



# Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
Lab Order: 0403091  
Project: Inj Well 1st Qtr. 2004  
Lab ID: 0403091-02

Client Sample ID: Trip Blank

Collection Date:

Matrix: TRIP BLANK

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Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: BDH
Benzene	ND	1.0		µg/L	1	3/16/2004
Toluene	ND	1.0		µg/L	1	3/16/2004
Ethylbenzene	ND	1.0		µg/L	1	3/16/2004
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	3/16/2004
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	3/16/2004
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	3/16/2004
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	3/16/2004
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	3/16/2004
Naphthalene	ND	2.0		µg/L	1	3/16/2004
1-Methylnaphthalene	ND	4.0		µg/L	1	3/16/2004
2-Methylnaphthalene	ND	4.0		µg/L	1	3/16/2004
Acetone	ND	10		µg/L	1	3/16/2004
Bromobenzene	ND	1.0		µg/L	1	3/16/2004
Bromochloromethane	ND	1.0		µg/L	1	3/16/2004
Bromodichloromethane	ND	1.0		µg/L	1	3/16/2004
Bromoform	ND	1.0		µg/L	1	3/16/2004
Bromomethane	ND	2.0		µg/L	1	3/16/2004
2-Butanone	ND	10		µg/L	1	3/16/2004
Carbon disulfide	ND	10		µg/L	1	3/16/2004
Carbon Tetrachloride	ND	1.0		µg/L	1	3/16/2004
Chlorobenzene	ND	1.0		µg/L	1	3/16/2004
Chloroethane	ND	2.0		µg/L	1	3/16/2004
Chloroform	ND	1.0		µg/L	1	3/16/2004
Chloromethane	ND	1.0		µg/L	1	3/16/2004
2-Chlorotoluene	ND	1.0		µg/L	1	3/16/2004
4-Chlorotoluene	ND	1.0		µg/L	1	3/16/2004
cis-1,2-DCE	ND	1.0		µg/L	1	3/16/2004
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	3/16/2004
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	3/16/2004
Dibromochloromethane	ND	1.0		µg/L	1	3/16/2004
Dibromomethane	ND	2.0		µg/L	1	3/16/2004
1,2-Dichlorobenzene	ND	1.0		µg/L	1	3/16/2004
1,3-Dichlorobenzene	ND	1.0		µg/L	1	3/16/2004
1,4-Dichlorobenzene	ND	1.0		µg/L	1	3/16/2004
Dichlorodifluoromethane	ND	1.0		µg/L	1	3/16/2004
1,1-Dichloroethane	ND	1.0		µg/L	1	3/16/2004
1,1-Dichloroethene	ND	1.0		µg/L	1	3/16/2004
1,2-Dichloropropane	ND	1.0		µg/L	1	3/16/2004
1,3-Dichloropropane	ND	1.0		µg/L	1	3/16/2004
2,2-Dichloropropane	ND	1.0		µg/L	1	3/16/2004
1,1-Dichloropropene	ND	1.0		µg/L	1	3/16/2004

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank      E - Value above quantitation range  
 \* - Value exceeds Maximum Contaminant Level

# Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
 Lab Order: 0403091  
 Project: Inj Well 1st Qtr. 2004  
 Lab ID: 0403091-02

Client Sample ID: Trip Blank  
 Collection Date:  
 Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	1.0		µg/L	1	3/16/2004
2-Hexanone	ND	10		µg/L	1	3/16/2004
Isopropylbenzene	ND	1.0		µg/L	1	3/16/2004
4-Isopropyltoluene	ND	1.0		µg/L	1	3/16/2004
4-Methyl-2-pentanone	ND	10		µg/L	1	3/16/2004
Methylene Chloride	ND	3.0		µg/L	1	3/16/2004
n-Butylbenzene	ND	1.0		µg/L	1	3/16/2004
n-Propylbenzene	ND	1.0		µg/L	1	3/16/2004
sec-Butylbenzene	ND	1.0		µg/L	1	3/16/2004
Styrene	ND	1.0		µg/L	1	3/16/2004
tert-Butylbenzene	ND	1.0		µg/L	1	3/16/2004
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	3/16/2004
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	3/16/2004
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	3/16/2004
trans-1,2-DCE	ND	1.0		µg/L	1	3/16/2004
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	3/16/2004
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	3/16/2004
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	3/16/2004
1,1,1-Trichloroethane	ND	1.0		µg/L	1	3/16/2004
1,1,2-Trichloroethane	ND	1.0		µg/L	1	3/16/2004
Trichloroethene (TCE)	ND	1.0		µg/L	1	3/16/2004
Trichlorofluoromethane	ND	1.0		µg/L	1	3/16/2004
1,2,3-Trichloropropane	ND	2.0		µg/L	1	3/16/2004
Vinyl chloride	ND	2.0		µg/L	1	3/16/2004
Xylenes, Total	ND	1.0		µg/L	1	3/16/2004
Surr: 1,2-Dichloroethane-d4	98.2	70.6-124		%REC	1	3/16/2004
Surr: 4-Bromofluorobenzene	108	76.4-130		%REC	1	3/16/2004
Surr: Dibromofluoromethane	90.7	67.2-131		%REC	1	3/16/2004
Surr: Toluene-d8	108	82.1-123		%REC	1	3/16/2004

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 B - Analyte detected in the associated Method Blank  
 \* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 E - Value above quantitation range



LABORATORY ANALYTICAL REPORT

Client: Hall Environmental  
 Project: 1st Qtr. 2004  
 Lab ID: C04030517-001  
 Client Sample ID: Qtr Inj Well 1st (0403091-01E)

Report Date: 03/25/04  
 Collection Date: 03/09/04 08:00  
 Date Received: 03/11/04  
 Matrix: Aqueous

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
<b>NON-METALS</b>							
Sulfide	ND	mg/L		1.0		E376.1	03/12/04 12:49 dd
<b>PHYSICAL PROPERTIES</b>							
Flash Point (Ignitability)	>140	°F		60	140	SW1010	03/18/04 10:40 bah
pH, Corrosivity	9.29	s.u.		0.10		E9040 B	03/16/04 16:00 lmh
- Flashpoint has been corrected for barometric pressure.							
<b>REACTIVITY</b>							
Sulfide, Reactive	ND	mg/kg		20.0	500	SW846 Ch 7	03/12/04 11:28 / dd
Cyanide, Reactive	ND	mg/kg		1.0	250	SW846 Ch 7	03/18/04 12:07 / eli-b

Report Definitions: RL - Analyte reporting limit.  
 QCL - Quality control limit.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.

## QA/QC Summary Report

**Client:** Hall Environmental  
**Project:** 1st Qtr. 2004

**Report Date:** 03/25/04  
**Work Order:** C04030517

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E376.1</b>							Batch: 040312B-SULFIDE-TTR-W		
<b>Sample ID: MBLK7-040312B</b>	Method Blank								03/12/04 11:58
Sulfide	ND	mg/L	1.0						
<b>Sample ID: C04030434-002C</b>	Sample Duplicate								03/12/04 13:32
Sulfide	64.4	mg/L	1.0				0.6	10	
<b>Method: SW1010</b>							Batch: 040318A-FLSHPNT-LIQ		
<b>Sample ID: MBLK1_040318A</b>	Method Blank								03/18/04 13:11
Flash Point (Ignitability)	ND	°F	60						
- lashpoint has been corrected for barometric pressure.									
<b>Sample ID: LCS1_040318A</b>	Laboratory Control Spike								03/18/04 08:19
Flash Point (Ignitability)	82.0	°F	60	100	96	104			
- lashpoint has not been corrected for barometric pressure.									
<b>Method: SW846 Ch 7</b>							Batch: 5239		
<b>Sample ID: MB-5239</b>	Method Blank								03/12/04 11:23
Sulfide, Reactive	ND	mg/kg	20						
<b>Sample ID: C04030517-001C</b>	Sample Duplicate								03/12/04 11:33
Sulfide, Reactive	ND	mg/kg	20				0	10	
<b>Method: SW846 Ch 7</b>							Batch: B_9556		
<b>Sample ID: MB-9556</b>	Method Blank								03/18/04 12:09
Cyanide, Reactive	ND	mg/kg	0.050						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Method Blank

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
MBLK2	R11284	E300	mg/L	3/11/2004 4:37:51 PM							
Client ID:		Run ID: LC_040311A		SeqNo: 258415							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.10									
Sulfate	ND	0.50									

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
MBLK	R11276	E310.1	mg/L CaCO3	3/11/2004							
Client ID:		Run ID: WC_040311B		SeqNo: 258240							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.0									
Carbonate	ND	2.0									
Bicarbonate	ND	2.0									

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Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
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**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

## QC SUMMARY REPORT

Method Blank

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date							
mb-5401	5401	SW8270A	µg/L	3/19/2004	3/16/2004							
Client ID:	Run ID:	SeqNo:										
	ELMO_040319A	260740										
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Acenaphthene	ND	10										
Acenaphthylene	ND	10										
Aniline	ND	10										
Anthracene	ND	10										
Azobenzene	ND	10										
Benz(a)anthracene	7.98	10									J	
Benzidine	4.88	20									J	
Benzo(a)pyrene	ND	10										
Benzo(b)fluoranthene	2.02	10									J	
Benzo(g,h,i)perylene	4.12	10									J	
Benzo(k)fluoranthene	ND	10										
Benzoic acid	ND	50										
Benzyl alcohol	ND	20										
Bis(2-chloroethoxy)methane	ND	10										
Bis(2-chloroethyl)ether	ND	10										
Bis(2-chloroisopropyl)ether	ND	10										
Bis(2-ethylhexyl)phthalate	ND	10										
4-Bromophenyl phenyl ether	ND	10										
Butyl benzyl phthalate	ND	10										
Carbazole	ND	10										
4-Chloro-3-methylphenol	ND	20										
4-Chloroaniline	ND	20										
2-Chloronaphthalene	ND	10										
2-Chlorophenol	ND	10										
4-Chlorophenyl phenyl ether	ND	10										
Chrysene	ND	10										
Di-n-butyl phthalate	2.48	10									J	
Di-n-octyl phthalate	ND	10										

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CLIENT: San Juan Refining  
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 Project: Inj Well 1st Qtr. 2004

QC SUMMARY REPORT

Method Blank

Dibenz(a,h)anthracene	9.84	10	J
Dibenzofuran	ND	10	
1,2-Dichlorobenzene	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
3,3'-Dichlorobenzidine	5.8	10	J
Diethyl phthalate	ND	10	
Dimethyl phthalate	ND	10	
2,4-Dichlorophenol	ND	10	
2,4-Dimethylphenol	ND	10	
4,6-Dinitro-2-methylphenol	ND	50	
2,4-Dinitrophenol	ND	50	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Fluoranthene	ND	10	
Fluorene	ND	10	
Hexachlorobenzene	ND	10	
Hexachlorobutadiene	ND	10	
Hexachlorocyclopentadiene	ND	10	
Hexachloroethane	ND	10	
Indeno(1,2,3-cd)pyrene	3.58	10	J
Isophorone	ND	10	
2-Methylnaphthalene	ND	10	
2-Methylphenol	ND	10	
3+4-Methylphenol	ND	10	
N-Nitrosodi-n-propylamine	ND	10	
N-Nitrosodiphenylamine	ND	10	
Naphthalene	ND	10	
2-Nitroaniline	ND	50	
3-Nitroaniline	ND	50	
4-Nitroaniline	ND	20	
Nitrobenzene	ND	10	
2-Nitrophenol	ND	10	

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S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

## QC SUMMARY REPORT

Method Blank

4-Nitrophenol	9.6	50								J
Pentachlorophenol	9.68	50								J
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2,4,6-Tribromophenol	135.3	0	200	0	67.6	16.6	115	0		
Surr: 2-Fluorobiphenyl	61.96	0	100	0	62.0	37	95.7	0		
Surr: 2-Fluorophenol	119.5	0	200	0	59.7	9.54	89.8	0		
Surr: 4-Terphenyl-d14	66.4	0	100	0	66.4	70	130	0		S
Surr: Nitrobenzene-d5	64.16	0	100	0	64.2	38	106	0		
Surr: Phenol-d6	81.62	0	200	0	40.8	10.7	63.4	0		

Sample ID **MB-5381**      Batch ID: **5381**      Test Code: **SW7470**      Units: mg/L      Analysis Date **3/12/2004**      Prep Date **3/12/2004**

Client ID:      Run ID: **MI-LA254\_040312A**      SeqNo: **259041**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.00020									

**Qualifiers:** ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits



**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**

Method Blank

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
MB-5405	5405	SW6010A	mg/L	3/18/2004 8:17:59 AM	3/16/2004						
Client ID:		Run ID:	ICP_040318A	SeqNo:	260976						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.020									
Barium	ND	0.020									
Cadmium	ND	0.0020									
Calcium	0.565	1.0									J
Chromium	ND	0.0060									
Lead	0.001294	0.0050									J
Magnesium	0.3276	1.0									J
Potassium	ND	1.0									
Selenium	ND	0.020									
Silver	ND	0.0050									
Sodium	ND	1.0									

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
MB-5383	5383	E160.1	mg/L	3/15/2004	3/12/2004						
Client ID:		Run ID:	WC_040315B	SeqNo:	259126						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	1.0									

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

QC SUMMARY REPORT

Method Blank

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date							
5ml rb	R11306	SW8260B	µg/L	3/15/2004								
Client ID:	Run ID:	SeqNo:										
	THOR_040315A	259011										
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Benzene	ND	1.0										
Toluene	ND	1.0										
Ethylbenzene	ND	1.0										
Methyl tert-butyl ether (MTBE)	ND	1.0										
1,2,4-Trimethylbenzene	ND	1.0										
1,3,5-Trimethylbenzene	ND	1.0										
1,2-Dichloroethane (EDC)	ND	1.0										
1,2-Dibromoethane (EDB)	ND	1.0										
Naphthalene	ND	2.0										
1-Methylnaphthalene	ND	4.0										
2-Methylnaphthalene	ND	4.0										
Acetone	ND	10										
Bromobenzene	ND	1.0										
Bromochloromethane	ND	1.0										
Bromodichloromethane	ND	1.0										
Bromoform	ND	1.0										
Bromomethane	ND	2.0										
2-Butanone	ND	10										
Carbon disulfide	ND	10										
Carbon Tetrachloride	ND	1.0										
Chlorobenzene	ND	1.0										
Chloroethane	ND	2.0										
Chloroform	ND	1.0										
Chloromethane	ND	1.0										
2-Chlorotoluene	ND	1.0										
4-Chlorotoluene	ND	1.0										
cis-1,2-DCE	ND	1.0										

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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CLIENT: San Juan Refining  
Work Order: 0403091  
Project: Inj Well 1st Qtr. 2004

## QC SUMMARY REPORT

Method Blank

cis-1,3-Dichloropropene	ND	1.0
1,2-Dibromo-3-chloropropane	ND	2.0
Dibromochloromethane	ND	1.0
Dibromomethane	ND	2.0
1,2-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
Dichlorodifluoromethane	ND	1.0
1,1-Dichloroethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,2-Dichloropropane	ND	1.0
1,3-Dichloropropane	ND	1.0
2,2-Dichloropropane	ND	1.0
1,1-Dichloropropene	ND	1.0
Hexachlorobutadiene	ND	1.0
2-Hexanone	ND	10
Isopropylbenzene	ND	1.0
4-Isopropyltoluene	ND	1.0
4-Methyl-2-pentanone	ND	10
Methylene Chloride	ND	3.0
n-Butylbenzene	ND	1.0
n-Propylbenzene	ND	1.0
sec-Butylbenzene	ND	1.0
Styrene	ND	1.0
tert-Butylbenzene	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Tetrachloroethene (PCE)	ND	1.0
trans-1,2-DCE	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0
1,1,1-Trichloroethane	ND	1.0

Qualifiers: ND - Not Detected at the Reporting Limit  
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S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

## QC SUMMARY REPORT

Method Blank

1,1,2-Trichloroethane	ND	1.0							
Trichloroethene (TCE)	ND	1.0							
Trichlorofluoromethane	ND	1.0							
1,2,3-Trichloropropane	ND	2.0							
Vinyl chloride	ND	2.0							
Xylenes, Total	ND	1.0							
Surr: 1,2-Dichloroethane-d4	10.05	0	10	0	101	68.4	127	0	
Surr: 4-Bromofluorobenzene	10.25	0	10	0	102	70.4	126	0	
Surr: Dibromofluoromethane	9.904	0	10	0	99.0	70.2	126	0	
Surr: Toluene-d8	10.34	0	10	0	103	73.5	129	0	

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**Qualifiers:** ND - Not Detected at the Reporting Limit  
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 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Sample Duplicate

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.020	0	0	0	0	0	0	0	30	
Barium	0.1959	0.020	0	0	0	0	0	0.1995	1.86	30	
Cadmium	ND	0.0020	0	0	0	0	0	0	0	30	
Calcium	87.65	1.0	0	0	0	0	0	86.14	1.74	30	
Chromium	0.005976	0.0060	0	0	0	0	0	0.005846	0	30	J
Lead	ND	0.0050	0	0	0	0	0	0	0	30	
Magnesium	23.36	1.0	0	0	0	0	0	24.47	4.67	30	
Potassium	23.55	1.0	0	0	0	0	0	22.8	3.22	30	
Selenium	0.05562	0.020	0	0	0	0	0	0.05612	0.888	30	
Silver	ND	0.0050	0	0	0	0	0	0	0	30	

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

18/25

Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID	0403091-01D MS	Batch ID:	5405	Test Code:	SW6010A	Units:	mg/L	Analysis Date	3/18/2004 9:03:48 AM	Prep Date	3/16/2004
Client ID:	Qtr Inj Well 1st	Run ID:	ICP_040318A	SeqNo:	259983						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.5726	0.020	0.5	0	115	75	125	0			
Barium	0.6872	0.020	0.5	0.1995	97.5	75	125	0			
Cadmium	0.4954	0.0020	0.5	0	99.1	75	125	0			
Calcium	136	1.0	50	86.14	99.7	75	125	0			
Chromium	0.4983	0.0060	0.5	0.005846	98.5	75	125	0			
Lead	0.4719	0.0050	0.5	0	94.4	75	125	0			
Magnesium	80.57	1.0	50	24.47	112	75	125	0			
Potassium	78.86	1.0	50	22.8	112	75	125	0			
Selenium	0.597	0.020	0.5	0.05612	108	75	125	0			
Silver	0.5139	0.0050	0.5	0	103	75	125	0			

Sample ID	0403091-01D MSD	Batch ID:	5405	Test Code:	SW6010A	Units:	mg/L	Analysis Date	3/18/2004 9:06:11 AM	Prep Date	3/16/2004
Client ID:	Qtr Inj Well 1st	Run ID:	ICP_040318A	SeqNo:	259984						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.5647	0.020	0.5	0	113	75	125	0			
Barium	0.6797	0.020	0.5	0.1995	96.0	75	125	0			
Cadmium	0.487	0.0020	0.5	0	97.4	75	125	0			
Calcium	136.4	1.0	50	86.14	100	75	125	0			
Chromium	0.488	0.0060	0.5	0.005846	96.4	75	125	0			
Lead	0.4672	0.0050	0.5	0	93.4	75	125	0			
Magnesium	80.22	1.0	50	24.47	112	75	125	0			
Potassium	79.13	1.0	50	22.8	113	75	125	0			
Selenium	0.5928	0.020	0.5	0.05612	107	75	125	0			
Silver	0.5039	0.0050	0.5	0	101	75	125	0			

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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Hall Environmental Analysis Laboratory

Date: 25-Mar-04

CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Laboratory Control Spike - generic

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
LC5B	R11284	E300	mg/L	3/11/2004 4:54:36 PM							
Client ID:		Run ID: LC_040311A		SeqNo: 258416							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	5.043	0.10	5	0	101	90	110	0			
Sulfate	10.36	0.50	10	0	104	90	110	0			

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
LC5C	R11284	E300	mg/L	3/11/2004 8:55:06 PM							
Client ID:		Run ID: LC_040311A		SeqNo: 258430							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	4.958	0.10	5	0	99.2	90	110	0			
Sulfate	10.22	0.50	10	0	102	90	110	0			

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
100ng Ics	R11306	SW8260B	µg/L	3/15/2004							
Client ID:		Run ID: THOR_040315A		SeqNo: 259012							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.11	1.0	20	0	101	75.3	128	0			
Toluene	19.68	1.0	20	0	98.4	87.7	122	0			
Chlorobenzene	26.74	1.0	20	0	134	85.6	136	0			
1,1-Dichloroethene	19.06	1.0	20	0	95.3	70.7	122	0			
Trichloroethene (TCE)	19.28	1.0	20	0	96.4	76.9	130	0			

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Laboratory Control Spike - generic

Sample ID	100ng ccv	Batch ID:	R11339	Test Code:	SW8260B	Units:	µg/L	Analysis Date	3/17/2004	Prep Date	
Client ID:		Run ID:	NEPTUNE_040316B	SeqNo:	259667						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.08	1.0	20	0	95.4	75.3	128	0			
Toluene	19.66	1.0	20	0	98.3	87.7	122	0			
Chlorobenzene	19.74	1.0	20	0	98.7	85.6	136	0			
1,1-Dichloroethene	18.79	1.0	20	0	94.0	70.7	122	0			
Trichloroethene (TCE)	21.55	1.0	20	0	108	76.9	130	0			

Sample ID	Ics-5401	Batch ID:	5401	Test Code:	SW8270A	Units:	µg/L	Analysis Date	3/19/2004	Prep Date	3/16/2004
Client ID:		Run ID:	ELMO_040319A	SeqNo:	260741						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	61.92	10	100	0	61.9	44.8	96.8	0			
4-Chloro-3-methylphenol	132.9	20	200	0	66.5	51.5	98.7	0			
2-Chlorophenol	136.5	10	200	0	68.2	45.9	99.6	0			
1,4-Dichlorobenzene	59.16	10	100	0	59.2	33	95.9	0			
2,4-Dinitrotoluene	70.86	10	100	0	70.9	47.8	103	0			
N-Nitrosodi-n-propylamine	61.76	10	100	0	61.8	45.9	93.6	0			
4-Nitrophenol	67.7	50	200	9.6	29.1	22.1	58.3	0			
Pentachlorophenol	141	50	200	9.68	65.6	26.4	118	0			
Phenol	73.5	10	200	0	36.8	6.99	71.3	0			
Pyrene	65.18	10	100	0	65.2	58.3	103	0			
1,2,4-Trichlorobenzene	61.08	10	100	0	61.1	38.7	92.3	0			

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits



CLIENT: San Juan Refining  
 Work Order: 0403091  
 Project: Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
Icsd-5401	5401	SW8270A	µg/L	3/19/2004	3/16/2004						
Client ID:		Run ID: ELMO_040319A		SeqNo: 260742							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	70.2	10	100	0	70.2	44.8	96.8	61.92	12.5	30.5	
4-Chloro-3-methylphenol	141.1	20	200	0	70.5	51.5	98.7	132.9	5.94	28.6	
2-Chlorophenol	143.5	10	200	0	71.8	45.9	99.6	136.5	5.04	107	
1,4-Dichlorobenzene	72.78	10	100	0	72.8	33	95.9	59.16	20.6	62.1	
2,4-Dinitrotoluene	73.72	10	100	0	73.7	47.8	103	70.86	3.96	14.7	
N-Nitrosodi-n-propylamine	66.8	10	100	0	66.8	45.9	93.6	61.76	7.84	30.3	
4-Nitrophenol	72.8	50	200	9.6	31.6	22.1	58.3	67.7	7.26	36.3	
Pentachlorophenol	150.4	50	200	9.68	70.4	26.4	118	141	6.51	49	
Phenol	81.18	10	200	0	40.6	6.99	71.3	73.5	9.93	52.4	
Pyrene	69.86	10	100	0	69.9	58.3	103	65.18	6.93	16.3	
1,2,4-Trichlorobenzene	72.6	10	100	0	72.6	38.7	92.3	61.08	17.2	36.4	

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
LCS-5381	5381	SW7470	mg/L	3/12/2004	3/12/2004						
Client ID:		Run ID: MI-LA254_040312A		SeqNo: 259042							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.005216	0.00020	0.005	0	104	75.2	134	0			

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date						
LCSD-5381	5381	SW7470	mg/L	3/12/2004	3/12/2004						
Client ID:		Run ID: MI-LA254_040312A		SeqNo: 259043							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.005464	0.00020	0.005	0	109	75.2	134	0.005216	4.65	0	

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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**CLIENT:** San Juan Refining  
**Work Order:** 0403091  
**Project:** Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
 Laboratory Control Spike - generic

Sample ID	LCS-5405	Batch ID:	5405	Test Code:	SW6010A	Units:	mg/L	Analysis Date	3/18/2004 8:20:32 AM	Prep Date	3/16/2004
Client ID:				Run ID:	ICP_040318A	SeqNo:	260977				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.483	0.020	0.5	0	96.6	80	120	0			
Barium	0.4649	0.020	0.5	0	93.0	80	120	0			
Cadmium	0.4619	0.0020	0.5	0	92.4	80	120	0			
Calcium	51.31	1.0	50	0.565	101	80	120	0			
Chromium	0.4764	0.0060	0.5	0	95.3	80	120	0			
Lead	0.463	0.0050	0.5	0.001294	92.3	80	120	0			
Magnesium	49.65	1.0	50	0.3276	98.6	80	120	0			
Potassium	52.76	1.0	50	0	106	80	120	0			
Selenium	0.5178	0.020	0.5	0	104	80	120	0			
Silver	0.4786	0.0050	0.5	0	95.7	80	120	0			
Sodium	48.9	1.0	50	0	97.8	80	120	0			

Sample ID	LCSD-5405	Batch ID:	5405	Test Code:	SW6010A	Units:	mg/L	Analysis Date	3/18/2004 8:23:07 AM	Prep Date	3/16/2004
Client ID:				Run ID:	ICP_040318A	SeqNo:	260978				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.4919	0.020	0.5	0	98.4	80	120	0.483	1.83	20	
Barium	0.4724	0.020	0.5	0	94.5	80	120	0.4649	1.61	20	
Cadmium	0.4699	0.0020	0.5	0	94.0	80	120	0.4619	1.72	20	
Calcium	51.31	1.0	50	0.565	101	80	120	51.31	0.00899	20	
Chromium	0.488	0.0060	0.5	0	97.6	80	120	0.4764	2.40	20	
Lead	0.473	0.0050	0.5	0.001294	94.3	80	120	0.463	2.15	20	
Magnesium	51.55	1.0	50	0.3276	102	80	120	49.65	3.74	20	
Potassium	52.89	1.0	50	0	106	80	120	52.76	0.247	20	
Selenium	0.5168	0.020	0.5	0	103	80	120	0.5178	0.194	20	
Silver	0.4841	0.0050	0.5	0	96.8	80	120	0.4786	1.14	20	
Sodium	49.08	1.0	50	0	98.2	80	120	48.9	0.384	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

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CLIENT: San Juan Refining  
Work Order: 0403091  
Project: Inj Well 1st Qtr. 2004

**QC SUMMARY REPORT**  
Laboratory Control Spike - generic

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Sample ID	LCS-5383	Batch ID:	5383	Test Code:	E160.1	Units:	mg/L	Analysis Date	3/15/2004	Prep Date	3/12/2004					
Client ID:		Run ID:	WC_040315B	SeqNo:	259127											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids		1043		1.0		1000		0		104	80	120	0			

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24/25

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Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
                  J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory

Sample Receipt Checklist

Client Name SJR

Date and Time Received:

3/10/2004

Work Order Number 0403091

Received by AT

Checklist completed by

*[Signature]*  
Signature

3/10/04  
Date

Matrix

Carrier name UPS

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present  Not Shipped
- Custody seals intact on sample bottles? Yes  No  N/A
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Water - VOA vials have zero headspace? No VOA vials submitted  Yes  No
- Water - pH acceptable upon receipt? Yes  No  N/A

Container/Temp Blank temperature? **14°** 4° C ± 2 Acceptable  
If given sufficient time to cool.

COMMENTS:

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Client contacted \_\_\_\_\_ Date contacted: \_\_\_\_\_ Person contacted \_\_\_\_\_

Contacted by: \_\_\_\_\_ Regarding \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Action \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

# CHAIN-OF-CUSTODY RECORD

Accreditation Applied:

NELAC  USACE

Other: \_\_\_\_\_

Client: SAN Juan Refining

Project Name: Injection Well 1<sup>st</sup> Qtr

Address: #50 CR 4990  
Bloomfield, NM  
87413

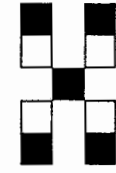
Project #: 2004

Project Manager: \_\_\_\_\_  
Sampler: Cindy Hurtado

Phone #: 505-632-4161

Sample Temperature: 14°C

Fax #: 505-632-3911



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
4901 Hawkins NE, Suite D  
Albuquerque, New Mexico 87109  
Tel. 505.345.3975 Fax 505.345.4107  
www.hallenvironmental.com

## ANALYSIS REQUEST

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals + Pb, K, Mg, Ca	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	EC, pH, TDS, SO <sub>4</sub> , ALK, Cl	Ignitability, Corrosivity	Reactivity	Sulfide	Air Bubbles or Headspace (Y or N)
										X						
											X					
												X				
							X						X			
														X		
															X	

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative		HEAL No.
					HgCl <sub>2</sub>	HNO <sub>3</sub>	
09/04	8AM	H <sub>2</sub> O	QTR Inj Well 1 <sup>st</sup>	3-VOA	X		0403091-1
				1-liter			Amber
				1-500ml			
				1-500ml			
				1-500ml	X		
				1-250ml			Na OH
				1-250			Zn Acetate
			Trip Blank				-2

Date: 09/04 Time: 9AM Relinquished By: (Signature) Cindy Hurtado  
Received By: (Signature) [Signature] 3/10/04  
Date: \_\_\_\_\_ Time: \_\_\_\_\_ Relinquished By: (Signature) \_\_\_\_\_  
Received By: (Signature) \_\_\_\_\_

Remarks: \_\_\_\_\_