	meq/L	1	EPA 310.1	04/03/01	1330	KA
Chloride	58.4	mg/L	1.65	meq/L	0.2	EPA 300.0	03/30/01	1300	KA
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	03/30/01	1300	KA
Fluoride	<0.1	mg/L	<0.01	meq/L	0.1	EPA 300.0	03/30/01	0837	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Nitrogen - Nitrate/Nitrite	0.68	mg/L	0.05	meq/L	0.05	EPA 353.2	03/29/01	1500	FP
Sulfate	190	mg/L	3.96	meq/L	5	EPA 300.0	03/30/01	1300	KA
Major Cations									
Calcium	2.0	mg/L	0.10	meq/L	0.2	EPA 200.7	04/02/01	1400	WL
Magnesium	0.2	mg/L	0.02	meq/L	0.2	EPA 200.7	04/02/01	1400	WL
Potassium	0.8	mg/L	0.02	meq/L	0.2	EPA 200.7	04/02/01	1400	WL
Sodium	316	mg/L	13.75	meq/L	0.2	EPA 200.7	04/02/01	1400	WL
Anion/Cation Balance QC Information									
Anion Sum			13.95	meq/L	N/A	N/A			
Cation Sum			13.89	meq/L	N/A	N/A			
Cation/Anion Balance			0.22	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Lab ID: 0301W01493
Matrix: Water
Condition: Cool/Intact

Date Received: 03/29/01
Date Reported: 04/11/01
Date Sampled: 03/26/01
Time Sampled: 1315

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	<0.05	mg/L			0.05	EPA 200.7	04/04/01	1620	WL
Arsenic	<0.005	mg/L			0.005	SM 3113B	04/02/01	1630	JG
Barium	0.04	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Boron	0.34	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Cadmium	<0.005	mg/L			0.005	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Copper	0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Iron	0.03	mg/L			0.02	EPA 200.7	04/04/01	1620	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Selenium	0.005	mg/L			0.005	SM 3114B	04/05/01	1310	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1620	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/04/01	1620	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/04/01	1620	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

William Lipps

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/02/01

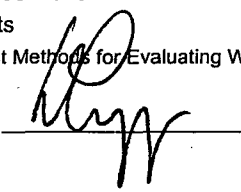
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

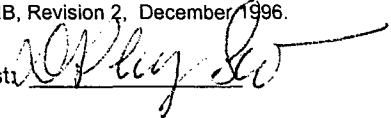
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	90	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	91	88 - 110
4-Bromofluorobenzene	80*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	29	10 - 94
Nitrobenzene-d5	69	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	88	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____

Analyst: _____

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Lab ID: 0301W01493
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/12/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/01/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.5	0.5	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.5	0.5	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:

William Lipps

Analyst:

SL

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

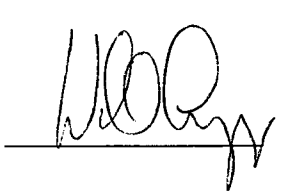
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

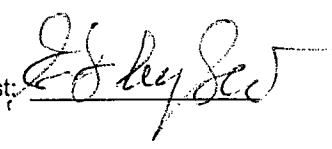
Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	64	50 - 150
Decachlorobiphenyl	94	50 - 150

ND - Compound not detected at stated Detection Limit.

B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Lab ID: 0301W01493
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water

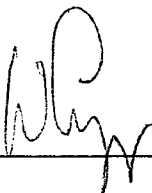
Date Reported: 04/17/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



TOTAL ORGANIC CARBON

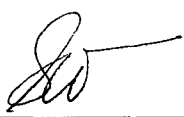
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water
Condition: Intact

Date Reported: 04/10/01
Date Analyzed: 04/09/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result mg/L	MDL
Replicate #1	1.66	1.00
Replicate #2	1.66	1.00
Replicate #3	1.68	1.00
Replicate #4	1.64	1.00

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

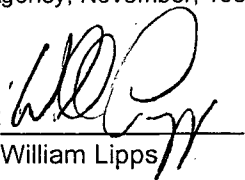
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Lab ID: 0301W01493
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/09/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

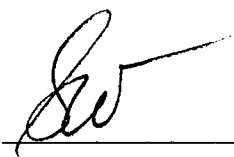
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	76	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-1-32601**
Laboratory ID: **0301W01493**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/18/01**
Date Analyzed: **03/29/01**
Date Sampled: **03/26/01**
Date Received: **03/29/01**

	Result mg/L	MDL
Replicate #1	8.6	0.1
Replicate #2	8.6	0.1
Replicate #3	8.6	0.1
Replicate #4	8.6	0.1

Comments:

Reported By: 

Reviewed By: _____

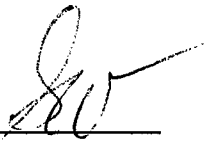
ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-1-32601
Laboratory ID: 0301W01493
Sample Matrix: Water
Condition: Intact

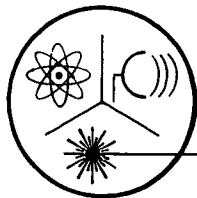
Date Reported: 04/18/01
Date Analyzed: 03/29/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result	MDL
Replicate #1	1450	10
Replicate #2	1450	10
Replicate #3	1450	10
Replicate #4	1450	10

Comments:

Reported By: 

Reviewed By: _____



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

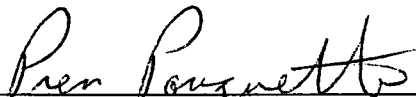
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 2, 2001
Samples Completed: April 11, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
1493	< 0.2	< 0.4	< 0.4


Pierre Pouquette, Staff Chemist

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining Co. - Ciniza**
Project: **Spring 2001 Groundwater**
Sample Matrix: **Water**

Date Reported: **04/10/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

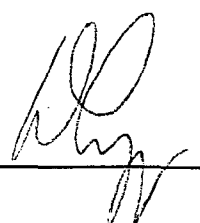
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by _____

Reviewed by  _____

QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project ID: **Spring 2001 Groundwater**
Sample Matrix: **Water**

Date Reported: **04/10/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

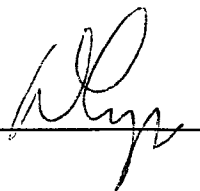
Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.46	<0.05	0.50	92%
Arsenic	0.011	<0.005	0.010	107%
Barium	0.93	<0.01	1.00	93%
Boron	0.10	<0.01	0.10	101%
Cadmium	0.003	<0.001	0.003	101%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	98%
Copper	0.11	<0.01	0.10	105%
Iron	0.51	<0.01	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.49	<0.01	0.50	98%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.10	<0.01	0.10	104%
Nickel	0.10	<0.01	0.10	100%
Selenium	0.035	0.025	0.010	105%
Silver	0.10	<0.01	0.10	97%
Uranium	0.5	<0.1	0.5	102%
Zinc	0.099	<0.025	0.100	99%

References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by _____

Reviewed by 

QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 Groundwater
Sample Matrix: Water

Date Reported: 04/10/01
Date Analyzed: 04/10/01
Date Received: 03/29/01

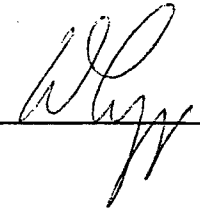
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.80	2.00	90%	mg/L
Arsenic	0.042	0.040	104%	mg/L
Barium	1.84	2.00	92%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.92	2.00	96%	mg/L
Cobalt	1.92	2.00	96%	mg/L
Copper	1.88	2.00	94%	mg/L
Iron	1.93	2.00	97%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.88	2.00	94%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.90	2.00	95%	mg/L
Selenium	0.020	0.020	102%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.9	2.0	93%	mg/L
Zinc	1.91	2.00	96%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by _____

Reviewed by 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Method Blank Analysis

Sample ID: Method Blank
 Laboratory ID: V3MB01-092
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Extracted: NA
 Date Analyzed: 04/02/01

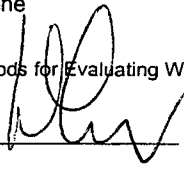
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

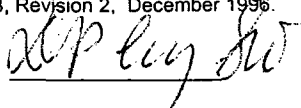
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	88	86 - 118
1,2-Dichloroethane-d4	89	80 - 120
Toluene-d8	91	88 - 110
4-Bromofluorobenzene	81*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-092
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Extracted: NA
 Date Analyzed: 04/02/01

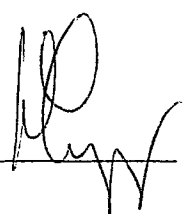
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	39	79	40	81	2
Benzene	ND	50	46	93	50	99	7
Chlorobenzene	ND	50	41	83	43	87	4
Toluene	ND	50	42	84	46	93	10
Trichloroethene (TCE)	ND	50	35	70	38	76	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	90	88	86 - 118
1,2-Dichloroethane-d4	91	93	80 - 120
Toluene-d8	91	96	88 - 110
4-Bromofluorobenzene	84*	85*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: _____

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00701MS
Sample Matrix: Water

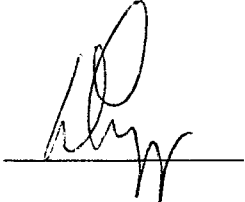
Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

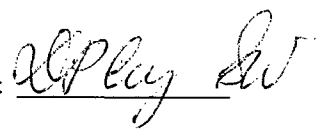
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	37	74
Benzene	ND	50	48	96
Chlorobenzene	ND	50	43	85
Toluene	ND	50	44	88
Trichloroethene (TCE)	ND	50	36	72

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	87	86 - 118
1,2-Dichloroethane-d4	90	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	87	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthrene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

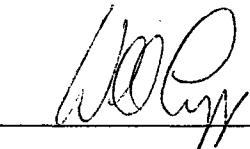
** - Compounds Coelute.

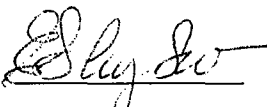
QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	2*	21 - 100
Phenol-d6	9*	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	4*	10 - 123
Terphenyl-d14	78	33 - 141

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 0301W01493MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	64	64
1,4-Dichlorobenzene	ND	100	76	76
2,4-Dinitrotoluene	ND	100	75	75
2-Chlorophenol	ND	200	109	55
4-Chloro-3-methylphenol	ND	200	123	61
4-Nitrophenol	ND	200	65	32
Acenaphthene	ND	100	69	69
N-Nitrosodi-n-propylamine	ND	100	65	65
Pentachlorophenol	ND	200	168	84
Phenol	ND	200	52	26
Pyrene	ND	100	70	70

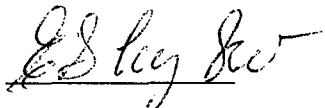
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

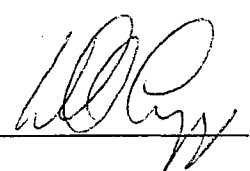
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	64	64	56	56	13
1,4-Dichlorobenzene	ND	100	77	77	67	67	13
2,4-Dinitrotoluene	ND	100	78	78	77	77	1
2-Chlorophenol	ND	200	119	59	104	52	13
4-Chloro-3-methylphenol	ND	200	132	66	127	63	4
4-Nitrophenol	ND	200	64	32	70	35	10
Acenaphthene	ND	100	71	71	70	70	1
N-Nitrosodi-n-propylamine	ND	100	74	74	67	67	10
Pentachlorophenol	ND	200	163	81	167	84	3
Phenol	ND	200	61	31	54	27	12
Pyrene	ND	100	72	72	71	71	2

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	41	34	21 - 100
Phenol-d6	31	27	10 - 94
Nitrobenzene-d5	76	65	35 - 114
2-Fluorobiphenyl	70	67	43 - 116
2,4,6-Tribromophenol	92	92	10 - 123
Terphenyl-d14	81	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

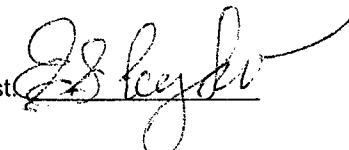
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	67	43 - 116
2,4,6-Tribromophenol	87	10 - 123
Terphenyl-d14	78	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

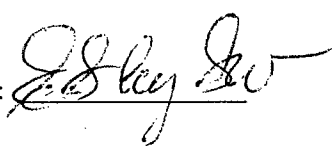
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	58	50 - 150
Decachlorobiphenyl	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: 

Analyst: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01493**
Sample Matrix: **Water**

Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.8
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01493**
Sample Matrix: **Water**

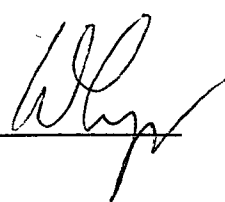
Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	28.4	70.3	44-79
Acenaphthylene	40.4	28.9	71.5	48-88
Acenaphthene	40.4	28.3	70	51-86
Fluorene	4.1	2.85	69.6	55-92
Phenanthrene	3.07	2.28	74.3	70-96
Fluoranthene	1.92	1.51	78.4	76-101
Pyrene	3.850	3.044	79.1	77-101
Benzo(a)pyrene	0.253	0.217	85.8	67-127
Benzo(g,h,i)perylene	0.553	0.476	86.1	80-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	78	77-104

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Duplicate Analysis

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	65	50 - 150
Decachlorobiphenyl	65	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: _____

Analyst: _____

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

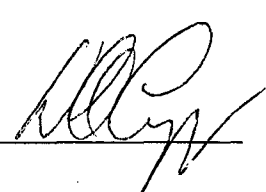
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

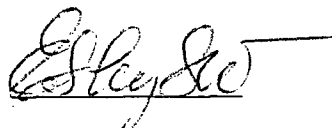
Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	109	2.2	112	3

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____

Analyst: _____

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-102A
Sample Matrix: Water

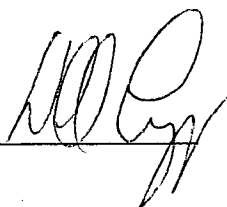
Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-102
Sample Matrix: Water

Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	56	112	55	110	2

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



April 18, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on March 29, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,



Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

OW-2

Case Narrative

On March 29, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

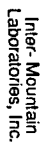
It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-2-32601
 Lab ID: 0301W01494
 Matrix: Water
 Condition: Cool/Intact

Date Received: 03/29/01

Date Reported: 04/19/01

Date Sampled: 03/26/01

Time Sampled: 1430

Parameter	Analytical		Analysis					
	Result	Units	Units	PQL	Method	Date	Time	Init.
General Parameters								
PH	7.8	s.u.		0.1	EPA 150.1	03/29/01	1220	KA
Electrical Conductivity	1,390	µmhos/cm		10	EPA 120.1	03/29/01	1220	KA
Solids - Total Dissolved	880	mg/L		10	EPA 160.1	03/29/01	1600	AG
Solids - Total Suspended	314	mg/L		2	EPA 160.2	03/29/01	1300	KA
Alkalinity (CaCO3)	668	mg/L		1	EPA 310.1	04/03/01	1330	KA
Cyanide (Total) - Colorimetric	<0.05	mg/L		0.05	SM 4500-CN E	04/08/01	1223	CM
Hardness (CaCO3)	37	mg/L		1	EPA 200.7	04/02/01	1400	WL
Phosphorus - Ortho-P	0.89	mg/L		0.02	EPA 365.3	03/29/01	1235	KA
Total Phenolics	0.05	mg/L		0.01	EPA 420.1	04/12/01	0800	TH
Major Anions								
Bicarbonate (HCO3)	815	mg/L	13.36	meq/L	1	EPA 310.1	04/03/01	1330 KA
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330 KA
Chloride	47	mg/L	1.33	meq/L	1	EPA 300.0	03/30/01	1300 KA
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	SM 4500Br-B	03/30/01	1300 KA
Fluoride	1.6	mg/L	<0.01	meq/L	0.1	EPA 300.0	03/30/01	2212 KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330 KA
Nitrogen - Nitrate/Nitrite	0.35	mg/L	0.03	meq/L	0.05	EPA 353.2	03/29/01	1500 FP
Sulfate	37	mg/L	0.77	meq/L	5	EPA 300.0	03/30/01	1300 KA
Major Cations								
Calcium	9.0	mg/L	0.45	meq/L	0.2	EPA 200.7	04/02/01	1402 WL
Magnesium	3.4	mg/L	0.28	meq/L	0.2	EPA 200.7	04/02/01	1402 WL
Potassium	1.8	mg/L	0.05	meq/L	0.2	EPA 200.7	04/02/01	1402 WL
Sodium	329	mg/L	14.31	meq/L	0.2	EPA 200.7	04/02/01	1402 WL
Anion/Cation Balance QC Information								
Anion Sum			15.49	meq/L	N/A	N/A		
Cation Sum			15.09	meq/L	N/A	N/A		
Cation/Anion Balance			1.31	%	N/A	N/A		

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By: _____

William Lipps

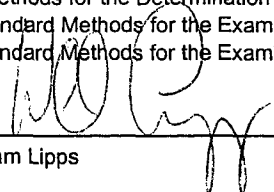
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Lab ID: 0301W01494
Matrix: Water
Condition: Cool/Intact

Date Received: 03/29/01
Date Reported: 04/11/01
Date Sampled: 03/26/01
Time Sampled: 1430

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	3.31	mg/L			0.05	EPA 200.7	04/04/01	1623	WL
Arsenic	<0.005	mg/L			0.005	SM 3113B	04/02/01	1630	JG
Barium	0.16	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Boron	0.79	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Copper	0.02	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Iron	1.54	mg/L			0.02	EPA 200.7	04/04/01	1623	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.16	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	0.01	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Selenium	<0.005	mg/L			0.005	SM 3114B	04/05/01	1310	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1623	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/04/01	1623	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/04/01	1623	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-2-32601
 Laboratory ID: 0301W01494
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Sampled: 03/26/01
 Date Received: NG
 Date Extracted: NA
 Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/02/01

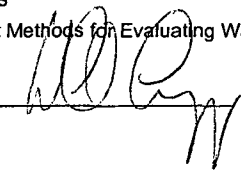
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

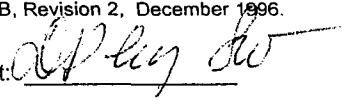
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	91	86 - 118
1,2-Dichloroethane-d4	93	80 - 120
Toluene-d8	90	88 - 110
4-Bromofluorobenzene	80*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

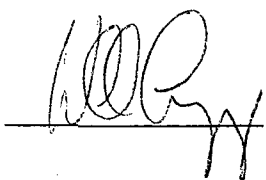
ND - Compound not detected at stated Detection Limit.

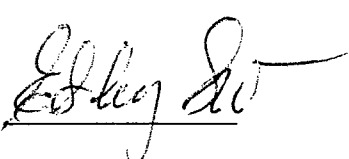
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	37	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	72	35 - 114
2-Fluorobiphenyl	73	43 - 116
2,4,6-Tribromophenol	88	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

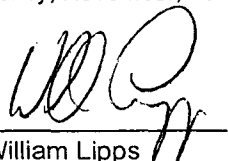
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Lab ID: 0301W01494
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/12/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.5	0.5	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.5	0.5	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:


William Lipps

Analyst:



**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	64	50 - 150
Decachlorobiphenyl	67	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

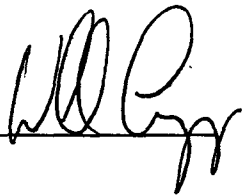
Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Lab ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water

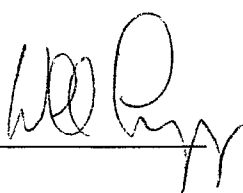
Date Reported: 04/17/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-2-32601**
Laboratory ID: **0301W01494**
Sample Matrix: **Water**
Condition: **Intact**

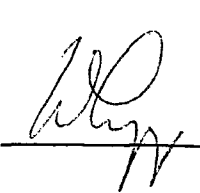
Date Reported: **04/10/01**
Date Analyzed: **04/09/01**
Date Sampled: **03/26/01**
Date Received: **03/29/01**

	Result mg/L	MDL
Replicate #1	2.33	1.00
Replicate #2	2.44	1.00
Replicate #3	2.44	1.00
Replicate #4	2.53	1.00

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

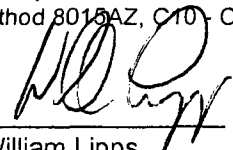
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Lab ID: 0301W01494
Matrix: Water
Condition: Cool/Intact

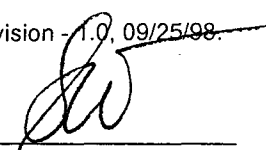
Date Reported: 04/09/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	85	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision - 1.0, 09/25/98.

Reviewed By: 
William Lipps

Analyst: 

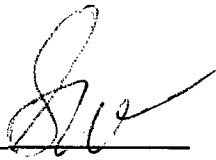
pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water
Condition: Intact

Date Reported: 04/18/01
Date Analyzed: 03/29/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result mg/L	MDL
Replicate #1	7.8	0.1
Replicate #2	7.8	0.1
Replicate #3	7.8	0.1
Replicate #4	7.8	0.1

Comments:

Reported By: 

Reviewed By: _____

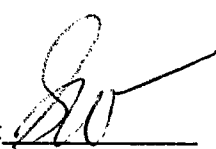
ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-2-32601
Laboratory ID: 0301W01494
Sample Matrix: Water
Condition: Intact

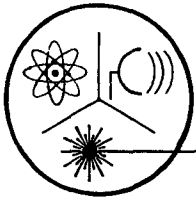
Date Reported: 04/18/01
Date Analyzed: 03/29/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result	MDL
Replicate #1	1390	10
Replicate #2	1390	10
Replicate #3	1390	10
Replicate #4	1390	10

Comments:

Reported By: 

Reviewed By: _____



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

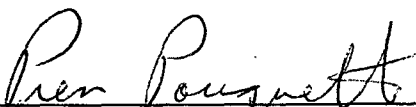
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 2, 2001
Samples Completed: April 11, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
1494	< 0.1	< 0.4	< 0.4


Pierre Pouquette, Staff Chemist

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample Matrix: **Water**

Date Reported: **04/10/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

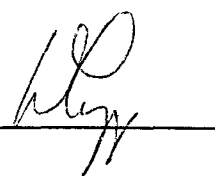
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project ID: Spring 2001 Groundwater
Sample Matrix: Water

Date Reported: 04/10/01
Date Analyzed: 04/10/01
Date Received: 03/29/01

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.46	<0.05	0.50	92%
Arsenic	0.011	<0.005	0.010	107%
Barium	0.93	<0.01	1.00	93%
Boron	0.10	<0.01	0.10	101%
Cadmium	0.003	<0.001	0.003	101%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	98%
Copper	0.11	<0.01	0.10	105%
Iron	0.51	<0.01	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.49	<0.01	0.50	98%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.10	<0.01	0.10	104%
Nickel	0.10	<0.01	0.10	100%
Selenium	0.035	0.025	0.010	105%
Silver	0.10	<0.01	0.10	97%
Uranium	0.5	<0.1	0.5	102%
Zinc	0.099	<0.025	0.100	99%

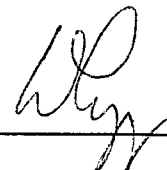
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample Matrix: **Water**

Date Reported: **04/10/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

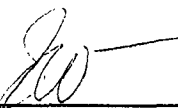
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.80	2.00	90%	mg/L
Arsenic	0.042	0.040	104%	mg/L
Barium	1.84	2.00	92%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.92	2.00	96%	mg/L
Cobalt	1.92	2.00	96%	mg/L
Copper	1.88	2.00	94%	mg/L
Iron	1.93	2.00	97%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.88	2.00	94%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.90	2.00	95%	mg/L
Selenium	0.020	0.020	102%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.9	2.0	93%	mg/L
Zinc	1.91	2.00	96%	mg/L

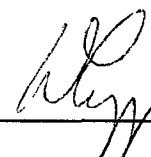
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

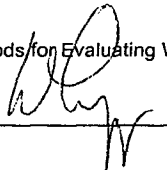
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

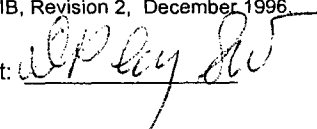
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	88	86 - 118
1,2-Dichloroethane-d4	89	80 - 120
Toluene-d8	91	88 - 110
4-Bromofluorobenzene	81*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-092
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Extracted: NA
 Date Analyzed: 04/02/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	39	79	40	81	2
Benzene	ND	50	46	93	50	99	7
Chlorobenzene	ND	50	41	83	43	87	4
Toluene	ND	50	42	84	46	93	10
Trichloroethene (TCE)	ND	50	35	70	38	76	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	90	88	86 - 118
1,2-Dichloroethane-d4	91	93	80 - 120
Toluene-d8	91	96	88 - 110
4-Bromofluorobenzene	84*	85*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00701MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	37	74
Benzene	ND	50	48	96
Chlorobenzene	ND	50	43	85
Toluene	ND	50	44	88
Trichloroethene (TCE)	ND	50	36	72

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	87	86 - 118
1,2-Dichloroethane-d4	90	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	87	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

Analyst: _____

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthrene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	2*	21 - 100
Phenol-d6	9*	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	4*	10 - 123
Terphenyl-d14	78	33 - 141

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: _____

Analyst: _____

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 0301W01493MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

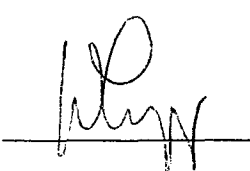
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	64	64
1,4-Dichlorobenzene	ND	100	76	76
2,4-Dinitrotoluene	ND	100	75	75
2-Chlorophenol	ND	200	109	55
4-Chloro-3-methylphenol	ND	200	123	61
4-Nitrophenol	ND	200	65	32
Acenaphthene	ND	100	69	69
N-Nitrosodi-n-propylamine	ND	100	65	65
Pentachlorophenol	ND	200	168	84
Phenol	ND	200	52	26
Pyrene	ND	100	70	70

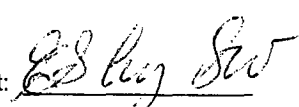
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: -Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

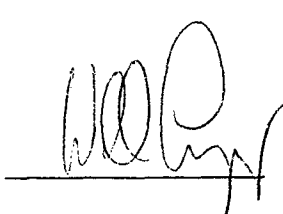
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	64	64	56	56	13
1,4-Dichlorobenzene	ND	100	77	77	67	67	13
2,4-Dinitrotoluene	ND	100	78	78	77	77	1
2-Chlorophenol	ND	200	119	59	104	52	13
4-Chloro-3-methylphenol	ND	200	132	66	127	63	4
4-Nitrophenol	ND	200	64	32	70	35	10
Acenaphthene	ND	100	71	71	70	70	1
N-Nitrosodi-n-propylamine	ND	100	74	74	67	67	10
Pentachlorophenol	ND	200	163	81	167	84	3
Phenol	ND	200	61	31	54	27	12
Pyrene	ND	100	72	72	71	71	2

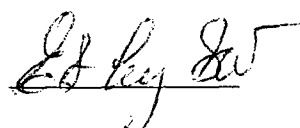
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	41	34	21 - 100
Phenol-d6	31	27	10 - 94
Nitrobenzene-d5	76	65	35 - 114
2-Fluorobiphenyl	70	67	43 - 116
2,4,6-Tribromophenol	92	92	10 - 123
Terphenyl-d14	81	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **OW-2-32601**
Laboratory ID: **0301W01494Dup**
Sample Matrix: **Water**

Date Reported: **04/16/01**
Date Sampled: **03/26/01**
Date Received: **NG**
Date Extracted: **04/02/01**
Date Analyzed: **04/06/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **OW-2-32601**
Laboratory ID: **0301W01494Dup**
Sample Matrix: **Water**

Date Reported: **04/16/01**
Date Sampled: **03/26/01**
Date Received: **NG**
Date Extracted: **04/02/01**
Date Analyzed: **04/06/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	67	43 - 116
2,4,6-Tribromophenol	87	10 - 123
Terphenyl-d14	78	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

Analyst: _____

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

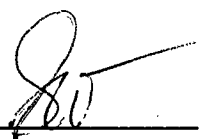
Method Blank

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01494
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/29/01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.8
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: 

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

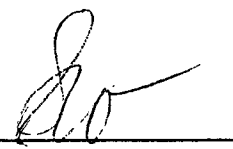
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01494**
Sample Matrix: **Water**

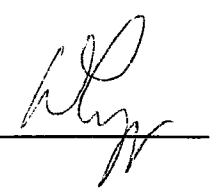
Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	28.4	70.3	44-79
Acenaphthylene	40.4	28.9	71.5	48-88
Acenaphthene	40.4	28.3	70	51-86
Fluorene	4.1	2.85	69.6	55-92
Phenanthrene	3.07	2.28	74.3	70-96
Fluoranthene	1.92	1.51	78.4	76-101
Pyrene	3.850	3.044	79.1	77-101
Benzo(a)pyrene	0.253	0.217	85.8	67-127
Benzo(g,h,i)perylene	0.553	0.476	86.1	80-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	79	77-104

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	58	50 - 150
Decachlorobiphenyl	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Duplicate Analysis

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

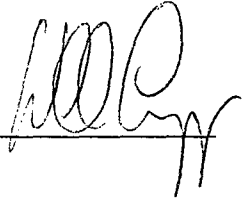
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Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

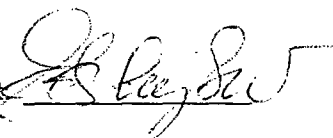
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	65	50 - 150
Decachlorobiphenyl	65	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Revised By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By: _____

Analyst: _____

ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	109	2.2	112	3

ND - Compound not detected at stated Detection Limit.

Received By: _____

Analyst: _____

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-102A
Sample Matrix: Water

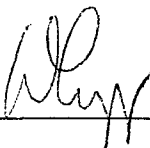
Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-102
Sample Matrix: Water

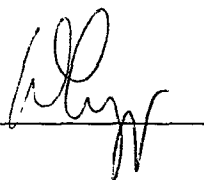
Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	56	112	55	110	2

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____





Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

April 18, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on March 29, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,



Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

GIANT REFINING COMPANY CINIZA

AW-3
Case Narrative

On March 29, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

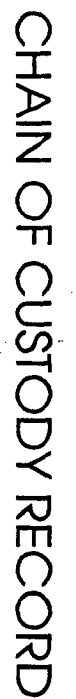
It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-3-32601
 Lab ID: 0301W01490
 Matrix: Water
 Condition: Intact

Date Received: 03/29/01
 Date Reported: 04/19/01
 Date Sampled: 03/26/01
 Time Sampled: 1515

Parameter	Analytical						Analysis		
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	7.9	s.u.		0.1	EPA 150.1	03/29/01	1220	KA	
Electrical Conductivity	1,400	µmhos/cm		10	EPA 120.1	03/29/01	1220	KA	
Solids - Total Dissolved	1,120	mg/L		10	EPA 160.1	03/29/01	1600	AG	
Solids - Total Suspended	649	mg/L		2	EPA 160.2	03/29/01	1300	KA	
Alkalinity (CaCO3)	672	mg/L		1	EPA 310.1	04/03/01	1330	KA	
Cyanide (Total) - Colorimetric	<0.05	mg/L		0.05	SM 4500-CN E	04/08/01	1213	CM	
Hardness (CaCO3)	41	mg/L		1	EPA 200.7	04/02/01	1357	WL	
Phosphorus - Ortho-P	0.85	mg/L		0.02	EPA 365.3	03/29/01	1235	KA	
Total Phenolics	0.05	mg/L		0.01	EPA 420.1	04/12/01	0800	TH	
Major Anions									
Bicarbonate (HCO3)	820	mg/L	13.44	meq/L	1	EPA 310.1	04/03/01	1330	KA
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Chloride	47	mg/L	1.33	meq/L	1	EPA 300.0	03/30/01	1300	KA
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	03/30/01	1300	KA
Fluoride	1.7	mg/L	<0.01	meq/L	0.1	EPA 300.0	03/30/01	0822	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Nitrogen - Nitrate/Nitrite	0.52	mg/L	0.04	meq/L	0.05	EPA 353.2	03/29/01	1500	FP
Sulfate	45	mg/L	0.95	meq/L	5	EPA 300.0	03/30/01	1300	KA
Major Cations									
Calcium	9.7	mg/L	0.49	meq/L	0.2	EPA 200.7	04/02/01	1357	WL
Magnesium	4.0	mg/L	0.33	meq/L	0.2	EPA 200.7	04/02/01	1357	WL
Potassium	1.2	mg/L	0.03	meq/L	0.2	EPA 200.7	04/02/01	1357	WL
Sodium	326	mg/L	14.18	meq/L	0.2	EPA 200.7	04/02/01	1357	WL
Anion/Cation Balance QC Information									
Anion Sum			15.76	meq/L	0.01	SM 1030			
Cation Sum			15.03	meq/L	0.01	SM 1030			
Cation/Anion Balance			2.37	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

William Lipps

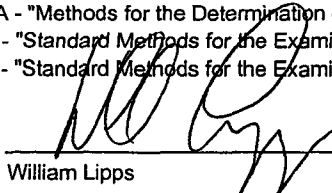
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-3-32601
Lab ID: 0301W01490
Matrix: Water
Condition: Intact

Date Received: 03/29/01
Date Reported: 05/16/01
Date Sampled: 03/26/01
Time Sampled: 1515

Parameter	Analytical		Units	PQL	Method	Analysis		
	Result	Units				Date	Time	Init.
Total Metals								
Aluminum	0.96	mg/L		0.05	EPA 200.7	05/03/01	1454	WL
Arsenic	0.006	mg/L		0.005	SM 3113B	04/02/01	1630	JG
Barium	0.37	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Boron	0.81	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Cadmium	<0.001	mg/L		0.001	EPA 200.9	04/09/01	0825	SW
Chromium	0.02	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Cobalt	<0.01	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Copper	0.03	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Iron	11.6	mg/L		0.02	EPA 200.7	04/04/01	1617	WL
Lead	<0.005	mg/L		0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.62	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Mercury	<0.001	mg/L		0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum*	0.01	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Nickel	0.02	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Selenium	<0.005	mg/L		0.005	SM 3114B	04/05/01	1310	JG
Silver	<0.01	mg/L		0.01	EPA 200.7	04/04/01	1617	WL
Uranium	<0.3	mg/L		0.3	EPA 200.7	04/04/01	1617	WL
Zinc	0.025	mg/L		0.025	EPA 200.7	04/04/01	1617	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-3-32601
 Laboratory ID: 0301W01490
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Sampled: 03/26/01
 Date Received: NG
 Date Extracted: NA
 Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropane	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/02/01

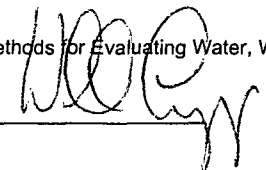
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

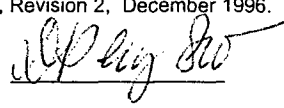
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	91	86 - 118
1,2-Dichloroethane-d4	96	80 - 120
Toluene-d8	91	88 - 110
4-Bromofluorobenzene	78*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

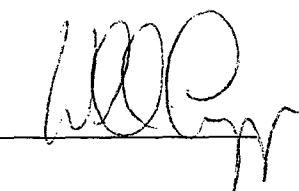
ND - Compound not detected at stated Detection Limit.

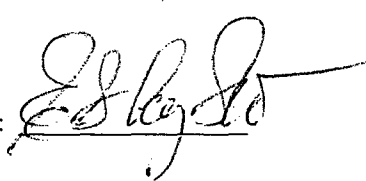
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	29	21 - 100
Phenol-d6	21	10 - 94
Nitrobenzene-d5	65	35 - 114
2-Fluorobiphenyl	67	43 - 116
2,4,6-Tribromophenol	86	10 - 123
Terphenyl-d14	83	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-3-32601
Lab ID: 0301W01490
Matrix: Water
Condition: Intact

Date Reported: 04/12/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/01/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.5	0.5	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.5	0.5	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:

William Lipps

Analyst:



**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

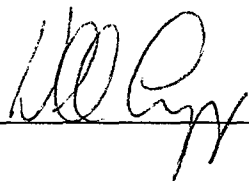
Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

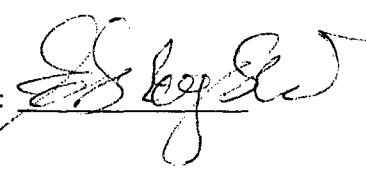
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	50 - 150
Decachlorobiphenyl	64	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

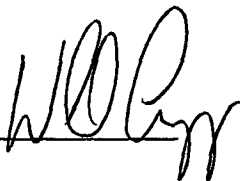
Client: **Giant Refining Co. - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-3-32601**
Lab ID: **0301W01490**
Sample Matrix: **Water**

Date Reported: **04/16/01**
Date Sampled: **03/26/01**
Date Received: **03/29/01**
Date Extracted: **04/04/01**
Date Analyzed: **04/05/01**

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water

Date Reported: 04/17/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

TOTAL ORGANIC CARBON

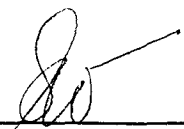
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-3-32601**
Laboratory ID: **0301W01490**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/10/01**
Date Analyzed: **04/09/01**
Date Sampled: **03/26/01**
Date Received: **03/29/01**

	Result mg/L	MDL
Replicate #1	2.32	1.00
Replicate #2	2.21	1.00
Replicate #3	2.16	1.00
Replicate #4	2.19	1.00

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

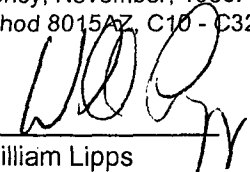
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-3-32601
Lab ID: 0301W01490
Matrix: Water
Condition: Intact

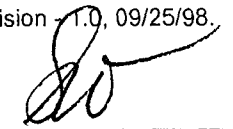
Date Reported: 04/09/01
Date Sampled: 03/26/01
Date Received: 03/29/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	86	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015A-Z, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision 1.0, 09/25/98.

Reviewed By: 
William Lipps

Analyst: 

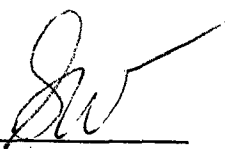
pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water
Condition: Intact

Date Reported: 04/18/01
Date Analyzed: 03/29/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result mg/L	MDL
Replicate #1	7.9	0.1
Replicate #2	7.9	0.1
Replicate #3	7.9	0.1
Replicate #4	7.9	0.1

Comments:

Reported By: 

Reviewed By: _____

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-3-32601
Laboratory ID: 0301W01490
Sample Matrix: Water
Condition: Intact

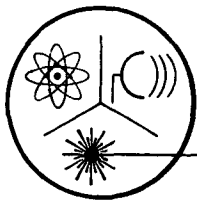
Date Reported: 04/18/01
Date Analyzed: 03/29/01
Date Sampled: 03/26/01
Date Received: 03/29/01

	Result	MDL
Replicate #1	1400	10
Replicate #2	1400	10
Replicate #3	1400	10
Replicate #4	1400	10

Comments:

Reported By: 

Reviewed By: _____



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

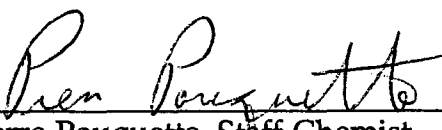
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 2, 2001
Samples Completed: April 11, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
1490	< 0.3	< 0.4	< 0.4


Pierre Pouquette, Staff Chemist

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining Co. - Ciniza
Project: Spring 2001 Groundwater
Sample Matrix: Water

Date Reported: 04/10/01
Date Analyzed: 04/10/01
Date Received: 03/29/01

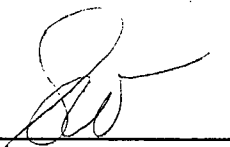
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

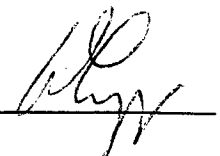
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project ID: **Spring 2001 Groundwater**
Sample Matrix: **Water**

Date Reported: **04/10/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.46	<0.05	0.50	92%
Arsenic	0.011	<0.005	0.010	107%
Barium	0.93	<0.01	1.00	93%
Boron	0.10	<0.01	0.10	101%
Cadmium	0.003	<0.001	0.003	101%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	98%
Copper	0.11	<0.01	0.10	105%
Iron	0.51	<0.01	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.49	<0.01	0.50	98%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.10	<0.01	0.10	104%
Nickel	0.10	<0.01	0.10	100%
Selenium	0.035	0.025	0.010	105%
Silver	0.10	<0.01	0.10	97%
Uranium	0.5	<0.1	0.5	102%
Zinc	0.099	<0.025	0.100	99%

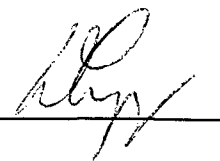
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 Groundwater
Sample Matrix: Water

Date Reported: 04/10/01
Date Analyzed: 04/10/01
Date Received: 03/29/01

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.80	2.00	90%	mg/L
Arsenic	0.042	0.040	104%	mg/L
Barium	1.84	2.00	92%	mg/L
Boron	1.83	2.00	92%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.92	2.00	96%	mg/L
Cobalt	1.92	2.00	96%	mg/L
Copper	1.88	2.00	94%	mg/L
Iron	1.93	2.00	97%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.88	2.00	94%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	2.00	2.00	100%	mg/L
Nickel	1.90	2.00	95%	mg/L
Selenium	0.020	0.020	102%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.9	2.0	93%	mg/L
Zinc	1.91	2.00	96%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

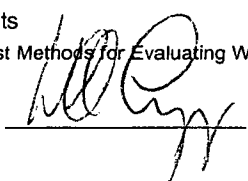
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

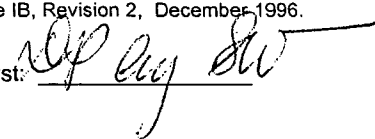
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	88	86 - 118
1,2-Dichloroethane-d4	89	80 - 120
Toluene-d8	91	88 - 110
4-Bromofluorobenzene	81*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: V3BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/02/01

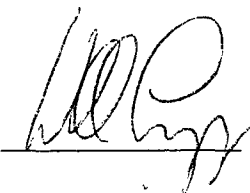
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	39	79	40	81	2
Benzene	ND	50	46	93	50	99	7
Chlorobenzene	ND	50	41	83	43	87	4
Toluene	ND	50	42	84	46	93	10
Trichloroethene (TCE)	ND	50	35	70	38	76	7

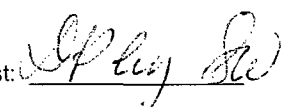
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	90	88	86 - 118
1,2-Dichloroethane-d4	91	93	80 - 120
Toluene-d8	91	96	88 - 110
4-Bromofluorobenzene	84*	85*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00701MS
Sample Matrix: Water

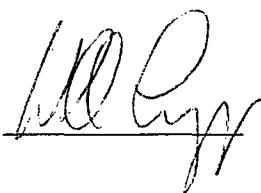
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Date Extracted: NA
Date Analyzed: 04/02/01

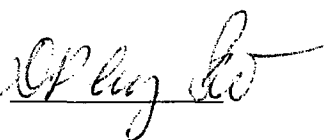
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	37	74
Benzene	ND	50	48	96
Chlorobenzene	ND	50	43	85
Toluene	ND	50	44	88
Trichloroethene (TCE)	ND	50	36	72

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	87	86 - 118
1,2-Dichloroethane-d4	90	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	87	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthrene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

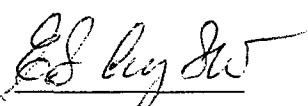
QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	2*	21 - 100
Phenol-d6	9*	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	4*	10 - 123
Terphenyl-d14	78	33 - 141

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 0301W01493MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	64	64
1,4-Dichlorobenzene	ND	100	76	76
2,4-Dinitrotoluene	ND	100	75	75
2-Chlorophenol	ND	200	109	55
4-Chloro-3-methylphenol	ND	200	123	61
4-Nitrophenol	ND	200	65	32
Acenaphthene	ND	100	69	69
N-Nitrosodi-n-propylamine	ND	100	65	65
Pentachlorophenol	ND	200	168	84
Phenol	ND	200	52	26
Pyrene	ND	100	70	70

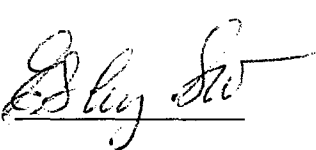
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

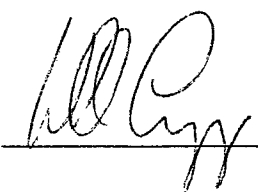
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	64	64	56	56	13
1,4-Dichlorobenzene	ND	100	77	77	67	67	13
2,4-Dinitrotoluene	ND	100	78	78	77	77	1
2-Chlorophenol	ND	200	119	59	104	52	13
4-Chloro-3-methylphenol	ND	200	132	66	127	63	4
4-Nitrophenol	ND	200	64	32	70	35	10
Acenaphthene	ND	100	71	71	70	70	1
N-Nitrosodi-n-propylamine	ND	100	74	74	67	67	10
Pentachlorophenol	ND	200	163	81	167	84	3
Phenol	ND	200	61	31	54	27	12
Pyrene	ND	100	72	72	71	71	2

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	41	34	21 - 100
Phenol-d6	31	27	10 - 94
Nitrobenzene-d5	76	65	35 - 114
2-Fluorobiphenyl	70	67	43 - 116
2,4,6-Tribromophenol	92	92	10 - 123
Terphenyl-d14	81	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Duplicate Analysis

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

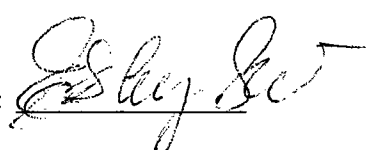
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	67	43 - 116
2,4,6-Tribromophenol	87	10 - 123
Terphenyl-d14	78	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01490**
Sample Matrix: **Water**

Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.8
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: _____

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01490**
Sample Matrix: **Water**

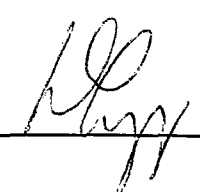
Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/29/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	28.4	70.3	44-79
Acenaphthylene	40.4	28.9	71.5	48-88
Acenaphthene	40.4	28.3	70	51-86
Fluorene	4.1	2.85	69.6	55-92
Phenanthrene	3.07	2.28	74.3	70-96
Fluoranthene	1.92	1.51	78.4	76-101
Pyrene	3.850	3.044	79.1	77-101
Benzo(a)pyrene	0.253	0.217	85.8	67-127
Benzo(g,h,i)perylene	0.553	0.476	86.1	80-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	77	77-104

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

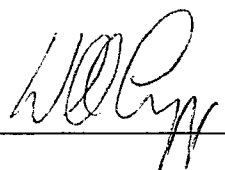
Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	58	50 - 150
Decachlorobiphenyl	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Duplicate Analysis

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-2-32601
Laboratory ID: 0301W01494Dup
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/26/01
Date Received: NG
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	65	50 - 150
Decachlorobiphenyl	65	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: _____

Analyst: _____

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By:

Analyst:

ETHYLENE DIBROMIDE BY GC/ECD

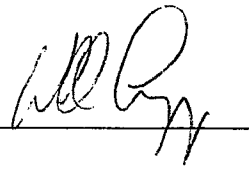
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	109	2.2	112	3

ND - Compound not detected at stated Detection Limit.

Reveiwed By: 

Analyst: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

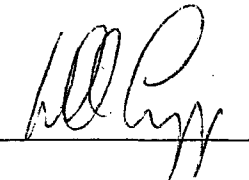
Sample ID: Method Blank
Laboratory ID: MB01-102A
Sample Matrix: Water

Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-102
Sample Matrix: Water

Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	56	112	55	110	2

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 



April 26, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on April 5, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

HW 7, 11, 12, 13
Case Narrative

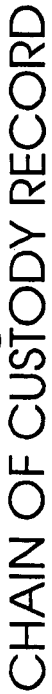
On April 5, 2001, four water samples were submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the samples reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

Inter-Mountain Laboratories, Inc.

**GIANT REFINING - CINIZA
SPRING 2001 GROUNDWATER PROJECT
OW-7-4301**

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-7-4301
 Lab ID: 0301W01576
 Matrix: Water
 Condition: Intact

Date Received: 04/05/01

Date Reported: 04/26/01

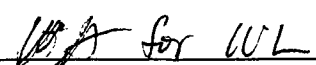
Date Sampled: 04/03/01

Time Sampled: 1110

Parameter	Analytical		Analysis						
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	8.6	s.u.		0.1	EPA 150.1	04/05/01	1445	KA	
Electrical Conductivity	1,310	µmhos/cm		10	EPA 120.1	04/05/01	1445	KA	
Solids - Total Dissolved	810	mg/L		10	EPA 160.1	04/06/01	1400	AG	
Solids - Total Suspended	2	mg/L		2	EPA 160.2	04/06/01	0930	KA	
Alkalinity (CaCO3)	442	mg/L		1	EPA 310.1	04/06/01	1100	KA	
Cyanide (Total) - Colorimetric	<0.01	mg/L		0.01	SM 4500-CN E	04/18/01	1500	WW	
Hardness (CaCO3)	29	mg/L		1	EPA 200.7	04/10/01	1636	WL	
Phosphorus - Ortho-P	0.11	mg/L		0.02	EPA 365.3	04/05/01	1547	KA	
Total Phenolics	0.06	mg/L		0.01	EPA 420.1	04/12/01	0800	TH	
Major Anions									
Bicarbonate (HCO3)	501	mg/L	8.22	meq/L	1	EPA 310.1	04/06/01	1100	KA
Carbonate (CO3)	18	mg/L	0.61	meq/L	1	EPA 310.1	04/06/01	1100	KA
Chloride	190	mg/L	5.37	meq/L	1	EPA 300.0	04/06/01	2034	KA
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	04/06/01	2034	KA
Fluoride	2.63	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/06/01	2208	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/06/01	1100	KA
Nitrogen - Nitrate/Nitrite	1.30	mg/L	0.09	meq/L	0.05	EPA 353.2	04/16/01	1336	WH
Sulfate	1,020	mg/L	21.25	meq/L	5	EPA 300.0	04/06/01	2034	KA
Major Cations									
Calcium	11.6	mg/L	0.58	meq/L	0.2	EPA 200.7	04/10/01	1638	WL
Magnesium	<0.2	mg/L	0.02	meq/L	0.2	EPA 200.7	04/10/01	1638	WL
Potassium	1.7	mg/L	0.04	meq/L	0.2	EPA 200.7	04/10/01	1638	WL
Sodium	750	mg/L	32.63	meq/L	0.2	EPA 200.7	04/10/01	1638	WL
Anion/Cation Balance QC Information									
Anion Sum			35.53	meq/L	N/A	N/A			
Cation Sum			33.24	meq/L	N/A	N/A			
Cation/Anion Balance			3.33	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By:


 William Lipps

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-7-4301
Lab ID: 0301W01576
Matrix: Water
Condition: Intact

Date Received: 04/05/01
Date Reported: 04/26/01
Date Sampled: 04/03/01
Time Sampled: 1110

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	0.07	mg/L		0.05	EPA 200.7	04/10/01	1233	WL	
Arsenic	<0.005	mg/L		0.005	SM 3114B	04/16/01	1750	JG	
Barium	0.03	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Boron	0.48	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Cadmium	<0.001	mg/L		0.001	EPA 200.9	04/09/01	0825	SW	
Chromium	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Cobalt	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Copper	0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Iron	0.03	mg/L		0.02	EPA 200.7	04/10/01	1233	WL	
Lead	<0.005	mg/L		0.005	EPA 200.9	04/10/01	0739	SW	
Manganese	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Mercury	<0.001	mg/L		0.001	EPA 245.1	04/10/01	1130	JG	
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Nickel	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Selenium	<0.005	mg/L		0.005	SM 3114B	04/17/01	1730	JG	
Silver	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1233	WL	
Uranium	<0.3	mg/L		0.3	EPA 200.7	04/10/01	1233	WL	
Zinc	<0.025	mg/L		0.025	EPA 200.7	04/10/01	1233	WL	

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-7
 Laboratory ID: 0301W01576
 Sample Matrix: Water

Date Reported: 04/23/01
 Date Sampled: 04/03/01
 Date Received: NG
 Date Extracted: NA
 Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-7
Laboratory ID: 0301W01576
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	106	86 - 118
1,2-Dichloroethane-d4	101	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	102	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 07

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-7
Laboratory ID: 0301W01576
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-7
 Laboratory ID: 0301W01576
 Sample Matrix: Water

Date Reported: 04/23/01
 Date Sampled: 04/03/01
 Date Received: NG
 Date Extracted: 04/10/01
 Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-7
Laboratory ID: 0301W01576
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

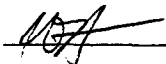
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	43	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	73	43 - 116
2,4,6-Tribromophenol	75	10 - 123
Terphenyl-d14	90	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-7-4301
Lab ID: 0301W01576
Matrix: Water
Condition: Intact

Date Reported: 04/26/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/11/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	ug/L
Acenaphthylene	<2.5	2.5	ug/L
Anthracene	<0.8	0.8	ug/L
Benzo(a)anthracene	<0.02	0.02	ug/L
Benzo(b)fluoranthene	<0.06	0.06	ug/L
Benzo(a)pyrene	<0.02	0.02	ug/L
Benzo(g,h,i)perylene	<0.03	0.03	ug/L
Benzo(k)fluoranthene	<0.02	0.02	ug/L
Chrysene	<0.2	0.2	ug/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	ug/L
Fluorene	<0.8	0.8	ug/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	ug/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	ug/L
Phenanthrene	<0.6	0.6	ug/L
Pyrene	<0.3	0.3	ug/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:

William Lipps

Analyst:

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: **Ciniza**
Sample ID: **OW-7**
Laboratory ID: **0301W01576**
Sample Matrix: **Water**

Date Reported: **04/23/01**
Date Sampled: **04/03/01**
Date Received: **NG**
Date Extracted: **04/10/01**
Date Analyzed: **04/17/01**

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	75	50 - 150
Decachlorobiphenyl	103	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: Cost

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-7
Lab ID: 0301W01576
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: WAC

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-7
Laboratory ID: 0301W01576
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By:

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-7-4301**
Laboratory ID: **0301W01576**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/10/01**
Date Analyzed: **04/09/01**
Date Sampled: **04/03/01**
Date Received: **04/05/01**

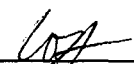
	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

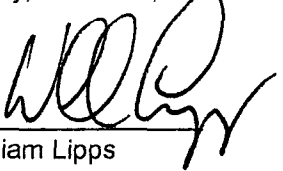
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-7-4301
Lab ID: 0301W01576
Matrix: Water
Condition: Intact

Date Reported: 04/09/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	75	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 
William Lipps

Analyst: 

pH

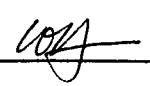
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-7-4301
Laboratory ID: 0301W01576
Sample Matrix: Water
Condition: Intact

Date Reported: 04/25/01
Date Analyzed: 04/05/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result	MDL
Replicate #1	8.6	0.1
Replicate #2	8.6	0.1
Replicate #3	8.6	0.1
Replicate #4	8.6	0.1

Comments:

Reported By: 

Reviewed By: 

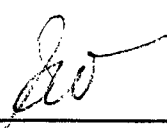
ELECTRICAL CONDUCTIVITY

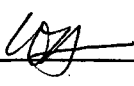
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-7-4301
Laboratory ID: 0301W01576
Sample Matrix: Water
Condition: Intact

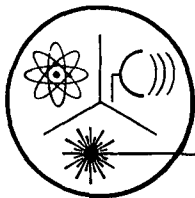
Date Reported: 04/25/01
Date Analyzed: 04/05/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result	MDL
Replicate #1	1310	10
Replicate #2	1310	10
Replicate #3	1310	10
Replicate #4	1310	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

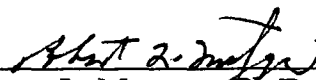
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 9, 2001
Samples Completed: April 23, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
OW-7 W01576	< 0.2	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/25/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

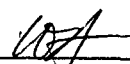
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/25/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.61	0.07	0.50	108%
Arsenic	0.013	0.003	0.010	104%
Barium	1.06	0.02	1.00	104%
Boron	0.45	<0.01	0.50	90%
Cadmium	0.002	<0.001	0.003	92%
Chromium	0.11	<0.01	0.10	107%
Cobalt	0.11	<0.01	0.10	108%
Copper	0.12	0.01	0.10	108%
Iron	0.58	0.04	0.50	109%
Lead	0.025	<0.005	0.025	102%
Manganese	0.53	<0.01	0.50	106%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.11	0.01	0.10	104%
Nickel	0.11	<0.01	0.10	105%
Selenium	0.032	0.023	0.010	98%
Silver	0.10	<0.01	0.10	101%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.104	<0.025	0.100	104%

References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

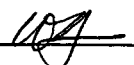
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.92	2.00	96%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.92	2.00	96%	mg/L
Boron	1.92	2.00	96%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.98	2.00	99%	mg/L
Cobalt	1.96	2.00	98%	mg/L
Copper	1.98	2.00	99%	mg/L
Iron	1.97	2.00	99%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.94	2.00	97%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.97	2.00	99%	mg/L
Selenium	0.020	0.020	99%	mg/L
Silver	0.25	0.25	100%	mg/L
Uranium	1.96	2.00	98%	mg/L
Zinc	1.96	2.00	98%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by 

Reviewed by 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

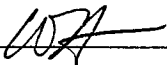
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

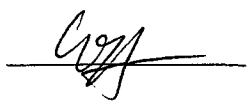
Date Reported: 04/23/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

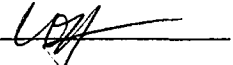
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	52	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

*** - Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	68	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: UBA

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01576**
Sample Matrix: **Water**

Date Reported: **04/26/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: EL

Reviewed By: USA

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
 Project: **Spring 2001 GW**
 Lab ID: **0301W01576**
 Sample Matrix: **Water**

Date Reported: **04/26/01**
 Date Analyzed: **04/17/01**
 Date Received: **04/05/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	17.4	43	41-82
Acenaphthylene	40.4	18.74	46	43-91
Acenaphthene	40.4	19.7	49	48-85
Fluorene	4.1	2.10	51	48-87
Phenanthrene	2.07	3.07	67	60-86
Fluoranthene	1.51	1.92	78	72-96
Pyrene	3.072	3.850	79	73-96
Benzo(a)pyrene	0.182	0.253	72	66-118
Benzo(g,h,i)perylene	0.441	0.553	80	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	68	54.5-116

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: SL

Reviewed By: WA

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: UJA

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

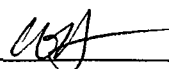
Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____



ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	110	2.2	110	1

ND - Compound not detected at stated Detection Limit.

Reveiwed By:

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-107
Sample Matrix: Water

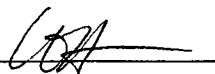
Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00728MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
9020B Total Organic Halides (TOX)	ND	50	59	117

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: COJ



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

April 30, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on April 6, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script, reading "Sharon Williams".

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING CO. SPRING 2001 GROUNDWATER OW-10-4501

Case Narrative

On April 6, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-10-4501
 Lab ID: 0301W01596
 Matrix: Water
 Condition: Intact

Date Received: 04/06/01
 Date Reported: 04/30/01
 Date Sampled: 04/05/01
 Time Sampled: 0930

Parameter	Analytical						Analysis		
	Result	Units		Units	PQL	Method	Date	Time	Init.
General Parameters									
PH	7.4	s.u.			0.1	EPA 150.1	04/06/01	1310	AG
Electrical Conductivity	1,900	µmhos/cm			10	EPA 120.1	04/06/01	1310	AG
Solids - Total Dissolved	1,090	mg/L			10	EPA 160.1	04/09/01	0830	AG
Solids - Total Suspended	6	mg/L			2	EPA 160.2	04/06/01	1600	AG
Alkalinity (CaCO3)	492	mg/L			1	EPA 310.1	04/09/01	1045	AG
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	SM 4500-CN E	04/18/01	1500	CM
Hardness (CaCO3)	72	mg/L			1	EPA 200.7			
Phosphorus - Ortho-P	0.09	mg/L			0.02	EPA 365.3	04/06/01	1600	AG
Total Phenolics	0.09	mg/L			0.01	EPA 420.1	04/12/01	0800	TH
Major Anions									
Bicarbonate (HCO3)	600	mg/L	9.83	meq/L	1	EPA 310.1	04/09/01	1045	AG
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/09/01	1045	AG
Chloride	167	mg/L	4.71	meq/L	1	EPA 300.0	04/11/01	2144	KA
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	04/06/01	2034	KA
Fluoride	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/11/01	2144	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/09/01	1045	AG
Nitrogen - Nitrate/Nitrite	0.64	mg/L	0.05	meq/L	0.05	EPA 353.2	04/16/01	1347	WH
Sulfate	175	mg/L	3.65	meq/L	5	EPA 300.0	04/11/01	2144	KA
Major Cations									
Calcium	23.2	mg/L	1.2	meq/L	0.2	EPA 200.7	04/10/01	1643	WL
Magnesium	3.4	mg/L	0.28	meq/L	0.2	EPA 200.7	04/10/01	1643	WL
Potassium	1.0	mg/L	0.03	meq/L	0.2	EPA 200.7	04/10/01	1643	WL
Sodium	381	mg/L	16.58	meq/L	0.2	EPA 200.7	04/10/01	1643	WL
Anion/Cation Balance QC Information									
Anion Sum			18.24	meq/L	N/A	N/A			
Cation Sum			18.05	meq/L	N/A	N/A			
Cation/Anion Balance			0.52	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By:

William Lipps

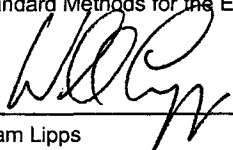
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-10-4501
Lab ID: 0301W01596
Matrix: Water
Condition: Intact

Date Received: 04/06/01
Date Reported: 04/30/01
Date Sampled: 04/05/01
Time Sampled: 0930

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	1.40	mg/L			0.05	EPA 200.7	04/10/01	1250	WL
Arsenic	<0.005	mg/L			0.005	SM 3114B	04/16/01	1750	JG
Barium	0.24	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Boron	0.49	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Copper	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Iron	0.47	mg/L			0.02	EPA 200.7	04/10/01	1250	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.03	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Selenium	0.011	mg/L			0.005	SM 3114B	04/17/01	1750	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1250	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/10/01	1250	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/10/01	1250	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

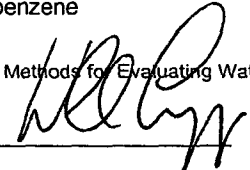
Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

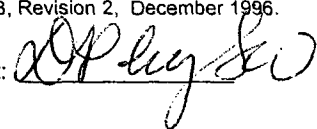
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	105	86 - 118
1,2-Dichloroethane-d4	100	80 - 120
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	104	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	45	21 - 100
Phenol-d6	35	10 - 94
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	76	43 - 116
2,4,6-Tribromophenol	85	10 - 123
Terphenyl-d14	86	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

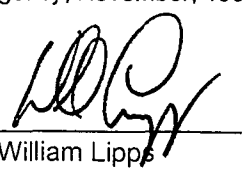
Analyst: _____

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-10-4501
Lab ID: 0301W01596
Matrix: Water
Condition: Intact

Date Reported: 04/30/01
Date Sampled: 04/05/01
Date Received: 04/06/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.6	0.6	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

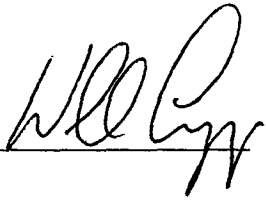
Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

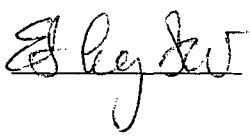
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	69	50 - 150
Decachlorobiphenyl	92	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

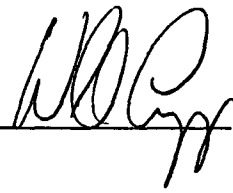
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-10-4501**
Lab ID: **0301W01596**
Sample Matrix: **Water**

Date Reported: **04/23/01**
Date Sampled: **04/03/01**
Date Received: **04/06/01**
Date Extracted: **04/10/01**
Date Analyzed: **04/10/01**

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: W. C. Gyr

Analyst: M. P. L. J. Sw

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-10-4501**
Laboratory ID: **0301W01596**
Sample Matrix: **Water**
Condition: **Intact**

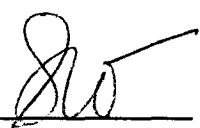
Date Reported: **04/30/01**
Date Analyzed: **04/18/01**
Date Sampled: **04/05/01**
Date Received: **04/06/01**

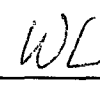
	Result mg/L	MDL
Replicate #1	4.2	1.00
Replicate #2	4.2	1.00
Replicate #3	4.2	1.00
Replicate #4	4.3	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

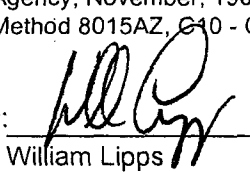
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-10-4501
Lab ID: 0301W01596
Matrix: Water
Condition: Intact

Date Reported: 04/30/01
Date Sampled: 04/05/01
Date Received: 04/06/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

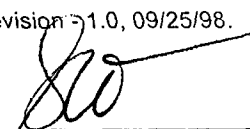
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	72	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision 1.0, 09/25/98.

Reviewed By: 

William Lipps

Analyst: 

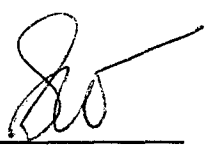
pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-10-4501
Laboratory ID: 0301W01596
Sample Matrix: Water
Condition: Intact

Date Reported: 04/30/01
Date Analyzed: 04/06/01
Date Sampled: 04/05/01
Date Received: 04/06/01

	Result	MDL
Replicate #1	7.4	0.1
Replicate #2	7.4	0.1
Replicate #3	7.4	0.1
Replicate #4	7.4	0.1

Comments:

Reported By: 

Reviewed By: 

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-10-4501**
Laboratory ID: **0301W01596**
Sample Matrix: **Water**
Condition: **Intact**

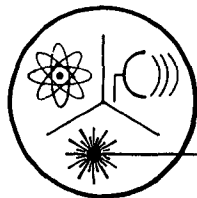
Date Reported: **04/30/01**
Date Analyzed: **04/06/01**
Date Sampled: **04/05/01**
Date Received: **04/06/01**

	Result	MDL
Replicate #1	1900	10
Replicate #2	1900	10
Replicate #3	1900	10
Replicate #4	1900	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

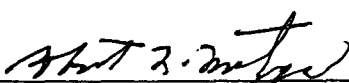
[480] 897-9459
FAX [480] 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 11, 2001
Samples Completed: April 26, 2001

Sample ID	Gross Alpha Activity method 600/00-02	Gross Beta Activity method 900	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
W01596	---	---	1.2 ± 0.3	< 0.4	1.2 ± 0.3


Robert L. Metzger, Ph.D., C.H.P.



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/30/01
Date Analyzed: 04/17/01
Date Received: 04/06/01

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

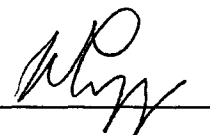
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/30/01
Date Analyzed: 04/17/01
Date Received: 04/06/01

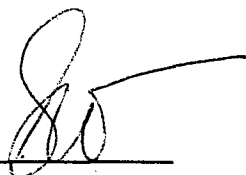
Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.61	0.09	0.50	104%
Arsenic	0.011	0.003	0.010	80%
Barium	1.06	0.03	1.00	103%
Boron	0.10	<0.01	0.10	97%
Cadmium	0.002	<0.001	0.003	92%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	100%
Copper	0.11	<0.01	0.10	108%
Iron	0.50	<0.02	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.50	<0.01	0.50	99%
Mercury	0.002	<0.001	0.002	105%
Molybdenum	0.10	<0.01	0.10	98%
Nickel	0.10	<0.01	0.10	97%
Selenium	0.009	<0.005	0.010	91%
Silver	0.09	<0.01	0.10	95%
Uranium	0.5	<0.1	0.5	98%
Zinc	0.103	<0.025	0.100	103%

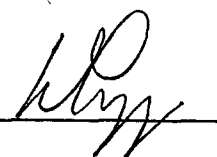
References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/30/01**
Date Analyzed: **04/17/01**
Date Received: **04/06/01**

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	2.02	2.00	101%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	2.03	2.00	102%	mg/L
Boron	2.01	2.00	101%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	2.05	2.00	103%	mg/L
Cobalt	2.05	2.00	103%	mg/L
Copper	2.06	2.00	103%	mg/L
Iron	2.08	2.00	104%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	2.04	2.00	102%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	2.06	2.00	103%	mg/L
Nickel	2.05	2.00	103%	mg/L
Selenium	0.020	0.020	99%	mg/L
Silver	0.26	0.25	104%	mg/L
Uranium	2.06	2.00	103%	mg/L
Zinc	2.05	2.00	103%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

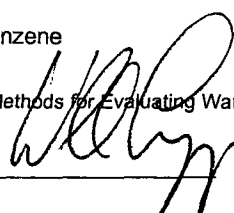
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

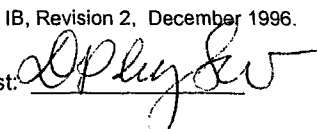
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

Date Reported: 04/23/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

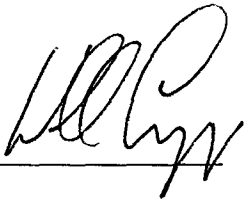
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	52	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

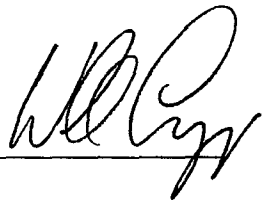
** - Compounds Coelute

*** - Common Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	68	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

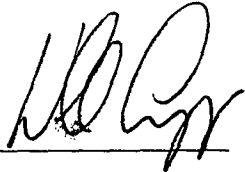
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

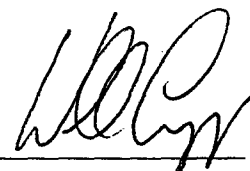
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

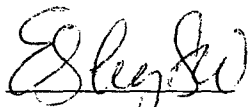
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01596
Sample Matrix: Water

Date Reported: 04/30/01
Date Analyzed: 04/18/01
Date Received: 04/06/01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: EW

Reviewed By: WJ

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01596**
Sample Matrix: **Water**

Date Reported: **04/30/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	20.6	51	41-82
Acenaphthylene	40.4	22.13	55	43-91
Acenaphthene	40.4	23.4	58	48-85
Fluorene	4.1	2.31	56	48-87
Phenanthrene	3.07	2.06	67	60-86
Fluoranthene	1.92	1.48	77	72-96
Pyrene	3.85	3.06	80	73-96
Benzo(a)pyrene	0.253	0.206	81	66-118
Benzo(g,h,i)perylene	0.553	0.475	86	79-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	90	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SW

Reviewed By: HP

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

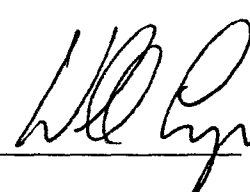
Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

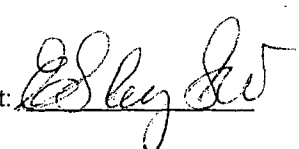
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

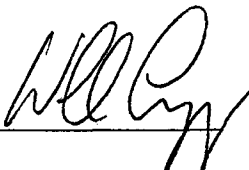
Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

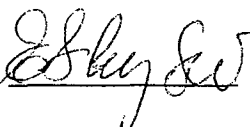
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Revised By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

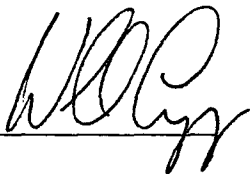
Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

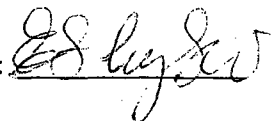
Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reveiwed By: _____



Analyst: _____



ETHYLENE DIBROMIDE BY GC/ECD

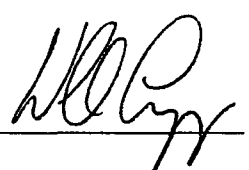
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	110	2.2	110	1

ND - Compound not detected at stated Detection Limit.

Received By: 

Analyst: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-110A
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



Analyst: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-110
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	50	100	51	102	3

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: W. C. Ryan

Analyst: DP Luyck



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

April 26, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on April 5, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script, reading 'Sharon Williams', is written over the typed name.

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

HW 7, 11, 12, 13
Case Narrative

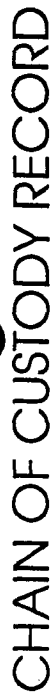
On April 5, 2001, four water samples were submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the samples reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

0
8
7
6
5

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

**GIANT REFINING - CINIZA
SPRING 2001 GROUNDWATER PROJECT
OW-11-4401**

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-11-4401
 Lab ID: 0301W01575
 Matrix: Water
 Condition: Intact

Date Received: 04/05/01
 Date Reported: 06/08/01
 Date Sampled: 04/04/01
 Time Sampled: 1130

Parameter	Analytical						Analysis		
	Result	Units		Units	PQL	Method	Date	Time	Init.
General Parameters									
PH	8.1	s.u.			0.1	EPA 150.1	04/05/01	1445	KA
Electrical Conductivity	2,820	µmhos/cm			10	EPA 120.1	04/05/01	1445	KA
Solids - Total Dissolved	1,880	mg/L			10	EPA 160.1	04/06/01	1400	AG
Solids - Total Suspended	<2	mg/L			2	EPA 160.2	04/06/01	0930	KA
Alkalinity (CaCO3)	317	mg/L			1	EPA 310.1	04/06/01	1100	KA
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	SM 4500-CN E	04/18/01	1500	WW
Hardness (CaCO3)	30	mg/L			1	EPA 200.7	04/10/01	1636	WL
Phosphorus - Ortho-P	0.07	mg/L			0.02	EPA 365.3	04/05/01	1547	KA
Total Phenolics	0.11	mg/L			0.01	EPA 420.1	04/12/01	0800	TH
Major Anions									
Bicarbonate (HCO3)	387	mg/L	6.34	meq/L	1	EPA 310.1	04/06/01	1100	KA
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/06/01	1100	KA
Chloride	100	mg/L	2.82	meq/L	1	EPA 300.0	04/06/01	2034	KA
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	04/06/01	2034	KA
Fluoride	2.81	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/06/01	2153	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/06/01	1100	KA
Nitrogen - Nitrate/Nitrite	1.58	mg/L	0.11	meq/L	0.05	EPA 353.2	04/05/01	1400	KA
Sulfate	858	mg/L	17.86	meq/L	5	EPA 300.0	04/06/01	2034	KA
Major Cations									
Calcium	10.1	mg/L	0.51	meq/L	0.2	EPA 200.7	04/10/01	1636	WL
Magnesium	1.1	mg/L	0.09	meq/L	0.2	EPA 200.7	04/10/01	1636	WL
Potassium	1.7	mg/L	0.04	meq/L	0.2	EPA 200.7	04/10/01	1636	WL
Sodium	596	mg/L	25.94	meq/L	0.2	EPA 200.7	04/10/01	1636	WL
Anion/Cation Balance QC Information									
Anion Sum			27.13	meq/L	0.01	SM 1030			
Cation Sum			26.58	meq/L	0.01	SM 1030			
Cation/Anion Balance			1.02	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By: _____

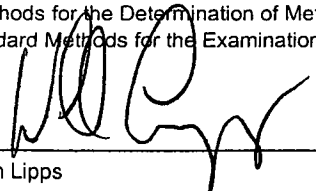
William Lipps

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-11-4401
Lab ID: 0301W01575
Matrix: Water
Condition: Intact

Date Received: 04/05/01
Date Reported: 06/08/01
Date Sampled: 04/04/01
Time Sampled: 1130

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	<0.05	mg/L			0.05	EPA 200.7	04/10/01	1230	WL
Arsenic	0.016	mg/L			0.005	SM 3114B	04/16/01	1730	JG
Barium	0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Boron	1.26	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Copper	0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Iron	<0.02	mg/L			0.02	EPA 200.7	04/10/01	1230	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	0.21	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Selenium	0.007	mg/L			0.005	SM 3114B	04/17/01	1730	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/10/01	1230	WL
Uranium	0.4	mg/L			0.3	EPA 200.7	04/10/01	1230	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/10/01	1230	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By: 

William Lipps

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

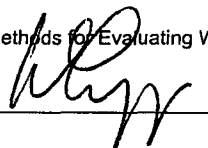
Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	105	86 - 118
1,2-Dichloroethane-d4	98	80 - 120
Toluene-d8	100	88 - 110
4-Bromofluorobenzene	102	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **OW-11**
Laboratory ID: **0301W01575**
Sample Matrix: **Water**

Date Reported: **04/23/01**
Date Sampled: **04/04/01**
Date Received: **NG**
Date Extracted: **04/10/01**
Date Analyzed: **04/18/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate***	220	20	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

*** - Compound detected in Blank.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	37	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	59	35 - 114
2-Fluorobiphenyl	67	43 - 116
2,4,6-Tribromophenol	80	10 - 123
Terphenyl-d14	86	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

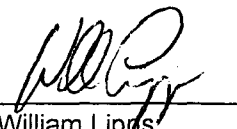
Reviewed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-11-4401
Lab ID: 0301W01575
Matrix: Water
Condition: Intact

Date Reported: 04/26/01
Date Sampled: 04/04/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	ug/L
Anthracene	<0.8	0.8	ug/L
Benzo(a)anthracene	<0.02	0.02	ug/L
Benzo(b)fluoranthene	<0.06	0.06	ug/L
Benzo(a)pyrene	<0.02	0.02	ug/L
Benzo(g,h,i)perylene	<0.03	0.03	ug/L
Benzo(k)fluoranthene	<0.02	0.02	ug/L
Chrysene	<0.2	0.2	ug/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	ug/L
Fluorene	<0.8	0.8	ug/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	ug/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	ug/L
Phenanthrene	<0.6	0.6	ug/L
Pyrene	<0.3	0.3	ug/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

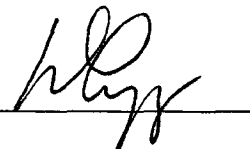
Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	73	50 - 150
Decachlorobiphenyl	103	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: 

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

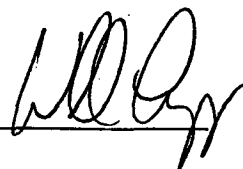
Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-11
Lab ID: 0301W01575
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-11
Laboratory ID: 0301W01575
Sample Matrix: Water

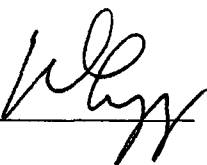
Date Reported: 04/23/01
Date Sampled: 04/04/01
Date Received: NG
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-11-4401
Laboratory ID: 0301W01575
Sample Matrix: Water
Condition: Intact

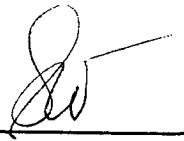
Date Reported: 04/10/01
Date Analyzed: 04/09/01
Date Sampled: 04/04/01
Date Received: 04/05/01

	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

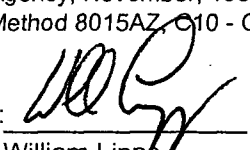
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-11-4401
Lab ID: 0301W01575
Matrix: Water
Condition: Intact

Date Reported: 04/26/01
Date Sampled: 04/04/01
Date Received: 04/05/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

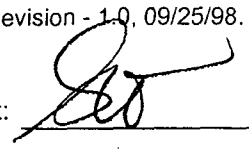
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	88	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision - 1.0, 09/25/98.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-11-4401
Laboratory ID: 0301W01575
Sample Matrix: Water
Condition: Intact

Date Reported: 04/25/01
Date Analyzed: 04/05/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result	MDL
Replicate #1	8.1	0.1
Replicate #2	8.1	0.1
Replicate #3	8.1	0.1
Replicate #4	8.1	0.1

Comments:

Reported By: 

Reviewed By: 

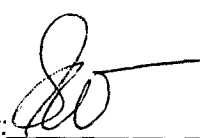
ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-11-4401**
Laboratory ID: **0301W01575**
Sample Matrix: **Water**
Condition: **Intact**

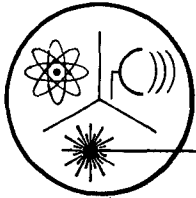
Date Reported: **04/25/01**
Date Analyzed: **04/05/01**
Date Sampled: **04/03/01**
Date Received: **04/05/01**

	Result	MDL
Replicate #1	2820	10
Replicate #2	2820	10
Replicate #3	2820	10
Replicate #4	2820	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

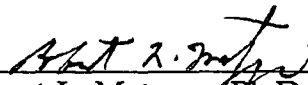
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 9, 2001
Samples Completed: April 23, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
OW-11 W01575	< 0.3	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/25/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

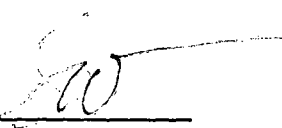
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.61	0.07	0.50	108%
Arsenic	0.013	0.003	0.010	104%
Barium	1.06	0.02	1.00	104%
Boron	0.45	<0.01	0.50	90%
Cadmium	0.002	<0.001	0.003	92%
Chromium	0.11	<0.01	0.10	107%
Cobalt	0.11	<0.01	0.10	108%
Copper	0.12	0.01	0.10	108%
Iron	0.58	0.04	0.50	109%
Lead	0.025	<0.005	0.025	102%
Manganese	0.53	<0.01	0.50	106%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.11	0.01	0.10	104%
Nickel	0.11	<0.01	0.10	105%
Selenium	0.032	0.023	0.010	98%
Silver	0.10	<0.01	0.10	101%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.104	<0.025	0.100	104%

References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/25/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.92	2.00	96%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.92	2.00	96%	mg/L
Boron	1.92	2.00	96%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.98	2.00	99%	mg/L
Cobalt	1.96	2.00	98%	mg/L
Copper	1.98	2.00	99%	mg/L
Iron	1.97	2.00	99%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.94	2.00	97%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.97	2.00	99%	mg/L
Selenium	0.020	0.020	99%	mg/L
Silver	0.25	0.25	100%	mg/L
Uranium	1.96	2.00	98%	mg/L
Zinc	1.96	2.00	98%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Method Blank Analysis

Sample ID: Method Blank
 Laboratory ID: V3MB01-100
 Sample Matrix: Water

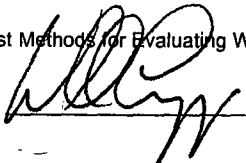
Date Reported: 04/23/01
 Date Extracted: NA
 Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: V3BSD01-099
Sample Matrix: Water

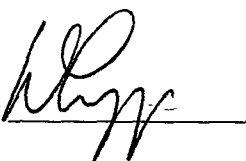
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzenzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	52	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

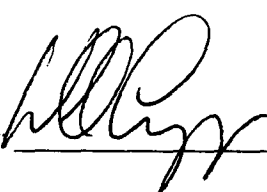
** - Compounds Coelute

*** - Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	68	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

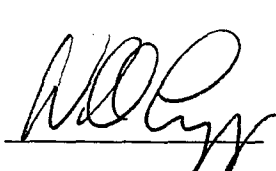
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

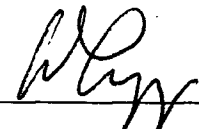
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01575
Sample Matrix: Water

Date Reported: 04/26/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Benzo(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SL

Reviewed By: ALP

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01575**
Sample Matrix: **Water**

Date Reported: **04/26/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	17.4	43	41-82
Acenaphthylene	40.4	18.74	46	43-91
Acenaphthene	40.4	19.7	49	48-85
Fluorene	4.1	2.10	51	48-87
Phenanthrene	2.07	3.07	67	60-86
Fluoranthene	1.51	1.92	78	72-96
Pyrene	3.072	3.850	79	73-96
Benzo(a)pyrene	0.182	0.253	72	66-118
Benzo(g,h,i)perylene	0.441	0.553	80	79-112

Surrogates	Result %	Accuracy % Limits
Benzo(a)pyrene	81	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SL

Reviewed By: [Signature]

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

ETHYLENE DIBROMIDE BY GC/ECD

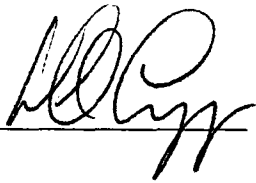
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By: 

ETHYLENE DIBROMIDE BY GC/ECD

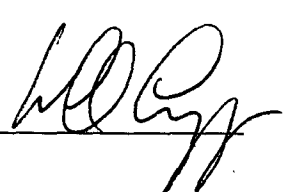
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	110	2.2	110	1

ND - Compound not detected at stated Detection Limit.

Reviewed By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-107
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
9020B			
Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00728MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
9020B Total Organic Halides (TOX)	ND	50	59	117

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

April 26, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on April 5, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script, reading "Sharon Williams", is written over the typed name.

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

HW 7, 11, 12, 13
Case Narrative

On April 5, 2001, four water samples were submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the samples reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

**GIANT REFINING - CINIZA
SPRING 2001 GROUNDWATER PROJECT
OW-12-4301**

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-12-4301
 Lab ID: 0301W01573
 Matrix: Water
 Condition: Intact

Date Received: 04/05/01
 Date Reported: 04/26/01
 Date Sampled: 04/03/01
 Time Sampled: 1345

Parameter	Analytical					Analysis			
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	9.0	s.u.			0.1	EPA 150.1	04/05/01	1445	KA
Electrical Conductivity	1,120	µmhos/cm			10	EPA 120.1	04/05/01	1445	KA
Solids - Total Dissolved	720	mg/L			10	EPA 160.1	04/06/01	1400	AG
Solids - Total Suspended	5	mg/L			2	EPA 160.2	04/09/01	0930	AG
Alkalinity (CaCO3)	350	mg/L			1	EPA 310.1	04/06/01	1100	KA
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	SM 4500-CN E	04/18/01	1500	SL
Hardness (CaCO3)	8	mg/L			1	EPA 200.7	04/10/01	1225	WL
Phosphorus - Ortho-P	0.32	mg/L			0.02	EPA 365.3	04/05/01	1546	KA
Total Phenolics	0.01	mg/L			0.01	EPA 420.1	04/12/01	0800	TH
Major Anions									
Bicarbonate (HCO3)	286	mg/L	4.69	meq/L	1	EPA 310.1	04/06/01	1100	KA
Carbonate (CO3)	69	mg/L	2.30	meq/L	1	EPA 310.1	04/06/01	1100	KA
Chloride	33	mg/L	0.93	meq/L	1	EPA 300.0	04/06/01	2034	KA
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	04/06/01	2034	KA
Fluoride	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/06/01	2121	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/06/01	1100	KA
Nitrogen - Nitrate/Nitrite	0.80	mg/L	0.06	meq/L	0.05	EPA 353.2	04/05/01	1355	KA
Sulfate	166	mg/L	3.47	meq/L	5	EPA 300.0	04/06/01	2034	KA
Major Cations									
Calcium	2.5	mg/L	0.13	meq/L	0.2	EPA 200.7	04/10/01	1225	WL
Magnesium	0.2	mg/L	0.02	meq/L	0.2	EPA 200.7	04/10/01	1225	WL
Potassium	<0.2	mg/L	<0.01	meq/L	0.2	EPA 200.7	04/10/01	1225	WL
Sodium	247	mg/L	10.74	meq/L	0.2	EPA 200.7	04/10/01	1225	WL
Anion/Cation Balance QC Information									
Anion Sum			11.44	meq/L	0.01	SM 1030			
Cation Sum			10.89	meq/L	0.01	SM 1030			
Cation/Anion Balance			2.46	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

William Lipps

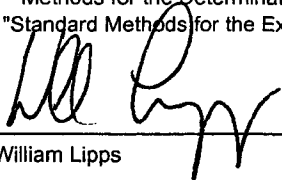
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-12-4301
Lab ID: 0301W01573
Matrix: Water
Condition: Intact

Date Received: 04/05/01
Date Reported: 04/20/01
Date Sampled: 04/03/01
Time Sampled: 1345

Parameter	Analytical		Units	PQL	Method	Analysis		
	Result	Units				Date	Time	Init.
Total Metals								
Aluminum	0.15	mg/L		0.05	EPA 200.7	04/10/01	1225	WL
Arsenic	<0.005	mg/L		0.005	SM 3114B	04/16/01	1750	JG
Barium	0.02	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Boron	0.52	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Cadmium	<0.001	mg/L		0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Cobalt	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Copper	0.02	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Iron	0.09	mg/L		0.02	EPA 200.7	04/10/01	1225	WL
Lead	<0.005	mg/L		0.005	EPA 200.9	04/10/01	0739	SW
Manganese	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Mercury	<0.001	mg/L		0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Nickel	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Selenium	<0.005	mg/L		0.005	SM 3114B	04/17/01	1750	JG
Silver	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1225	WL
Uranium	<0.3	mg/L		0.3	EPA 200.7	04/10/01	1225	WL
Zinc	<0.025	mg/L		0.025	EPA 200.7	04/10/01	1225	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

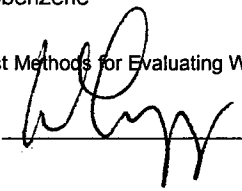
Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	94	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	104	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

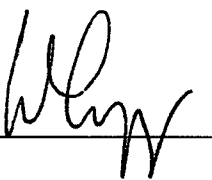
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	32	21 - 100
Phenol-d6	24	10 - 94
Nitrobenzene-d5	52	35 - 114
2-Fluorobiphenyl	59	43 - 116
2,4,6-Tribromophenol	72	10 - 123
Terphenyl-d14	88	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

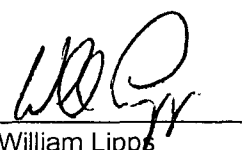
Reveiwed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-12-4301
Lab ID: 0301W01573
Matrix: Water
Condition: Intact

Date Reported: 04/20/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	ug/L
Acenaphthylene	<2.5	2.5	ug/L
Anthracene	<0.8	0.8	ug/L
Benzo(a)anthracene	<0.02	0.02	ug/L
Benzo(b)fluoranthene	<0.06	0.06	ug/L
Benzo(a)pyrene	<0.02	0.02	ug/L
Benzo(g,h,i)perylene	<0.03	0.03	ug/L
Benzo(k)fluoranthene	<0.02	0.02	ug/L
Chrysene	<0.2	0.2	ug/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	ug/L
Fluorene	<0.8	0.8	ug/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	ug/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	ug/L
Phenanthrene	<0.6	0.6	ug/L
Pyrene	<0.3	0.3	ug/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

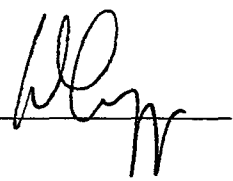
Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	74	50 - 150
Decachlorobiphenyl	100	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

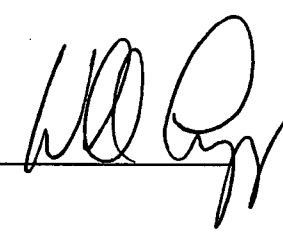
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-12
Lab ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-12
Laboratory ID: 0301W01573
Sample Matrix: Water

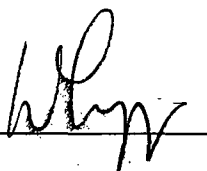
Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-12-4301
Laboratory ID: 0301W01573
Sample Matrix: Water
Condition: Intact

Date Reported: 04/10/01
Date Analyzed: 04/09/01
Date Sampled: 04/03/01
Date Received: 04/05/01

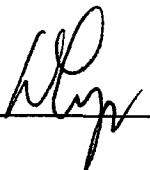
	Result mg/L	MDL
Replicate #1	ND	1.00
Replicate #2	ND	1.00
Replicate #3	ND	1.00
Replicate #4	ND	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

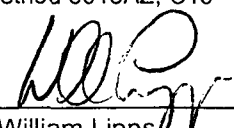
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-12-4301
Lab ID: 0301W01573
Matrix: Water
Condition: Intact

Date Reported: 04/09/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

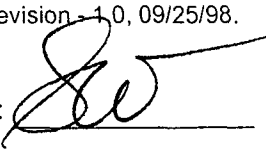
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	80	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision - 1.0, 09/25/98.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-12-4301**
Laboratory ID: **0301W01573**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/25/01**
Date Analyzed: **04/05/01**
Date Sampled: **04/03/01**
Date Received: **04/05/01**

	Result	MDL
Replicate #1	9.0	0.1
Replicate #2	9.0	0.1
Replicate #3	9.0	0.1
Replicate #4	9.0	0.1

Comments:

Reported By: 

Reviewed By: 

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-12-4301
Laboratory ID: 0301W01573
Sample Matrix: Water
Condition: Intact

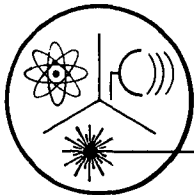
Date Reported: 04/25/01
Date Analyzed: 04/05/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result	MDL
Replicate #1	1120	10
Replicate #2	1120	10
Replicate #3	1120	10
Replicate #4	1120	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

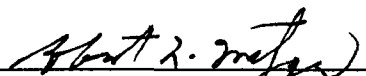
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 9, 2001
Samples Completed: April 23, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
OW-12 W01573	0.9 ± 0.3	< 0.4	0.9 ± 0.3


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

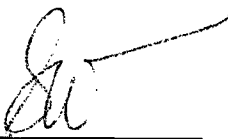
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

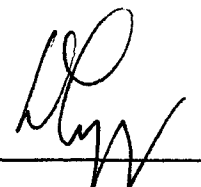
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.61	0.07	0.50	108%
Arsenic	0.013	0.003	0.010	104%
Barium	1.06	0.02	1.00	104%
Boron	0.45	<0.01	0.50	90%
Cadmium	0.002	<0.001	0.003	92%
Chromium	0.11	<0.01	0.10	107%
Cobalt	0.11	<0.01	0.10	108%
Copper	0.12	0.01	0.10	108%
Iron	0.58	0.04	0.50	109%
Lead	0.025	<0.005	0.025	102%
Manganese	0.53	<0.01	0.50	106%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.11	0.01	0.10	104%
Nickel	0.11	<0.01	0.10	105%
Selenium	0.032	0.023	0.010	98%
Silver	0.10	<0.01	0.10	101%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.104	<0.025	0.100	104%

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/25/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

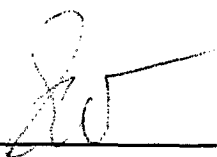
Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.92	2.00	96%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.92	2.00	96%	mg/L
Boron	1.92	2.00	96%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.98	2.00	99%	mg/L
Cobalt	1.96	2.00	98%	mg/L
Copper	1.98	2.00	99%	mg/L
Iron	1.97	2.00	99%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.94	2.00	97%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.97	2.00	99%	mg/L
Selenium	0.020	0.020	99%	mg/L
Silver	0.25	0.25	100%	mg/L
Uranium	1.96	2.00	98%	mg/L
Zinc	1.96	2.00	98%	mg/L

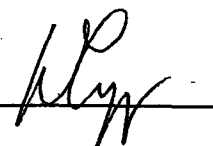
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

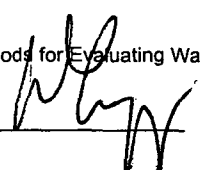
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: V3BSD01-099
Sample Matrix: Water

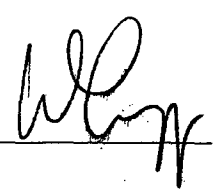
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

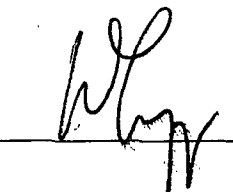
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzenzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	52	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

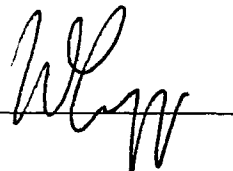
** - Compounds Coelute

*** - Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	68	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

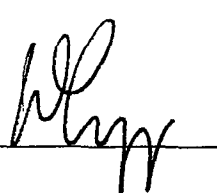
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

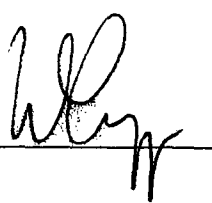
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01573
Sample Matrix: Water

Date Reported: 04/26/01
Date Analyzed: 04/17/01
Date Received: 04/05/01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By:

Reviewed By:

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01573**
Sample Matrix: **Water**

Date Reported: **04/26/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	17.4	43	41-82
Acenaphthylene	40.4	18.74	46	43-91
Acenaphthene	40.4	19.7	49	48-85
Fluorene	4.1	2.10	51	48-87
Phenanthrene	2.07	3.07	67	60-86
Fluoranthene	1.51	1.92	78	72-96
Pyrene	3.072	3.850	79	73-96
Benzo(a)pyrene	0.182	0.253	72	66-118
Benzo(g,h,i)perylene	0.441	0.553	80	79-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	93	54.5-116

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

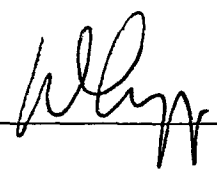
Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 0, December 1996.

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: 

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

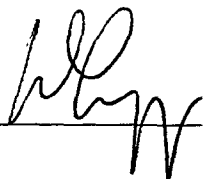
Sample ID: . Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reviewed By: _____



ETHYLENE DIBROMIDE BY GC/ECD

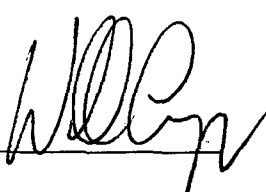
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	110	2.2	110	1

ND - Compound not detected at stated Detection Limit.

Reviewed By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-107
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00728MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
9020B Total Organic Halides (TOX)	ND	50	59	117

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____



April 26, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the samples received by our laboratory for analysis on April 5, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

HW 7, 11, 12, 13

Case Narrative

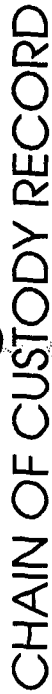
On April 5, 2001, four water samples were submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the samples reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

7-00000

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

**GIANT REFINING - CINIZA
SPRING 2001 GROUNDWATER PROJECT
OW-13-4301**

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-13-4301
 Lab ID: 0301W01574
 Matrix: Water
 Condition: Intact

Date Received: 04/05/01
 Date Reported: 04/26/01
 Date Sampled: 04/03/01
 Time Sampled: 0920

Parameter	Analytical		Analysis						
	Result	Units	Units	PQL	Method	Date	Time	Init	
General Parameters									
PH	7.9	s.u.		0.1	EPA 150.1	04/05/01	1445	KA	
Electrical Conductivity	1,280	µmhos/cm		10	EPA 120.1	04/05/01	1445	KA	
Solids - Total Dissolved	790	mg/L		10	EPA 160.1	04/06/01	1400	AG	
Solids - Total Suspended	<2	mg/L		2	EPA 160.2	04/06/01	0930	AG	
Alkalinity (CaCO3)	480	mg/L		1	EPA 310.1	04/06/01	1100	KA	
Cyanide (Total) - Colorimetric	<0.01	mg/L		0.01	SM 4500-CN E	04/18/01	1500	SL	
Hardness (CaCO3)	27	mg/L		1	EPA 200.7	04/10/01	1634	WL	
Phosphorus - Ortho-P	0.09	mg/L		0.02	EPA 365.3	04/05/01	1546	KA	
Total Phenolics	0.05	mg/L		0.01	EPA 420.1	04/12/01	0800	TH	
Major Anions									
Bicarbonate (HCO3)	567	mg/L	9.29	meq/L	1	EPA 310.1	04/06/01	1100	KA
Carbonate (CO3)	9	mg/L	0.31	meq/L	1	EPA 310.1	04/06/01	1100	KA
Chloride	29	mg/L	0.82	meq/L	1	EPA 300.0	04/06/01	2034	KA
Bromide (Br)	<0.2	mg/L	<0.01	meq/L	0.2	EPA 300.0	04/06/01	2034	KA
Fluoride	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/06/01	2137	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/06/01	1100	KA
Nitrogen - Nitrate/Nitrite	0.76	mg/L	0.05	meq/L	0.05	EPA 353.2	04/05/01	1355	KA
Sulfate	100	mg/L	2.08	meq/L	5	EPA 300.0	04/06/01	2034	KA
Major Cations									
Calcium	8.5	mg/L	0.43	meq/L	0.2	EPA 200.7	04/10/01	1634	WL
Magnesium	1.3	mg/L	0.10	meq/L	0.2	EPA 200.7	04/10/01	1634	WL
Potassium	1.2	mg/L	0.03	meq/L	0.2	EPA 200.7	04/10/01	1634	WL
Sodium	292	mg/L	12.68	meq/L	0.2	EPA 200.7	04/10/01	1634	WL
Anion/Cation Balance QC Information									
Anion Sum			12.55	meq/L	0.01	SM 1030			
Cation Sum			13.24	meq/L	0.01	SM 1030			
Cation/Anion Balance			2.68	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

William Lipps

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-13-4301
Lab ID: 0301W01574
Matrix: Water
Condition: Intact

Date Received: 04/05/01
Date Reported: 04/20/01
Date Sampled: 04/03/01
Time Sampled: 0920

Parameter	Analytical		Units	PQL	Method	Analysis		
	Result	Units				Date	Time	Init.
Total Metals								
Aluminum	<0.05	mg/L		0.05	EPA 200.7	04/10/01	1227	WL
Arsenic	<0.005	mg/L		0.005	SM 3114B	04/16/01	1730	JG
Barium	0.02	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Boron	0.33	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Cadmium	<0.001	mg/L		0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Cobalt	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Copper	0.02	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Iron	<0.02	mg/L		0.02	EPA 200.7	04/10/01	1227	WL
Lead	<0.005	mg/L		0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.02	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Mercury	<0.001	mg/L		0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Nickel	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Selenium	<0.005	mg/L		0.005	SM 3114B	04/17/01	1750	JG
Silver	<0.01	mg/L		0.01	EPA 200.7	04/10/01	1227	WL
Uranium	<0.3	mg/L		0.3	EPA 200.7	04/10/01	1227	WL
Zinc	<0.025	mg/L		0.025	EPA 200.7	04/10/01	1227	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:

William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-13
Laboratory ID: 0301W01574
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-13
 Laboratory ID: 0301W01574
 Sample Matrix: Water

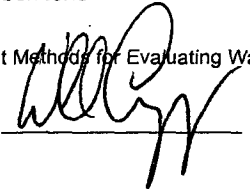
Date Reported: 04/23/01
 Date Sampled: 04/03/01
 Date Received: NG
 Date Extracted: NA
 Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	103	86 - 118
1,2-Dichloroethane-d4	97	80 - 120
Toluene-d8	103	88 - 110
4-Bromofluorobenzene	107	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **OW-13**
Laboratory ID: **0301W01574**
Sample Matrix: **Water**

Date Reported: **04/23/01**
Date Sampled: **04/03/01**
Date Received: **NG**
Date Extracted: **04/10/01**
Date Analyzed: **04/18/01**

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
 Project ID: **Ciniza**
 Sample ID: **OW-13**
 Laboratory ID: **0301W01574**
 Sample Matrix: **Water**

Date Reported: **04/23/01**
 Date Sampled: **04/03/01**
 Date Received: **NG**
 Date Extracted: **04/10/01**
 Date Analyzed: **04/18/01**

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: **Ciniza**
Sample ID: **OW-13**
Laboratory ID: **0301W01574**
Sample Matrix: **Water**

Date Reported: **04/23/01**
Date Sampled: **04/03/01**
Date Received: **NG**
Date Extracted: **04/10/01**
Date Analyzed: **04/18/01**

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

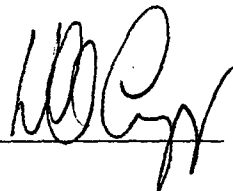
ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	64	43 - 116
2,4,6-Tribromophenol	73	10 - 123
Terphenyl-d14	85	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-13-4301
Lab ID: 0301W01574
Matrix: Water
Condition: Intact

Date Reported: 04/20/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.8	0.8	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.06	0.06	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.8	0.8	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:

William Lipps

Analyst:

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-13
Laboratory ID: 0301W01574
Sample Matrix: Water

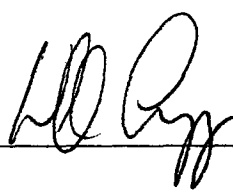
Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

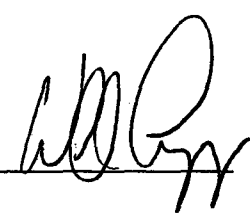
ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-13
Lab ID: 0301W01574
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

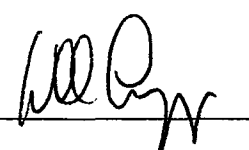
Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-13
Laboratory ID: 0301W01574
Sample Matrix: Water

Date Reported: 04/23/01
Date Sampled: 04/03/01
Date Received: NG
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-13-4301
Laboratory ID: 0301W01574
Sample Matrix: Water
Condition: Intact

Date Reported: 04/10/01
Date Analyzed: 04/09/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result mg/L	MDL
Replicate #1	1.02	1.00
Replicate #2	1.00	1.00
Replicate #3	ND(0.94)	1.00
Replicate #4	ND(0.83)	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

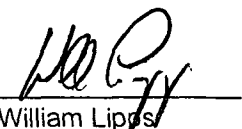
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-13-4301
Lab ID: 0301W01574
Matrix: Water
Condition: Intact

Date Reported: 04/09/01
Date Sampled: 04/03/01
Date Received: 04/05/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

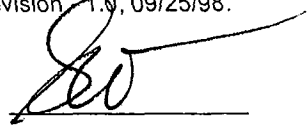
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	84	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision 1.0, 09/25/98.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-13-4301**
Laboratory ID: **0301W01574**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/25/01**
Date Analyzed: **04/05/01**
Date Sampled: **04/03/01**
Date Received: **04/05/01**

	Result	MDL
Replicate #1	7.9	0.1
Replicate #2	7.9	0.1
Replicate #3	7.9	0.1
Replicate #4	7.9	0.1

Comments:

Reported By: 

Reviewed By: 

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-13-4301
Laboratory ID: 0301W01574
Sample Matrix: Water
Condition: Intact

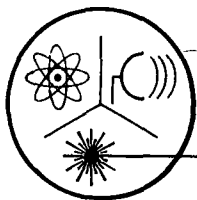
Date Reported: 04/25/01
Date Analyzed: 04/05/01
Date Sampled: 04/03/01
Date Received: 04/05/01

	Result	MDL
Replicate #1	1280	10
Replicate #2	1280	10
Replicate #3	1280	10
Replicate #4	1280	10

Comments:

Reported By: SW

Reviewed By: W. Lynn



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

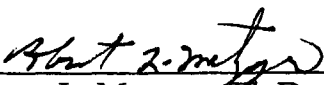
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 9, 2001
Samples Completed: April 23, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
OW-13 W01574	< 0.2	< 0.4	< 0.4


Robert L. Metzger, Ph.D., C.H.P.

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

References: **Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.**

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.61	0.07	0.50	108%
Arsenic	0.013	0.003	0.010	104%
Barium	1.06	0.02	1.00	104%
Boron	0.45	<0.01	0.50	90%
Cadmium	0.002	<0.001	0.003	92%
Chromium	0.11	<0.01	0.10	107%
Cobalt	0.11	<0.01	0.10	108%
Copper	0.12	0.01	0.10	108%
Iron	0.58	0.04	0.50	109%
Lead	0.025	<0.005	0.025	102%
Manganese	0.53	<0.01	0.50	106%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.11	0.01	0.10	104%
Nickel	0.11	<0.01	0.10	105%
Selenium	0.032	0.023	0.010	98%
Silver	0.10	<0.01	0.10	101%
Uranium	0.5	<0.1	0.5	104%
Zinc	0.104	<0.025	0.100	104%

References: Method 6010: Acid Digestion for Water and Waste Water, SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/25/01**
Date Analyzed: **04/17/01**
Date Received: **04/05/01**

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	1.92	2.00	96%	mg/L
Arsenic	0.039	0.040	98%	mg/L
Barium	1.92	2.00	96%	mg/L
Boron	1.92	2.00	96%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.98	2.00	99%	mg/L
Cobalt	1.96	2.00	98%	mg/L
Copper	1.98	2.00	99%	mg/L
Iron	1.97	2.00	99%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.94	2.00	97%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.97	2.00	99%	mg/L
Selenium	0.020	0.020	99%	mg/L
Silver	0.25	0.25	100%	mg/L
Uranium	1.96	2.00	98%	mg/L
Zinc	1.96	2.00	98%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

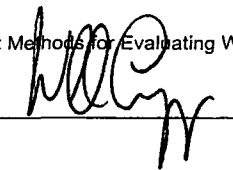
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

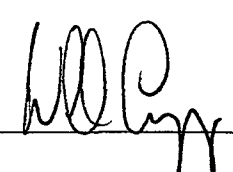
Date Reported: 04/23/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

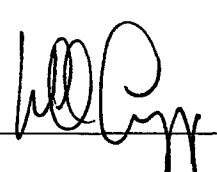
Date Reported: 04/23/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	52	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

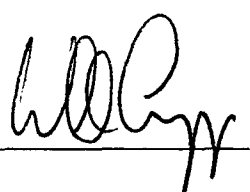
** - Compounds Coelute

*** - Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	56	35 - 114
2-Fluorobiphenyl	62	43 - 116
2,4,6-Tribromophenol	68	10 - 123
Terphenyl-d14	95	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

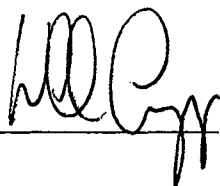
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

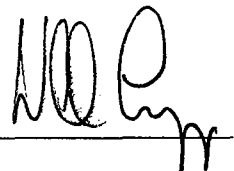
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

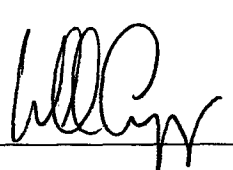
Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	70	50 - 150
Decachlorobiphenyl	105	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reveiwed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC

Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

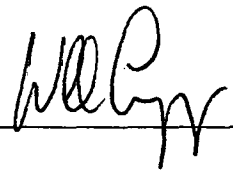
Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

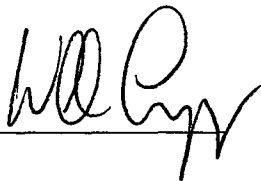
ETHYLENE DIBROMIDE BY GC/ECD
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reveiwed By: 

ETHYLENE DIBROMIDE BY GC/ECD

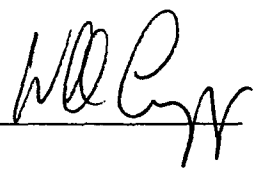
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-100
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/10/01
Date Analyzed: 04/10/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	110	2.2	110	1

ND - Compound not detected at stated Detection Limit.

Reveiwed By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

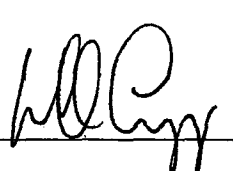
Sample ID: Method Blank
Laboratory ID: MB01-107
Sample Matrix: Water

Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00728MS
Sample Matrix: Water

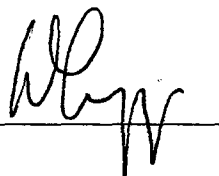
Date Reported: 04/23/01
Date Extracted: 04/17/01
Date Analyzed: 04/17/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
9020B Total Organic Halides (TOX)	ND	50	59	117

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____





Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

May 4, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on April 11, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

**GIANT REFINING CO.
SPRING 2001 GROUNDWATER
— OW-14-4901**

Case Narrative

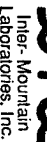
On April 11, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the sample are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

[illegible]

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

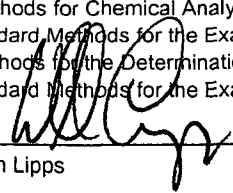
Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-14-4901
 Lab ID: 0301W01688
 Matrix: Water
 Condition: Intact

Date Received: 04/11/01
 Date Reported: 02/28/02
 Date Sampled: 04/09/01
 Time Sampled: 1415

Parameter	Analytical						Analysis		
	Result	Units		Units	PQL	Method	Date	Time	Init.
General Parameters									
PH	7.3	s.u.			0.1	EPA 150.1	04/11/01	1700	AG
Electrical Conductivity	2,440	µmhos/cm			10	EPA 120.1	04/11/01	1700	AG
Solids - Total Dissolved	1,380	mg/L			10	EPA 160.1	04/12/01	0900	AG
Solids - Total Suspended	5	mg/L			2	EPA 160.2	04/12/01	1730	AG
Alkalinity (CaCO3)	608	mg/L			1	EPA 310.1	04/20/01	1600	ML
Cyanide (Total) - Colorimetric	<0.01	mg/L			0.01	SM 4500-CN E	05/02/01	0800	WN
Hardness (CaCO3)	234	mg/L			1	EPA 200.7	05/01/01	1148	WL
Phosphorus - Ortho-P	0.83	mg/L			0.02	EPA 365.3	04/11/01	1600	AG
Total Phenolics	<0.01	mg/L			0.01	EPA 420.1	05/02/01	0800	WN
Major Anions									
Bicarbonate (HCO3)	742	mg/L	12.16	meq/L	1	EPA 310.1	04/20/01	1600	ML
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/20/01	1600	ML
Chloride	400	mg/L	11.28	meq/L	1	EPA 300.0	05/01/01	1152	WL
Bromide (Br)	7.05	mg/L	0.09	meq/L	0.05	EPA 300.0	05/01/01	1152	WL
Fluoride	1.53	mg/L	<0.01	meq/L	0.05	EPA 300.0	05/01/01	1152	WL
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/20/01	1600	ML
Nitrogen - Nitrate/Nitrite	0.24	mg/L	0.02	meq/L	0.05	EPA 353.2	04/16/01	1400	WH
Sulfate	67	mg/L	1.39	meq/L	5	EPA 300.0	05/01/01	1152	WL
Major Cations									
Calcium	62.9	mg/L	3.1	meq/L	0.2	EPA 200.7	05/01/01	1151	WL
Magnesium	18.8	mg/L	1.54	meq/L	0.2	EPA 200.7	05/01/01	1151	WL
Potassium	<0.2	mg/L	<0.01	meq/L	0.2	EPA 200.7	05/01/01	1151	WL
Sodium	421	mg/L	18.33	meq/L	0.2	EPA 200.7	05/01/01	1151	WL
Anion/Cation Balance QC Information									
Anion Sum			24.84	meq/L	0.01	SM 1030			
Cation Sum			23.01	meq/L	0.01	SM 1030			
Cation/Anion Balance			3.82	%	0.01	SM 1030			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


 William Lipps

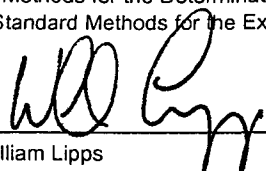
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Lab ID: 0301W01688
Matrix: Water
Condition: Intact

Date Received: 04/11/01
Date Reported: 02/28/02
Date Sampled: 04/09/01
Time Sampled: 1415

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	<0.05	mg/L			0.05	EPA 200.7	04/16/01	1318	WL
Arsenic	0.005	mg/L			0.005	SM 3114B	04/17/01	1750	JG
Barium	0.24	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Boron	0.46	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	04/17/01	1150	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Copper	0.05	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Iron	0.67	mg/L			0.02	EPA 200.7	04/16/01	1318	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/23/01	1200	SW
Manganese	1.59	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/24/01	0800	JG
Molybdenum	0.03	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Selenium	<0.005	mg/L			0.005	SM 3114B	04/17/01	0800	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/16/01	1318	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/16/01	1318	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/16/01	1318	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/19/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	9.5	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	64	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/19/01

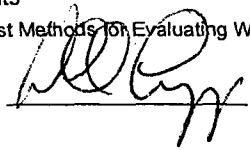
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	8.0	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

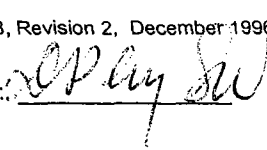
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	104	86 - 118
1,2-Dichloroethane-d4	116	80 - 120
Toluene-d8	100	88 - 110
4-Bromofluorobenzene	82*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

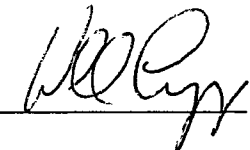
ND - Compound not detected at stated Detection Limit.

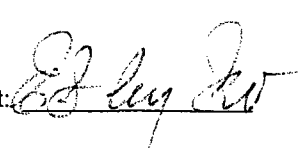
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	37	21 - 100
Phenol-d6	37	10 - 94
Nitrobenzene-d5	59	35 - 114
2-Fluorobiphenyl	73	43 - 116
2,4,6-Tribromophenol	101	10 - 123
Terphenyl-d14	91	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Lab ID: 0301W01688
Matrix: Water
Condition: Intact

Date Reported: 05/02/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.6	0.6	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	ug/L
Fluoranthene	<0.6	0.6	µg/L
Fluorene	<0.6	0.6	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	ug/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:


William Lipps

Analyst:



**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: NG
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

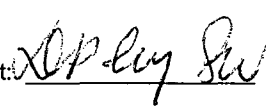
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	68	50 - 150
Decachlorobiphenyl	102	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Lab ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/19/01
Date Analyzed: 04/19/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water

Date Reported: 04/26/01
Date Sampled: 04/05/01
Date Received: NG
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By:

Analyst:

TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-14-4901**
Laboratory ID: **0301W01688**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/30/01**
Date Analyzed: **04/18/01**
Date Sampled: **04/09/01**
Date Received: **04/11/01**

	Result mg/L	MDL
Replicate #1	32.0	1.00
Replicate #2	32.1	1.00
Replicate #3	32.4	1.00
Replicate #4	32.1	1.00

ND - Analyte not detected

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: SW

Reviewed By: Wly

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Lab ID: 0301W01688
Matrix: Water
Condition: Intact

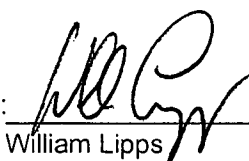
Date Reported: 05/02/01
Date Sampled: 04/09/01
Date Received: 04/11/01
Date Extracted: 04/16/01
Date Analyzed: 04/17/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

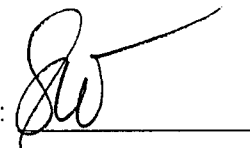
Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	88	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:


William Lipps

Analyst:



pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water
Condition: Intact

Date Reported: 05/04/01
Date Analyzed: 04/11/01
Date Sampled: 04/09/01
Date Received: 04/11/01

	Result	MDL
Replicate #1	7.3	0.1
Replicate #2	7.3	0.1
Replicate #3	7.3	0.1
Replicate #4	7.3	0.1

Comments:

Reported By: SW

Reviewed By: Wly

ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-14-4901
Laboratory ID: 0301W01688
Sample Matrix: Water
Condition: Intact

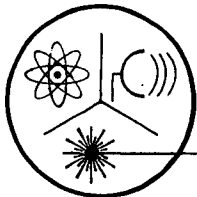
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Date Analyzed: 04/11/01
Date Sampled: 04/09/01
Date Received: 04/11/01

	Result	MDL
Replicate #1	2440	10
Replicate #2	2440	10
Replicate #3	2440	10
Replicate #4	2440	10

Comments:

Reported By: AW

Reviewed By: [Signature]



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

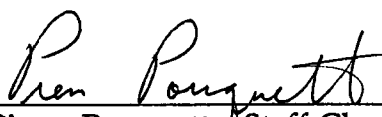
[480] 897-9459
FAX [480] 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 12, 2001
Samples Completed: May 1, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
WO1688	< 0.2	< 1.0	< 1.0


Pierre Pouquette Staff Chemist



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

QUALITY CONTROL / QUALITY ASSURANCE

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-109
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: NA
Date Analyzed: 04/19/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B VOLATILE ORGANIC COMPOUNDS BY GC/MS

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-109
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: NA
Date Analyzed: 04/19/01

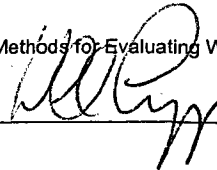
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

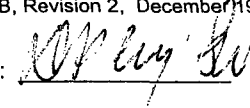
ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	109	86 - 118
1,2-Dichloroethane-d4	117	80 - 120
Toluene-d8	97	88 - 110
4-Bromofluorobenzene	79*	86 - 115

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

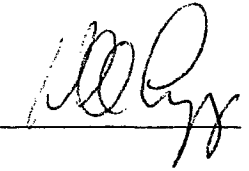
Date Reported: 04/26/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

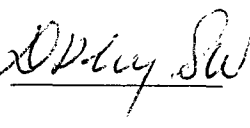
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

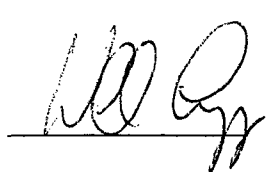
Date Reported: 04/26/01
Date Extracted: NA
Date Analyzed: 04/09/01

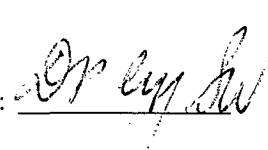
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/18/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

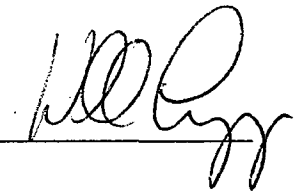
ND - Compound not detected at stated Detection Limit.

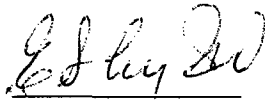
** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	27	21 - 100
Phenol-d6	20	10 - 94
Nitrobenzene-d5	45	35 - 114
2-Fluorobiphenyl	52	43 - 116
2,4,6-Tribromophenol	65	10 - 123
Terphenyl-d14	89	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-096
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

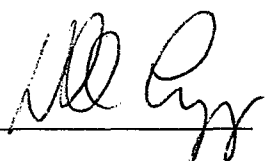
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	65	65	46	46	34
1,4-Dichlorobenzene	ND	100	59	59	41	41	36
2,4-Dinitrotoluene	ND	100	78	78	74	74	5
2-Chlorophenol	ND	200	115	58	89	44	26
4-Chloro-3-methylphenol	ND	200	126	63	101	50	22
4-Nitrophenol	ND	200	60	30	73	36	20
Acenaphthene	ND	100	75	75	62	62	20
N-Nitrosodi-n-propylamine	ND	100	75	75	57	57	28
Pentachlorophenol	ND	200	160	80	156	78	3
Phenol	ND	200	51	26	45	22	13
Pyrene	ND	100	73	73	71	71	3

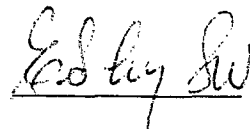
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	34	28	21 - 100
Phenol-d6	25	22	10 - 94
Nitrobenzene-d5	73	55	35 - 114
2-Fluorobiphenyl	72	56	43 - 116
2,4,6-Tribromophenol	90	90	10 - 123
Terphenyl-d14	82	79	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301W00707MS
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/06/01
Date Analyzed: 04/10/01

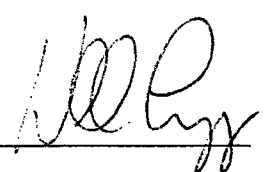
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	63	63
1,4-Dichlorobenzene	ND	100	58	58
2,4-Dinitrotoluene	ND	100	82	82
2-Chlorophenol	ND	200	120	60
4-Chloro-3-methylphenol	ND	200	132	66
4-Nitrophenol	ND	200	121	60
Acenaphthene	ND	100	78	78
N-Nitrosodi-n-propylamine	ND	100	66	66
Pentachlorophenol	ND	200	192	96
Phenol	ND	200	64	32
Pyrene	ND	100	72	72

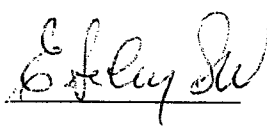
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	40	21 - 100
Phenol-d6	32	10 - 94
Nitrobenzene-d5	74	35 - 114
2-Fluorobiphenyl	71	43 - 116
2,4,6-Tribromophenol	92	10 - 123
Terphenyl-d14	81	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01688
Sample Matrix: Water

Date Reported: 05/04/01
Date Analyzed: 04/20/01
Date Received: 04/11/01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SL

Reviewed By: [Signature]

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Lab ID: 0301W01688
Sample Matrix: Water

Date Reported: 05/04/01
Date Analyzed: 04/20/01
Date Received: 04/11/01

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	23.3	58	41-82
Acenaphthylene	40.4	25.2	62	43-91
Acenaphthene	40.4	26.6	66	48-85
Fluorene	4.1	2.66	65	48-87
Phenanthrene	3.07	2.29	75	60-86
Fluoranthene	1.92	1.61	84	72-96
Pyrene	3.85	3.15	82	73-96
Benzo(a)pyrene	0.253	0.226	89	66-118
Benzo(g,h,i)perylene	0.553	0.487	88	79-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	86	54.5-116

Reference: SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.

Reported By: SL

Reviewed By: Wly

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-106
Sample Matrix: Water

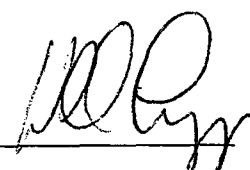
Date Reported: 04/26/01
Date Extracted: 04/16/01
Date Analyzed: 04/20/01

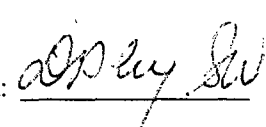
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	67	50 - 150
Decachlorobiphenyl	111	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By:

Analyst:

ETHYLENE DIBROMIDE BY GC/ECD
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-109
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/19/01
Date Analyzed: 04/19/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By: W. B. Lynn

Analyst: E. J. Lynn

**QUALITY CONTROL / QUALITY ASSURANCE
ETHYLENE DIBROMIDE BY GC/ECD**

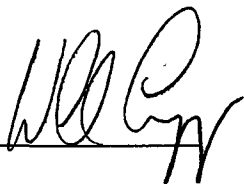
Client: **Giant Refining Co. - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **Matrix Spike**
Lab ID: **1301G00767MS**
Sample Matrix: **Water**

Date Reported: **04/26/01**
Date Sampled: **04/09/01**
Date Received: **04/11/01**
Date Extracted: **04/19/01**
Date Analyzed: **04/19/01**

Parameter	Result	Spike Added	Spike Result	Spike Recovery	Units
Method 504					
Ethylene Dibromide	ND	2.0	2.3	115%	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

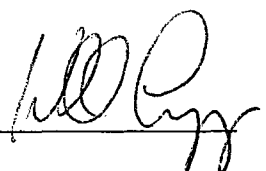
Sample ID: Method Blank
Laboratory ID: MB01-110A
Sample Matrix: Water

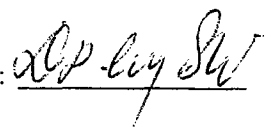
Date Reported: 04/26/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-110
Sample Matrix: Water

Date Reported: 04/26/01
Date Extracted: 04/20/01
Date Analyzed: 04/20/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	50	100	51	102	3

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

April 20, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on March 30, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

A handwritten signature in cursive script, appearing to read 'Sharon Williams', is written over the word 'Sincerely'.

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

OW-29
Case Narrative

On March 30, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

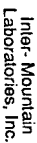
It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams

Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

Client/Project Name						Project Location		ANALYSES / PARAMETERS							
Sample: (Signature)						Chain of Custody Tape No.		Remarks							
Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers										
91-29-32801	3/28/01	1300	1515	Water	23	the attached sheet for parameters									
Relinquished by: (Signature) [Signature]						Date	Time	Received by: (Signature)				Date	Time		
Relinquished by: (Signature)						Date	Time	Received by: (Signature)				Date	Time		
Relinquished by: (Signature)						Date	Time	Received by Laboratory: (Signature)				Date	Time		

☐ 555 Absaraka
Sheridan Wyoming 82801
Telephone (307) 674-7506

☐ 1633 Terra Avenue
Sheridan, Wyoming 82801
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☒ 1701 Phillips Circle
Gillette, Wyoming 82701
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☒ 2506 West Main Street
Farmington, NM 87401
Telephone (505) 326-4737

☐ 11183 State Hwy. 30
College Station, TX 77845
Telephone (979) 776-8945

Inter-Mountain Laboratories, Inc.

89637

GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative		# of cont.
Full 8260 + MTBE		Hcl		2
Full 8270		None		2
TOC (4 replicates)		H2SO4		8
TOX (4 replicates)		H2SO4		1
CN		NaOH/Zn Acetate		1
(Unfiltered) Metals (Per WQCC)		HNO3		1
PCB		None		1
Phenols		H2SO4		2
Ra 226/228		None		1
8015 (DRO)		HCl		2
NO3/NO2		H2SO4		1
PAH (8310)		None		1
pH, cond. (4 replicates each)		None	*	1
Cat/Anion parameters		None	*	
TDS/TSS		None	*	
Alkalinity		None	*	
Chloride		None	*	
Fluoride		None	*	
Sulfate		None	*	
Phosphorous as P		None	*	
Bromide		None	*	
Calcium		None	*	
Potassium		None	*	
Magnesium		None	*	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-29-32801
 Lab ID: 0301W01515
 Matrix: Water
 Condition: Cool/Intact

Date Received: 03/30/01
 Date Reported: 04/20/01
 Date Sampled: 03/28/01
 Time Sampled: 1300

Parameter	Analytical		Analysis						
	Result	Units	Units	PQL	Method	Date	Time	Init.	
General Parameters									
PH	7.5	s.u.		0.1	EPA 150.1	03/30/01	1030	FP	
Electrical Conductivity	1,800	µmhos/cm		10	EPA 120.1	03/30/01	1030	FP	
Solids - Total Dissolved	1,040	mg/L		10	EPA 160.1	04/04/01	1400	AG	
Solids - Total Suspended	115	mg/L		2	EPA 160.2	03/30/01	1100	KA	
Alkalinity (CaCO3)	569	mg/L		1	EPA 310.1	04/03/01	1330	KA	
Cyanide (Total) - Colorimetric	<0.05	mg/L		0.05	SM 4500-CN E	04/08/01	1224	CM	
Hardness (CaCO3)	163	mg/L		1	EPA 200.7	04/02/01	1400	WL	
Phosphorus - Ortho-P	0.07	mg/L		0.02	EPA 365.3	03/30/01	1100	KA	
Total Phenolics	0.06	mg/L		0.01	EPA 420.1	04/12/01	0800	TH	
Major Anions									
Bicarbonate (HCO3)	694	mg/L	11.37	meq/L	1	EPA 310.1	04/03/01	1330	KA
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Chloride	124	mg/L	3.49	meq/L	1	EPA 300.0	04/04/01	2014	KA
Bromide (Br)	0.62	mg/L	0.01	meq/L	0.05	SM 4500Br-B	04/04/01	2014	KA
Fluoride	3.02	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/10/01	0800	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Nitrogen - Nitrate/Nitrite	0.75	mg/L	0.05	meq/L	0.05	EPA 353.2	04/05/01	1340	KA
Sulfate	133	mg/L	2.78	meq/L	5	EPA 300.0	04/04/01	2014	KA
Major Cations									
Calcium	47.1	mg/L	2.4	meq/L	0.2	EPA 200.7	04/02/01	1404	WL
Magnesium	10.9	mg/L	0.89	meq/L	0.2	EPA 200.7	04/02/01	1404	WL
Potassium	0.5	mg/L	0.01	meq/L	0.2	EPA 200.7	04/02/01	1404	WL
Sodium	337	mg/L	14.66	meq/L	0.2	EPA 200.7	04/02/01	1404	WL
Anion/Cation Balance QC Information									
Anion Sum			17.68	meq/L	N/A	N/A			
Cation Sum			17.92	meq/L	N/A	N/A			
Cation/Anion Balance			0.67	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By:

William Lipps

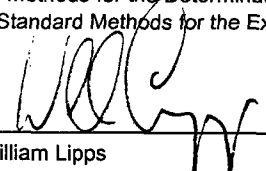
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-29-32801
Lab ID: 0301W01515
Matrix: Water
Condition: Cool/Intact

Date Received: 03/30/01
Date Reported: 04/19/01
Date Sampled: 03/28/01
Time Sampled: 1300

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	3.70	mg/L			0.05	EPA 200.7	04/04/01	1720	WL
Arsenic	<0.005	mg/L			0.005	SM 3114B	04/02/01	1630	JG
Barium	0.11	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Boron	0.43	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Cadmium	<0.005	mg/L			0.005	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Copper	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Iron	2.06	mg/L			0.02	EPA 200.7	04/04/01	1720	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.41	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Selenium	<0.005	mg/L			0.005	SM 3114B	04/05/01	1310	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1720	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/04/01	1720	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/04/01	1720	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

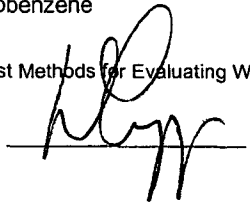
Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

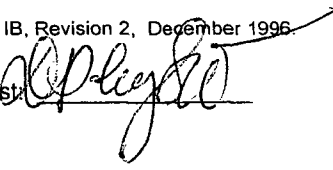
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	104	86 - 118
1,2-Dichloroethane-d4	98	80 - 120
Toluene-d8	102	88 - 110
4-Bromofluorobenzene	107	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Revised By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Benzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client: **Giant Refining Company**
 Project ID: Ciniza
 Sample ID: OW-29
 Laboratory ID: 0301W01515
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Sampled: 03/28/01
 Date Received: NG
 Date Extracted: 04/04/01
 Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	26	10 - 94
Nitrobenzene-d5	68	35 - 114
2-Fluorobiphenyl	68	43 - 116
2,4,6-Tribromophenol	83	10 - 123
Terphenyl-d14	80	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____

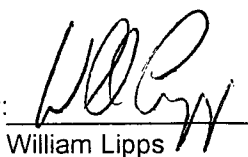
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-29-32801
Lab ID: 0301W01515
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/18/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/04/01
Date Analyzed: 04/11/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.6	0.6	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.5	0.5	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By:


William Lipps

Analyst:



**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/09/01

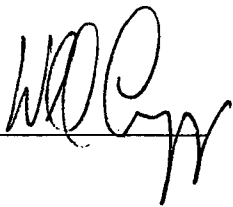
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

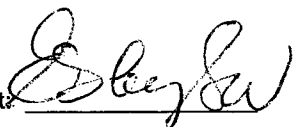
Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	61	50 - 150
Decachlorobiphenyl	84	50 - 150

ND - Compound not detected at stated Detection Limit.

B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD
Method 504

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-29
Lab ID: 0301W01515
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: _____



**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-29
Laboratory ID: 0301W01515
Sample Matrix: Water

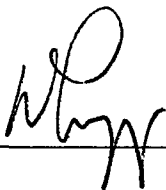
Date Reported: 04/17/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____



TOTAL ORGANIC CARBON

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-29-32801**
Laboratory ID: **0301W01515**
Sample Matrix: **Water**
Condition: **Intact**

Date Reported: **04/10/01**
Date Analyzed: **04/09/01**
Date Sampled: **03/28/01**
Date Received: **03/30/01**

	Result mg/L	MDL
Replicate #1	3.03	1.00
Replicate #2	3.02	1.00
Replicate #3	3.01	1.00
Replicate #4	3.06	1.00

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

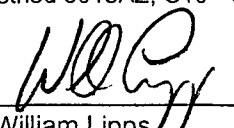
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-29-32801
Lab ID: 0301W01515
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/09/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

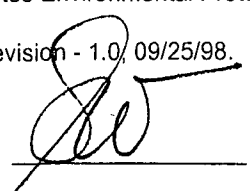
Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	90	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision - 1.0, 09/25/98.

Reviewed By: 

William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-29-32801
Laboratory ID: 0301W01515
Sample Matrix: Water
Condition: Intact

Date Reported: 04/19/01
Date Analyzed: 03/30/01
Date Sampled: 03/28/01
Date Received: 03/30/01

	Result	MDL
Replicate #1	7.5	0.1
Replicate #2	7.5	0.1
Replicate #3	7.5	0.1
Replicate #4	7.5	0.1

Comments:

Reported By: 

Reviewed By: 

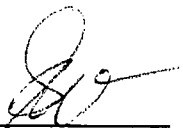
ELECTRICAL CONDUCTIVITY

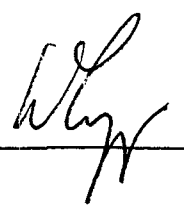
Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-29-32801
Laboratory ID: 0301W01515
Sample Matrix: Water
Condition: Intact

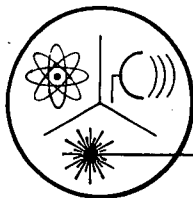
Date Reported: 04/19/01
Date Analyzed: 03/30/01
Date Sampled: 03/28/01
Date Received: 03/30/01

	Result	MDL
Replicate #1	1800	10
Replicate #2	1800	10
Replicate #3	1800	10
Replicate #4	1800	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

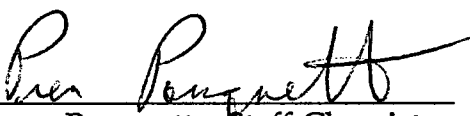
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 3, 2001
Samples Completed: April 11, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
1515	0.3 ± 0.1	< 0.4	0.3 ± 0.1


Pierre Pouquette, Staff Chemist



Phone (505) 326-4737 Fax (505) 325-4182

Inter-Mountain Laboratories, Inc.

2506 West Main Street, Farmington, NM 87401

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/30/01

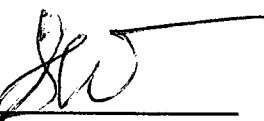
Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

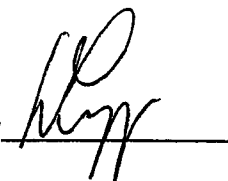
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/30/01

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.48	<0.05	0.50	96%
Arsenic	0.011	<0.005	0.010	107%
Barium	0.96	<0.01	1.00	96%
Boron	0.10	<0.01	0.10	101%
Cadmium	0.003	<0.001	0.003	101%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	98%
Copper	0.11	<0.01	0.10	105%
Iron	0.51	<0.02	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.50	<0.01	0.50	100%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.10	<0.01	0.10	104%
Nickel	0.10	<0.01	0.10	99%
Selenium	0.035	0.025	0.010	105%
Silver	0.10	<0.01	0.10	97%
Uranium	0.5	<0.1	0.5	103%
Zinc	0.099	<0.025	0.100	99%

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Sample Matrix: **Water**

Date Reported: **04/12/01**
Date Analyzed: **04/10/01**
Date Received: **03/30/01**

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	0.234	0.250	94%	mg/L
Arsenic	0.042	0.040	104%	mg/L
Barium	1.79	2.00	90%	mg/L
Boron	1.07	1.00	107%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.90	2.00	95%	mg/L
Cobalt	1.88	2.00	94%	mg/L
Copper	1.84	2.00	92%	mg/L
Iron	1.87	2.00	94%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.84	2.00	92%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.87	2.00	94%	mg/L
Selenium	0.020	0.020	102%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.81	2.00	91%	mg/L
Zinc	1.88	2.00	94%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

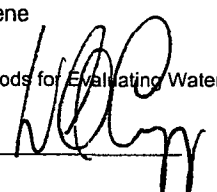
Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/10/01

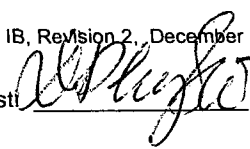
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: V3BSD01-099
Sample Matrix: Water

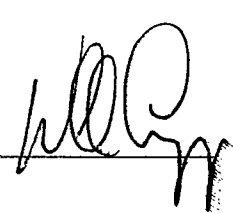
Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____

Analyst: _____

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	310	20	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

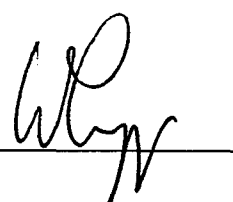
*** - Laboratory Contaminant

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	68	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	81	10 - 123
Terphenyl-d14	133	33 - 141

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

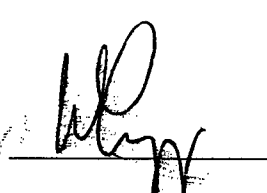
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	64	64	56	56	13
1,4-Dichlorobenzene	ND	100	80	80	67	67	17
2,4-Dinitrotoluene	ND	100	78	78	77	77	1
2-Chlorophenol	ND	200	119	59	104	52	13
4-Chloro-3-methylphenol	ND	200	132	66	127	63	4
4-Nitrophenol	ND	200	64	32	70	35	10
Acenaphthene	ND	100	71	71	70	70	1
N-Nitrosodi-n-propylamine	ND	100	74	74	67	67	10
Pentachlorophenol	ND	200	163	81	167	84	3
Phenol	ND	200	61	31	54	27	12
Pyrene	ND	100	72	72	71	71	2

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	41	34	21 - 100
Phenol-d6	31	27	10 - 94
Nitrobenzene-d5	76	65	35 - 114
2-Fluorobiphenyl	70	67	43 - 116
2,4,6-Tribromophenol	92	92	10 - 123
Terphenyl-d14	81	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 0301W01493MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	64	64
1,4-Dichlorobenzene	ND	100	76	76
2,4-Dinitrotoluene	ND	100	75	75
2-Chlorophenol	ND	200	109	55
4-Chloro-3-methylphenol	ND	200	123	61
4-Nitrophenol	ND	200	65	32
Acenaphthene	ND	100	69	69
N-Nitrosodi-n-propylamine	ND	100	65	65
Pentachlorophenol	ND	200	168	84
Phenol	ND	200	52	26
Pyrene	ND	100	70	70

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: _____

Analyst: _____

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01515**
Sample Matrix: **Water**

Date Reported: **04/18/01**
Date Analyzed: **04/11/01**
Date Received: **03/30/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons Spike Analysis

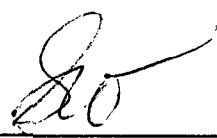
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01515**
Sample Matrix: **Water**

Date Reported: **04/19/01**
Date Analyzed: **04/11/01**
Date Received: **03/30/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	26.0	64.3	44-79
Acenaphthylene	40.4	27.1	67.1	48-88
Acenaphthene	40.4	28.0	69.3	51-86
Fluorene	4.1	2.73	66.6	55-92
Phenanthrene	3.07	2.31	75.2	70-96
Fluoranthene	1.92	1.58	82	76-101
Pyrene	3.850	3.213	83.5	77-101
Benzo(a)pyrene	0.253	0.260	103	67-127
Benzo(g,h,i)perylene	0.553	0.525	94.9	80-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	80	54.5-116

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

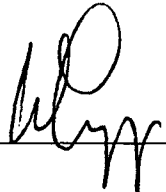
Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	58	50 - 150
Decachlorobiphenyl	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

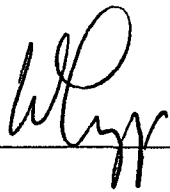
Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	56	50 - 150
Decachlorobiphenyl	101	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Reviewed By: _____

Analyst: _____

ETHYLENE DIBROMIDE BY GC/ECD

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Reviewed By:

Analyst:

ETHYLENE DIBROMIDE BY GC/ECD

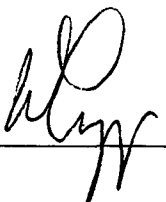
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	109	2.2	112	3

ND - Compound not detected at stated Detection Limit.

Reviewed By: 

Analyst: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-102A
Sample Matrix: Water

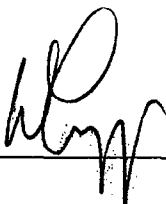
Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____



EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-102
Sample Matrix: Water

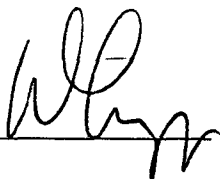
Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B							
Total Organic Halides (TOX)	ND	50	56	112	55	110	2

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____





Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

April 20, 2001

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the reports for the sample received by our laboratory for analysis on March 30, 2001.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Thank you for choosing IML for your analytical needs!

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File



GIANT REFINING COMPANY CINIZA

OW-30

Case Narrative

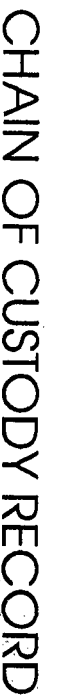
On March 30, 2001, one water sample was submitted to Inter-Mountain Laboratories - Farmington for analysis. The parameters performed on the samples are indicated on the accompanying Chain of Custody.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported herein are found in: EPA: "Methods for Chemical Analysis of Water and Wastes (MCAWW)" – EPA/600/4-79-020 – March 1983, EPA – "Methods for the Determination of Metals in Environmental Samples", Supplement I – 600/R-94-111 – May, 1994, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995, SM – "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.

Quality control data appear at the end of the analytical report and may be identified by title. If there are any questions regarding the information presented in this report package, please feel free to contact us at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington



CHAIN OF CUSTODY RECORD

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GIANT/CINIZA - WELL SAMPLE PARAMETERS

3/27/01

Parameters		Preservative	# of cont.
Full 8260 + MTBE		Hcl	2
Full 8270		None	2
TOC (4 replicates)		H2SO4	8
TOX (4 replicates)		H2SO4	1
CN		NaOH/Zn Acetate	1
(Unfiltered) Metals (Per WQCC)		HNO3	1
PCB		None	1
Phenols		H2SO4	2
Ra 226/228		None	1
8015 (DRO)		HCl	2
NO3/NO2		H2SO4	1
PAH (8310)		None	1
pH, cond. (4 replicates each)		None *	1
Cat/Anion parameters		None *	
TDS/TSS		None *	
Alkalinity		None *	
Chloride		None *	
Fluoride		None *	
Sulfate		None *	
Phosphorous as P		None *	
Bromide		None *	
Calcium		None *	
Potassium		None *	
Magnesium		None *	

* = All from unpreserved bottles

note: all sample water is nonchlorinated

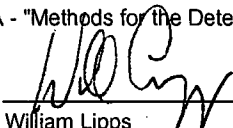
Client: Giant Refining Co. (Gallup)
 Project: Spring 2001 Groundwater
 Sample ID: OW-30-32801
 Lab ID: 0301W01516
 Matrix: Water
 Condition: Cool/Intact

Date Received: 03/30/01
 Date Reported: 04/20/01
 Date Sampled: 03/28/01
 Time Sampled: 1445

Parameter	Analytical						Analysis		
	Result	Units		Units	PQL	Method	Date	Time	Init.
General Parameters									
PH	7.4	s.u.			0.1	EPA 150.1	03/30/01	1030	FP
Electrical Conductivity	1,870	s.u.			0.1	EPA 150.1	03/30/01	1030	FP
Solids - Total Dissolved	1,060	mg/L			10	EPA 160.1	04/04/01	1400	AG
Solids - Total Suspended	3	mg/L			2	EPA 160.2	03/30/01	1100	KA
Alkalinity (CaCO3)	588	mg/L			1	EPA 310.1	04/03/01	1330	KA
Cyanide (Total) - Colorimetric	<0.05	mg/L			0.05	SM 4500-CN E	04/08/01	1225	CM
Hardness (CaCO3)	204	mg/L			1	EPA 200.7	04/02/01	1400	WL
Phosphorus - Ortho-P	0.05	mg/L			0.02	EPA 365.3	03/30/01	1100	KA
Total Phenolics	0.16	mg/L			0.01	EPA 420.1	04/12/01	0800	TH
Major Anions									
Bicarbonate (HCO3)	717	mg/L	11.76	meq/L	1	EPA 310.1	04/03/01	1330	KA
Carbonate (CO3)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Chloride	175	mg/L	4.94	meq/L	1	EPA 300.0	04/04/01	2014	KA
Bromide (Br)	<0.05	mg/L	<0.01	meq/L	0.05	SM 4500Br-B	04/04/01	2014	KA
Fluoride	<0.05	mg/L	<0.01	meq/L	0.05	EPA 300.0	04/04/01	0800	KA
Hydroxide (OH)	<1	mg/L	<0.01	meq/L	1	EPA 310.1	04/03/01	1330	KA
Nitrogen - Nitrate/Nitrite	0.80	mg/L	0.06	meq/L	0.05	EPA 353.2	04/05/01	1340	KA
Sulfate	81	mg/L	1.68	meq/L	5	EPA 300.0	04/04/01	2014	KA
Major Cations									
Calcium	59.0	mg/L	2.9	meq/L	0.2	EPA 200.7	04/02/01	1407	WL
Magnesium	13.7	mg/L	1.13	meq/L	0.2	EPA 200.7	04/02/01	1407	WL
Potassium	0.2	mg/L	0.01	meq/L	0.2	EPA 200.7	04/02/01	1407	WL
Sodium	349	mg/L	15.16	meq/L	0.2	EPA 200.7	04/02/01	1407	WL
Anion/Cation Balance QC Information									
Anion Sum			18.44	meq/L	N/A	N/A			
Cation Sum			19.24	meq/L	N/A	N/A			
Cation/Anion Balance			2.12	%	N/A	N/A			

Reference: EPA - "Methods for Chemical Analysis of Water and Wastes (MCAWW)" - EPA/600/4-79-020 - March, 1983.
 SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 18th Edition, 1992.
 EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.

Reviewed By:


 William Lipps

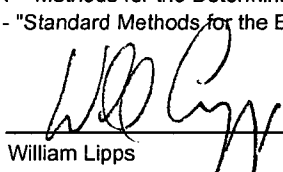
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-30-32801
Lab ID: 0301W01516
Matrix: Water
Condition: Cool/Intact

Date Received: 03/30/01
Date Reported: 04/20/01
Date Sampled: 03/28/01
Time Sampled: 1445

Parameter	Analytical		Units	Units	PQL	Method	Analysis		
	Result						Date	Time	Init.
Total Metals									
Aluminum	0.11	mg/L			0.05	EPA 200.7	04/04/01	1723	WL
Arsenic	<0.005	mg/L			0.005	SM 3114B	04/02/01	1630	JG
Barium	0.06	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Boron	0.46	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Cadmium	<0.001	mg/L			0.001	EPA 200.9	04/09/01	0825	SW
Chromium	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Cobalt	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Copper	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Iron	0.12	mg/L			0.02	EPA 200.7	04/04/01	1723	WL
Lead	<0.005	mg/L			0.005	EPA 200.9	04/10/01	0739	SW
Manganese	0.03	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Mercury	<0.001	mg/L			0.001	EPA 245.1	04/10/01	1130	JG
Molybdenum	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Nickel	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Selenium	<0.005	mg/L			0.005	SM 3114B	04/05/01	1310	JG
Silver	<0.01	mg/L			0.01	EPA 200.7	04/04/01	1723	WL
Uranium	<0.3	mg/L			0.3	EPA 200.7	04/04/01	1723	WL
Zinc	<0.025	mg/L			0.025	EPA 200.7	04/04/01	1723	WL

Reference: EPA - "Methods for the Determination of Metals in Environmental Samples" - Supplement I - 600/R-94-111 - May, 1994.
SM - "Standard Methods for the Examination of Water and Wastewater", APHA-AWWA-WEF, 19th Edition, 1995.

Reviewed By:


William Lipps

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

**EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

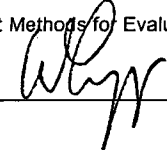
Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: NA
Date Analyzed: 04/10/01

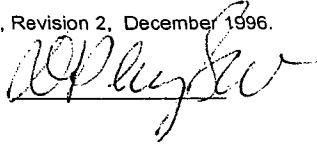
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	105	86 - 118
1,2-Dichloroethane-d4	99	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnapthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate	ND	10	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/06/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	34	21 - 100
Phenol-d6	26	10 - 94
Nitrobenzene-d5	61	35 - 114
2-Fluorobiphenyl	66	43 - 116
2,4,6-Tribromophenol	94	10 - 123
Terphenyl-d14	82	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____

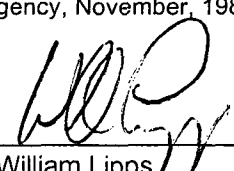
Analyst: _____

Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-30-32801
Lab ID: 0301W01516
Matrix: Water
Condition: Cool/Intact

Date Reported: 04/18/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/04/01
Date Analyzed: 04/11/01

Parameter	Analytical Result	PQL	Units
POLYNUCLEAR AROMATIC HYDROCARBONS			
Acenaphthene	<2.5	2.5	µg/L
Acenaphthylene	<2.5	2.5	µg/L
Anthracene	<0.6	0.6	µg/L
Benzo(a)anthracene	<0.02	0.02	µg/L
Benzo(b)fluoranthene	<0.05	0.05	µg/L
Benzo(a)pyrene	<0.02	0.02	µg/L
Benzo(g,h,i)perylene	<0.03	0.03	µg/L
Benzo(k)fluoranthene	<0.02	0.02	µg/L
Chrysene	<0.2	0.2	µg/L
Dibenz(a,h)anthracene	<0.04	0.04	µg/L
Fluoranthene	<0.3	0.3	µg/L
Fluorene	<0.5	0.5	µg/L
Indeno(1,2,3-cd)pyrene	<0.08	0.08	µg/L
2-Methylnaphthalene	<2.5	2.5	µg/L
Naphthalene	<2.5	2.5	µg/L
Phenanthrene	<0.6	0.6	µg/L
Pyrene	<0.3	0.3	µg/L

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.

Reviewed By: 

William Lipps

Analyst: 

**EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC**

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/04/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	48*	50 - 150
Decachlorobiphenyl	86	50 - 150

* - Out of Limits

ND - Compound not detected at stated Detection Limit.

B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: W. R. Cyp

Analyst: E. S. Bay Jr

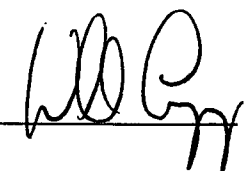
**ETHYLENE DIBROMIDE BY GC/ECD
METHOD 504**

Client: **Giant Refining Co. - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-30
Lab ID: 0301W01516
Sample Matrix: Water

Date Reported: 04/16/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	ug/L

ND - Compound Not Detected At Stated Detection Limit.

Reviewed By: 

**EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)**

Client: **Giant Refining Company**
Project ID: Ciniza
Sample ID: OW-30
Laboratory ID: 0301W01516
Sample Matrix: Water

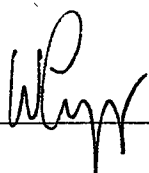
Date Reported: 04/17/01
Date Sampled: 03/28/01
Date Received: NG
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Replicate	Analytical Result	PQL	Units
9020B				
Total Organic Halides (TOX)	1	ND	40	µg/L
Total Organic Halides (TOX)	2	ND	40	µg/L
Total Organic Halides (TOX)	3	ND	40	µg/L
Total Organic Halides (TOX)	4	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reviewed By: _____



TOTAL ORGANIC CARBON

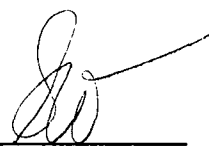
Client: **Giant Refining - Ciniza**
Project: **Spring 2001 Groundwater**
Sample ID: **OW-30-32801**
Laboratory ID: **0301W01516**
Sample Matrix: **Water**
Condition: **Intact**

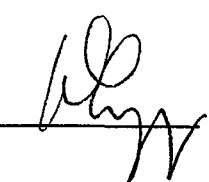
Date Reported: **04/10/01**
Date Analyzed: **04/09/01**
Date Sampled: **03/28/01**
Date Received: **03/30/01**

	Result mg/L	MDL
Replicate #1	5.23	1.00
Replicate #2	5.21	1.00
Replicate #3	5.20	1.00
Replicate #4	5.15	1.00

References: Method 415.1: TOTAL ORGANIC CARBON (TOC). Test Methods For Evaluating Waste and Solid Wastes, SW-846, USEPA, 3rd Edition, Final Update II, September, 1994

Comments:

Reported By: 

Reviewed By: 

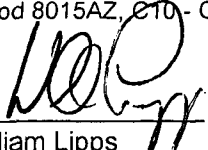
Client: Giant Refining Co. (Gallup)
Project: Spring 2001 Groundwater
Sample ID: OW-30-32801
Lab ID: 0301W01516
Matrix: Water
Condition: Cool/Intact

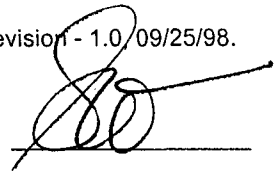
Date Reported: 04/09/01
Date Sampled: 03/28/01
Date Received: 03/30/01
Date Extracted: 04/09/01
Date Analyzed: 04/09/01

Parameter	Analytical Result	PQL	Units
DRO - Method 8015			
Diesel Range Organics (C10 - C22)	<30	30	mg/L
Oil Range Organics (C22 - C32)	<30	30	mg/L

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	89	70 - 130

Reference: SW-846 - "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", United States Environmental Protection Agency, November, 1986.
Method 8015AZ, C10 - C32 Hydrocarbons in Soil, Arizona Department of Health Services, Revision 1 - 1.0/09/25/98.

Reviewed By: 
William Lipps

Analyst: 

pH

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-30-32801
Laboratory ID: 0301W01516
Sample Matrix: Water
Condition: Intact

Date Reported: 04/19/01
Date Analyzed: 03/30/01
Date Sampled: 03/28/01
Date Received: 03/30/01

	Result	MDL
Replicate #1	7.4	0.1
Replicate #2	7.4	0.1
Replicate #3	7.4	0.1
Replicate #4	7.4	0.1

Comments:

Reported By: 

Reviewed By: 

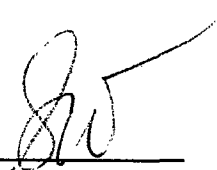
ELECTRICAL CONDUCTIVITY

Client: **Giant Refining - Ciniza**
Project: Spring 2001 Groundwater
Sample ID: OW-30-32801
Laboratory ID: 0301W01516
Sample Matrix: Water
Condition: Intact

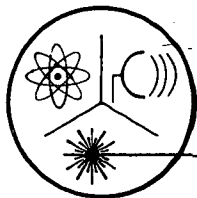
Date Reported: 04/19/01
Date Analyzed: 03/30/01
Date Sampled: 03/28/01
Date Received: 03/30/01

	Result	MDL
Replicate #1	1870	10
Replicate #2	1870	10
Replicate #3	1870	10
Replicate #4	1870	10

Comments:

Reported By: 

Reviewed By: 



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

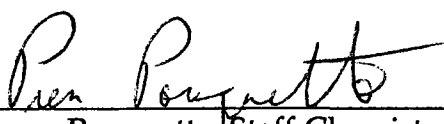
(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Inter-Mountain Laboratories
2506 West Main Street
Farmington, NM 87401

Samples Received: April 3, 2001
Samples Completed: April 11, 2001

Sample ID	Radium 226 Activity method 903.1	Radium 228 Activity method 904	Total Radium Activity
1516	< 0.4	< 0.4	< 0.4


Pierre Pouquette, Staff Chemist



Inter-Mountain Laboratories, Inc.

Phone (505) 326-4737 Fax (505) 325-4182

2506 West Main Street, Farmington, NM 87401

QUALITY CONTROL / QUALITY ASSURANCE

QUALITY CONTROL / QUALITY ASSURANCE

Blank Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/30/01

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Aluminum	ND	0.05	mg/L
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Boron	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Chromium	ND	0.01	mg/L
Cobalt	ND	0.01	mg/L
Copper	ND	0.01	mg/L
Iron	ND	0.02	mg/L
Lead	ND	0.005	mg/L
Manganese	ND	0.01	mg/L
Mercury	ND	0.001	mg/L
Molybdenum	ND	0.01	mg/L
Nickel	ND	0.01	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L
Uranium	ND	0.1	mg/L
Zinc	ND	0.025	mg/L

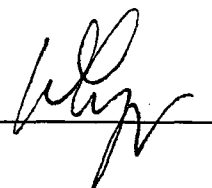
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Spike Analysis TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/30/01

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Aluminum	0.48	<0.05	0.50	96%
Arsenic	0.011	<0.005	0.010	107%
Barium	0.96	<0.01	1.00	96%
Boron	0.10	<0.01	0.10	101%
Cadmium	0.003	<0.001	0.003	101%
Chromium	0.10	<0.01	0.10	101%
Cobalt	0.10	<0.01	0.10	98%
Copper	0.11	<0.01	0.10	105%
Iron	0.51	<0.02	0.50	101%
Lead	0.025	<0.005	0.025	102%
Manganese	0.50	<0.01	0.50	100%
Mercury	0.002	<0.001	0.002	100%
Molybdenum	0.10	<0.01	0.10	104%
Nickel	0.10	<0.01	0.10	99%
Selenium	0.035	0.025	0.010	105%
Silver	0.10	<0.01	0.10	97%
Uranium	0.5	<0.1	0.5	103%
Zinc	0.099	<0.025	0.100	99%

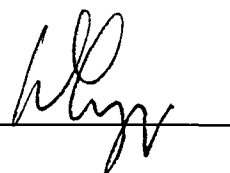
References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



QUALITY CONTROL / QUALITY ASSURANCE

Known Analysis

TOTAL METALS

Client: Giant Refining - Ciniza
Project: Spring 2001 GW
Sample Matrix: Water

Date Reported: 04/12/01
Date Analyzed: 04/10/01
Date Received: 03/30/01

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Aluminum	0.234	0.250	94%	mg/L
Arsenic	0.042	0.040	104%	mg/L
Barium	1.79	2.00	90%	mg/L
Boron	1.07	1.00	107%	mg/L
Cadmium	0.005	0.005	100%	mg/L
Chromium	1.90	2.00	95%	mg/L
Cobalt	1.88	2.00	94%	mg/L
Copper	1.84	2.00	92%	mg/L
Iron	1.87	2.00	94%	mg/L
Lead	0.050	0.050	100%	mg/L
Manganese	1.84	2.00	92%	mg/L
Mercury	0.003	0.003	107%	mg/L
Molybdenum	1.96	2.00	98%	mg/L
Nickel	1.87	2.00	94%	mg/L
Selenium	0.020	0.020	102%	mg/L
Silver	0.23	0.25	92%	mg/L
Uranium	1.81	2.00	91%	mg/L
Zinc	1.88	2.00	94%	mg/L

References: Method 6010: Acid Digestion for Water and Waste Water,
SW-846, Rev. 1, July 1992.

Comments:

Reported by



Reviewed by



EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/10/01

Parameter	Analytical Result	MDL	Units
1,1,1,2-Tetrachloroethane	ND	5	µg/L
1,1,1-Trichloroethane	ND	5	µg/L
1,1,2,2-Tetrachloroethane	ND	5	µg/L
1,1,2-Trichloroethane	ND	5	µg/L
1,1-Dichloroethane	ND	5	µg/L
1,1-Dichloroethene	ND	5	µg/L
1,1-Dichloropropene	ND	5	µg/L
1,2,3-Trichlorobenzene	ND	5	µg/L
1,2,4-Trichlorobenzene	ND	5	µg/L
1,2,4-Trimethylbenzene	ND	5	µg/L
1,2-Dibromo-3-chloropropane	ND	5	µg/L
1,2-Dibromoethane	ND	5	µg/L
1,2-Dichlorobenzene	ND	5	µg/L
1,2-Dichloroethane	ND	5	µg/L
1,2-Dichloropropane	ND	5	µg/L
1,3,5-Trimethylbenzene	ND	5	µg/L
1,3-Dichlorobenzene	ND	5	µg/L
1,3-Dichloropropane	ND	5	µg/L
1,4-Dichlorobenzene	ND	5	µg/L
1,4-Dioxane	ND	1000	µg/L
2,2-Dichloropropane	ND	5	µg/L
2-Butanone (MEK)	ND	20	µg/L
2-Chloroethylvinyl ether	ND	20	µg/L
2-Chlorotoluene	ND	5	µg/L
2-Hexanone	ND	20	µg/L
4-Chlorotoluene	ND	5	µg/L
4-Isopropyltoluene	ND	5	µg/L
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L
Acetone	ND	50	µg/L
Benzene	ND	5	µg/L
Bromobenzene	ND	5	µg/L
Bromochloromethane	ND	5	µg/L
Bromodichloromethane	ND	5	µg/L
Bromoform	ND	5	µg/L
Bromomethane	ND	5	µg/L
Carbon Disulfide	ND	5	µg/L
Carbon Tetrachloride	ND	5	µg/L

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: V3MB01-100
Sample Matrix: Water

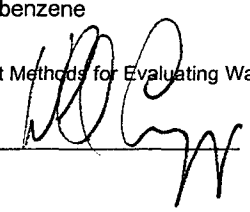
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Date Extracted: NA
Date Analyzed: 04/10/01

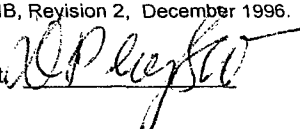
Parameter	Analytical Result	MDL	Units
Chlorobenzene	ND	5	µg/L
Chloroethane	ND	5	µg/L
Chloroform	ND	5	µg/L
Chloromethane	ND	5	µg/L
cis-1,2-Dichloroethene	ND	5	µg/L
cis-1,3-Dichloropropene	ND	5	µg/L
Dibromochloromethane	ND	5	µg/L
Dibromomethane	ND	5	µg/L
Dichlorodifluoromethane	ND	5	µg/L
Ethylbenzene	ND	5	µg/L
Hexachlorobutadiene	ND	5	µg/L
Isopropylbenzene	ND	5	µg/L
m,p-Xylene	ND	5	µg/L
Methylene Chloride	ND	20	µg/L
MTBE	ND	5	µg/L
n-Butylbenzene	ND	5	µg/L
n-Propylbenzene	ND	5	µg/L
Naphthalene	ND	5	µg/L
o-Xylene	ND	5	µg/L
sec-Butylbenzene	ND	5	µg/L
Styrene	ND	5	µg/L
tert-Butylbenzene	ND	5	µg/L
Tetrachloroethene (PCE)	ND	5	µg/L
Toluene	ND	5	µg/L
trans-1,2-Dichloroethene	ND	5	µg/L
trans-1,3-Dichloropropene	ND	5	µg/L
trans-1,4-Dichloro-2-butene	ND	5	µg/L
Trichloroethene (TCE)	ND	5	µg/L
Trichlorofluoromethane	ND	5	µg/L
Vinyl Acetate	ND	5	µg/L
Vinyl Chloride	ND	1	µg/L

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	102	86 - 118
1,2-Dichloroethane-d4	91	80 - 120
Toluene-d8	99	88 - 110
4-Bromofluorobenzene	105	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Revised By: 

Analyst: 

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
 Blank Spike/Duplicate Analysis

Sample ID: Blank Spike Duplicate
 Laboratory ID: V3BSD01-099
 Sample Matrix: Water

Date Reported: 04/16/01
 Date Extracted: NA
 Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,1-Dichloroethene	ND	50	50	100	55	111	10
Benzene	ND	50	50	100	54	108	7
Chlorobenzene	ND	50	51	102	55	111	8
Toluene	ND	50	51	101	53	107	5
Trichloroethene (TCE)	ND	50	51	101	55	109	7

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Dup %	Water QC Limits
Dibromofluoromethane	103	108	86 - 118
1,2-Dichloroethane-d4	103	108	80 - 120
Toluene-d8	98	96	88 - 110
4-Bromofluorobenzene	103	101	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Reviewed By: _____

Analyst: _____

EPA METHOD 8260B
VOLATILE ORGANIC COMPOUNDS BY GC/MS
Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 1301G00733MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: NA
Date Analyzed: 04/09/01

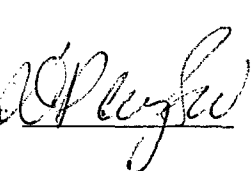
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,1-Dichloroethene	ND	50	58	115
Benzene	ND	50	55	111
Chlorobenzene	ND	50	57	114
Toluene	ND	50	54	109
Trichloroethene (TCE)	ND	50	53	107

ND - Compound not detected at stated Detection Limit.

Surrogate Recovery	%	Water QC Limits
Dibromofluoromethane	110	86 - 118
1,2-Dichloroethane-d4	110	80 - 120
Toluene-d8	95	88 - 110
4-Bromofluorobenzene	99	86 - 115

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume 1B, Revision 2, December 1996.

Received By: 

Analyst: 

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
1,2,4-Trichlorobenzene	ND	10	µg/L
1,2-Dichlorobenzene	ND	10	µg/L
1,3-Dichlorobenzene	ND	10	µg/L
1,4-Dichlorobenzene	ND	30	µg/L
1-Methylnaphthalene	ND	10	µg/L
2,4,5-Trichlorophenol	ND	10	µg/L
2,4,6-Trichlorophenol	ND	10	µg/L
2,4-Dichlorophenol	ND	10	µg/L
2,4-Dimethylphenol	ND	10	µg/L
2,4-Dinitrophenol	ND	50	µg/L
2,4-Dinitrotoluene	ND	10	µg/L
2,6-Dinitrotoluene	ND	10	µg/L
2-Chloronaphthalene	ND	10	µg/L
2-Chlorophenol	ND	10	µg/L
2-Methylnaphthalene	ND	10	µg/L
2-Methylphenol	ND	10	µg/L
2-Nitroaniline	ND	50	µg/L
2-Nitrophenol	ND	10	µg/L
3,3'-Dichlorobenzidine	ND	20	µg/L
4,6-Dinitro-2-methylphenol	ND	50	µg/L
4-Bromophenyl-phenylether	ND	10	µg/L
4-Chloro-3-methylphenol	ND	20	µg/L
4-Chloroaniline	ND	20	µg/L
4-Chlorophenyl-phenylether	ND	10	µg/L
4-Methylphenol/3-Methylphenol **	ND	10	µg/L
4-Nitroaniline	ND	20	µg/L
4-Nitrophenol	ND	50	µg/L
6-Methylchrysene	ND	10	µg/L
7,12-Dimethylbenz(a)anthracene	ND	10	µg/L
Acenaphthene	ND	10	µg/L
Acenaphthylene	ND	10	µg/L
Aniline	ND	10	µg/L
Anthracene	ND	10	µg/L
Azobenzene	ND	10	µg/L
Benzidine	ND	10	µg/L
Benzo(a)anthracene	ND	10	µg/L

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Benzo(a)pyrene	ND	10	µg/L
Benzo(b)fluoranthene	ND	10	µg/L
Benzo(g,h,i)perylene	ND	10	µg/L
Benzo(j)fluoranthene	ND	10	µg/L
Benzo(k)fluoranthene	ND	10	µg/L
Benzoic Acid	ND	50	µg/L
Benzyl Alcohol	ND	20	µg/L
bis(2-Chloroethoxy)methane	ND	10	µg/L
bis(2-Chloroethyl)ether	ND	10	µg/L
bis(2-Chloroisopropyl)ether	ND	10	µg/L
bis(2-Ethylhexyl)phthalate***	310	20	µg/L
Butylbenzylphthalate	ND	10	µg/L
Chrysene	ND	10	µg/L
Di-n-Butylphthalate	ND	10	µg/L
Di-n-Octylphthalate	ND	10	µg/L
Dibenz(a,h)anthracene	ND	10	µg/L
Dibenz(a,j)acridine	ND	10	µg/L
Dibenzofuran	ND	10	µg/L
Diethylphthalate	ND	20	µg/L
Dimethylphthalate	ND	40	µg/L
Fluoranthene	ND	10	µg/L
Fluorene	ND	10	µg/L
Hexachlorobenzene	ND	10	µg/L
Hexachlorobutadiene	ND	10	µg/L
Hexachlorocyclopentadiene	ND	10	µg/L
Hexachloroethane	ND	10	µg/L
Indene	ND	10	µg/L
Indeno(1,2,3-cd)pyrene	ND	10	µg/L
Isophorone	ND	10	µg/L
N-Nitrosodi-n-propylamine	ND	10	µg/L
N-Nitrosodiphenylamine	ND	10	µg/L
Naphthalene	ND	10	µg/L
Nitrobenzene	ND	10	µg/L
Pentachlorophenol	ND	50	µg/L

EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/10/01

Parameter	Analytical Result	Detection Limit	Units
Phenanthrene	ND	10	µg/L
Phenol	ND	10	µg/L
Pyrene	ND	10	µg/L
Pyridine	ND	10	µg/L
Quinoline	ND	10	µg/L
Total Cresols	ND	10	µg/L

ND - Compound not detected at stated Detection Limit.

** - Compounds Coelute

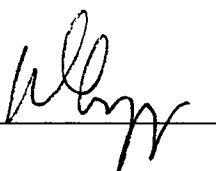
*** - Laboratory Contaminant

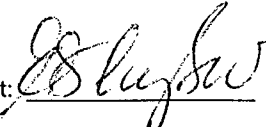
QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	39	21 - 100
Phenol-d6	27	10 - 94
Nitrobenzene-d5	68	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	81	10 - 123
Terphenyl-d14	133	33 - 141

* - Out of Limits

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Blank Spike/Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

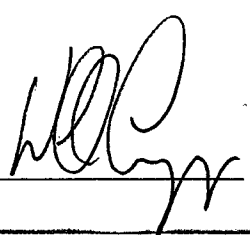
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
1,2,4-Trichlorobenzene	ND	100	64	64	56	56	13
1,4-Dichlorobenzene	ND	100	80	80	67	67	17
2,4-Dinitrotoluene	ND	100	78	78	77	77	1
2-Chlorophenol	ND	200	119	59	104	52	13
4-Chloro-3-methylphenol	ND	200	132	66	127	63	4
4-Nitrophenol	ND	200	64	32	70	35	10
Acenaphthene	ND	100	71	71	70	70	1
N-Nitrosodi-n-propylamine	ND	100	74	74	67	67	10
Pentachlorophenol	ND	200	163	81	167	84	3
Phenol	ND	200	61	31	54	27	12
Pyrene	ND	100	72	72	71	71	2

ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Dup %	Water QC Limits
2-Fluorophenol	41	34	21 - 100
Phenol-d6	31	27	10 - 94
Nitrobenzene-d5	76	65	35 - 114
2-Fluorobiphenyl	70	67	43 - 116
2,4,6-Tribromophenol	92	92	10 - 123
Terphenyl-d14	81	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

**EPA METHOD 8270B
GC/MS SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES**

Matrix Spike Analysis

Sample ID: Matrix Spike
Laboratory ID: 0301W01493MS
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/06/01

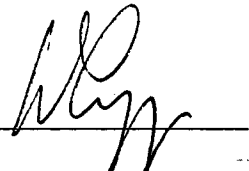
Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %
1,2,4-Trichlorobenzene	ND	100	64	64
1,4-Dichlorobenzene	ND	100	76	76
2,4-Dinitrotoluene	ND	100	75	75
2-Chlorophenol	ND	200	109	55
4-Chloro-3-methylphenol	ND	200	123	61
4-Nitrophenol	ND	200	65	32
Acenaphthene	ND	100	69	69
N-Nitrosodi-n-propylamine	ND	100	65	65
Pentachlorophenol	ND	200	168	84
Phenol	ND	200	52	26
Pyrene	ND	100	70	70

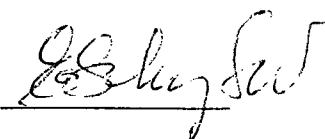
ND - Compound not detected at stated Detection Limit.

QUALITY CONTROL:

Surrogate Recoveries	%	Water QC Limits
2-Fluorophenol	35	21 - 100
Phenol-d6	25	10 - 94
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	69	43 - 116
2,4,6-Tribromophenol	89	10 - 123
Terphenyl-d14	77	33 - 141

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

Analyst: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Method Blank

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01516**
Sample Matrix: **Water**

Date Reported: **04/18/01**
Date Analyzed: **04/11/01**
Date Received: **03/30/01**

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	2.5
Acenaphthylene	ND	ug/L	2.5
Anthracene	ND	ug/L	0.5
Benzo(a)anthracene	ND	ug/L	0.02
Benzo(b)fluoranthene	ND	ug/L	0.05
Benzo(a)pyrene	ND	ug/L	0.02
Benzo(g,h,i)perylene	ND	ug/L	0.03
Benzo(k)fluoranthene	ND	ug/L	0.02
Chrysene	ND	ug/L	0.2
Dibenz(a,h)anthracene	ND	ug/L	0.04
Fluoranthene	ND	ug/L	0.3
Fluorene	ND	ug/L	0.5
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.08
2-Methylnaphthene	ND	ug/L	2.5
Naphthalene	ND	ug/L	2.5
Phenanthrene	ND	ug/L	0.5
Pyrene	ND	ug/L	0.3

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

Quality Control / Quality Assurance

Polynuclear Aromatic Hydrocarbons

Spike Analysis

Client: **Giant Refining - Ciniza**
Project: **Spring 2001 GW**
Lab ID: **0301W01516**
Sample Matrix: **Water**

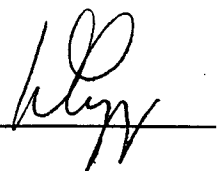
Date Reported: **04/19/01**
Date Analyzed: **04/11/01**
Date Received: **03/30/01**

Analyte	Concentration		Accuracy %	
	Spiked	Measured	LCS	Limits
Naphthalene	40.4	26.0	64.3	44-79
Acenaphthylene	40.4	27.1	67.1	48-88
Acenaphthene	40.4	28.0	69.3	51-86
Fluorene	4.1	2.73	66.6	55-92
Phenanthrene	3.07	2.31	75.2	70-96
Fluoranthene	1.92	1.58	82	76-101
Pyrene	3.850	3.213	83.5	77-101
Benzo(a)pyrene	0.253	0.260	103	67-127
Benzo(g,h,i)perylene	0.553	0.525	94.9	80-112

Surrogates	Result %	Accuracy %
		Limits
Benzo(a)pyrene	72	54.5-116

Reference: **SM - "Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995.**

Reported By: 

Reviewed By: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-092
Sample Matrix: Water

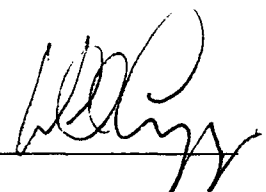
Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

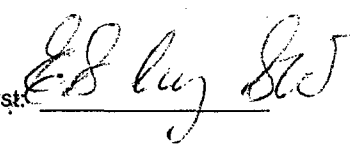
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	58	50 - 150
Decachlorobiphenyl	98	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Revised By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Method Blank Analysis

Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

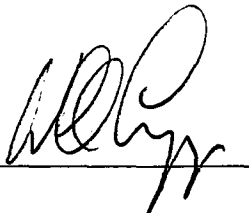
Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/09/01

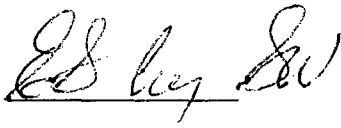
Parameter	Analytical Result	Detection Limit	Units
Aroclor 1016	ND	1	µg/L
Aroclor 1221	ND	2	µg/L
Aroclor 1232	ND	1	µg/L
Aroclor 1242	ND	1	µg/L
Aroclor 1248	ND	1	µg/L
Aroclor 1254	ND	1	µg/L
Aroclor 1260	ND	1	µg/L
Aroclor 1262	ND	1	µg/L

Quality Control - Surrogate Recovery	%	QC Limits
2,4,5,6-tetrachloro-m-xylene	56	50 - 150
Decachlorobiphenyl	101	50 - 150

ND - Compound not detected at stated Detection Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: 

Analyst: 

EPA METHOD 8082
POLYCHLORINATED BIPHENYLS (PCBs) BY GC
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-092
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/02/01
Date Analyzed: 04/09/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Aroclor 1260	ND	2.0	1.6	78	1.6	81	5

Quality Control - Surrogate Recovery	%	Dup %	QC Limits
2,4,5,6-tetrachloro-m-xylene	66	67	50 - 150
Decachlorobiphenyl	97	98	50 - 150

ND - Compound not detected at stated Detection Limit.
B - Compound detected in Method Blank.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 0, December 1996.

Received By: _____

Analyst: _____

ETHYLENE DIBROMIDE BY GC/ECD

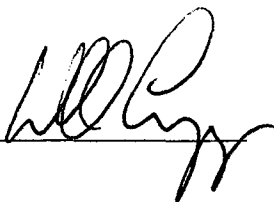
Method Blank Analysis

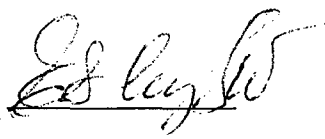
Sample ID: Method Blank
Laboratory ID: MB01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result	Detection Limit	Units
Ethylene Dibromide	ND	0.1	µg/L

ND - Compound not detected at stated Detection Limit.

Received By: 

Analyst: 

ETHYLENE DIBROMIDE BY GC/ECD

Blank Spike Duplicate Analysis

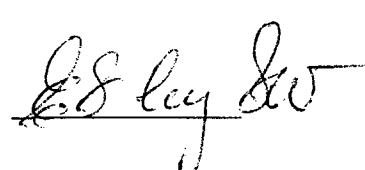
Sample ID: Blank Spike Duplicate
Laboratory ID: BSD01-094
Sample Matrix: Water

Date Reported: 04/16/01
Date Extracted: 04/04/01
Date Analyzed: 04/05/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
Ethylene Dibromide	ND	2.0	2.2	109	2.2	112	3

ND - Compound not detected at stated Detection Limit.

Reveiwed By: 

Analyst: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Method Blank Analysis

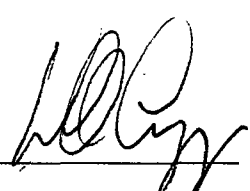
Sample ID: Method Blank
Laboratory ID: MB01-102A
Sample Matrix: Water

Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result	PQL	Units
9020B Total Organic Halides (TOX)	ND	40	µg/L

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Received By: 

EPA METHOD 9020B
TOTAL ORGANIC HALIDES (TOX)
Blank Spike Duplicate Analysis

Sample ID: Blank Spike Duplicate _____
Laboratory ID: BSD01-102
Sample Matrix: Water

Date Reported: 04/17/01
Date Extracted: 04/12/01
Date Analyzed: 04/12/01

Parameter	Analytical Result µg/L	Spike Added µg/L	Spike Results µg/L	Spike Recovery %	Duplicate Results µg/L	Duplicate Recovery %	Relative Difference %RSD
9020B Total Organic Halides (TOX)	ND	50	56	112	55	110	2

ND - Compound not detected at stated Quantitative Limit.

Reference: Test Methods for Evaluating Water, Wastewater and Solid Waste, SW-846, U.S.E.P.A., Volume IB, Revision 2, December 1996.

Reveiwed By: _____

