GW – 001

2 of 3

GW REMEDIATION & MONITORING REPORT

2014

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408B57**

24-Sep-14

Client: Western Refining Southwest, Inc.

Project: Downgradient Wells 8-21-14

Sample ID **lcs-14928**	SampType: **LCS**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW**	Batch ID: **14928**	RunNo: **20778**
Prep Date: **8/25/2014**	Analysis Date: **8/25/2014**	SeqNo: **604654** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	89	10	100.0	0	89.2	50.3	109			
4-Chloro-3-methylphenol	200	10	200.0	0	101	51.2	113			
2-Chlorophenol	190	10	200.0	0	97.1	48.5	104			
1,4-Dichlorobenzene	79	10	100.0	0	79.2	39.5	106			
2,4-Dinitrotoluene	83	10	100.0	0	83.2	45.4	107			
N-Nitrosodi-n-propylamine	93	10	100.0	0	93.3	50.4	119			
4-Nitrophenol	120	10	200.0	0	59.6	15.5	62.2			
Pentachlorophenol	150	20	200.0	0	73.0	23.5	93.5			
Phenol	120	10	200.0	0	59.2	26.8	65.6			
Pyrene	93	10	100.0	0	92.6	54.4	108			
1,2,4-Trichlorobenzene	82	10	100.0	0	82.0	39.9	106			
Surr: 2-Fluorophenol	150		200.0		74.7	12.1	85.8			
Surr: Phenol-d5	110		200.0		53.8	17.7	65.8			
Surr: 2,4,6-Tribromophenol	140		200.0		71.4	26	138			
Surr: Nitrobenzene-d5	100		100.0		104	47.5	119			
Surr: 2-Fluorobiphenyl	100		100.0		101	48.1	106			
Surr: 4-Terphenyl-d14	97		100.0		97.4	44	113			

Sample ID **lcsd-14928**	SampType: **LCSD**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSS02**	Batch ID: **14928**	RunNo: **20778**
Prep Date: **8/25/2014**	Analysis Date: **8/25/2014**	SeqNo: **604958** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	100	10	100.0	0	104	50.3	109	15.4	27.2	
4-Chloro-3-methylphenol	220	10	200.0	0	110	51.2	113	8.80	25.9	
2-Chlorophenol	160	10	200.0	0	78.7	48.5	104	21.0	22.5	
1,4-Dichlorobenzene	87	10	100.0	0	87.2	39.5	106	9.59	24.6	
2,4-Dinitrotoluene	110	10	100.0	0	111	45.4	107	28.6	25.3	RS
N-Nitrosodi-n-propylamine	100	10	100.0	0	104	50.4	119	11.3	23.6	
4-Nitrophenol	71	10	200.0	0	35.6	15.5	62.2	50.5	34.7	R
Pentachlorophenol	89	20	200.0	0	44.6	23.5	93.5	48.3	32.8	R
Phenol	110	10	200.0	0	56.9	26.8	65.6	3.96	25.5	
Pyrene	120	10	100.0	0	125	54.4	108	29.6	31.4	S
1,2,4-Trichlorobenzene	87	10	100.0	0	86.8	39.9	106	5.71	25.9	
Surr: 2-Fluorophenol	92		200.0		46.2	12.1	85.8	0	0	
Surr: Phenol-d5	110		200.0		53.0	17.7	65.8	0	0	
Surr: 2,4,6-Tribromophenol	100		200.0		52.2	26	138	0	0	
Surr: Nitrobenzene-d5	110		100.0		108	47.5	119	0	0	
Surr: 2-Fluorobiphenyl	110		100.0		112	48.1	106	0	0	S

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408B57**

24-Sep-14

Client: Western Refining Southwest, Inc.

Project: Downgradient Wells 8-21-14

Sample ID	**lcsd-14928**	SampType:	**LCSD**	TestCode:	**EPA Method 8270C: Semivolatiles**					
Client ID:	**LCSS02**	Batch ID:	**14928**	RunNo:	**20778**					
Prep Date:	**8/25/2014**	Analysis Date:	**8/25/2014**	SeqNo:	**604958**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	110		100.0		110	44	113	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408B57**

24-Sep-14

Client: Western Refining Southwest, Inc.

Project: Downgradient Wells 8-21-14

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605425**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605426**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	99.7	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605442**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605443**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408B57**

24-Sep-14

Client: Western Refining Southwest, Inc.

Project: Downgradient Wells 8-21-14

Sample ID **MB-14958**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **14958**	RunNo: **20839**
Prep Date: **8/26/2014**	Analysis Date: **8/27/2014**	SeqNo: **606511** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-14958**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **14958**	RunNo: **20839**
Prep Date: **8/26/2014**	Analysis Date: **8/27/2014**	SeqNo: **606512** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1408B57** RcptNo: 1

Received by/date: 08/22/14

Logged By: **Lindsay Mangin** 8/22/2014 7:00:00 AM

Completed By: **Lindsay Mangin** 8/22/2014 7:23:49 AM

Reviewed By: IO 08/22/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No	NA
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes ✔	No	No VOA Vials
11. Were any sample containers received broken?	Yes	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: 18 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? No
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by: mj

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: Date:

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Downgradient Wells 8-21-14

Project #:

Project Manager:

Sampler: Bobby Mah

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408857	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Ext. 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. anion, CO_2	Air Bubbles (Y or N)
8-21-14	11:00	H_2O	MW-37	5-VOA	HCl	-001			X							X						
				1-500	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-21-14	1446	Robert Kraker	Chris Walt	8/21/14	1490
8/21/14	1820	Chris Walt		08/22/14	0700

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Downgradient wells 8-21-14

Project #:

Project Manager:

Sampler: Bob + Matt
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408857	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Ext. 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anion, CO_3	Air Bubbles (Y or N)
8-21-14	11:30	H_2O	MW-38	5-VOA	HCl	-002			X							X						
				1-liter	amber												X						
				1-500	amber													X					
				1-500	HNO_3								X										
			filter	1-250	HNO_3														X				
				1-500																X			
				1-250	H_2SO_4																X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-21-14	1410	Robert Krakow		8/21/14	1440
8/21/14	1820			08/22/14	0700

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Downgradient Wells 8-21-14

Project #:

Project Manager:

Sampler: Bob + Matt
On Ice: ☑ Yes ☐ No
Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408857
8-21-14	9:30	H_2O	MW-12	5-VOA	HCl	-003
				1-liter	amber	
				1-500	amber	
				1-500	HNO_3	
			filter	1-250	HNO_3	
				1-500		
				1-250	H_2SO_4	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Ext. 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. anions, CO_2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-21-14	1446	Robert Krakow	Christa Walters	8/21/14	1440
8/21/14	1820	Christa Walters			

Date:	Time:	Relinquished by:	Received by:	Date	Time
				08/22/14	0700

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Downgradient Wells 8-21-14

Project #:

Project Manager:

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408857	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Ext. 8015B	Dissolved Metal	Gen. Chem.: Alkalinity	Gen. Chem.: Anion, CO_2	Air Bubbles (Y or N)
8-21-14	9:00	H_2O	MW-11	5-VOA	HCl	-004			X							X						
				1-liter	amber												X					
				1-500	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500	—															X		
				1-250	H_2SO_4																X	
8-21-14	1:15	H_2O	Rinsate	3-VOA	HCL	-005	X															

Remarks: Trip Blank -008

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-21-14	1440	Robert Krakow	[signature]	8/21/14	1440
8/21/14	1820	[signature]	[signature]	08/22/14	0700

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
downgradient wells 8-21-14

Project #:

Project Manager:

Sampler: Robert Kraklow

On Ice: ☒ Yes ☐ No

Sample Temperature: 18

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408857	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO-Ext. 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. anion, CO_2	Air Bubbles (Y or N)
8-21-14	1000	H_2O	MW-34	5-VOA	HCl	-006			X							X						
				1-500	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	
8-21-14	10:30		MW-35	5-VOA	HCl	-007			X							X						
				1-500	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-21-14	1440	Robert Kraklow	[signature]	8/21/14	1440
8/21/14	1820	[signature]	[signature]	08/22/14	0700

Remarks:

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TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	

Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 09, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: RCRA Wells 8-19-14 OrderNo.: 1408A13

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 14 sample(s) on 8/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: MW-51
Project: RCRA Wells 8-19-14
Collection Date: 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001
Matrix: AQUEOUS
Received Date: 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/20/2014 10:25:15 PM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/20/2014 10:25:15 PM	14873
Surr: DNOP	109	75.2-161		%REC	1	8/20/2014 10:25:15 PM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 6:18:12 PM	R20730
Surr: BFB	97.5	70.9-130		%REC	1	8/21/2014 6:18:12 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.54	0.10		mg/L	1	8/20/2014 4:17:06 PM	R20712
Chloride	15	0.50		mg/L	1	8/20/2014 4:17:06 PM	R20712
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 4:17:06 PM	R20712
Bromide	0.12	0.10		mg/L	1	8/20/2014 4:17:06 PM	R20712
Nitrogen, Nitrate (As N)	1.4	0.10		mg/L	1	8/20/2014 4:17:06 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 4:17:06 PM	R20712
Sulfate	76	10		mg/L	20	8/20/2014 4:29:30 PM	R20712
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:34:02 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:54:24 AM	R20721
Barium	0.056	0.020		mg/L	1	8/21/2014 11:54:24 AM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:54:24 AM	R20721
Calcium	76	1.0		mg/L	1	8/21/2014 11:54:24 AM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:54:24 AM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 11:54:24 AM	R20721
Iron	ND	0.020		mg/L	1	8/21/2014 11:54:24 AM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 11:54:24 AM	R20721
Magnesium	15	1.0		mg/L	1	8/21/2014 11:54:24 AM	R20721
Manganese	1.2	0.010		mg/L	5	8/21/2014 12:32:41 PM	R20721
Potassium	1.9	1.0		mg/L	1	8/21/2014 11:54:24 AM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 11:54:24 AM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 11:54:24 AM	R20721
Sodium	55	1.0		mg/L	1	8/21/2014 11:54:24 AM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 11:54:24 AM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 11:54:24 AM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:23:25 AM	14876
Barium	0.095	0.020		mg/L	1	8/21/2014 11:23:25 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:23:25 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-51
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:23:25 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:23:25 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:23:25 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:23:25 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Acenaphthylene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Aniline	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Anthracene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Azobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzoic acid	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Carbazole	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Chrysene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Dibenzofuran	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-51
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4-Dichlorophenol	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4,6-Dinitro-2-methylphenol	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4-Dinitrophenol	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Fluoranthene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Fluorene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Hexachloroethane	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Isophorone	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Methylphenol	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Naphthalene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Nitrobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Pentachlorophenol	ND	21		µg/L	1	8/22/2014 6:02:48 PM	14909
Phenanthrene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Phenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Pyrene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Pyridine	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 6:02:48 PM	14909
Surr: 2-Fluorophenol	32.9	12.1-85.8		%REC	1	8/22/2014 6:02:48 PM	14909
Surr: Phenol-d5	16.7	17.7-65.8	S	%REC	1	8/22/2014 6:02:48 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-51
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	52.3	26-138		%REC	1	8/22/2014 6:02:48 PM	14909
Surr: Nitrobenzene-d5	86.1	47.5-119		%REC	1	8/22/2014 6:02:48 PM	14909
Surr: 2-Fluorobiphenyl	75.6	48.1-106		%REC	1	8/22/2014 6:02:48 PM	14909
Surr: 4-Terphenyl-d14	74.1	44-113		%REC	1	8/22/2014 6:02:48 PM	14909
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 12:47:15 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 12:47:15 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 12:47:15 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-51
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 12:47:15 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 12:47:15 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 12:47:15 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 12:47:15 PM	R20875
Surr: 1,2-Dichloroethane-d4	97.0	70-130		%REC	1	8/28/2014 12:47:15 PM	R20875
Surr: 4-Bromofluorobenzene	124	70-130		%REC	1	8/28/2014 12:47:15 PM	R20875
Surr: Dibromofluoromethane	93.8	70-130		%REC	1	8/28/2014 12:47:15 PM	R20875
Surr: Toluene-d8	98.1	70-130		%REC	1	8/28/2014 12:47:15 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	250	1.0	H	mg CO2/L	1	8/22/2014 3:59:36 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-51
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 8:40:00 AM
Lab ID: 1408A13-001 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	270	20		mg/L CaCO3	1	8/22/2014 3:59:36 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 3:59:36 PM	R20763
Total Alkalinity (as CaCO3)	270	20		mg/L CaCO3	1	8/22/2014 3:59:36 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	438	40.0		mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** TRIP BLANK
Project: RCRA Wells 8-19-14 **Collection Date:**
Lab ID: 1408A13-002 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 2:13:14 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 2:13:14 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 2:13:14 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** TRIP BLANK
Project: RCRA Wells 8-19-14 **Collection Date:**
Lab ID: 1408A13-002 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 2:13:14 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 2:13:14 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 2:13:14 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 2:13:14 PM	R20875
Surr: 1,2-Dichloroethane-d4	99.0	70-130		%REC	1	8/28/2014 2:13:14 PM	R20875
Surr: 4-Bromofluorobenzene	123	70-130		%REC	1	8/28/2014 2:13:14 PM	R20875
Surr: Dibromofluoromethane	87.0	70-130		%REC	1	8/28/2014 2:13:14 PM	R20875
Surr: Toluene-d8	99.9	70-130		%REC	1	8/28/2014 2:13:14 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-52
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:00:00 AM
Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/20/2014 11:54:34 PM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/20/2014 11:54:34 PM	14873
Surr: DNOP	117	75.2-161		%REC	1	8/20/2014 11:54:34 PM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 6:48:23 PM	R20730
Surr: BFB	95.6	70.9-130		%REC	1	8/21/2014 6:48:23 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.49	0.10		mg/L	1	8/20/2014 4:41:55 PM	R20712
Chloride	820	25	*	mg/L	50	8/21/2014 11:43:15 AM	R20741
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	8/20/2014 4:54:21 PM	R20712
Bromide	2.0	0.10		mg/L	1	8/20/2014 4:41:55 PM	R20712
Nitrogen, Nitrate (As N)	18	2.0	*	mg/L	20	8/20/2014 4:54:21 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 4:41:55 PM	R20712
Sulfate	1700	25	*	mg/L	50	8/21/2014 11:43:15 AM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:35:50 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:56:10 AM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 11:56:10 AM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:56:10 AM	R20721
Calcium	430	5.0		mg/L	5	8/21/2014 12:34:31 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:56:10 AM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 11:56:10 AM	R20721
Iron	4.1	0.10		mg/L	5	8/21/2014 12:34:31 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 11:56:10 AM	R20721
Magnesium	110	5.0		mg/L	5	8/21/2014 12:34:31 PM	R20721
Manganese	8.8	0.020		mg/L	10	8/21/2014 12:36:21 PM	R20721
Potassium	5.6	1.0		mg/L	1	8/21/2014 11:56:10 AM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 11:56:10 AM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 11:56:10 AM	R20721
Sodium	590	10		mg/L	10	8/21/2014 12:36:21 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 11:56:10 AM	R20721
Zinc	0.13	0.020		mg/L	1	8/21/2014 11:56:10 AM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:25:11 AM	14876
Barium	0.052	0.020		mg/L	1	8/21/2014 11:25:11 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:25:11 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-52
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:00:00 AM
Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:25:11 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:25:11 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:25:11 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:25:11 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Acenaphthylene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Aniline	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Anthracene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Azobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzoic acid	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
Benzyl alcohol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Carbazole	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Chloroaniline	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Chlorophenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Chrysene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Dibenzofuran	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Diethyl phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-52
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:00:00 AM
Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Fluoranthene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Fluorene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Hexachloroethane	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Isophorone	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Methylphenol	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Naphthalene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Nitroaniline	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
3-Nitroaniline	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Nitroaniline	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Nitrobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2-Nitrophenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
4-Nitrophenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Pentachlorophenol	ND	20		µg/L	1	8/21/2014 11:27:47 PM	14881
Phenanthrene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Phenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Pyrene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Pyridine	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/21/2014 11:27:47 PM	14881
Surr: 2-Fluorophenol	63.5	12.1-85.8		%REC	1	8/21/2014 11:27:47 PM	14881
Surr: Phenol-d5	47.9	17.7-65.8		%REC	1	8/21/2014 11:27:47 PM	14881

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

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Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	32.1	26-138		%REC	1	8/21/2014 11:27:47 PM	14881
Surr: Nitrobenzene-d5	96.5	47.5-119		%REC	1	8/21/2014 11:27:47 PM	14881
Surr: 2-Fluorobiphenyl	94.3	48.1-106		%REC	1	8/21/2014 11:27:47 PM	14881
Surr: 4-Terphenyl-d14	87.9	44-113		%REC	1	8/21/2014 11:27:47 PM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 2:41:55 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 2:41:55 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 2:41:55 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875

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Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 2:41:55 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 2:41:55 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 2:41:55 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 2:41:55 PM	R20875
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	8/28/2014 2:41:55 PM	R20875
Surr: 4-Bromofluorobenzene	124	70-130		%REC	1	8/28/2014 2:41:55 PM	R20875
Surr: Dibromofluoromethane	92.8	70-130		%REC	1	8/28/2014 2:41:55 PM	R20875
Surr: Toluene-d8	97.3	70-130		%REC	1	8/28/2014 2:41:55 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	220	1.0	H	mg CO2/L	1	8/22/2014 4:12:57 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

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O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:00:00 AM
Lab ID: 1408A13-003 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	170	20		mg/L CaCO3	1	8/22/2014 4:12:57 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 4:12:57 PM	R20763
Total Alkalinity (as CaCO3)	170	20		mg/L CaCO3	1	8/22/2014 4:12:57 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3760	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

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CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-53
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:20:00 AM
Lab ID: 1408A13-004 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 12:24:32 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 12:24:32 AM	14873
Surr: DNOP	110	75.2-161		%REC	1	8/21/2014 12:24:32 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 7:18:38 PM	R20730
Surr: BFB	101	70.9-130		%REC	1	8/21/2014 7:18:38 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.11	0.10		mg/L	1	8/20/2014 5:06:45 PM	R20712
Chloride	1000	50	*	mg/L	100	8/21/2014 12:20:29 PM	R20741
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	8/20/2014 5:19:10 PM	R20712
Bromide	2.2	0.10		mg/L	1	8/20/2014 5:06:45 PM	R20712
Nitrogen, Nitrate (As N)	6.8	2.0		mg/L	20	8/20/2014 5:19:10 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 5:06:45 PM	R20712
Sulfate	1300	50	*	mg/L	100	8/21/2014 12:20:29 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:37:38 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:03:18 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:03:18 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:03:18 PM	R20721
Calcium	340	10		mg/L	10	8/21/2014 12:38:17 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:03:18 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:03:18 PM	R20721
Iron	0.029	0.020		mg/L	1	8/21/2014 12:03:18 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:03:18 PM	R20721
Magnesium	59	1.0		mg/L	1	8/21/2014 12:03:18 PM	R20721
Manganese	0.10	0.0020		mg/L	1	8/21/2014 12:03:18 PM	R20721
Potassium	5.1	1.0		mg/L	1	8/21/2014 12:03:18 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:03:18 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:03:18 PM	R20721
Sodium	750	10		mg/L	10	8/21/2014 12:38:17 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:03:18 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:03:18 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:26:47 AM	14876
Barium	0.041	0.020		mg/L	1	8/21/2014 11:26:47 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:26:47 AM	14876

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EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:26:47 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:26:47 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:26:47 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:26:47 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Acenaphthylene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Aniline	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Anthracene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Azobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benz(a)anthracene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzo(a)pyrene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzo(b)fluoranthene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzo(g,h,i)perylene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzo(k)fluoranthene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzoic acid	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
Benzyl alcohol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Bis(2-chloroethoxy)methane	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Bis(2-chloroethyl)ether	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Bis(2-chloroisopropyl)ether	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Bis(2-ethylhexyl)phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Bromophenyl phenyl ether	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Butyl benzyl phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Carbazole	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Chloro-3-methylphenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Chloroaniline	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Chloronaphthalene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Chlorophenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Chlorophenyl phenyl ether	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Chrysene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Di-n-butyl phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Di-n-octyl phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Dibenz(a,h)anthracene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Dibenzofuran	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
1,2-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
1,3-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
1,4-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
3,3´-Dichlorobenzidine	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Diethyl phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-53
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:20:00 AM
Lab ID: 1408A13-004 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Dimethyl phthalate	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4-Dichlorophenol	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4-Dimethylphenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4,6-Dinitro-2-methylphenol	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4-Dinitrophenol	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4-Dinitrotoluene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2,6-Dinitrotoluene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Fluoranthene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Fluorene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Hexachlorobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Hexachlorobutadiene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Hexachlorocyclopentadiene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Hexachloroethane	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Indeno(1,2,3-cd)pyrene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Isophorone	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
1-Methylnaphthalene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Methylnaphthalene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Methylphenol	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
3+4-Methylphenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
N-Nitrosodi-n-propylamine	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
N-Nitrosodimethylamine	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
N-Nitrosodiphenylamine	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Naphthalene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Nitroaniline	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
3-Nitroaniline	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Nitroaniline	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Nitrobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2-Nitrophenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
4-Nitrophenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Pentachlorophenol	ND	22		µg/L	1	8/22/2014 6:31:45 PM	14909
Phenanthrene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Phenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Pyrene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Pyridine	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
1,2,4-Trichlorobenzene	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4,5-Trichlorophenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
2,4,6-Trichlorophenol	ND	11		µg/L	1	8/22/2014 6:31:45 PM	14909
Surr: 2-Fluorophenol	56.2	12.1-85.8		%REC	1	8/22/2014 6:31:45 PM	14909
Surr: Phenol-d5	42.0	17.7-65.8		%REC	1	8/22/2014 6:31:45 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-53
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:20:00 AM
Lab ID: 1408A13-004 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	65.3	26-138		%REC	1	8/22/2014 6:31:45 PM	14909
Surr: Nitrobenzene-d5	76.4	47.5-119		%REC	1	8/22/2014 6:31:45 PM	14909
Surr: 2-Fluorobiphenyl	75.0	48.1-106		%REC	1	8/22/2014 6:31:45 PM	14909
Surr: 4-Terphenyl-d14	71.3	44-113		%REC	1	8/22/2014 6:31:45 PM	14909
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 3:10:37 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 3:10:37 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 3:10:37 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-53
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:20:00 AM
Lab ID: 1408A13-004 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 3:10:37 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 3:10:37 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 3:10:37 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 3:10:37 PM	R20875
Surr: 1,2-Dichloroethane-d4	97.5	70-130		%REC	1	8/28/2014 3:10:37 PM	R20875
Surr: 4-Bromofluorobenzene	126	70-130		%REC	1	8/28/2014 3:10:37 PM	R20875
Surr: Dibromofluoromethane	89.1	70-130		%REC	1	8/28/2014 3:10:37 PM	R20875
Surr: Toluene-d8	99.0	70-130		%REC	1	8/28/2014 3:10:37 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	310	1.0	H	mg CO2/L	1	8/22/2014 4:24:22 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-53
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:20:00 AM
Lab ID: 1408A13-004 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	330	20		mg/L CaCO3	1	8/22/2014 4:24:22 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 4:24:22 PM	R20763
Total Alkalinity (as CaCO3)	330	20		mg/L CaCO3	1	8/22/2014 4:24:22 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3560	100	*	mg/L	1	8/27/2014 4:44:00 PM	14958

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Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	0.62	0.20		mg/L	1	8/21/2014 12:54:24 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 12:54:24 AM	14873
Surr: DNOP	117	75.2-161		%REC	1	8/21/2014 12:54:24 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.72	0.050		mg/L	1	8/21/2014 9:49:30 PM	R20730
Surr: BFB	167	70.9-130	S	%REC	1	8/21/2014 9:49:30 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.20	0.10		mg/L	1	8/20/2014 5:56:24 PM	R20712
Chloride	210	10		mg/L	20	8/20/2014 6:08:49 PM	R20712
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 5:56:24 PM	R20712
Bromide	2.0	0.10		mg/L	1	8/20/2014 5:56:24 PM	R20712
Nitrogen, Nitrate (As N)	ND	2.0		mg/L	20	8/20/2014 6:08:49 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 5:56:24 PM	R20712
Sulfate	830	10	*	mg/L	20	8/20/2014 6:08:49 PM	R20712
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:46:48 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:05:19 PM	R20721
Barium	0.059	0.020		mg/L	1	8/21/2014 12:05:19 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:05:19 PM	R20721
Calcium	260	5.0		mg/L	5	8/21/2014 12:40:10 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:05:19 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:05:19 PM	R20721
Iron	7.9	0.20		mg/L	10	8/21/2014 12:41:44 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:05:19 PM	R20721
Magnesium	69	1.0		mg/L	1	8/21/2014 12:05:19 PM	R20721
Manganese	3.0	0.010		mg/L	5	8/21/2014 12:40:10 PM	R20721
Potassium	3.4	1.0		mg/L	1	8/21/2014 12:05:19 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:05:19 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:05:19 PM	R20721
Sodium	440	5.0		mg/L	5	8/21/2014 12:40:10 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:05:19 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:05:19 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:28:30 AM	14876
Barium	0.26	0.020		mg/L	1	8/21/2014 11:28:30 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:28:30 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	0.011	0.0060		mg/L	1	8/21/2014 11:28:30 AM	14876
Lead	0.011	0.0050		mg/L	1	8/21/2014 11:28:30 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:28:30 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:28:30 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 12:26:40 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Phenol	14	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 12:26:40 AM	14881
Surr: 2-Fluorophenol	69.6	12.1-85.8		%REC	1	8/22/2014 12:26:40 AM	14881
Surr: Phenol-d5	46.7	17.7-65.8		%REC	1	8/22/2014 12:26:40 AM	14881

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	69.4	26-138		%REC	1	8/22/2014 12:26:40 AM	14881
Surr: Nitrobenzene-d5	90.7	47.5-119		%REC	1	8/22/2014 12:26:40 AM	14881
Surr: 2-Fluorobiphenyl	88.3	48.1-106		%REC	1	8/22/2014 12:26:40 AM	14881
Surr: 4-Terphenyl-d14	84.4	44-113		%REC	1	8/22/2014 12:26:40 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	13	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Ethylbenzene	58	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Methyl tert-butyl ether (MTBE)	750	10		µg/L	10	8/29/2014 1:48:06 PM	R20928
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2-Dichloroethane (EDC)	10	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Naphthalene	3.6	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 3:39:19 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 3:39:19 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 3:39:19 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 3:39:19 PM	R20875
Isopropylbenzene	7.8	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 3:39:19 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
n-Propylbenzene	7.3	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
sec-Butylbenzene	3.8	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 3:39:19 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 3:39:19 PM	R20875
Surr: 1,2-Dichloroethane-d4	99.3	70-130		%REC	1	8/28/2014 3:39:19 PM	R20875
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	8/28/2014 3:39:19 PM	R20875
Surr: Dibromofluoromethane	97.2	70-130		%REC	1	8/28/2014 3:39:19 PM	R20875
Surr: Toluene-d8	97.8	70-130		%REC	1	8/28/2014 3:39:19 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	910	1.0	H	mg CO2/L	1	8/22/2014 4:39:23 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-59
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:20:00 PM
Lab ID: 1408A13-005 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	950	20		mg/L CaCO3	1	8/22/2014 4:39:23 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 4:39:23 PM	R20763
Total Alkalinity (as CaCO3)	950	20		mg/L CaCO3	1	8/22/2014 4:39:23 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2370	100	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 1:54:20 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 1:54:20 AM	14873
Surr: DNOP	92.3	75.2-161		%REC	1	8/21/2014 1:54:20 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 10:49:53 PM	R20730
Surr: BFB	104	70.9-130		%REC	1	8/21/2014 10:49:53 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	ND	2.0		mg/L	20	8/20/2014 6:33:38 PM	R20712
Chloride	14	10		mg/L	20	8/20/2014 6:33:38 PM	R20712
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 6:21:14 PM	R20712
Bromide	ND	0.10		mg/L	1	8/20/2014 6:21:14 PM	R20712
Nitrogen, Nitrate (As N)	0.38	0.10		mg/L	1	8/20/2014 6:21:14 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	8/20/2014 6:33:38 PM	R20712
Sulfate	4100	50	*	mg/L	100	8/21/2014 12:32:54 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:48:38 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:06:59 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:06:59 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:06:59 PM	R20721
Calcium	440	5.0		mg/L	5	8/21/2014 12:43:43 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:06:59 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:06:59 PM	R20721
Iron	ND	0.020		mg/L	1	8/21/2014 12:06:59 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:06:59 PM	R20721
Magnesium	39	1.0		mg/L	1	8/21/2014 12:06:59 PM	R20721
Manganese	0.49	0.0020		mg/L	1	8/21/2014 12:06:59 PM	R20721
Potassium	9.7	1.0		mg/L	1	8/21/2014 12:06:59 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:06:59 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:06:59 PM	R20721
Sodium	1400	20		mg/L	20	8/21/2014 12:45:33 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:06:59 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:06:59 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:30:13 AM	14876
Barium	ND	0.020		mg/L	1	8/21/2014 11:30:13 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:30:13 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:30:13 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:30:13 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:30:13 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:30:13 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 12:56:12 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Phenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 12:56:12 AM	14881
Surr: 2-Fluorophenol	71.2	12.1-85.8		%REC	1	8/22/2014 12:56:12 AM	14881
Surr: Phenol-d5	49.2	17.7-65.8		%REC	1	8/22/2014 12:56:12 AM	14881

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	59.6	26-138		%REC	1	8/22/2014 12:56:12 AM	14881
Surr: Nitrobenzene-d5	95.7	47.5-119		%REC	1	8/22/2014 12:56:12 AM	14881
Surr: 2-Fluorobiphenyl	94.5	48.1-106		%REC	1	8/22/2014 12:56:12 AM	14881
Surr: 4-Terphenyl-d14	89.3	44-113		%REC	1	8/22/2014 12:56:12 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 4:08:03 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 4:08:03 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 4:08:03 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 4:08:03 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 4:08:03 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 4:08:03 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 4:08:03 PM	R20875
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%REC	1	8/28/2014 4:08:03 PM	R20875
Surr: 4-Bromofluorobenzene	116	70-130		%REC	1	8/28/2014 4:08:03 PM	R20875
Surr: Dibromofluoromethane	92.1	70-130		%REC	1	8/28/2014 4:08:03 PM	R20875
Surr: Toluene-d8	99.4	70-130		%REC	1	8/28/2014 4:08:03 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	470	1.0	H	mg CO2/L	1	8/22/2014 5:11:50 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-62
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:40:00 PM
Lab ID: 1408A13-006 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	500	20		mg/L CaCO3	1	8/22/2014 5:11:50 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 5:11:50 PM	R20763
Total Alkalinity (as CaCO3)	500	20		mg/L CaCO3	1	8/22/2014 5:11:50 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	5940	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 2:24:10 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 2:24:10 AM	14873
Surr: DNOP	109	75.2-161		%REC	1	8/21/2014 2:24:10 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 11:20:08 PM	R20730
Surr: BFB	99.9	70.9-130		%REC	1	8/21/2014 11:20:08 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	ND	0.10		mg/L	1	8/20/2014 6:46:03 PM	R20712
Chloride	390	50	*	mg/L	100	8/21/2014 12:45:18 PM	R20741
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 6:46:03 PM	R20712
Bromide	7.3	2.0		mg/L	20	8/20/2014 6:58:27 PM	R20712
Nitrogen, Nitrate (As N)	170	2.0	*	mg/L	20	8/20/2014 6:58:27 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	8/20/2014 6:58:27 PM	R20712
Sulfate	2400	50	*	mg/L	100	8/21/2014 12:45:18 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:50:29 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:09:01 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:09:01 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:09:01 PM	R20721
Calcium	560	10		mg/L	10	8/21/2014 12:52:45 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:09:01 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:09:01 PM	R20721
Iron	0.022	0.020		mg/L	1	8/21/2014 12:09:01 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:09:01 PM	R20721
Magnesium	180	10		mg/L	10	8/21/2014 12:52:45 PM	R20721
Manganese	1.4	0.020		mg/L	10	8/21/2014 12:52:45 PM	R20721
Potassium	5.7	1.0		mg/L	1	8/21/2014 12:09:01 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:09:01 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:09:01 PM	R20721
Sodium	680	10		mg/L	10	8/21/2014 12:52:45 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:09:01 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:09:01 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:41:58 AM	14876
Barium	0.093	0.020		mg/L	1	8/21/2014 11:41:58 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:41:58 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:41:58 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:41:58 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:41:58 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:41:58 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 1:25:44 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Phenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 1:25:44 AM	14881
Surr: 2-Fluorophenol	71.6	12.1-85.8		%REC	1	8/22/2014 1:25:44 AM	14881
Surr: Phenol-d5	50.2	17.7-65.8		%REC	1	8/22/2014 1:25:44 AM	14881

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	55.6	26-138		%REC	1	8/22/2014 1:25:44 AM	14881
Surr: Nitrobenzene-d5	105	47.5-119		%REC	1	8/22/2014 1:25:44 AM	14881
Surr: 2-Fluorobiphenyl	101	48.1-106		%REC	1	8/22/2014 1:25:44 AM	14881
Surr: 4-Terphenyl-d14	91.4	44-113		%REC	1	8/22/2014 1:25:44 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 4:36:44 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 4:36:44 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 4:36:44 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 4:36:44 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 4:36:44 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 4:36:44 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 4:36:44 PM	R20875
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	8/28/2014 4:36:44 PM	R20875
Surr: 4-Bromofluorobenzene	124	70-130		%REC	1	8/28/2014 4:36:44 PM	R20875
Surr: Dibromofluoromethane	92.8	70-130		%REC	1	8/28/2014 4:36:44 PM	R20875
Surr: Toluene-d8	97.1	70-130		%REC	1	8/28/2014 4:36:44 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	380	1.0	H	mg CO2/L	1	8/22/2014 5:32:19 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-63
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 1:00:00 PM
Lab ID: 1408A13-007 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	400	20		mg/L CaCO3	1	8/22/2014 5:32:19 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 5:32:19 PM	R20763
Total Alkalinity (as CaCO3)	400	20		mg/L CaCO3	1	8/22/2014 5:32:19 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	5230	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 2:54:03 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 2:54:03 AM	14873
Surr: DNOP	103	75.2-161		%REC	1	8/21/2014 2:54:03 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/21/2014 11:50:11 PM	R20730
Surr: BFB	100	70.9-130		%REC	1	8/21/2014 11:50:11 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	ND	0.10		mg/L	1	8/20/2014 7:10:52 PM	R20712
Chloride	1100	50	*	mg/L	100	8/21/2014 12:57:43 PM	R20741
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	8/20/2014 7:23:17 PM	R20712
Bromide	2.6	0.10		mg/L	1	8/20/2014 7:10:52 PM	R20712
Nitrogen, Nitrate (As N)	36	2.0	*	mg/L	20	8/20/2014 7:23:17 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 7:10:52 PM	R20712
Sulfate	1600	50	*	mg/L	100	8/21/2014 12:57:43 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:52:20 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:11:02 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:11:02 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:11:02 PM	R20721
Calcium	470	10		mg/L	10	8/21/2014 12:54:31 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:11:02 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:11:02 PM	R20721
Iron	0.045	0.020		mg/L	1	8/21/2014 12:11:02 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:11:02 PM	R20721
Magnesium	69	1.0		mg/L	1	8/21/2014 12:11:02 PM	R20721
Manganese	ND	0.0020		mg/L	1	8/21/2014 12:11:02 PM	R20721
Potassium	5.4	1.0		mg/L	1	8/21/2014 12:11:02 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:11:02 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:11:02 PM	R20721
Sodium	840	10		mg/L	10	8/21/2014 12:54:31 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:11:02 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:11:02 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:43:45 AM	14876
Barium	0.11	0.020		mg/L	1	8/21/2014 11:43:45 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:43:45 AM	14876

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:43:45 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:43:45 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:43:45 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:43:45 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 1:55:17 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Phenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 1:55:17 AM	14881
Surr: 2-Fluorophenol	61.9	12.1-85.8		%REC	1	8/22/2014 1:55:17 AM	14881
Surr: Phenol-d5	54.4	17.7-65.8		%REC	1	8/22/2014 1:55:17 AM	14881

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Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	27.2	26-138		%REC	1	8/22/2014 1:55:17 AM	14881
Surr: Nitrobenzene-d5	105	47.5-119		%REC	1	8/22/2014 1:55:17 AM	14881
Surr: 2-Fluorobiphenyl	104	48.1-106		%REC	1	8/22/2014 1:55:17 AM	14881
Surr: 4-Terphenyl-d14	94.1	44-113		%REC	1	8/22/2014 1:55:17 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 5:05:23 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 5:05:23 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 5:05:23 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 5:05:23 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 5:05:23 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 5:05:23 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 5:05:23 PM	R20875
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	8/28/2014 5:05:23 PM	R20875
Surr: 4-Bromofluorobenzene	126	70-130		%REC	1	8/28/2014 5:05:23 PM	R20875
Surr: Dibromofluoromethane	93.4	70-130		%REC	1	8/28/2014 5:05:23 PM	R20875
Surr: Toluene-d8	97.0	70-130		%REC	1	8/28/2014 5:05:23 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	270	1.0	H	mg CO2/L	1	8/22/2014 5:49:40 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-008 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	290	20		mg/L CaCO3	1	8/22/2014 5:49:40 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 5:49:40 PM	R20763
Total Alkalinity (as CaCO3)	290	20		mg/L CaCO3	1	8/22/2014 5:49:40 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	4340	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 3:23:55 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 3:23:55 AM	14873
Surr: DNOP	85.6	75.2-161		%REC	1	8/21/2014 3:23:55 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/22/2014 12:20:16 AM	R20730
Surr: BFB	103	70.9-130		%REC	1	8/22/2014 12:20:16 AM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	ND	0.10		mg/L	1	8/20/2014 7:35:41 PM	R20712
Chloride	1000	50	*	mg/L	100	8/21/2014 1:10:07 PM	R20741
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	8/20/2014 7:48:06 PM	R20712
Bromide	2.6	0.10		mg/L	1	8/20/2014 7:35:41 PM	R20712
Nitrogen, Nitrate (As N)	36	2.0	*	mg/L	20	8/20/2014 7:48:06 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 7:35:41 PM	R20712
Sulfate	1600	50	*	mg/L	100	8/21/2014 1:10:07 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:54:12 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:13:03 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:13:03 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:13:03 PM	R20721
Calcium	470	10		mg/L	10	8/21/2014 12:56:26 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:13:03 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:13:03 PM	R20721
Iron	0.039	0.020		mg/L	1	8/21/2014 12:13:03 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:13:03 PM	R20721
Magnesium	68	1.0		mg/L	1	8/21/2014 12:13:03 PM	R20721
Manganese	ND	0.0020		mg/L	1	8/21/2014 12:13:03 PM	R20721
Potassium	5.4	1.0		mg/L	1	8/21/2014 12:13:03 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:13:03 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:13:03 PM	R20721
Sodium	820	10		mg/L	10	8/21/2014 12:56:26 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:13:03 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:13:03 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:45:29 AM	14876
Barium	0.21	0.020		mg/L	1	8/21/2014 11:45:29 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:45:29 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	0.0083	0.0060		mg/L	1	8/21/2014 11:45:29 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:45:29 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:45:29 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:45:29 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4-Dimethylphenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
3+4-Methylphenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 2:24:50 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Phenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 2:24:50 AM	14881
Surr: 2-Fluorophenol	60.9	12.1-85.8		%REC	1	8/22/2014 2:24:50 AM	14881
Surr: Phenol-d5	46.1	17.7-65.8		%REC	1	8/22/2014 2:24:50 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	44.5	26-138		%REC	1	8/22/2014 2:24:50 AM	14881
Surr: Nitrobenzene-d5	89.5	47.5-119		%REC	1	8/22/2014 2:24:50 AM	14881
Surr: 2-Fluorobiphenyl	93.3	48.1-106		%REC	1	8/22/2014 2:24:50 AM	14881
Surr: 4-Terphenyl-d14	85.2	44-113		%REC	1	8/22/2014 2:24:50 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 5:34:01 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 5:34:01 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 5:34:01 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 5:34:01 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 5:34:01 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 5:34:01 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 5:34:01 PM	R20875
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	8/28/2014 5:34:01 PM	R20875
Surr: 4-Bromofluorobenzene	127	70-130		%REC	1	8/28/2014 5:34:01 PM	R20875
Surr: Dibromofluoromethane	91.9	70-130		%REC	1	8/28/2014 5:34:01 PM	R20875
Surr: Toluene-d8	97.2	70-130		%REC	1	8/28/2014 5:34:01 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	270	1.0	H	mg CO2/L	1	8/22/2014 6:03:54 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-64 D
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 11:11:00 AM
Lab ID: 1408A13-009 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	290	20		mg/L CaCO3	1	8/22/2014 6:03:54 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 6:03:54 PM	R20763
Total Alkalinity (as CaCO3)	290	20		mg/L CaCO3	1	8/22/2014 6:03:54 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	4340	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	7.4	0.20		mg/L	1	8/21/2014 3:53:36 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 3:53:36 AM	14873
Surr: DNOP	114	75.2-161		%REC	1	8/21/2014 3:53:36 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	21	2.5		mg/L	50	8/21/2014 4:17:25 PM	R20730
Surr: BFB	113	70.9-130		%REC	50	8/21/2014 4:17:25 PM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	ND	0.10		mg/L	1	8/20/2014 8:25:19 PM	R20712
Chloride	290	10	*	mg/L	20	8/20/2014 8:37:44 PM	R20712
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 8:25:19 PM	R20712
Bromide	0.69	0.10		mg/L	1	8/20/2014 8:25:19 PM	R20712
Nitrogen, Nitrate (As N)	1.2	0.10		mg/L	1	8/21/2014 10:16:21 AM	R20741
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 8:25:19 PM	R20712
Sulfate	530	10	*	mg/L	20	8/20/2014 8:37:44 PM	R20712
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:55:56 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:15:03 PM	R20721
Barium	0.17	0.020		mg/L	1	8/21/2014 12:15:03 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:15:03 PM	R20721
Calcium	250	5.0		mg/L	5	8/21/2014 12:58:23 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:15:03 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:15:03 PM	R20721
Iron	3.4	0.10		mg/L	5	8/21/2014 12:58:23 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:15:03 PM	R20721
Magnesium	73	1.0		mg/L	1	8/21/2014 12:15:03 PM	R20721
Manganese	2.7	0.010		mg/L	5	8/21/2014 12:58:23 PM	R20721
Potassium	4.3	1.0		mg/L	1	8/21/2014 12:15:03 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:15:03 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:15:03 PM	R20721
Sodium	650	10		mg/L	10	8/21/2014 1:00:10 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:15:03 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:15:03 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:47:23 AM	14876
Barium	0.17	0.020		mg/L	1	8/21/2014 11:47:23 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:47:23 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:47:23 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:47:23 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:47:23 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:47:23 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Chloro-3-methylphenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2-Chlorophenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4-Dichlorophenol	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4-Dimethylphenol	210	50		µg/L	5	8/22/2014 11:49:28 AM	14881
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4-Dinitrophenol	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
1-Methylnaphthalene	150	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2-Methylnaphthalene	150	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2-Methylphenol	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
3+4-Methylphenol	14	10		µg/L	1	8/22/2014 2:54:01 AM	14881
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Naphthalene	430	50		µg/L	5	8/22/2014 11:49:28 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2-Nitrophenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
4-Nitrophenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Pentachlorophenol	ND	20		µg/L	1	8/22/2014 2:54:01 AM	14881
Phenanthrene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Phenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Pyrene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4,5-Trichlorophenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
2,4,6-Trichlorophenol	ND	10		µg/L	1	8/22/2014 2:54:01 AM	14881
Surr: 2-Fluorophenol	21.0	12.1-85.8		%REC	1	8/22/2014 2:54:01 AM	14881
Surr: Phenol-d5	41.2	17.7-65.8		%REC	1	8/22/2014 2:54:01 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	25.0	26-138	S	%REC	1	8/22/2014 2:54:01 AM	14881
Surr: Nitrobenzene-d5	98.7	47.5-119		%REC	1	8/22/2014 2:54:01 AM	14881
Surr: 2-Fluorobiphenyl	113	48.1-106	S	%REC	1	8/22/2014 2:54:01 AM	14881
Surr: 4-Terphenyl-d14	100	44-113		%REC	1	8/22/2014 2:54:01 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	5100	100		µg/L	100	8/28/2014 6:02:42 PM	R20875
Toluene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Ethylbenzene	1400	100		µg/L	100	8/28/2014 6:02:42 PM	R20875
Methyl tert-butyl ether (MTBE)	480	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2,4-Trimethylbenzene	1400	100		µg/L	100	8/28/2014 6:02:42 PM	R20875
1,3,5-Trimethylbenzene	17	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2-Dichloroethane (EDC)	140	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Naphthalene	240	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
1-Methylnaphthalene	110	40		µg/L	10	8/28/2014 6:31:23 PM	R20875
2-Methylnaphthalene	50	40		µg/L	10	8/28/2014 6:31:23 PM	R20875
Acetone	ND	100		µg/L	10	8/28/2014 6:31:23 PM	R20875
Bromobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Bromodichloromethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Bromoform	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Bromomethane	ND	30		µg/L	10	8/28/2014 6:31:23 PM	R20875
2-Butanone	ND	100		µg/L	10	8/28/2014 6:31:23 PM	R20875
Carbon disulfide	ND	100		µg/L	10	8/28/2014 6:31:23 PM	R20875
Carbon Tetrachloride	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Chlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Chloroethane	ND	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
Chloroform	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Chloromethane	ND	30		µg/L	10	8/28/2014 6:31:23 PM	R20875
2-Chlorotoluene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
4-Chlorotoluene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
cis-1,2-DCE	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
cis-1,3-Dichloropropene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
Dibromochloromethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Dibromomethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2-Dichlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,3-Dichlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,4-Dichlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Dichlorodifluoromethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1-Dichloroethene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2-Dichloropropane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,3-Dichloropropane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
2,2-Dichloropropane	ND	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1-Dichloropropene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Hexachlorobutadiene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
2-Hexanone	ND	100		µg/L	10	8/28/2014 6:31:23 PM	R20875
Isopropylbenzene	84	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
4-Isopropyltoluene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
4-Methyl-2-pentanone	ND	100		µg/L	10	8/28/2014 6:31:23 PM	R20875
Methylene Chloride	ND	30		µg/L	10	8/28/2014 6:31:23 PM	R20875
n-Butylbenzene	ND	30		µg/L	10	8/28/2014 6:31:23 PM	R20875
n-Propylbenzene	190	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
sec-Butylbenzene	12	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Styrene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
tert-Butylbenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
Tetrachloroethene (PCE)	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
trans-1,2-DCE	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
trans-1,3-Dichloropropene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2,3-Trichlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2,4-Trichlorobenzene	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1,1-Trichloroethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,1,2-Trichloroethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Trichloroethene (TCE)	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Trichlorofluoromethane	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
1,2,3-Trichloropropane	ND	20		µg/L	10	8/28/2014 6:31:23 PM	R20875
Vinyl chloride	ND	10		µg/L	10	8/28/2014 6:31:23 PM	R20875
Xylenes, Total	280	15		µg/L	10	8/28/2014 6:31:23 PM	R20875
Surr: 1,2-Dichloroethane-d4	94.6	70-130		%REC	10	8/28/2014 6:31:23 PM	R20875
Surr: 4-Bromofluorobenzene	72.8	70-130		%REC	10	8/28/2014 6:31:23 PM	R20875
Surr: Dibromofluoromethane	88.6	70-130		%REC	10	8/28/2014 6:31:23 PM	R20875
Surr: Toluene-d8	95.2	70-130		%REC	10	8/28/2014 6:31:23 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	1400	2.5	H	mg CO2/L	2.5	8/25/2014 4:35:07 PM	R20804
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-65
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 2:40:00 PM
Lab ID: 1408A13-010 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	1500	50		mg/L CaCO3	2.5	8/25/2014 4:35:07 PM	R20804
Carbonate (As CaCO3)	ND	5.0		mg/L CaCO3	2.5	8/25/2014 4:35:07 PM	R20804
Total Alkalinity (as CaCO3)	1500	50		mg/L CaCO3	2.5	8/25/2014 4:35:07 PM	R20804
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2630	100	*	mg/L	1	8/27/2014 4:44:00 PM	14958

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	0.64	0.20		mg/L	1	8/21/2014 4:23:10 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 4:23:10 AM	14873
Surr: DNOP	103	75.2-161		%REC	1	8/21/2014 4:23:10 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/22/2014 12:50:14 AM	R20730
Surr: BFB	102	70.9-130		%REC	1	8/22/2014 12:50:14 AM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.63	0.10		mg/L	1	8/20/2014 8:50:09 PM	R20712
Chloride	12	0.50		mg/L	1	8/20/2014 8:50:09 PM	R20712
Bromide	0.11	0.10		mg/L	1	8/20/2014 8:50:09 PM	R20712
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 8:50:09 PM	R20712
Sulfate	210	10		mg/L	20	8/20/2014 9:02:34 PM	R20712
Nitrate+Nitrite as N	2.7	1.0		mg/L	5	8/25/2014 5:11:54 PM	R20794
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:57:41 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:16:49 PM	R20721
Barium	0.034	0.020		mg/L	1	8/21/2014 12:16:49 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:16:49 PM	R20721
Calcium	130	5.0		mg/L	5	8/21/2014 1:02:10 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:16:49 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:16:49 PM	R20721
Iron	ND	0.020		mg/L	1	8/21/2014 12:16:49 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:16:49 PM	R20721
Magnesium	25	1.0		mg/L	1	8/21/2014 12:16:49 PM	R20721
Manganese	0.088	0.0020		mg/L	1	8/21/2014 12:16:49 PM	R20721
Potassium	3.2	1.0		mg/L	1	8/21/2014 12:16:49 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:16:49 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:16:49 PM	R20721
Sodium	55	1.0		mg/L	1	8/21/2014 12:16:49 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:16:49 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:16:49 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:48:59 AM	14876
Barium	0.047	0.020		mg/L	1	8/21/2014 11:48:59 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:48:59 AM	14876
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:48:59 AM	14876

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Lead	0.0058	0.0050		mg/L	1	8/21/2014 11:48:59 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:48:59 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:48:59 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Acenaphthylene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Aniline	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Anthracene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Azobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benz(a)anthracene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzo(a)pyrene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzo(b)fluoranthene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzo(g,h,i)perylene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzo(k)fluoranthene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzoic acid	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
Benzyl alcohol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Bis(2-chloroethoxy)methane	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Bis(2-chloroethyl)ether	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Bis(2-chloroisopropyl)ether	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Bis(2-ethylhexyl)phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Bromophenyl phenyl ether	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Butyl benzyl phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Carbazole	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Chloro-3-methylphenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Chloroaniline	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Chloronaphthalene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Chlorophenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Chlorophenyl phenyl ether	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Chrysene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Di-n-butyl phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Di-n-octyl phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Dibenz(a,h)anthracene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Dibenzofuran	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
1,2-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
1,3-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
1,4-Dichlorobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
3,3´-Dichlorobenzidine	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Diethyl phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Dimethyl phthalate	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
2,4-Dichlorophenol	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
2,4-Dimethylphenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4,6-Dinitro-2-methylphenol	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
2,4-Dinitrophenol	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
2,4-Dinitrotoluene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2,6-Dinitrotoluene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Fluoranthene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Fluorene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Hexachlorobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Hexachlorobutadiene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Hexachlorocyclopentadiene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Hexachloroethane	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Indeno(1,2,3-cd)pyrene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Isophorone	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
1-Methylnaphthalene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Methylnaphthalene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Methylphenol	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
3+4-Methylphenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
N-Nitrosodi-n-propylamine	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
N-Nitrosodimethylamine	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
N-Nitrosodiphenylamine	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Naphthalene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Nitroaniline	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
3-Nitroaniline	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Nitroaniline	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Nitrobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2-Nitrophenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
4-Nitrophenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Pentachlorophenol	ND	23		µg/L	1	8/22/2014 7:00:40 PM	14909
Phenanthrene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Phenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Pyrene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Pyridine	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
1,2,4-Trichlorobenzene	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2,4,5-Trichlorophenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
2,4,6-Trichlorophenol	ND	11		µg/L	1	8/22/2014 7:00:40 PM	14909
Surr: 2-Fluorophenol	24.6	12.1-85.8		%REC	1	8/22/2014 7:00:40 PM	14909
Surr: Phenol-d5	24.2	17.7-65.8		%REC	1	8/22/2014 7:00:40 PM	14909
Surr: 2,4,6-Tribromophenol	34.4	26-138		%REC	1	8/22/2014 7:00:40 PM	14909

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Surr: Nitrobenzene-d5	54.8	47.5-119		%REC	1	8/22/2014 7:00:40 PM	14909
Surr: 2-Fluorobiphenyl	56.6	48.1-106		%REC	1	8/22/2014 7:00:40 PM	14909
Surr: 4-Terphenyl-d14	54.5	44-113		%REC	1	8/22/2014 7:00:40 PM	14909
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 7:28:42 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 7:28:42 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 7:28:42 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 7:28:42 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 7:28:42 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 7:28:42 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 7:28:42 PM	R20875
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%REC	1	8/28/2014 7:28:42 PM	R20875
Surr: 4-Bromofluorobenzene	114	70-130		%REC	1	8/28/2014 7:28:42 PM	R20875
Surr: Dibromofluoromethane	91.3	70-130		%REC	1	8/28/2014 7:28:42 PM	R20875
Surr: Toluene-d8	95.6	70-130		%REC	1	8/28/2014 7:28:42 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	380	1.0	H	mg CO2/L	1	8/22/2014 6:52:09 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	410	20		mg/L CaCO3	1	8/22/2014 6:52:09 PM	R20763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-67
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 9:40:00 AM
Lab ID: 1408A13-011 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 6:52:09 PM	R20763
Total Alkalinity (as CaCO3)	410	20		mg/L CaCO3	1	8/22/2014 6:52:09 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	830	100	*	mg/L	1	8/27/2014 4:44:00 PM	14958

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Rinsate
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 3:15:00 PM
Lab ID: 1408A13-012 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	8/21/2014 2:47:12 PM	R20730
Benzene	ND	1.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
Toluene	ND	1.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
Ethylbenzene	ND	1.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
Xylenes, Total	ND	2.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/21/2014 2:47:12 PM	R20730
Surr: 4-Bromofluorobenzene	115	82.9-139		%REC	1	8/21/2014 2:47:12 PM	R20730

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 4:52:38 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 4:52:38 AM	14873
Surr: DNOP	112	75.2-161		%REC	1	8/21/2014 4:52:38 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/22/2014 1:20:16 AM	R20730
Surr: BFB	103	70.9-130		%REC	1	8/22/2014 1:20:16 AM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.45	0.10		mg/L	1	8/20/2014 9:14:59 PM	R20712
Chloride	34	10		mg/L	20	8/20/2014 9:27:24 PM	R20712
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 9:14:59 PM	R20712
Bromide	0.23	0.10		mg/L	1	8/20/2014 9:14:59 PM	R20712
Nitrogen, Nitrate (As N)	8.6	0.10		mg/L	1	8/21/2014 10:03:56 AM	R20741
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 9:14:59 PM	R20712
Sulfate	300	10	*	mg/L	20	8/20/2014 9:27:24 PM	R20712
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 2:59:26 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:18:40 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:18:40 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:18:40 PM	R20721
Calcium	90	1.0		mg/L	1	8/21/2014 12:18:40 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:18:40 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:18:40 PM	R20721
Iron	0.031	0.020		mg/L	1	8/21/2014 12:18:40 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:18:40 PM	R20721
Magnesium	24	1.0		mg/L	1	8/21/2014 12:18:40 PM	R20721
Manganese	0.059	0.0020		mg/L	1	8/21/2014 12:18:40 PM	R20721
Potassium	3.0	1.0		mg/L	1	8/21/2014 12:18:40 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:18:40 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:18:40 PM	R20721
Sodium	120	5.0		mg/L	5	8/21/2014 1:04:04 PM	R20721
Uranium	ND	0.10		mg/L	1	8/21/2014 12:18:40 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:18:40 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:50:49 AM	14876
Barium	0.16	0.020		mg/L	1	8/21/2014 11:50:49 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:50:49 AM	14876

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	8/21/2014 11:50:49 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:50:49 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:50:49 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:50:49 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Acenaphthene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Acenaphthylene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Aniline	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Anthracene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Azobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benz(a)anthracene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzo(a)pyrene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzo(b)fluoranthene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzo(g,h,i)perylene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzo(k)fluoranthene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzoic acid	ND	20		µg/L	1	8/22/2014 3:52:04 AM	14881
Benzyl alcohol	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Bis(2-chloroethyl)ether	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
4-Bromophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Butyl benzyl phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Carbazole	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
4-Chloro-3-methylphenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
4-Chloroaniline	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Chloronaphthalene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Chlorophenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Chrysene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Di-n-butyl phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Di-n-octyl phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Dibenz(a,h)anthracene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Dibenzofuran	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
1,2-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
1,3-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
1,4-Dichlorobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
3,3´-Dichlorobenzidine	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Diethyl phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Dimethyl phthalate	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2,4-Dichlorophenol	ND	22		µg/L	1	8/22/2014 7:29:24 PM	14909
2,4-Dimethylphenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
4,6-Dinitro-2-methylphenol	ND	22		µg/L	1	8/22/2014 7:29:24 PM	14909
2,4-Dinitrophenol	ND	22		µg/L	1	8/22/2014 7:29:24 PM	14909
2,4-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2,6-Dinitrotoluene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Fluoranthene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Fluorene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Hexachlorobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Hexachlorobutadiene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Hexachlorocyclopentadiene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Hexachloroethane	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Isophorone	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
1-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Methylnaphthalene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Methylphenol	ND	22		µg/L	1	8/22/2014 7:29:24 PM	14909
3+4-Methylphenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
N-Nitrosodimethylamine	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
N-Nitrosodiphenylamine	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Naphthalene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Nitroaniline	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
3-Nitroaniline	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
4-Nitroaniline	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Nitrobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2-Nitrophenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
4-Nitrophenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
Pentachlorophenol	ND	22		µg/L	1	8/22/2014 7:29:24 PM	14909
Phenanthrene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Phenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
Pyrene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
Pyridine	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
1,2,4-Trichlorobenzene	ND	10		µg/L	1	8/22/2014 3:52:04 AM	14881
2,4,5-Trichlorophenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
2,4,6-Trichlorophenol	ND	11		µg/L	1	8/22/2014 7:29:24 PM	14909
Surr: 2-Fluorophenol	39.5	12.1-85.8		%REC	1	8/22/2014 7:29:24 PM	14909
Surr: Phenol-d5	25.6	17.7-65.8		%REC	1	8/22/2014 7:29:24 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**	
Surr: 2,4,6-Tribromophenol	62.8	26-138		%REC	1	8/22/2014 7:29:24 PM	14909
Surr: Nitrobenzene-d5	95.0	47.5-119		%REC	1	8/22/2014 3:52:04 AM	14881
Surr: 2-Fluorobiphenyl	99.5	48.1-106		%REC	1	8/22/2014 3:52:04 AM	14881
Surr: 4-Terphenyl-d14	92.7	44-113		%REC	1	8/22/2014 3:52:04 AM	14881
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 7:57:27 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 7:57:27 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 7:57:27 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 7:57:27 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 7:57:27 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 7:57:27 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 7:57:27 PM	R20875
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	8/28/2014 7:57:27 PM	R20875
Surr: 4-Bromofluorobenzene	118	70-130		%REC	1	8/28/2014 7:57:27 PM	R20875
Surr: Dibromofluoromethane	92.2	70-130		%REC	1	8/28/2014 7:57:27 PM	R20875
Surr: Toluene-d8	101	70-130		%REC	1	8/28/2014 7:57:27 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	200	1.0	H	mg CO2/L	1	8/22/2014 7:09:28 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-68
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:30:00 AM
Lab ID: 1408A13-013 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	220	20		mg/L CaCO3	1	8/22/2014 7:09:28 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 7:09:28 PM	R20763
Total Alkalinity (as CaCO3)	220	20		mg/L CaCO3	1	8/22/2014 7:09:28 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	790	40.0	*	mg/L	1	8/27/2014 4:44:00 PM	14958

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/21/2014 5:22:13 AM	14873
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/21/2014 5:22:13 AM	14873
Surr: DNOP	119	75.2-161		%REC	1	8/21/2014 5:22:13 AM	14873
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/22/2014 1:50:28 AM	R20730
Surr: BFB	102	70.9-130		%REC	1	8/22/2014 1:50:28 AM	R20730
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.69	0.10		mg/L	1	8/20/2014 9:39:48 PM	R20712
Chloride	440	50	*	mg/L	100	8/21/2014 1:22:32 PM	R20741
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/20/2014 9:39:48 PM	R20712
Bromide	0.99	0.10		mg/L	1	8/20/2014 9:39:48 PM	R20712
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	8/21/2014 9:51:31 AM	R20741
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/20/2014 9:39:48 PM	R20712
Sulfate	2500	50	*	mg/L	100	8/21/2014 1:22:32 PM	R20741
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/22/2014 3:01:13 PM	14900
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 12:20:25 PM	R20721
Barium	ND	0.020		mg/L	1	8/21/2014 12:20:25 PM	R20721
Cadmium	ND	0.0020		mg/L	1	8/21/2014 12:20:25 PM	R20721
Calcium	600	10		mg/L	10	8/21/2014 1:17:49 PM	R20721
Chromium	ND	0.0060		mg/L	1	8/21/2014 12:20:25 PM	R20721
Copper	ND	0.0060		mg/L	1	8/21/2014 12:20:25 PM	R20721
Iron	18	0.40		mg/L	20	8/21/2014 1:19:35 PM	R20721
Lead	ND	0.0050		mg/L	1	8/21/2014 12:20:25 PM	R20721
Magnesium	170	5.0		mg/L	5	8/21/2014 1:05:56 PM	R20721
Manganese	3.0	0.010		mg/L	5	8/21/2014 1:05:56 PM	R20721
Potassium	5.0	1.0		mg/L	1	8/21/2014 12:20:25 PM	R20721
Selenium	ND	0.050		mg/L	1	8/21/2014 12:20:25 PM	R20721
Silver	ND	0.0050		mg/L	1	8/21/2014 12:20:25 PM	R20721
Sodium	720	10		mg/L	10	8/21/2014 1:17:49 PM	R20721
Uranium	ND	0.50		mg/L	5	8/21/2014 1:05:56 PM	R20721
Zinc	ND	0.020		mg/L	1	8/21/2014 12:20:25 PM	R20721
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/21/2014 11:52:32 AM	14876
Barium	0.22	0.020		mg/L	1	8/21/2014 11:52:32 AM	14876
Cadmium	ND	0.0020		mg/L	1	8/21/2014 11:52:32 AM	14876

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	0.0080	0.0060		mg/L	1	8/21/2014 11:52:32 AM	14876
Lead	ND	0.0050		mg/L	1	8/21/2014 11:52:32 AM	14876
Selenium	ND	0.050		mg/L	1	8/21/2014 11:52:32 AM	14876
Silver	ND	0.0050		mg/L	1	8/21/2014 11:52:32 AM	14876
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Acenaphthene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Acenaphthylene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Aniline	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Anthracene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Azobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benz(a)anthracene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzo(a)pyrene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzo(b)fluoranthene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzo(g,h,i)perylene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzo(k)fluoranthene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzoic acid	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
Benzyl alcohol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Bis(2-chloroethoxy)methane	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Bis(2-chloroethyl)ether	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Bis(2-chloroisopropyl)ether	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Bis(2-ethylhexyl)phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Bromophenyl phenyl ether	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Butyl benzyl phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Carbazole	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Chloro-3-methylphenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Chloroaniline	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Chloronaphthalene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Chlorophenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Chlorophenyl phenyl ether	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Chrysene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Di-n-butyl phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Di-n-octyl phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Dibenz(a,h)anthracene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Dibenzofuran	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
1,2-Dichlorobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
1,3-Dichlorobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
1,4-Dichlorobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
3,3´-Dichlorobenzidine	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Diethyl phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Dimethyl phthalate	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4-Dichlorophenol	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4-Dimethylphenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4,6-Dinitro-2-methylphenol	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4-Dinitrophenol	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4-Dinitrotoluene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2,6-Dinitrotoluene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Fluoranthene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Fluorene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Hexachlorobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Hexachlorobutadiene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Hexachlorocyclopentadiene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Hexachloroethane	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Indeno(1,2,3-cd)pyrene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Isophorone	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
1-Methylnaphthalene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Methylnaphthalene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Methylphenol	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
3+4-Methylphenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
N-Nitrosodi-n-propylamine	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
N-Nitrosodimethylamine	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
N-Nitrosodiphenylamine	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Naphthalene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Nitroaniline	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
3-Nitroaniline	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Nitroaniline	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Nitrobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2-Nitrophenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
4-Nitrophenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Pentachlorophenol	ND	25		µg/L	1	8/22/2014 7:58:05 PM	14909
Phenanthrene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Phenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Pyrene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Pyridine	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
1,2,4-Trichlorobenzene	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4,5-Trichlorophenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
2,4,6-Trichlorophenol	ND	12		µg/L	1	8/22/2014 7:58:05 PM	14909
Surr: 2-Fluorophenol	47.0	12.1-85.8		%REC	1	8/22/2014 7:58:05 PM	14909
Surr: Phenol-d5	37.1	17.7-65.8		%REC	1	8/22/2014 7:58:05 PM	14909

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Surr: 2,4,6-Tribromophenol	64.3	26-138		%REC	1	8/22/2014 7:58:05 PM	14909
Surr: Nitrobenzene-d5	67.9	47.5-119		%REC	1	8/22/2014 7:58:05 PM	14909
Surr: 2-Fluorobiphenyl	66.4	48.1-106		%REC	1	8/22/2014 7:58:05 PM	14909
Surr: 4-Terphenyl-d14	58.6	44-113		%REC	1	8/22/2014 7:58:05 PM	14909
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Toluene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Ethylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Naphthalene	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
2-Methylnaphthalene	ND	4.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Acetone	ND	10		µg/L	1	8/28/2014 8:26:19 PM	R20875
Bromobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Bromodichloromethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Bromoform	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Bromomethane	ND	3.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
2-Butanone	ND	10		µg/L	1	8/28/2014 8:26:19 PM	R20875
Carbon disulfide	ND	10		µg/L	1	8/28/2014 8:26:19 PM	R20875
Carbon Tetrachloride	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Chlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Chloroethane	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Chloroform	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Chloromethane	ND	3.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
2-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
4-Chlorotoluene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
cis-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Dibromochloromethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Dibromomethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875

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Qualifiers:

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- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **cadg**	
1,1-Dichloroethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1-Dichloroethene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,3-Dichloropropane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
2,2-Dichloropropane	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Hexachlorobutadiene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
2-Hexanone	ND	10		µg/L	1	8/28/2014 8:26:19 PM	R20875
Isopropylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
4-Isopropyltoluene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
4-Methyl-2-pentanone	ND	10		µg/L	1	8/28/2014 8:26:19 PM	R20875
Methylene Chloride	ND	3.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
n-Butylbenzene	ND	3.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
n-Propylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
sec-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Styrene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
tert-Butylbenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
trans-1,2-DCE	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Trichlorofluoromethane	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Vinyl chloride	ND	1.0		µg/L	1	8/28/2014 8:26:19 PM	R20875
Xylenes, Total	ND	1.5		µg/L	1	8/28/2014 8:26:19 PM	R20875
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	1	8/28/2014 8:26:19 PM	R20875
Surr: 4-Bromofluorobenzene	124	70-130		%REC	1	8/28/2014 8:26:19 PM	R20875
Surr: Dibromofluoromethane	90.6	70-130		%REC	1	8/28/2014 8:26:19 PM	R20875
Surr: Toluene-d8	94.5	70-130		%REC	1	8/28/2014 8:26:19 PM	R20875
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	730	1.0	H	mg CO2/L	1	8/22/2014 7:20:53 PM	R20763
SM2320B: ALKALINITY						Analyst: **JRR**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
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S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** MW-70
Project: RCRA Wells 8-19-14 **Collection Date:** 8/19/2014 10:00:00 AM
Lab ID: 1408A13-014 **Matrix:** AQUEOUS **Received Date:** 8/20/2014 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	780	20		mg/L CaCO3	1	8/22/2014 7:20:53 PM	R20763
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/22/2014 7:20:53 PM	R20763
Total Alkalinity (as CaCO3)	780	20		mg/L CaCO3	1	8/22/2014 7:20:53 PM	R20763
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	4960	100	*	mg/L	1	8/27/2014 4:44:00 PM	14958

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20712**	RunNo: **20712**
Prep Date:	Analysis Date: **8/20/2014**	SeqNo: **602707** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20741**	RunNo: **20741**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603501** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20741**	RunNo: **20741**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603565** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20794**	RunNo: **20794**
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605116** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20794**	RunNo: **20794**
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605154** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

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- B Analyte detected in the associated Method Blank
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- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **MB-14873**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **14873**	RunNo: **20683**
Prep Date: **8/20/2014**	Analysis Date: **8/20/2014**	SeqNo: **602569** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.42		0.5000		83.8	75.2	161			

Sample ID **1408A13-001CMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **MW-51**	Batch ID: **14873**	RunNo: **20683**
Prep Date: **8/20/2014**	Analysis Date: **8/20/2014**	SeqNo: **602586** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	106	64.4	178			
Surr: DNOP	0.27		0.2500		109	75.2	161			

Sample ID **1408A13-001CMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **MW-51**	Batch ID: **14873**	RunNo: **20683**
Prep Date: **8/20/2014**	Analysis Date: **8/20/2014**	SeqNo: **602587** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	0.20	2.500	0	112	64.4	178	5.70	20	
Surr: DNOP	0.29		0.2500		118	75.2	161	0	0	

Qualifiers:

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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**R20730**	RunNo:	**20730**					
Prep Date:		Analysis Date:	**8/21/2014**	SeqNo:	**603220**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		99.1	70.9	130			

Sample ID	**1408A13-010BMS**	SampType:	**MS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**MW-65**	Batch ID:	**R20730**	RunNo:	**20730**					
Prep Date:		Analysis Date:	**8/21/2014**	SeqNo:	**603230**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	49	2.5	25.00	21.09	111	70.4	127			
Surr: BFB	1200		1000		121	70.9	130			

Sample ID	**1408A13-010BMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**MW-65**	Batch ID:	**R20730**	RunNo:	**20730**					
Prep Date:		Analysis Date:	**8/21/2014**	SeqNo:	**603231**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	47	2.5	25.00	21.09	103	70.4	127	3.99	20	
Surr: BFB	1200		1000		120	70.9	130	0	0	

Qualifiers:

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- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R20730**	RunNo: **20730**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603246** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 4-Bromofluorobenzene	23		20.00		115	82.9	139			

Sample ID **1408A13-012AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **Rinsate**	Batch ID: **R20730**	RunNo: **20730**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603255** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	18	2.5	20.00	0	89.8	45.4	143			
Benzene	20	1.0	20.00	0.4000	98.9	80	120			
Toluene	20	1.0	20.00	0.4660	99.8	80	120			
Ethylbenzene	21	1.0	20.00	0	105	79.7	126			
Xylenes, Total	66	2.0	60.00	1.180	107	80	120			
1,2,4-Trimethylbenzene	22	1.0	20.00	0.4120	106	80.3	122			
1,3,5-Trimethylbenzene	22	1.0	20.00	0.3020	109	80	120			
Surr: 4-Bromofluorobenzene	24		20.00		122	82.9	139			

Sample ID **1408A13-012AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **Rinsate**	Batch ID: **R20730**	RunNo: **20730**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603256** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	18	2.5	20.00	0	89.5	45.4	143	0.290	20	
Benzene	20	1.0	20.00	0.4000	96.5	80	120	2.33	20	
Toluene	20	1.0	20.00	0.4660	96.9	80	120	2.91	20	
Ethylbenzene	21	1.0	20.00	0	103	79.7	126	2.12	20	
Xylenes, Total	64	2.0	60.00	1.180	105	80	120	2.38	20	
1,2,4-Trimethylbenzene	21	1.0	20.00	0.4120	104	80.3	122	1.79	20	
1,3,5-Trimethylbenzene	22	1.0	20.00	0.3020	107	80	120	1.97	20	
Surr: 4-Bromofluorobenzene	24		20.00		121	82.9	139	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
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- S Spike Recovery outside accepted recovery limits
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- H Holding times for preparation or analysis exceeded
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- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20875**	RunNo: **20875**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607425** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%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								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
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	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
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	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20875**	RunNo: **20875**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607425** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	3.0								
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	2.0								
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								
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	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.6	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		124	70	130			
Surr: Dibromofluoromethane	8.5		10.00		85.0	70	130			
Surr: Toluene-d8	10		10.00		99.7	70	130			

Sample ID **b4**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20875**	RunNo: **20875**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607445** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **b4**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20875**	RunNo: **20875**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607445** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
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	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
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	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **b4**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20875**	RunNo: **20875**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607445** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
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	2.0								
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								
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	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.1	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		121	70	130			
Surr: Dibromofluoromethane	8.3		10.00		83.4	70	130			
Surr: Toluene-d8	9.6		10.00		95.9	70	130			

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R20928**	RunNo: **20928**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608986** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	1.0								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	9.7		10.00		97.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **1408a13-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-51**	Batch ID: **R20928**	RunNo: **20928**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608990** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.5	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID **1408a13-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-51**	Batch ID: **R20928**	RunNo: **20928**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608991** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.5		10.00		95.2	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		112	70	130	0	0	
Surr: Toluene-d8	10		10.00		101	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**
09-Sep-14

Client: Western Refining Southwest, Inc.
Project: RCRA Wells 8-19-14

Sample ID **mb-14881**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14881**	RunNo: **20725**
Prep Date: **8/21/2014**	Analysis Date: **8/21/2014**	SeqNo: **603354** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
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	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**
09-Sep-14

Client: Western Refining Southwest, Inc.
Project: RCRA Wells 8-19-14

Sample ID **mb-14881**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14881**	RunNo: **20725**
Prep Date: **8/21/2014**	Analysis Date: **8/21/2014**	SeqNo: **603354** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	20								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
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-Fluorophenol	120		200.0		58.2	12.1	85.8			
Surr: Phenol-d5	82		200.0		41.1	17.7	65.8			
Surr: 2,4,6-Tribromophenol	120		200.0		60.8	26	138			
Surr: Nitrobenzene-d5	78		100.0		78.3	47.5	119			
Surr: 2-Fluorobiphenyl	78		100.0		78.5	48.1	106			
Surr: 4-Terphenyl-d14	81		100.0		81.3	44	113			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**
09-Sep-14

Client: Western Refining Southwest, Inc.
Project: RCRA Wells 8-19-14

Sample ID **mb-14909**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14909**	RunNo: **20759**
Prep Date: **8/22/2014**	Analysis Date: **8/22/2014**	SeqNo: **604193** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
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	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3´-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**
09-Sep-14

Client: Western Refining Southwest, Inc.
Project: RCRA Wells 8-19-14

Sample ID **mb-14909**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW**	Batch ID: **14909**	RunNo: **20759**
Prep Date: **8/22/2014**	Analysis Date: **8/22/2014**	SeqNo: **604193** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	20								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
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-Fluorophenol	130		200.0		65.4	12.1	85.8			
Surr: Phenol-d5	130		200.0		62.9	17.7	65.8			
Surr: 2,4,6-Tribromophenol	120		200.0		60.6	26	138			
Surr: Nitrobenzene-d5	77		100.0		76.8	47.5	119			
Surr: 2-Fluorobiphenyl	74		100.0		74.3	48.1	106			
Surr: 4-Terphenyl-d14	79		100.0		79.0	44	113			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**
09-Sep-14

Client: Western Refining Southwest, Inc.
Project: RCRA Wells 8-19-14

Sample ID	**MB-14900**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **14900**			RunNo: **20745**					
Prep Date:	**8/22/2014**	Analysis Date: **8/22/2014**			SeqNo: **603750**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**1408A13-004FMS**	SampType: **MS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**MW-53**	Batch ID: **14900**			RunNo: **20745**					
Prep Date:	**8/22/2014**	Analysis Date: **8/22/2014**			SeqNo: **603759**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	90.9	75	125			

Sample ID	**1408A13-004FMSD**	SampType: **MSD**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**MW-53**	Batch ID: **14900**			RunNo: **20745**					
Prep Date:	**8/22/2014**	Analysis Date: **8/22/2014**			SeqNo: **603762**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0045	0.00020	0.005000	0	90.5	75	125	0.460	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R20721**	RunNo: **20721**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **602939** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Uranium	ND	0.10								
Zinc	ND	0.020								

Sample ID **1408A13-014GMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **MW-70**	Batch ID: **R20721**	RunNo: **20721**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603182** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0	115	75	125			
Barium	0.48	0.020	0.5000	0.01993	91.8	75	125			
Cadmium	0.48	0.0020	0.5000	0	96.7	75	125			
Chromium	0.47	0.0060	0.5000	0	93.6	75	125			
Copper	0.50	0.0060	0.5000	0	99.2	75	125			
Lead	0.45	0.0050	0.5000	0	89.1	75	125			
Potassium	57	1.0	50.00	5.001	104	75	125			
Selenium	0.55	0.050	0.5000	0	110	75	125			
Silver	0.45	0.0050	0.5000	0	91.0	75	125			
Zinc	0.48	0.020	0.5000	0.007150	93.7	75	125			

Sample ID **1408A13-014GMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **MW-70**	Batch ID: **R20721**	RunNo: **20721**
Prep Date:	Analysis Date: **8/21/2014**	SeqNo: **603183** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.57	0.020	0.5000	0	114	75	125	0.522	20	
Barium	0.45	0.020	0.5000	0.01993	86.6	75	125	5.64	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID	**1408A13-014GMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**MW-70**	Batch ID:	**R20721**		RunNo:	**20721**				
Prep Date:		Analysis Date:	**8/21/2014**		SeqNo:	**603183**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.0020	0.5000	0	95.2	75	125	1.52	20	
Chromium	0.46	0.0060	0.5000	0	92.1	75	125	1.62	20	
Copper	0.49	0.0060	0.5000	0	97.2	75	125	2.04	20	
Lead	0.44	0.0050	0.5000	0	87.8	75	125	1.42	20	
Potassium	57	1.0	50.00	5.001	104	75	125	0.171	20	
Selenium	0.52	0.050	0.5000	0	104	75	125	5.65	20	
Silver	0.44	0.0050	0.5000	0	88.1	75	125	3.28	20	
Zinc	0.47	0.020	0.5000	0.007150	92.3	75	125	1.44	20	

Sample ID	**1408A13-014GMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**MW-70**	Batch ID:	**R20721**		RunNo:	**20721**				
Prep Date:		Analysis Date:	**8/21/2014**		SeqNo:	**603203**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	2.1	0.50	2.500	0	83.5	75	125			

Sample ID	**1408A13-014GMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**MW-70**	Batch ID:	**R20721**		RunNo:	**20721**				
Prep Date:		Analysis Date:	**8/21/2014**		SeqNo:	**603204**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	2.0	0.50	2.500	0	81.4	75	125	2.47	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **MB-14876**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **14876**	RunNo: **20721**
Prep Date: **8/20/2014**	Analysis Date: **8/21/2014**	SeqNo: **602943** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **1408A13-006FMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **MW-62**	Batch ID: **14876**	RunNo: **20721**
Prep Date: **8/20/2014**	Analysis Date: **8/21/2014**	SeqNo: **602965** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0.01082	95.1	75	125			
Barium	0.45	0.020	0.5000	0.01339	86.4	75	125			
Cadmium	0.45	0.0020	0.5000	0	89.8	75	125			
Chromium	0.42	0.0060	0.5000	0	84.7	75	125			
Lead	0.42	0.0050	0.5000	0	83.1	75	125			
Selenium	0.40	0.050	0.5000	0	79.3	75	125			
Silver	0.49	0.0050	0.5000	0	97.9	75	125			

Sample ID **1408A13-006FMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **MW-62**	Batch ID: **14876**	RunNo: **20721**
Prep Date: **8/20/2014**	Analysis Date: **8/21/2014**	SeqNo: **602969** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0.01082	99.4	75	125	4.29	20	
Barium	0.46	0.020	0.5000	0.01339	88.5	75	125	2.33	20	
Cadmium	0.46	0.0020	0.5000	0	92.4	75	125	2.86	20	
Chromium	0.44	0.0060	0.5000	0	88.0	75	125	3.73	20	
Lead	0.43	0.0050	0.5000	0	86.4	75	125	3.87	20	
Selenium	0.43	0.050	0.5000	0	86.6	75	125	8.79	20	
Silver	0.50	0.0050	0.5000	0	99.2	75	125	1.36	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20763**	RunNo: **20763**							
Prep Date:	Analysis Date: **8/22/2014**	SeqNo: **604272**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20763**	RunNo: **20763**							
Prep Date:	Analysis Date: **8/22/2014**	SeqNo: **604287**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605425**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20804**	RunNo: **20804**							
Prep Date:	Analysis Date: **8/25/2014**	SeqNo: **605442**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408A13**

09-Sep-14

Client: Western Refining Southwest, Inc.

Project: RCRA Wells 8-19-14

Sample ID	**MB-14958**	SampType:	**MBLK**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**PBW**	Batch ID:	**14958**		RunNo:	**20839**				
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**		SeqNo:	**606511**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**1408A13-008EMS**	SampType:	**MS**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**MW-64**	Batch ID:	**14958**		RunNo:	**20839**				
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**		SeqNo:	**606520**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	6460	40.0	2000	4340	106	80	120			

Sample ID	**1408A13-008EMSD**	SampType:	**MSD**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**MW-64**	Batch ID:	**14958**		RunNo:	**20839**				
Prep Date:	**8/26/2014**	Analysis Date:	**8/27/2014**		SeqNo:	**606521**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	6410	40.0	2000	4340	103	80	120	0.870	5	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1408A13** RcptNo: 1

Received by/date: LM 08/20/14

Logged By: **Ashley Gallegos** **8/20/2014 8:05:00 AM** AG

Completed By: **Ashley Gallegos** **8/20/2014 10:57:19 AM** AG

Reviewed By: AT 08/20/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials
11. Were any sample containers received broken?	Yes ☐	No ☑	# of preserved bottles checked for pH: 2 3 6
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? NO
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13
8-19-14	8:40	H2O	MW-51	5-VOA	HCl	-001
				1-liter	Amber	
				1-500	amber	
				1-500	HNO_3	
			filter	1-250	HNO_3	
				1-500		
				1-250	H_2SO_4	
			TRIP BLANK			-002

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved METALS	Gen. Chem. - Alkalinity	Gen. Chem., Anions, CO_2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	16:20	Robert Krakow	Christie Walters	8/19/14	16:20
8/19/14	17:50	Christie Walters			

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob & Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13
8-19-14	9:00	H_2O	MW-52	5-VOA	HCl	-003
				1-liter	Amber	-003
				1-500	Amber	
				1-500	HNO_3	
			filter	1-250	HNO_3	
				1-500		
				1-250	H_2SO_4	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [illegible])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anion, CO_2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christine Walte	8/19/14	1620
8/19/14	1750	Christine Walte		08/20/14	0805

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13
8-19-14	9:20	H_2O	MW-53	5-VOA	HCl	-004
				1-liter	amber	
				1-500	amber	
				1-500	HNO_3	
			Filter	1-250	HNO_3	
				1-500		
				1-250	H_2SO_4	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved Metals	Gen. chem. Alkalinity	Gen. chem. Anion, CO_2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Chad Walk	8/19/14	1620
8/19/14	1750	Chad Walk		08/20/14	0805

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved metals	Gen. Chem. Alkalinity	Gen. Chem. Wtbly CO_2	Air Bubbles (Y or N)
8-19-14	1:20	H_2O	MW-59	5-VOA	HCl	-005			X							X						
				1-liter	amber												X					
				1-500	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date	Time	Relinquished by	Received by	Date	Time
8-19-14	1620	Robert Krakow	Christine Walker	8/19/14	1620
8/19/14	1750	Christine Walker		08/20/14	0805

Remarks:

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Chain-of-Custody Record

Client: Western Refinery

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
RCRA 8-14-19

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408413	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO - Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, COD	Air Bubbles (Y or N)
8-19-14	~~1240~~ 1:40	H_2O	MW-[redacted]62	5-VOA	HCl	-006			X							X						
	1:40			1-liter	Amber												X					
				1-500	Amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date	Time	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christine Walker	8/19/14	1620
8/19/14	1750	Christine Walker		08/20/14	0805

Remarks:

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Chain-of-Custody Record

Client: Western Refinery

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTALS	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO-Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, CO_2	Air Bubbles (Y or N)
8-19-14	1:00	H_2O	MW-63	5-VOA	HCl	-007			X							X						
				1-liter	amber												X						
				1-500	amber													X					
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date	Time	Relinquished by	Received by	Date	Time
8-19-14	1620	Robert Kirkland	Christine Walker	8/19/14	1620
8/19/14	1750	Christine Walker		08/20/14	0805

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO-Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, CO_2	Air Bubbles (Y or N)
8-19-14	1111	H_2O	MW-64	5-VOA	HCl	-008			X							X						
				1-liter	amber												X						
				1-500	amber													X					
				1-500	HNO_3								X										
			filter	1-250	HNO_3														X				
				1-500																X			
				1-250	H_2SO_4																X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christine Walters	8/19/14	1620
8/19/14	1750	Christine Walters			

Received by: 08/20/K10805

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: RCRA Wells 8-19-14

Project #:

Project Manager: Kelly Robinson

Sampler: Bob + Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Ext. 8015B	Dissolved metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, Cl_2	Air Bubbles (Y or N)
8-19-14	[redacted]	H_2O	MW-[redacted]64D	5-VOA	HCl	-009			X							X						
	1111			1-liter	amber												X						
				1-500	amber													X					
				1-500	HNO_3								X									
			filted	1-250	HNO_3														X			
				1-500																X		
				1-250	H_2SO_4																X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christie Walker	8/19/14	1620
8/19/14	1750	Christie Walker			

Date:	Time:	Relinquished by:	Received by:	Date	Time
				08/20/14	0805

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13
8-19-14	2:40	H_2O	MW-[redacted]65	5-VOA	HCl	-010
				1-liter	Amber	
				1-500	Amber	
				1-500	HNO_3	
			filter	1-250	HNO_3	
				1-500		
				1-250	H_2SO_4	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, CO_2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Erickson	Christine Walters	8/19/14	1620
8/19/14	1750	Christine Walters			

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	D120 Extended 8015B	Dissolved Metal	Gen. Chem. Alkalinity	Gen. Chem. Anions, Cl, F	Air Bubbles (Y or N)
8-19-14	9:40	H_2O	MW-67	5-VOA	HCl	-011			X							X						
				1-liter	Amber												X						
				1-500	amber													X					
				1-500	HNO_3								X										
			filter	1-~~500~~ 250	HNO_3														X				
				1-500																X			
				1-250	H_2SO_4																X		
8-19-14	3:15		Rinsate	3-VOA	HCl	-012	X																

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
8-19-14	1620	Robert Knakow	Christie Walls	8/19/14	1620	
8/19/14	1750	Christie Walls		08/20/14	0805	

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
RCRA 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13
8-19-14	1030	H2O	MW-68	5-VOA	HCl	-013
				1-liter	Amber	
				1-500	Amber	
				1-500	HNO3	
				1-250	HNO3	
				1-500		
				1-250	H2SO4	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anions, CO2	Air Bubbles (Y or N)
		X							X						
										X					
											X				
						X									
												X			
													X		
														X	

Date	Time	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christine Walker	8/19/14	1620
8/19/14	1750	Christine Walker		08/20/14	0805

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
RCRA Wells 8-19-14

Project #:

Project Manager:
Kelly Robinson

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

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Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408A13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	Dissolved Metals	Gen. Chem. Alkalinity	Gen. Chem. Anion, CO_3	Air Bubbles (Y or N)
8-19-14	10:00	H_2O	MW-70	5-VOA	HCl	-014			X							X						
				1-liter	Amber												X					
				1-500	Amber													X				
				1-500	HNO_3								X									
				1-250	HNO_3														X			
				1-500	/															X		
				1-250	H_2SO_4																X	

Date	Time	Relinquished by:	Received by:	Date	Time
8-19-14	1620	Robert Krakow	Christie Walters	8/19/14	1620
8/19/14	1750	Christie Walters		08/20/14	0805

Remarks:

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TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 29, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: CW Wells 4-15-14 OrderNo.: 1404738

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/16/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Workorder Sample Summary

WO#: **1404738**

29-Apr-14

CLIENT: Western Refining Southwest, Inc.
Project: CW Wells 4-15-14

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1404738-001	CW 0+60		4/15/2014 9:30:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404738-001	CW 0+60		4/15/2014 9:30:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404738-002	CW 25+95		4/15/2014 1:00:00 PM	4/16/2014 10:10:00 AM	Aqueous
1404738-002	CW 25+95		4/15/2014 1:00:00 PM	4/16/2014 10:10:00 AM	Aqueous

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** CW 0+60
Project: CW Wells 4-15-14 **Collection Date:** 4/15/2014 9:30:00 AM
Lab ID: 1404738-001 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	1.7	0.20		mg/L	1	4/17/2014 2:19:01 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 2:19:01 PM	12735
Surr: DNOP	106	76-161		%REC	1	4/17/2014 2:19:01 PM	12735
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	5.6	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Toluene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Ethylbenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2,4-Trimethylbenzene	4.0	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Naphthalene	120	20		µg/L	10	4/18/2014 3:06:45 PM	R18099
1-Methylnaphthalene	22	4.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
2-Methylnaphthalene	41	4.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Acetone	ND	10		µg/L	1	4/22/2014 5:29:11 PM	R18153
Bromobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Bromodichloromethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Bromoform	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Bromomethane	ND	3.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
2-Butanone	ND	10		µg/L	1	4/22/2014 5:29:11 PM	R18153
Carbon disulfide	ND	10		µg/L	1	4/22/2014 5:29:11 PM	R18153
Carbon Tetrachloride	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Chlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Chloroethane	ND	2.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Chloroform	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Chloromethane	ND	3.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
2-Chlorotoluene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
4-Chlorotoluene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
cis-1,2-DCE	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Dibromochloromethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Dibromomethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1-Dichloroethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** CW 0+60
Project: CW Wells 4-15-14 **Collection Date:** 4/15/2014 9:30:00 AM
Lab ID: 1404738-001 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,1-Dichloroethene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2-Dichloropropane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,3-Dichloropropane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
2,2-Dichloropropane	ND	2.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1-Dichloropropene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Hexachlorobutadiene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
2-Hexanone	ND	10		µg/L	1	4/22/2014 5:29:11 PM	R18153
Isopropylbenzene	110	10		µg/L	10	4/18/2014 3:06:45 PM	R18099
4-Isopropyltoluene	1.1	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
4-Methyl-2-pentanone	ND	10		µg/L	1	4/22/2014 5:29:11 PM	R18153
Methylene Chloride	ND	3.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
n-Butylbenzene	4.9	3.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
n-Propylbenzene	120	10		µg/L	10	4/18/2014 3:06:45 PM	R18099
sec-Butylbenzene	14	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Styrene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
tert-Butylbenzene	3.3	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
trans-1,2-DCE	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Trichlorofluoromethane	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Vinyl chloride	ND	1.0		µg/L	1	4/22/2014 5:29:11 PM	R18153
Xylenes, Total	ND	1.5		µg/L	1	4/22/2014 5:29:11 PM	R18153
Surr: 1,2-Dichloroethane-d4	95.1	70-130		%REC	1	4/22/2014 5:29:11 PM	R18153
Surr: 4-Bromofluorobenzene	102	70-130		%REC	1	4/22/2014 5:29:11 PM	R18153
Surr: Dibromofluoromethane	94.2	70-130		%REC	1	4/22/2014 5:29:11 PM	R18153
Surr: Toluene-d8	93.2	70-130		%REC	1	4/22/2014 5:29:11 PM	R18153

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** CW 25+95
Project: CW Wells 4-15-14 **Collection Date:** 4/15/2014 1:00:00 PM
Lab ID: 1404738-002 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/17/2014 2:49:30 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 2:49:30 PM	12735
Surr: DNOP	106	76-161		%REC	1	4/17/2014 2:49:30 PM	12735
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	280	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Toluene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Ethylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2,4-Trimethylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,3,5-Trimethylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2-Dichloroethane (EDC)	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Naphthalene	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
1-Methylnaphthalene	ND	40		µg/L	10	4/22/2014 6:25:10 PM	R18153
2-Methylnaphthalene	ND	40		µg/L	10	4/22/2014 6:25:10 PM	R18153
Acetone	ND	100		µg/L	10	4/22/2014 6:25:10 PM	R18153
Bromobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Bromodichloromethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Bromoform	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Bromomethane	ND	30		µg/L	10	4/22/2014 6:25:10 PM	R18153
2-Butanone	ND	100		µg/L	10	4/22/2014 6:25:10 PM	R18153
Carbon disulfide	ND	100		µg/L	10	4/22/2014 6:25:10 PM	R18153
Carbon Tetrachloride	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Chlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Chloroethane	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
Chloroform	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Chloromethane	ND	30		µg/L	10	4/22/2014 6:25:10 PM	R18153
2-Chlorotoluene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
4-Chlorotoluene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
cis-1,2-DCE	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
cis-1,3-Dichloropropene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
Dibromochloromethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Dibromomethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2-Dichlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,3-Dichlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,4-Dichlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Dichlorodifluoromethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1-Dichloroethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** CW 25+95
Project: CW Wells 4-15-14 **Collection Date:** 4/15/2014 1:00:00 PM
Lab ID: 1404738-002 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,1-Dichloroethene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2-Dichloropropane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,3-Dichloropropane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
2,2-Dichloropropane	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1-Dichloropropene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Hexachlorobutadiene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
2-Hexanone	ND	100		µg/L	10	4/22/2014 6:25:10 PM	R18153
Isopropylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
4-Isopropyltoluene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
4-Methyl-2-pentanone	ND	100		µg/L	10	4/22/2014 6:25:10 PM	R18153
Methylene Chloride	ND	30		µg/L	10	4/22/2014 6:25:10 PM	R18153
n-Butylbenzene	ND	30		µg/L	10	4/22/2014 6:25:10 PM	R18153
n-Propylbenzene	10	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
sec-Butylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Styrene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
tert-Butylbenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
Tetrachloroethene (PCE)	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
trans-1,2-DCE	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
trans-1,3-Dichloropropene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2,3-Trichlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2,4-Trichlorobenzene	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1,1-Trichloroethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,1,2-Trichloroethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Trichloroethene (TCE)	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Trichlorofluoromethane	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
1,2,3-Trichloropropane	ND	20		µg/L	10	4/22/2014 6:25:10 PM	R18153
Vinyl chloride	ND	10		µg/L	10	4/22/2014 6:25:10 PM	R18153
Xylenes, Total	ND	15		µg/L	10	4/22/2014 6:25:10 PM	R18153
Surr: 1,2-Dichloroethane-d4	92.5	70-130		%REC	10	4/22/2014 6:25:10 PM	R18153
Surr: 4-Bromofluorobenzene	94.4	70-130		%REC	10	4/22/2014 6:25:10 PM	R18153
Surr: Dibromofluoromethane	93.5	70-130		%REC	10	4/22/2014 6:25:10 PM	R18153
Surr: Toluene-d8	91.3	70-130		%REC	10	4/22/2014 6:25:10 PM	R18153

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404738**

29-Apr-14

Client: Western Refining Southwest, Inc.

Project: CW Wells 4-15-14

Sample ID **MB-12735**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **12735**	RunNo: **18017**
Prep Date: **4/16/2014**	Analysis Date: **4/17/2014**	SeqNo: **520905** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.59		0.5000		117	76	161			

Sample ID **1404738-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **CW 0+60**	Batch ID: **12735**	RunNo: **18017**
Prep Date: **4/16/2014**	Analysis Date: **4/17/2014**	SeqNo: **520948** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.2	0.20	2.500	1.677	100	72.1	156			
Surr: DNOP	0.28		0.2500		111	76	161			

Sample ID **1404738-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **CW 0+60**	Batch ID: **12735**	RunNo: **18017**
Prep Date: **4/16/2014**	Analysis Date: **4/17/2014**	SeqNo: **520949** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.1	0.20	2.500	1.677	96.6	72.1	156	2.08	20	
Surr: DNOP	0.30		0.2500		118	76	161	0	0	

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404738**

29-Apr-14

Client: Western Refining Southwest, Inc.

Project: CW Wells 4-15-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R18099**	RunNo: **18099**
Prep Date:	Analysis Date: **4/18/2014**	SeqNo: **522540** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.3	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.1	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.0	70	130			
Surr: Toluene-d8	9.1		10.00		90.9	70	130			

Sample ID **b3**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R18099**	RunNo: **18099**
Prep Date:	Analysis Date: **4/18/2014**	SeqNo: **522545** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.8	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.5	70	130			
Surr: Dibromofluoromethane	9.4		10.00		94.5	70	130			
Surr: Toluene-d8	9.3		10.00		92.6	70	130			

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R18153**	RunNo: **18153**
Prep Date:	Analysis Date: **4/22/2014**	SeqNo: **523911** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%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								
Bromodichloromethane	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404738**

29-Apr-14

Client: Western Refining Southwest, Inc.

Project: CW Wells 4-15-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R18153**	RunNo: **18153**
Prep Date:	Analysis Date: **4/22/2014**	SeqNo: **523911** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
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	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
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	2.0								
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	3.0								
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	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404738**

29-Apr-14

Client: Western Refining Southwest, Inc.

Project: CW Wells 4-15-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R18153**	RunNo: **18153**
Prep Date:	Analysis Date: **4/22/2014**	SeqNo: **523911** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
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	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.6	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.4	70	130			
Surr: Toluene-d8	9.2		10.00		91.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1404738** RcptNo: 1

Received by/date: LM 04/16/14

Logged By: **Ashley Gallegos** **4/16/2014 10:10:00 AM** AG

Completed By: **Ashley Gallegos** **4/16/2014 10:58:35 AM** AG

Reviewed By: AT 04/16/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	Adjusted?
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
CW wells 4-15-14

Project #:

Project Manager:

Sampler: Matt & Bob
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and # (4)	Preservative Type	HEAL No. 1404738
4-15-14	9:30	H_2O	CW 0+60	3-VOA	HCl	-001
				1-500ml	Amber	
4-15-14	1:00		CW 25+95	3-VOA		-002
				1-500ml	Amber	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Extended DRO 8015B				Air Bubbles (Y or N)
									X		X				
									X		X				

Date	Time	Relinquished by:	Received by:	Date	Time
4-15-14	1549	Robert Knabow	Christine Walker	4/15/14	1549
4/15/14	1700	Christine Walker		04/16/14	1010

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 30, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: OW Wells 4/15/14 OrderNo.: 1404740

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 9 sample(s) on 4/16/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Workorder Sample Summary

WO#: **1404740**

30-Apr-14

CLIENT: Western Refining Southwest, Inc.
Project: OW Wells 4/15/14

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1404740-001	OW-3+85		4/15/2014 9:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-001	OW-3+85		4/15/2014 9:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-001	OW-3+85		4/15/2014 9:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-002	OW-16+60		4/15/2014 10:30:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-002	OW-16+60		4/15/2014 10:30:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-002	OW-16+60		4/15/2014 10:30:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-003	OW-22+00		4/15/2014 10:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-003	OW-22+00		4/15/2014 10:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-003	OW-22+00		4/15/2014 10:45:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-004	OW-23+10		4/15/2014 11:00:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-004	OW-23+10		4/15/2014 11:00:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-004	OW-23+10		4/15/2014 11:00:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-005	OW-23+90		4/15/2014 11:15:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-005	OW-23+90		4/15/2014 11:15:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-005	OW-23+90		4/15/2014 11:15:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-006	OW-25+70		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-006	OW-25+70		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-006	OW-25+70		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-007	OW-25+70D		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-007	OW-25+70D		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-007	OW-25+70D		4/15/2014 11:40:00 AM	4/16/2014 10:10:00 AM	Aqueous
1404740-008	Rinsate		4/15/2014 2:30:00 PM	4/16/2014 10:10:00 AM	Aqueous
1404740-009	TRIP BLANK			4/16/2014 10:10:00 AM	Aqueous
1404740-009	TRIP BLANK			4/16/2014 10:10:00 AM	Aqueous

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** OW-3+85
Project: OW Wells 4/15/14 **Collection Date:** 4/15/2014 9:45:00 AM
Lab ID: 1404740-001 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**JME**
Diesel Range Organics (DRO)	110	2.0		mg/L	10	4/21/2014 2:04:56 PM	12735
Motor Oil Range Organics (MRO)	ND	25		mg/L	10	4/21/2014 2:04:56 PM	12735
Surr: DNOP	0	76-161	S	%REC	10	4/21/2014 2:04:56 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	5.0	0.50		mg/L	10	4/21/2014 1:22:22 PM	R18124
Surr: BFB	187	80.4-118	S	%REC	10	4/21/2014 1:22:22 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**cadg**
Benzene	ND	10		µg/L	10	4/18/2014 5:37:34 PM	R18092
Toluene	ND	10		µg/L	10	4/18/2014 5:37:34 PM	R18092
Ethylbenzene	25	10		µg/L	10	4/18/2014 5:37:34 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/18/2014 5:37:34 PM	R18092
Xylenes, Total	ND	15		µg/L	10	4/18/2014 5:37:34 PM	R18092
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	10	4/18/2014 5:37:34 PM	R18092
Surr: 4-Bromofluorobenzene	81.1	70-130		%REC	10	4/18/2014 5:37:34 PM	R18092
Surr: Dibromofluoromethane	103	70-130		%REC	10	4/18/2014 5:37:34 PM	R18092
Surr: Toluene-d8	90.2	70-130		%REC	10	4/18/2014 5:37:34 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-16+60
Project: OW Wells 4/15/14
Collection Date: 4/15/2014 10:30:00 AM
Lab ID: 1404740-002
Matrix: AQUEOUS
Received Date: 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BCN**
Diesel Range Organics (DRO)	40	0.20		mg/L	1	4/17/2014 4:21:54 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 4:21:54 PM	12735
Surr: DNOP	117	76-161		%REC	1	4/17/2014 4:21:54 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	2.9	0.50		mg/L	10	4/21/2014 3:16:49 PM	R18124
Surr: BFB	227	80.4-118	S	%REC	10	4/21/2014 3:16:49 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**cadg**
Benzene	ND	2.0		µg/L	2	4/24/2014 3:57:58 PM	R18198
Toluene	ND	2.0		µg/L	2	4/24/2014 3:57:58 PM	R18198
Ethylbenzene	8.2	2.0		µg/L	2	4/24/2014 3:57:58 PM	R18198
Methyl tert-butyl ether (MTBE)	660	10		µg/L	10	4/18/2014 6:34:51 PM	R18092
Xylenes, Total	ND	3.0		µg/L	2	4/24/2014 3:57:58 PM	R18198
Surr: 1,2-Dichloroethane-d4	91.8	70-130		%REC	2	4/24/2014 3:57:58 PM	R18198
Surr: 4-Bromofluorobenzene	105	70-130		%REC	2	4/24/2014 3:57:58 PM	R18198
Surr: Dibromofluoromethane	101	70-130		%REC	2	4/24/2014 3:57:58 PM	R18198
Surr: Toluene-d8	98.6	70-130		%REC	2	4/24/2014 3:57:58 PM	R18198

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-22+00
Project: OW Wells 4/15/14
Collection Date: 4/15/2014 10:45:00 AM
Lab ID: 1404740-003
Matrix: AQUEOUS
Received Date: 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/17/2014 4:52:39 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 4:52:39 PM	12735
Surr: DNOP	115	76-161		%REC	1	4/17/2014 4:52:39 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/21/2014 4:14:02 PM	R18124
Surr: BFB	85.4	80.4-118		%REC	1	4/21/2014 4:14:02 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 7:32:08 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 7:32:08 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 7:32:08 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 7:32:08 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 7:32:08 PM	R18092
Surr: 1,2-Dichloroethane-d4	106	70-130		%REC	1	4/18/2014 7:32:08 PM	R18092
Surr: 4-Bromofluorobenzene	104	70-130		%REC	1	4/18/2014 7:32:08 PM	R18092
Surr: Dibromofluoromethane	107	70-130		%REC	1	4/18/2014 7:32:08 PM	R18092
Surr: Toluene-d8	94.3	70-130		%REC	1	4/18/2014 7:32:08 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** OW-23+10
Project: OW Wells 4/15/14 **Collection Date:** 4/15/2014 11:00:00 AM
Lab ID: 1404740-004 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	1.0	0.20		mg/L	1	4/17/2014 5:23:14 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 5:23:14 PM	12735
Surr: DNOP	113	76-161		%REC	1	4/17/2014 5:23:14 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.15	0.050		mg/L	1	4/21/2014 4:42:39 PM	R18124
Surr: BFB	86.3	80.4-118		%REC	1	4/21/2014 4:42:39 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 8:00:45 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 8:00:45 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 8:00:45 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 8:00:45 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 8:00:45 PM	R18092
Surr: 1,2-Dichloroethane-d4	97.5	70-130		%REC	1	4/18/2014 8:00:45 PM	R18092
Surr: 4-Bromofluorobenzene	96.1	70-130		%REC	1	4/18/2014 8:00:45 PM	R18092
Surr: Dibromofluoromethane	97.0	70-130		%REC	1	4/18/2014 8:00:45 PM	R18092
Surr: Toluene-d8	96.4	70-130		%REC	1	4/18/2014 8:00:45 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-23+90
Project: OW Wells 4/15/14
Collection Date: 4/15/2014 11:15:00 AM
Lab ID: 1404740-005 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/17/2014 5:54:05 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 5:54:05 PM	12735
Surr: DNOP	111	76-161		%REC	1	4/17/2014 5:54:05 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/21/2014 5:11:13 PM	R18124
Surr: BFB	83.7	80.4-118		%REC	1	4/21/2014 5:11:13 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 8:29:30 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 8:29:30 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 8:29:30 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 8:29:30 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 8:29:30 PM	R18092
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%REC	1	4/18/2014 8:29:30 PM	R18092
Surr: 4-Bromofluorobenzene	105	70-130		%REC	1	4/18/2014 8:29:30 PM	R18092
Surr: Dibromofluoromethane	102	70-130		%REC	1	4/18/2014 8:29:30 PM	R18092
Surr: Toluene-d8	93.9	70-130		%REC	1	4/18/2014 8:29:30 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** OW-25+70
Project: OW Wells 4/15/14 **Collection Date:** 4/15/2014 11:40:00 AM
Lab ID: 1404740-006 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**BCN**
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/17/2014 6:24:50 PM	12735
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/17/2014 6:24:50 PM	12735
Surr: DNOP	113	76-161		%REC	1	4/17/2014 6:24:50 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	0.20	0.050		mg/L	1	4/21/2014 5:39:48 PM	R18124
Surr: BFB	88.4	80.4-118		%REC	1	4/21/2014 5:39:48 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**cadg**
Benzene	ND	1.0		µg/L	1	4/18/2014 8:58:17 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 8:58:17 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 8:58:17 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 8:58:17 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 8:58:17 PM	R18092
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%REC	1	4/18/2014 8:58:17 PM	R18092
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	4/18/2014 8:58:17 PM	R18092
Surr: Dibromofluoromethane	102	70-130		%REC	1	4/18/2014 8:58:17 PM	R18092
Surr: Toluene-d8	92.8	70-130		%REC	1	4/18/2014 8:58:17 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** OW-25+70D
Project: OW Wells 4/15/14 **Collection Date:** 4/15/2014 11:40:00 AM
Lab ID: 1404740-007 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/17/2014 6:55:51 PM	12735
Motor Oil Range Organics (MRO)	3.0	2.5		mg/L	1	4/17/2014 6:55:51 PM	12735
Surr: DNOP	116	76-161		%REC	1	4/17/2014 6:55:51 PM	12735
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.18	0.050		mg/L	1	4/21/2014 6:08:20 PM	R18124
Surr: BFB	88.3	80.4-118		%REC	1	4/21/2014 6:08:20 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 9:27:03 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 9:27:03 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 9:27:03 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 9:27:03 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 9:27:03 PM	R18092
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%REC	1	4/18/2014 9:27:03 PM	R18092
Surr: 4-Bromofluorobenzene	106	70-130		%REC	1	4/18/2014 9:27:03 PM	R18092
Surr: Dibromofluoromethane	98.6	70-130		%REC	1	4/18/2014 9:27:03 PM	R18092
Surr: Toluene-d8	91.4	70-130		%REC	1	4/18/2014 9:27:03 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Rinsate
Project: OW Wells 4/15/14
Collection Date: 4/15/2014 2:30:00 PM
Lab ID: 1404740-008 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 9:55:41 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 9:55:41 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 9:55:41 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 9:55:41 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 9:55:41 PM	R18092
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	4/18/2014 9:55:41 PM	R18092
Surr: 4-Bromofluorobenzene	102	70-130		%REC	1	4/18/2014 9:55:41 PM	R18092
Surr: Dibromofluoromethane	106	70-130		%REC	1	4/18/2014 9:55:41 PM	R18092
Surr: Toluene-d8	93.4	70-130		%REC	1	4/18/2014 9:55:41 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** TRIP BLANK
Project: OW Wells 4/15/14 **Collection Date:**
Lab ID: 1404740-009 **Matrix:** AQUEOUS **Received Date:** 4/16/2014 10:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/21/2014 6:37:00 PM	R18124
Surr: BFB	86.0	80.4-118		%REC	1	4/21/2014 6:37:00 PM	R18124
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/18/2014 5:08:52 PM	R18092
Toluene	ND	1.0		µg/L	1	4/18/2014 5:08:52 PM	R18092
Ethylbenzene	ND	1.0		µg/L	1	4/18/2014 5:08:52 PM	R18092
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/18/2014 5:08:52 PM	R18092
Xylenes, Total	ND	1.5		µg/L	1	4/18/2014 5:08:52 PM	R18092
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	4/18/2014 5:08:52 PM	R18092
Surr: 4-Bromofluorobenzene	104	70-130		%REC	1	4/18/2014 5:08:52 PM	R18092
Surr: Dibromofluoromethane	106	70-130		%REC	1	4/18/2014 5:08:52 PM	R18092
Surr: Toluene-d8	90.1	70-130		%REC	1	4/18/2014 5:08:52 PM	R18092

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404740**

30-Apr-14

Client: Western Refining Southwest, Inc.

Project: OW Wells 4/15/14

Sample ID **MB-12735**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **12735**	RunNo: **18017**
Prep Date: **4/16/2014**	Analysis Date: **4/17/2014**	SeqNo: **520905** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.59		0.5000		117	76	161			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404740**

30-Apr-14

Client: Western Refining Southwest, Inc.

Project: OW Wells 4/15/14

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R18124**	RunNo: **18124**
Prep Date:	Analysis Date: **4/21/2014**	SeqNo: **523149** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		83.8	80.4	118			

Sample ID **1404740-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **OW-3+85**	Batch ID: **R18124**	RunNo: **18124**
Prep Date:	Analysis Date: **4/21/2014**	SeqNo: **523152** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	8.2	0.50	5.000	5.048	63.2	79	121			S
Surr: BFB	300		200.0		151	80.4	118			S

Sample ID **1404740-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **OW-3+85**	Batch ID: **R18124**	RunNo: **18124**
Prep Date:	Analysis Date: **4/21/2014**	SeqNo: **523153** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	8.8	0.50	5.000	5.048	74.3	79	121	6.55	20	S
Surr: BFB	320		200.0		159	80.4	118	0	0	S

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404740**

30-Apr-14

Client: Western Refining Southwest, Inc.

Project: OW Wells 4/15/14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R18092**	RunNo: **18092**
Prep Date:	Analysis Date: **4/18/2014**	SeqNo: **522367** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.4		10.00		94.3	70	130			

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R18198**	RunNo: **18198**
Prep Date:	Analysis Date: **4/24/2014**	SeqNo: **525242** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.0	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.9	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		99.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1404740** RcptNo: **1**

Received by/date: LM 04/16/14

Logged By: **Ashley Gallegos** **4/16/2014 10:10:00 AM** AG

Completed By: **Ashley Gallegos** **4/16/2014 11:03:18 AM** AG

Reviewed By: AG 04/16/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ✔	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ✔	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
OW wells 4-15-14

Project #:

Project Manager:

Sampler: Matt & Bob
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1404740
4-15-14	9:45	H2O	OW-3+85	5-VOA	HCl	-001
				1-500ml	amber	
4-15-14	10:30		OW-16+60	5-VOA	HCl	-002
				1-500ml	amber	
4-15-14	10:45		OW-22+00	5-VOA	HCl	-003
				1-500ml	amber	
4-15-14	11:00		OW-23+90	5-VOA	HCl	-004
				1-500ml	amber	
4-15-14	11:15		OW-23+90	~~1-500ml~~ 5-VOA	HCl	-005

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Extended DRO 8015B				Air Bubbles (Y or N)
		X							X		X				
											X				
		X							X		X				
											X				
		X							X		X				
											X				
		X							X		X				
											X				
		X							X		X				
											X				

Date: 4-15-14 Time: 1549 Relinquished by: Robert Bracken
Received by: Christa Walters Date: 4/15/14 Time: 1549

Date: 4/15/14 Time: 1700 Relinquished by: Christa Walters
Received by: [signature] Date: 04/16/14 Time: 1010

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
OW Wells 4-15-14

Project #:

Project Manager:

Sampler: Matt + Bob
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1404740
4-15-14	11:40	H2O	OW-25+70	5-VOA	HCl	-006
				1-500ml	amber	
4-15-14	11:40		OW-25+70D	4-VOA	HCl	-007
				1-500ml	amber	
4-15-14	2:30		Rinsate	3-VOA	HCl	-008

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Extended DRO 8015B				Air Bubbles (Y or N)
		X							X						
											X				
		X							X						
											X				
									X						

Date	Time	Relinquished by:	Received by:	Date	Time
4-15-14	1549	Robert Krakow	Martin Wade	4/15/14	1549
4/15/14	1700	Martin Wade		04/16/14	1010

Remarks:
TRIP BLANK -009

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 10, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Collection Wells 8-27-14 OrderNo.: 1408E58

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/28/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: CW-0+60
Project: Collection Wells 8-27-14
Collection Date: 8/27/2014 8:45:00 AM
Lab ID: 1408E58-001 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	0.74	0.20		mg/L	1	8/30/2014 1:02:04 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 1:02:04 AM	15015
Surr: DNOP	113	75.2-161		%REC	1	8/30/2014 1:02:04 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2.9	0.050		mg/L	1	8/29/2014 5:02:48 PM	R20897
Surr: BFB	1020	70.9-130	S	%REC	1	8/29/2014 5:02:48 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	2.0	1.0		µg/L	1	9/4/2014 4:01:29 PM	R20995
Toluene	ND	1.0		µg/L	1	9/4/2014 4:01:29 PM	R20995
Ethylbenzene	1.8	1.0		µg/L	1	9/4/2014 4:01:29 PM	R20995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 4:01:29 PM	R20995
Xylenes, Total	ND	1.5		µg/L	1	9/4/2014 4:01:29 PM	R20995
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1	9/4/2014 4:01:29 PM	R20995
Surr: 4-Bromofluorobenzene	91.5	70-130		%REC	1	9/4/2014 4:01:29 PM	R20995
Surr: Dibromofluoromethane	112	70-130		%REC	1	9/4/2014 4:01:29 PM	R20995
Surr: Toluene-d8	80.3	70-130		%REC	1	9/4/2014 4:01:29 PM	R20995

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** CW-25+95
Project: Collection Wells 8-27-14 **Collection Date:** 8/27/2014 11:15:00 AM
Lab ID: 1408E58-002 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	0.24	0.20		mg/L	1	8/30/2014 1:44:40 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 1:44:40 AM	15015
Surr: DNOP	116	75.2-161		%REC	1	8/30/2014 1:44:40 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.80	0.25		mg/L	5	8/29/2014 5:33:03 PM	R20897
Surr: BFB	109	70.9-130		%REC	5	8/29/2014 5:33:03 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	330	50		µg/L	50	9/3/2014 10:40:55 PM	R20971
Toluene	ND	50		µg/L	50	9/3/2014 10:40:55 PM	R20971
Ethylbenzene	ND	50		µg/L	50	9/3/2014 10:40:55 PM	R20971
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	50	9/3/2014 10:40:55 PM	R20971
Xylenes, Total	ND	75		µg/L	50	9/3/2014 10:40:55 PM	R20971
Surr: 1,2-Dichloroethane-d4	98.1	70-130		%REC	50	9/3/2014 10:40:55 PM	R20971
Surr: 4-Bromofluorobenzene	91.5	70-130		%REC	50	9/3/2014 10:40:55 PM	R20971
Surr: Dibromofluoromethane	89.5	70-130		%REC	50	9/3/2014 10:40:55 PM	R20971
Surr: Toluene-d8	88.0	70-130		%REC	50	9/3/2014 10:40:55 PM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E58**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Collection Wells 8-27-14

Sample ID **MB-15015**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.54		0.5000		108	75.2	161			

Sample ID **LCS-15015**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	107	65.8	162			
Surr: DNOP	0.27		0.2500		107	75.2	161			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E58**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Collection Wells 8-27-14

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**R20897**	RunNo:	**20897**					
Prep Date:		Analysis Date:	**8/29/2014**	SeqNo:	**608571**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		100	70.9	130			

Sample ID	**2.5UG GRO LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**R20897**	RunNo:	**20897**					
Prep Date:		Analysis Date:	**8/29/2014**	SeqNo:	**608572**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	95.2	80	120			
Surr: BFB	19		20.00		95.4	70.9	130			

Sample ID	**1408E58-002AMS**	SampType:	**MS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**CW-25+95**	Batch ID:	**R20897**	RunNo:	**20897**					
Prep Date:		Analysis Date:	**8/29/2014**	SeqNo:	**608580**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	3.5	0.25	2.500	0.7990	108	70.4	127			
Surr: BFB	120		100.0		124	70.9	130			

Sample ID	**1408E58-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**CW-25+95**	Batch ID:	**R20897**	RunNo:	**20897**					
Prep Date:		Analysis Date:	**8/29/2014**	SeqNo:	**608581**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	3.5	0.25	2.500	0.7990	108	70.4	127	0.515	20	
Surr: BFB	110		100.0		112	70.9	130	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E58**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Collection Wells 8-27-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R20971**	RunNo: **20971**
Prep Date:	Analysis Date: **9/3/2014**	SeqNo: **610448** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
mp-Xylenes	ND	1.0								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.5	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	8.5		10.00		85.4	70	130			

Sample ID **100ng lcs3**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R20971**	RunNo: **20971**
Prep Date:	Analysis Date: **9/3/2014**	SeqNo: **610449** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.4	70	130			
Toluene	19	1.0	20.00	0	92.8	80	120			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		89.8	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		90.2	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.6	70	130			
Surr: Toluene-d8	9.1		10.00		91.3	70	130			

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611315** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
mp-Xylenes	ND	1.0								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.0	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.7	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.9	70	130			
Surr: Toluene-d8	8.9		10.00		89.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E58**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Collection Wells 8-27-14

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611316** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	20	1.0	20.00	0	100	80	120			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.4	70	130			
Surr: Toluene-d8	8.9		10.00		89.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1408E58 RcptNo: 1

Received by/date: AT MG 08/28/14

Logged By: Anne Thorne 8/28/2014 8:15:00 AM Anne Thorne

Completed By: Anne Thorne 8/28/2014 Anne Thorne

Reviewed By: 08/28/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Collection Wells 8-27-14

Project #:

Project Manager:

Sampler: Bob & MATT

On Ice: ☐ Yes ☐ No

Sample Temperature: 3.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408658	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	DRO-Extended 8015B				Air Bubbles (Y or N)
8-27-14	8:45	H2O	CW-0+80	5-VOA	HCl	-001			X							X						
				1-500ml	amber	-001												X				
8-27-14	11:15		CW-25+95	5-VOA	HCl	-002			X							X						
				1-500ml	amber	-002												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-27-14	1340	Robert Krakow	Christine Walker	8/27/14	1340
8/27/14	1730	Christine Walker	Michelle Garcia	08/28/14	0815

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 10, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Observation Wells 8-27-14 OrderNo.: 1408E55

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 8/28/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-22+00
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 10:10:00 AM
Lab ID: 1408E55-001 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/29/2014 10:32:36 PM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/29/2014 10:32:36 PM	15015
Surr: DNOP	114	75.2-161		%REC	1	8/29/2014 10:32:36 PM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/29/2014 2:32:02 PM	R20897
Surr: BFB	100	70.9-130		%REC	1	8/29/2014 2:32:02 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/3/2014 11:10:36 PM	R20971
Toluene	ND	1.0		µg/L	1	9/3/2014 11:10:36 PM	R20971
Ethylbenzene	ND	1.0		µg/L	1	9/3/2014 11:10:36 PM	R20971
Methyl tert-butyl ether (MTBE)	1.7	1.0		µg/L	1	9/3/2014 11:10:36 PM	R20971
Xylenes, Total	ND	1.5		µg/L	1	9/3/2014 11:10:36 PM	R20971
Surr: 1,2-Dichloroethane-d4	95.8	70-130		%REC	1	9/3/2014 11:10:36 PM	R20971
Surr: 4-Bromofluorobenzene	98.3	70-130		%REC	1	9/3/2014 11:10:36 PM	R20971
Surr: Dibromofluoromethane	96.7	70-130		%REC	1	9/3/2014 11:10:36 PM	R20971
Surr: Toluene-d8	97.2	70-130		%REC	1	9/3/2014 11:10:36 PM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-23+10
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 10:20:00 AM
Lab ID: 1408E55-002 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	2.1	0.20		mg/L	1	8/29/2014 11:36:35 PM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/29/2014 11:36:35 PM	15015
Surr: DNOP	115	75.2-161		%REC	1	8/29/2014 11:36:35 PM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.16	0.050		mg/L	1	8/29/2014 3:02:10 PM	R20897
Surr: BFB	118	70.9-130		%REC	1	8/29/2014 3:02:10 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/3/2014 11:40:18 PM	R20971
Toluene	ND	1.0		µg/L	1	9/3/2014 11:40:18 PM	R20971
Ethylbenzene	ND	1.0		µg/L	1	9/3/2014 11:40:18 PM	R20971
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/3/2014 11:40:18 PM	R20971
Xylenes, Total	ND	1.5		µg/L	1	9/3/2014 11:40:18 PM	R20971
Surr: 1,2-Dichloroethane-d4	106	70-130		%REC	1	9/3/2014 11:40:18 PM	R20971
Surr: 4-Bromofluorobenzene	94.7	70-130		%REC	1	9/3/2014 11:40:18 PM	R20971
Surr: Dibromofluoromethane	102	70-130		%REC	1	9/3/2014 11:40:18 PM	R20971
Surr: Toluene-d8	94.1	70-130		%REC	1	9/3/2014 11:40:18 PM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-23+90
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 10:40:00 AM
Lab ID: 1408E55-003 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/29/2014 11:57:55 PM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/29/2014 11:57:55 PM	15015
Surr: DNOP	114	75.2-161		%REC	1	8/29/2014 11:57:55 PM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	8/29/2014 3:32:23 PM	R20897
Surr: BFB	110	70.9-130		%REC	1	8/29/2014 3:32:23 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 12:10:01 AM	R20971
Toluene	ND	1.0		µg/L	1	9/4/2014 12:10:01 AM	R20971
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 12:10:01 AM	R20971
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 12:10:01 AM	R20971
Xylenes, Total	ND	1.5		µg/L	1	9/4/2014 12:10:01 AM	R20971
Surr: 1,2-Dichloroethane-d4	110	70-130		%REC	1	9/4/2014 12:10:01 AM	R20971
Surr: 4-Bromofluorobenzene	93.8	70-130		%REC	1	9/4/2014 12:10:01 AM	R20971
Surr: Dibromofluoromethane	102	70-130		%REC	1	9/4/2014 12:10:01 AM	R20971
Surr: Toluene-d8	97.4	70-130		%REC	1	9/4/2014 12:10:01 AM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-25+70
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 11:00:00 AM
Lab ID: 1408E55-004 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 12:19:18 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 12:19:18 AM	15015
Surr: DNOP	109	75.2-161		%REC	1	8/30/2014 12:19:18 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.14	0.050		mg/L	1	8/29/2014 4:02:35 PM	R20897
Surr: BFB	115	70.9-130		%REC	1	8/29/2014 4:02:35 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 12:39:41 AM	R20971
Toluene	ND	1.0		µg/L	1	9/4/2014 12:39:41 AM	R20971
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 12:39:41 AM	R20971
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 12:39:41 AM	R20971
Xylenes, Total	ND	1.5		µg/L	1	9/4/2014 12:39:41 AM	R20971
Surr: 1,2-Dichloroethane-d4	98.3	70-130		%REC	1	9/4/2014 12:39:41 AM	R20971
Surr: 4-Bromofluorobenzene	99.2	70-130		%REC	1	9/4/2014 12:39:41 AM	R20971
Surr: Dibromofluoromethane	96.5	70-130		%REC	1	9/4/2014 12:39:41 AM	R20971
Surr: Toluene-d8	90.7	70-130		%REC	1	9/4/2014 12:39:41 AM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-25+70D
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 11:00:00 AM
Lab ID: 1408E55-005 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 12:40:36 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 12:40:36 AM	15015
Surr: DNOP	128	75.2-161		%REC	1	8/30/2014 12:40:36 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.14	0.050		mg/L	1	8/29/2014 4:32:39 PM	R20897
Surr: BFB	116	70.9-130		%REC	1	8/29/2014 4:32:39 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 1:09:20 AM	R20971
Toluene	ND	1.0		µg/L	1	9/4/2014 1:09:20 AM	R20971
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 1:09:20 AM	R20971
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 1:09:20 AM	R20971
Xylenes, Total	ND	1.5		µg/L	1	9/4/2014 1:09:20 AM	R20971
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	9/4/2014 1:09:20 AM	R20971
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	9/4/2014 1:09:20 AM	R20971
Surr: Dibromofluoromethane	103	70-130		%REC	1	9/4/2014 1:09:20 AM	R20971
Surr: Toluene-d8	89.5	70-130		%REC	1	9/4/2014 1:09:20 AM	R20971

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E55**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **MB-15015**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.54		0.5000		108	75.2	161			

Sample ID **LCS-15015**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	107	65.8	162			
Surr: DNOP	0.27		0.2500		107	75.2	161			

Sample ID **1408E55-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **OW-22+00**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608539** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	109	64.4	178			
Surr: DNOP	0.27		0.2500		108	75.2	161			

Sample ID **1408E55-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **OW-22+00**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608540** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.20	2.500	0	118	64.4	178	7.79	20	
Surr: DNOP	0.28		0.2500		114	75.2	161	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E55**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R20897**	RunNo: **20897**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608571** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		100	70.9	130			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R20897**	RunNo: **20897**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608572** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	95.2	80	120			
Surr: BFB	19		20.00		95.4	70.9	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E55**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R20971**	RunNo: **20971**
Prep Date:	Analysis Date: **9/3/2014**	SeqNo: **610448** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
mp-Xylenes	ND	1.0								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.5	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	8.5		10.00		85.4	70	130			

Sample ID **100ng lcs3**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R20971**	RunNo: **20971**
Prep Date:	Analysis Date: **9/3/2014**	SeqNo: **610449** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.4	70	130			
Toluene	19	1.0	20.00	0	92.8	80	120			
Surr: 1,2-Dichloroethane-d4	9.0		10.00		89.8	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		90.2	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.6	70	130			
Surr: Toluene-d8	9.1		10.00		91.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1408E55 RcptNo: 1

Received by/date: MG 08/28/14

Logged By: Anne Thorne 8/28/2014 8:15:00 AM Anne Thorne

Completed By: Anne Thorne 8/28/2014 Anne Thorne

Reviewed By: 08/28/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
observation Wells 8-27-14

Project #:

Project Manager:

Sampler: Bob + MATT

On Ice: ☑ Yes ☐ No

Sample Temperature: 3.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. HOE55	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	DRO Extended 8015B				Air Bubbles (Y or N)
27-14	10:10	H_2O	OW-22+00	5-VOA	HCl	-001			X							X						
				1-500	amber	-001												X				
	10:20		OW-23+10	5-VOA	HCl	-002			X							X						
				1-500	amber	-002												X				
	10:40		OW-23+90	5-VOA	HCl	-003			X							X						
				1-500	amber	-003												X				
	11:00		OW-25+70	5-VOA	HCl	-004			X							X						
				1-500	amber	-004												X				
	11:00		OW-25+70D	5-VOA	HCl	-005			X							X						
				1-500	amber	-005												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
27-14	1320	Robert Kraker	Misty Walt	8/27/14	1320
Date:	Time:	Relinquished by:	Received by:	Date	Time
27/14	1730	Misty Walter	Michelle Garcia	08/28/14	0815

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 10, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: Observation Wells 8-27-14 OrderNo.: 1408E60

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 8/28/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-0+60
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 9:00:00 AM
Lab ID: 1408E60-001 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	1.5	0.20		mg/L	1	8/30/2014 2:05:58 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 2:05:58 AM	15015
Surr: DNOP	106	75.2-161		%REC	1	8/30/2014 2:05:58 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.23	0.050		mg/L	1	8/29/2014 7:03:49 PM	R20897
Surr: BFB	202	70.9-130	S	%REC	1	8/29/2014 7:03:49 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/5/2014 7:16:31 PM	R21044
Toluene	ND	1.0		µg/L	1	9/5/2014 7:16:31 PM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/5/2014 7:16:31 PM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/5/2014 7:16:31 PM	R21044
Xylenes, Total	ND	1.5		µg/L	1	9/5/2014 7:16:31 PM	R21044
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	9/5/2014 7:16:31 PM	R21044
Surr: 4-Bromofluorobenzene	96.7	70-130		%REC	1	9/5/2014 7:16:31 PM	R21044
Surr: Dibromofluoromethane	95.8	70-130		%REC	1	9/5/2014 7:16:31 PM	R21044
Surr: Toluene-d8	82.9	70-130		%REC	1	9/5/2014 7:16:31 PM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-11+15
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 9:40:00 AM
Lab ID: 1408E60-002 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	34	0.20		mg/L	1	8/30/2014 2:27:19 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 2:27:19 AM	15015
Surr: DNOP	120	75.2-161		%REC	1	8/30/2014 2:27:19 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	3.7	0.50		mg/L	10	8/29/2014 7:33:56 PM	R20897
Surr: BFB	124	70.9-130		%REC	10	8/29/2014 7:33:56 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	840	100		µg/L	100	9/8/2014 12:04:54 PM	R21080
Toluene	ND	10		µg/L	10	9/5/2014 7:46:14 PM	R21044
Ethylbenzene	ND	10		µg/L	10	9/5/2014 7:46:14 PM	R21044
Methyl tert-butyl ether (MTBE)	870	10		µg/L	10	9/5/2014 7:46:14 PM	R21044
Xylenes, Total	ND	15		µg/L	10	9/5/2014 7:46:14 PM	R21044
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%REC	10	9/5/2014 7:46:14 PM	R21044
Surr: 4-Bromofluorobenzene	98.2	70-130		%REC	10	9/5/2014 7:46:14 PM	R21044
Surr: Dibromofluoromethane	90.1	70-130		%REC	10	9/5/2014 7:46:14 PM	R21044
Surr: Toluene-d8	94.3	70-130		%REC	10	9/5/2014 7:46:14 PM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: OW-16+60
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 10:50:00 AM
Lab ID: 1408E60-003 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	35	0.20		mg/L	1	8/30/2014 2:48:38 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 2:48:38 AM	15015
Surr: DNOP	118	75.2-161		%REC	1	8/30/2014 2:48:38 AM	15015
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2.7	0.25		mg/L	5	8/29/2014 8:04:09 PM	R20897
Surr: BFB	347	70.9-130	S	%REC	5	8/29/2014 8:04:09 PM	R20897
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	5.0		µg/L	5	9/8/2014 12:34:33 PM	R21080
Toluene	ND	5.0		µg/L	5	9/8/2014 12:34:33 PM	R21080
Ethylbenzene	5.6	5.0		µg/L	5	9/8/2014 12:34:33 PM	R21080
Methyl tert-butyl ether (MTBE)	730	5.0		µg/L	5	9/8/2014 12:34:33 PM	R21080
Xylenes, Total	ND	7.5		µg/L	5	9/8/2014 12:34:33 PM	R21080
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	5	9/8/2014 12:34:33 PM	R21080
Surr: 4-Bromofluorobenzene	98.1	70-130		%REC	5	9/8/2014 12:34:33 PM	R21080
Surr: Dibromofluoromethane	96.6	70-130		%REC	5	9/8/2014 12:34:33 PM	R21080
Surr: Toluene-d8	91.1	70-130		%REC	5	9/8/2014 12:34:33 PM	R21080

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Rinsate
Project: Observation Wells 8-27-14
Collection Date: 8/27/2014 1:00:00 PM
Lab ID: 1408E60-004
Matrix: AQUEOUS
Received Date: 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/5/2014 8:45:36 PM	R21044
Toluene	ND	1.0		µg/L	1	9/5/2014 8:45:36 PM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/5/2014 8:45:36 PM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/5/2014 8:45:36 PM	R21044
Xylenes, Total	ND	1.5		µg/L	1	9/5/2014 8:45:36 PM	R21044
Surr: 1,2-Dichloroethane-d4	93.7	70-130		%REC	1	9/5/2014 8:45:36 PM	R21044
Surr: 4-Bromofluorobenzene	89.4	70-130		%REC	1	9/5/2014 8:45:36 PM	R21044
Surr: Dibromofluoromethane	88.9	70-130		%REC	1	9/5/2014 8:45:36 PM	R21044
Surr: Toluene-d8	93.2	70-130		%REC	1	9/5/2014 8:45:36 PM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
Project: Observation Wells 8-27-14 **Collection Date:**
Lab ID: 1408E60-005 **Matrix:** AQUEOUS **Received Date:** 8/28/2014 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/5/2014 9:15:16 PM	R21044
Toluene	ND	1.0		µg/L	1	9/5/2014 9:15:16 PM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/5/2014 9:15:16 PM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/5/2014 9:15:16 PM	R21044
Xylenes, Total	ND	1.5		µg/L	1	9/5/2014 9:15:16 PM	R21044
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	1	9/5/2014 9:15:16 PM	R21044
Surr: 4-Bromofluorobenzene	99.1	70-130		%REC	1	9/5/2014 9:15:16 PM	R21044
Surr: Dibromofluoromethane	94.0	70-130		%REC	1	9/5/2014 9:15:16 PM	R21044
Surr: Toluene-d8	91.1	70-130		%REC	1	9/5/2014 9:15:16 PM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E60**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **MB-15015**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.54		0.5000		108	75.2	161			

Sample ID **LCS-15015**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	107	65.8	162			
Surr: DNOP	0.27		0.2500		107	75.2	161			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E60**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **R20897**	RunNo: **20897**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608571** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		100	70.9	130			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **R20897**	RunNo: **20897**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608572** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	95.2	80	120			
Surr: BFB	19		20.00		95.4	70.9	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E60**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **b3**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R21044**	RunNo: **21044**
Prep Date:	Analysis Date: **9/5/2014**	SeqNo: **612441** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
mp-Xylenes	ND	1.0								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.3	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.4	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.5	70	130			
Surr: Toluene-d8	9.2		10.00		91.8	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R21044**	RunNo: **21044**
Prep Date:	Analysis Date: **9/5/2014**	SeqNo: **612445** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	20	1.0	20.00	0	101	80	120			
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.5	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.8	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.8	70	130			
Surr: Toluene-d8	9.0		10.00		90.4	70	130			

Sample ID **b4**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R21080**	RunNo: **21080**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613381** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
mp-Xylenes	ND	1.0								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	8.8		10.00		87.5	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.0	70	130			
Surr: Dibromofluoromethane	8.5		10.00		84.6	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408E60**

10-Sep-14

Client: Western Refining Southwest, Inc.

Project: Observation Wells 8-27-14

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R21080**	RunNo: **21080**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613382** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.9	70	130			
Toluene	20	1.0	20.00	0	99.1	80	120			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.6	70	130			
Surr: Toluene-d8	9.3		10.00		93.4	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1408E60 RcptNo: 1

Received by/date: MG 08/28/14

Logged By: Anne Thorne 8/28/2014 8:15:00 AM Anne Thorne

Completed By: Anne Thorne 8/28/2014 Anne Thorne

Reviewed By: 08/28/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Observation Wells 8-27-14

Project #:

Project Manager:

Sampler: Bob & Matt
On Ice: ☒ Yes ☐ No
Sample Temperature: 3.4'

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408E60	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	DRO-Extended 8015B				Air Bubbles (Y or N)
8-27-14	9:00	H2O	OW-0+60	5-VOA	HCl	-001			X							X						
				1-500	amber	-001												X				
	9:40		OW-11+15	5-VOA	HCl	-002			X							X						
				1-500	amber	-002												X				
	10:50		OW-16+60	5-VOA	HCl	-003			X							X						
				1-500	amber	-003												X				
8-27-14	1:00		Rinsate	3-VOA	HCl	-004										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-27-14	1320	Robert Krakow	Martin Walker	8/27/14	1320
8/27/14	1730	Martin Walker	Michelle Garcia	08/28/14	0815

Remarks: Trip Blank -005

TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 09, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: San Juan River 8-28-14 OrderNo.: 1408F37

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 6 sample(s) on 8/29/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-001A

Client Sample ID: Upstream
Collection Date: 8/28/2014 8:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 8:07:16 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 8:07:16 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 8:07:16 AM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/6/2014 8:07:16 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 8:07:16 AM	R21044
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	9/6/2014 8:07:16 AM	R21044
Surr: 4-Bromofluorobenzene	99.5	70-130		%REC	1	9/6/2014 8:07:16 AM	R21044
Surr: Dibromofluoromethane	98.0	70-130		%REC	1	9/6/2014 8:07:16 AM	R21044
Surr: Toluene-d8	85.8	70-130		%REC	1	9/6/2014 8:07:16 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-001B

Client Sample ID: Upstream
Collection Date: 8/28/2014 8:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/2/2014 1:27:49 PM	R20946
Surr: BFB	103	70.9-130		%REC	1	9/2/2014 1:27:49 PM	R20946

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-001C

Client Sample ID: Upstream
Collection Date: 8/28/2014 8:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 3:10:03 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 3:10:03 AM	15015
Surr: DNOP	121	75.2-161		%REC	1	8/30/2014 3:10:03 AM	15015

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Upstream
Project: San Juan River 8-28-14
Collection Date: 8/28/2014 8:00:00 AM
Lab ID: 1408F37-001D
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.18	0.10		mg/L	1	9/2/2014 12:23:53 PM	R20961
Chloride	3.3	0.50		mg/L	1	9/2/2014 12:23:53 PM	R20961
Bromide	ND	0.10		mg/L	1	9/2/2014 12:23:53 PM	R20961
Phosphorus, Orthophosphate (As P)	ND	0.50	H	mg/L	1	9/2/2014 12:23:53 PM	R20961
Sulfate	66	10		mg/L	20	9/2/2014 1:01:07 PM	R20961
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/3/2014 4:50:43 AM	R20957
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	350	0.010		µmhos/cm	1	9/2/2014 3:26:45 PM	R20962
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	96	20		mg/L CaCO3	1	9/2/2014 3:26:45 PM	R20962
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	9/2/2014 3:26:45 PM	R20962
Total Alkalinity (as CaCO3)	96	20		mg/L CaCO3	1	9/2/2014 3:26:45 PM	R20962
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	225	100		mg/L	1	9/5/2014 10:21:00 AM	15087

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-001E

Client Sample ID: Upstream
Collection Date: 8/28/2014 8:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS						Analyst: **JLF**	
Arsenic	ND	0.020		mg/L	1	9/10/2014 1:49:40 PM	15178
Barium	0.18	0.0020		mg/L	1	9/10/2014 1:49:40 PM	15178
Cadmium	ND	0.0020		mg/L	1	9/10/2014 1:49:40 PM	15178
Chromium	0.0074	0.0060		mg/L	1	9/10/2014 1:49:40 PM	15178
Lead	ND	0.0050		mg/L	1	9/10/2014 1:49:40 PM	15178
Selenium	ND	0.050		mg/L	1	9/10/2014 1:49:40 PM	15178
Silver	ND	0.0050		mg/L	1	9/10/2014 1:49:40 PM	15178
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/9/2014 10:52:10 AM	15169

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-001F

Client Sample ID: Upstream
Collection Date: 8/28/2014 8:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Barium	0.079	0.0020		mg/L	1	8/29/2014 4:45:08 PM	R20915
Cadmium	ND	0.0020		mg/L	1	8/29/2014 4:45:08 PM	R20915
Calcium	39	1.0		mg/L	1	8/29/2014 4:45:08 PM	R20915
Chromium	ND	0.0060		mg/L	1	8/29/2014 4:45:08 PM	R20915
Copper	ND	0.0060		mg/L	1	8/29/2014 4:45:08 PM	R20915
Iron	0.34	0.020	*	mg/L	1	8/29/2014 4:45:08 PM	R20915
Magnesium	6.3	1.0		mg/L	1	8/29/2014 4:45:08 PM	R20915
Manganese	0.028	0.0020		mg/L	1	9/2/2014 4:57:45 PM	R20947
Potassium	2.0	1.0		mg/L	1	8/29/2014 4:45:08 PM	R20915
Silver	ND	0.0050		mg/L	1	8/29/2014 4:45:08 PM	R20915
Sodium	22	1.0		mg/L	1	8/29/2014 4:45:08 PM	R20915
Zinc	ND	0.010		mg/L	1	8/29/2014 4:45:08 PM	R20915
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	0.0011	0.0010		mg/L	1	9/8/2014 6:25:05 PM	R21084
Lead	ND	0.0010		mg/L	1	9/8/2014 6:25:05 PM	R21084
Selenium	ND	0.0010		mg/L	1	9/8/2014 6:25:05 PM	R21084
Uranium	ND	0.0010		mg/L	1	9/8/2014 6:25:05 PM	R21084
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/10/2014 9:59:41 AM	15200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-002A

Client Sample ID: Downstream
Collection Date: 8/28/2014 10:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 8:36:53 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 8:36:53 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 8:36:53 AM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/6/2014 8:36:53 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 8:36:53 AM	R21044
Surr: 1,2-Dichloroethane-d4	97.4	70-130		%REC	1	9/6/2014 8:36:53 AM	R21044
Surr: 4-Bromofluorobenzene	96.8	70-130		%REC	1	9/6/2014 8:36:53 AM	R21044
Surr: Dibromofluoromethane	94.0	70-130		%REC	1	9/6/2014 8:36:53 AM	R21044
Surr: Toluene-d8	89.7	70-130		%REC	1	9/6/2014 8:36:53 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-002B

Client Sample ID: Downstream
Collection Date: 8/28/2014 10:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/2/2014 1:58:02 PM	R20946
Surr: BFB	105	70.9-130		%REC	1	9/2/2014 1:58:02 PM	R20946

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Downstream
Project: San Juan River 8-28-14
Collection Date: 8/28/2014 10:00:00 AM
Lab ID: 1408F37-002C
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 3:31:27 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 3:31:27 AM	15015
Surr: DNOP	119	75.2-161		%REC	1	8/30/2014 3:31:27 AM	15015

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-002D

Client Sample ID: Downstream
Collection Date: 8/28/2014 10:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst:	**LGP**
Fluoride	0.18	0.10		mg/L	1	9/2/2014 1:13:32 PM	R20961
Chloride	3.3	0.50		mg/L	1	9/2/2014 1:13:32 PM	R20961
Bromide	ND	0.10		mg/L	1	9/2/2014 1:13:32 PM	R20961
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	9/2/2014 1:13:32 PM	R20961
Sulfate	60	10		mg/L	20	9/2/2014 1:25:57 PM	R20961
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/3/2014 5:03:07 AM	R20957
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	340	0.010		µmhos/cm	1	9/2/2014 3:34:50 PM	R20962
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	96	20		mg/L CaCO3	1	9/2/2014 3:34:50 PM	R20962
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	9/2/2014 3:34:50 PM	R20962
Total Alkalinity (as CaCO3)	96	20		mg/L CaCO3	1	9/2/2014 3:34:50 PM	R20962
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	220	100		mg/L	1	9/5/2014 10:21:00 AM	15087

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-002E

Client Sample ID: Downstream
Collection Date: 8/28/2014 10:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS						Analyst: **JLF**	
Arsenic	ND	0.020		mg/L	1	9/10/2014 1:51:24 PM	15178
Barium	0.17	0.0020		mg/L	1	9/10/2014 1:51:24 PM	15178
Cadmium	ND	0.0020		mg/L	1	9/10/2014 1:51:24 PM	15178
Chromium	0.0060	0.0060		mg/L	1	9/10/2014 1:51:24 PM	15178
Lead	ND	0.0050		mg/L	1	9/10/2014 1:51:24 PM	15178
Selenium	ND	0.050		mg/L	1	9/10/2014 1:51:24 PM	15178
Silver	ND	0.0050		mg/L	1	9/10/2014 1:51:24 PM	15178
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/9/2014 10:54:00 AM	15169

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-002F

Client Sample ID: Downstream
Collection Date: 8/28/2014 10:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Barium	0.081	0.0020		mg/L	1	8/29/2014 4:46:59 PM	R20915
Cadmium	ND	0.0020		mg/L	1	8/29/2014 4:46:59 PM	R20915
Calcium	38	1.0		mg/L	1	8/29/2014 4:46:59 PM	R20915
Chromium	ND	0.0060		mg/L	1	8/29/2014 4:46:59 PM	R20915
Copper	ND	0.0060		mg/L	1	8/29/2014 4:46:59 PM	R20915
Iron	0.44	0.020	*	mg/L	1	8/29/2014 4:46:59 PM	R20915
Magnesium	6.0	1.0		mg/L	1	8/29/2014 4:46:59 PM	R20915
Manganese	0.022	0.0020		mg/L	1	9/2/2014 4:59:40 PM	R20947
Potassium	2.0	1.0		mg/L	1	8/29/2014 4:46:59 PM	R20915
Silver	ND	0.0050		mg/L	1	8/29/2014 4:46:59 PM	R20915
Sodium	21	1.0		mg/L	1	8/29/2014 4:46:59 PM	R20915
Zinc	ND	0.010		mg/L	1	8/29/2014 4:46:59 PM	R20915
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	0.0010	0.0010		mg/L	1	9/8/2014 6:28:10 PM	R21084
Lead	ND	0.0010		mg/L	1	9/8/2014 6:28:10 PM	R21084
Selenium	ND	0.0010		mg/L	1	9/8/2014 6:28:10 PM	R21084
Uranium	ND	0.0010		mg/L	1	9/8/2014 6:28:10 PM	R21084
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/10/2014 10:01:29 AM	15200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003A

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 9:06:32 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 9:06:32 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 9:06:32 AM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/6/2014 9:06:32 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 9:06:32 AM	R21044
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	9/6/2014 9:06:32 AM	R21044
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	9/6/2014 9:06:32 AM	R21044
Surr: Dibromofluoromethane	101	70-130		%REC	1	9/6/2014 9:06:32 AM	R21044
Surr: Toluene-d8	79.1	70-130		%REC	1	9/6/2014 9:06:32 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003B

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/2/2014 2:28:28 PM	R20946
Surr: BFB	103	70.9-130		%REC	1	9/2/2014 2:28:28 PM	R20946

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003C

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 3:52:51 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 3:52:51 AM	15015
Surr: DNOP	119	75.2-161		%REC	1	8/30/2014 3:52:51 AM	15015

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003D

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.18	0.10		mg/L	1	9/2/2014 1:38:21 PM	R20961
Chloride	3.2	0.50		mg/L	1	9/2/2014 1:38:21 PM	R20961
Bromide	ND	0.10		mg/L	1	9/2/2014 1:38:21 PM	R20961
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	9/2/2014 1:38:21 PM	R20961
Sulfate	59	10		mg/L	20	9/2/2014 1:50:46 PM	R20961
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/3/2014 5:15:32 AM	R20957
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	340	0.010		µmhos/cm	1	9/2/2014 3:42:44 PM	R20962
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	95	20		mg/L CaCO3	1	9/2/2014 3:42:44 PM	R20962
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	9/2/2014 3:42:44 PM	R20962
Total Alkalinity (as CaCO3)	95	20		mg/L CaCO3	1	9/2/2014 3:42:44 PM	R20962
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	345	100		mg/L	1	9/5/2014 10:21:00 AM	15087

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003E

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS						Analyst: **JLF**	
Arsenic	ND	0.020		mg/L	1	9/10/2014 1:53:03 PM	15178
Barium	0.18	0.0020		mg/L	1	9/10/2014 1:53:03 PM	15178
Cadmium	ND	0.0020		mg/L	1	9/10/2014 1:53:03 PM	15178
Chromium	ND	0.0060		mg/L	1	9/10/2014 1:53:03 PM	15178
Lead	ND	0.0050		mg/L	1	9/10/2014 1:53:03 PM	15178
Selenium	ND	0.050		mg/L	1	9/10/2014 1:53:03 PM	15178
Silver	ND	0.0050		mg/L	1	9/10/2014 1:53:03 PM	15178
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/9/2014 10:55:50 AM	15169

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-003F

Client Sample ID: North of 45
Collection Date: 8/28/2014 9:00:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Barium	0.076	0.0020		mg/L	1	8/29/2014 4:48:50 PM	R20915
Cadmium	ND	0.0020		mg/L	1	8/29/2014 4:48:50 PM	R20915
Calcium	37	1.0		mg/L	1	8/29/2014 4:48:50 PM	R20915
Chromium	ND	0.0060		mg/L	1	8/29/2014 4:48:50 PM	R20915
Copper	ND	0.0060		mg/L	1	8/29/2014 4:48:50 PM	R20915
Iron	0.27	0.020		mg/L	1	8/29/2014 4:48:50 PM	R20915
Magnesium	6.0	1.0		mg/L	1	8/29/2014 4:48:50 PM	R20915
Manganese	0.014	0.0020		mg/L	1	9/2/2014 5:01:38 PM	R20947
Potassium	2.0	1.0		mg/L	1	8/29/2014 4:48:50 PM	R20915
Silver	ND	0.0050		mg/L	1	8/29/2014 4:48:50 PM	R20915
Sodium	21	1.0		mg/L	1	8/29/2014 4:48:50 PM	R20915
Zinc	ND	0.010		mg/L	1	8/29/2014 4:48:50 PM	R20915
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	ND	0.0010		mg/L	1	9/8/2014 6:31:16 PM	R21084
Lead	ND	0.0010		mg/L	1	9/8/2014 6:31:16 PM	R21084
Selenium	ND	0.0010		mg/L	1	9/8/2014 6:31:16 PM	R21084
Uranium	ND	0.0010		mg/L	1	9/8/2014 6:31:16 PM	R21084
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/10/2014 10:03:17 AM	15200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004A

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 9:36:07 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 9:36:07 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 9:36:07 AM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/6/2014 9:36:07 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 9:36:07 AM	R21044
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	9/6/2014 9:36:07 AM	R21044
Surr: 4-Bromofluorobenzene	95.7	70-130		%REC	1	9/6/2014 9:36:07 AM	R21044
Surr: Dibromofluoromethane	105	70-130		%REC	1	9/6/2014 9:36:07 AM	R21044
Surr: Toluene-d8	85.7	70-130		%REC	1	9/6/2014 9:36:07 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004B

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/2/2014 2:58:41 PM	R20946
Surr: BFB	104	70.9-130		%REC	1	9/2/2014 2:58:41 PM	R20946

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004C

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	8/30/2014 4:14:08 AM	15015
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/30/2014 4:14:08 AM	15015
Surr: DNOP	119	75.2-161		%REC	1	8/30/2014 4:14:08 AM	15015

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004D

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.18	0.10		mg/L	1	9/2/2014 2:28:01 PM	R20961
Chloride	3.2	0.50		mg/L	1	9/2/2014 2:28:01 PM	R20961
Bromide	ND	0.10		mg/L	1	9/2/2014 2:28:01 PM	R20961
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	9/2/2014 2:28:01 PM	R20961
Sulfate	58	10		mg/L	20	9/2/2014 2:40:26 PM	R20961
Nitrate+Nitrite as N	ND	1.0		mg/L	5	9/3/2014 5:27:56 AM	R20957
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	330	0.010		µmhos/cm	1	9/2/2014 3:51:07 PM	R20962
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	95	20		mg/L CaCO3	1	9/2/2014 3:51:07 PM	R20962
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	9/2/2014 3:51:07 PM	R20962
Total Alkalinity (as CaCO3)	95	20		mg/L CaCO3	1	9/2/2014 3:51:07 PM	R20962
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	260	100		mg/L	1	9/5/2014 10:21:00 AM	15087

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004E

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: METALS						Analyst: **JLF**	
Arsenic	ND	0.020		mg/L	1	9/10/2014 1:54:49 PM	15178
Barium	0.17	0.0020		mg/L	1	9/10/2014 1:54:49 PM	15178
Cadmium	ND	0.0020		mg/L	1	9/10/2014 1:54:49 PM	15178
Chromium	0.0060	0.0060		mg/L	1	9/10/2014 1:54:49 PM	15178
Lead	ND	0.0050		mg/L	1	9/10/2014 1:54:49 PM	15178
Selenium	ND	0.050		mg/L	1	9/10/2014 1:54:49 PM	15178
Silver	ND	0.0050		mg/L	1	9/10/2014 1:54:49 PM	15178
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/9/2014 10:57:42 AM	15169

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-004F

Client Sample ID: North of 46
Collection Date: 8/28/2014 9:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **JLF**	
Barium	0.078	0.0020		mg/L	1	8/29/2014 4:50:40 PM	R20915
Cadmium	ND	0.0020		mg/L	1	8/29/2014 4:50:40 PM	R20915
Calcium	37	1.0		mg/L	1	8/29/2014 4:50:40 PM	R20915
Chromium	ND	0.0060		mg/L	1	8/29/2014 4:50:40 PM	R20915
Copper	ND	0.0060		mg/L	1	8/29/2014 4:50:40 PM	R20915
Iron	0.35	0.020	*	mg/L	1	8/29/2014 4:50:40 PM	R20915
Magnesium	6.1	1.0		mg/L	1	8/29/2014 4:50:40 PM	R20915
Manganese	0.020	0.0020		mg/L	1	9/2/2014 5:03:32 PM	R20947
Potassium	2.0	1.0		mg/L	1	8/29/2014 4:50:40 PM	R20915
Silver	ND	0.0050		mg/L	1	8/29/2014 4:50:40 PM	R20915
Sodium	21	1.0		mg/L	1	8/29/2014 4:50:40 PM	R20915
Zinc	ND	0.010		mg/L	1	8/29/2014 4:50:40 PM	R20915
EPA 200.8: DISSOLVED METALS						Analyst: **DBD**	
Arsenic	0.0011	0.0010		mg/L	1	9/8/2014 6:34:21 PM	R21084
Lead	ND	0.0010		mg/L	1	9/8/2014 6:34:21 PM	R21084
Selenium	ND	0.0010		mg/L	1	9/8/2014 6:34:21 PM	R21084
Uranium	ND	0.0010		mg/L	1	9/8/2014 6:34:21 PM	R21084
EPA METHOD 245.1: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	9/10/2014 10:05:05 AM	15200

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-005A

Client Sample ID: Rinsate
Collection Date: 8/28/2014 10:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 10:05:43 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 10:05:43 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 10:05:43 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 10:05:43 AM	R21044
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	9/6/2014 10:05:43 AM	R21044
Surr: 4-Bromofluorobenzene	90.5	70-130		%REC	1	9/6/2014 10:05:43 AM	R21044
Surr: Dibromofluoromethane	96.1	70-130		%REC	1	9/6/2014 10:05:43 AM	R21044
Surr: Toluene-d8	86.9	70-130		%REC	1	9/6/2014 10:05:43 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14
Lab ID: 1408F37-006A

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

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/6/2014 10:35:18 AM	R21044
Toluene	ND	1.0		µg/L	1	9/6/2014 10:35:18 AM	R21044
Ethylbenzene	ND	1.0		µg/L	1	9/6/2014 10:35:18 AM	R21044
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/6/2014 10:35:18 AM	R21044
Xylenes, Total	ND	2.0		µg/L	1	9/6/2014 10:35:18 AM	R21044
Surr: 1,2-Dichloroethane-d4	99.8	70-130		%REC	1	9/6/2014 10:35:18 AM	R21044
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	9/6/2014 10:35:18 AM	R21044
Surr: Dibromofluoromethane	96.5	70-130		%REC	1	9/6/2014 10:35:18 AM	R21044
Surr: Toluene-d8	85.0	70-130		%REC	1	9/6/2014 10:35:18 AM	R21044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608597** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608598** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	94.3	85	115			
Cadmium	0.48	0.0020	0.5000	0	95.3	85	115			
Calcium	49	1.0	50.00	0	99.0	85	115			
Chromium	0.47	0.0060	0.5000	0	93.5	85	115			
Copper	0.47	0.0060	0.5000	0	93.9	85	115			
Iron	0.47	0.020	0.5000	0	94.1	85	115			
Magnesium	50	1.0	50.00	0	100	85	115			
Potassium	49	1.0	50.00	0	97.5	85	115			
Silver	0.49	0.0050	0.5000	0	97.4	85	115			
Zinc	0.47	0.010	0.5000	0	93.4	85	115			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **R20947**	RunNo: **20947**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	ND	0.0020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **R20947**	RunNo: **20947**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609525** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.46	0.0020	0.5000	0	92.9	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID	**MB-15178**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**15178**	RunNo:	**21110**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/9/2014**	SeqNo:	**614436**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID	**LCS-15178**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**LCSW**	Batch ID:	**15178**	RunNo:	**21110**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/9/2014**	SeqNo:	**614437**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.5	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.1	85	115			
Chromium	0.48	0.0060	0.5000	0	96.2	85	115			
Silver	0.48	0.0050	0.5000	0	95.8	85	115			

Sample ID	**MB-15178**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**15178**	RunNo:	**21132**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/10/2014**	SeqNo:	**614927**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Lead	ND	0.0050								
Selenium	ND	0.050								

Sample ID	**LCS-15178**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**LCSW**	Batch ID:	**15178**	RunNo:	**21132**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/10/2014**	SeqNo:	**614928**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.6	85	115			
Lead	0.49	0.0050	0.5000	0	98.0	85	115			
Selenium	0.49	0.050	0.5000	0	97.6	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608593** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Zinc	ND	0.010								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608594** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	94.0	85	115			
Cadmium	0.48	0.0020	0.5000	0	95.7	85	115			
Calcium	49	1.0	50.00	0	98.9	85	115			
Chromium	0.47	0.0060	0.5000	0	94.2	85	115			
Copper	0.47	0.0060	0.5000	0	94.4	85	115			
Iron	0.47	0.020	0.5000	0	94.9	85	115			
Magnesium	50	1.0	50.00	0	99.3	85	115			
Potassium	48	1.0	50.00	0	96.9	85	115			
Silver	0.49	0.0050	0.5000	0	97.3	85	115			
Sodium	49	1.0	50.00	0	98.0	85	115			
Zinc	0.47	0.010	0.5000	0	94.0	85	115			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608595** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608595** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	ND	1.0								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Zinc	ND	0.010								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R20915**	RunNo: **20915**
Prep Date:	Analysis Date: **8/29/2014**	SeqNo: **608596** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.0020	0.5000	0	91.8	85	115			
Cadmium	0.47	0.0020	0.5000	0	93.2	85	115			
Calcium	49	1.0	50.00	0	98.3	85	115			
Chromium	0.46	0.0060	0.5000	0	91.5	85	115			
Copper	0.46	0.0060	0.5000	0	92.0	85	115			
Iron	0.47	0.020	0.5000	0	93.1	85	115			
Magnesium	49	1.0	50.00	0	98.4	85	115			
Potassium	48	1.0	50.00	0	95.6	85	115			
Silver	0.48	0.0050	0.5000	0	95.8	85	115			
Sodium	48	1.0	50.00	0	96.9	85	115			
Zinc	0.45	0.010	0.5000	0	90.9	85	115			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R20947**	RunNo: **20947**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609620** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	ND	0.0020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R20947**	RunNo: **20947**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609621** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.46	0.0020	0.5000	0	92.9	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613680** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	99.2	85	115			
Lead	0.025	0.0010	0.02500	0	101	85	115			
Selenium	0.024	0.0010	0.02500	0	95.1	85	115			
Uranium	0.025	0.0010	0.02500	0	101	85	115			

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613681** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	95.7	85	115			
Lead	0.025	0.0010	0.02500	0	99.8	85	115			
Selenium	0.024	0.0010	0.02500	0	95.2	85	115			
Uranium	0.024	0.0010	0.02500	0	96.7	85	115			

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.024	0.0010	0.02500	0	97.4	85	115			
Lead	0.025	0.0010	0.02500	0	102	85	115			
Selenium	0.024	0.0010	0.02500	0	96.4	85	115			
Uranium	0.025	0.0010	0.02500	0	98.0	85	115			

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613683** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	100	85	115			
Lead	0.024	0.0010	0.02500	0	95.5	85	115			
Selenium	0.024	0.0010	0.02500	0	97.1	85	115			
Uranium	0.024	0.0010	0.02500	0	95.5	85	115			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613684** Units: **mg/L**

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613684** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								
Uranium	ND	0.0010								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613685** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								
Uranium	ND	0.0010								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613686** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								
Uranium	ND	0.0010								

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21084**	RunNo: **21084**
Prep Date:	Analysis Date: **9/8/2014**	SeqNo: **613687** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								
Uranium	ND	0.0010								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID	**MB-15169**	SampType:	**MBLK**		TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**15169**		RunNo:	**21090**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/9/2014**		SeqNo:	**613856**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.00020									

Sample ID	**LCS-15169**	SampType:	**LCS**		TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**15169**		RunNo:	**21090**					
Prep Date:	**9/8/2014**	Analysis Date:	**9/9/2014**		SeqNo:	**613857**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.0050	0.00020	0.005000	0	99.2	80	120				

Sample ID	**MB-15200**	SampType:	**MBLK**		TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**15200**		RunNo:	**21121**					
Prep Date:	**9/9/2014**	Analysis Date:	**9/10/2014**		SeqNo:	**614619**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.00020									

Sample ID	**LCS-15200**	SampType:	**LCS**		TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**15200**		RunNo:	**21121**					
Prep Date:	**9/9/2014**	Analysis Date:	**9/10/2014**		SeqNo:	**614620**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.0052	0.00020	0.005000	0	104	80	120				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20957**	RunNo: **20957**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609966** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20957**	RunNo: **20957**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **609967** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.1	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20957**	RunNo: **20957**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20957**	RunNo: **20957**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610019** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	3.3	0.20	3.500	0	95.6	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20961**	RunNo: **20961**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610078** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20961**	RunNo: **20961**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610079** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20961**	RunNo: **20961**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610079** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	95.4	90	110			
Bromide	2.5	0.10	2.500	0	99.1	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.5	90	110			
Sulfate	9.8	0.50	10.00	0	97.8	90	110			

Sample ID **1408F37-001DMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Upstream**	Batch ID: **R20961**	RunNo: **20961**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610081** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.76	0.10	0.5000	0	152	72.7	110			S
Chloride	8.3	0.50	5.000	3.412	96.9	92.6	107			
Bromide	2.5	0.10	2.500	0	99.5	85.1	108			

Sample ID **1408F37-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Upstream**	Batch ID: **R20961**	RunNo: **20961**
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610082** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.68	0.10	0.5000	0	135	72.7	110	11.7	20	S
Chloride	8.2	0.50	5.000	3.412	96.6	92.6	107	0.150	20	
Bromide	2.5	0.10	2.500	0	99.5	85.1	108	0.0161	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **MB-15015**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.54		0.5000		108	75.2	161			

Sample ID **LCS-15015**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **15015**	RunNo: **20880**
Prep Date: **8/28/2014**	Analysis Date: **8/29/2014**	SeqNo: **608538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.20	2.500	0	107	65.8	162			
Surr: DNOP	0.27		0.2500		107	75.2	161			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**R20946**	RunNo:	**20946**					
Prep Date:		Analysis Date:	**9/2/2014**	SeqNo:	**609479**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		93.1	70.9	130			

Sample ID	**2.5UG GRO LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**R20946**	RunNo:	**20946**					
Prep Date:		Analysis Date:	**9/2/2014**	SeqNo:	**609480**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.54	0.050	0.5000	0	108	80	120			
Surr: BFB	22		20.00		110	70.9	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**
09-Oct-14

Client: Western Refining Southwest, Inc.
Project: San Juan River 8-28-14

Sample ID **b3**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R21044**	RunNo: **21044**
Prep Date:	Analysis Date: **9/5/2014**	SeqNo: **612441** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
mp-Xylenes	ND	1.0								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.3	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.4	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.5	70	130			
Surr: Toluene-d8	9.2		10.00		91.8	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R21044**	RunNo: **21044**
Prep Date:	Analysis Date: **9/5/2014**	SeqNo: **612445** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	20	1.0	20.00	0	101	80	120			
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.5	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.8	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.8	70	130			
Surr: Toluene-d8	9.0		10.00		90.4	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20962**	RunNo: **20962**							
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610172**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20962**	RunNo: **20962**							
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610173**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20962**	RunNo: **20962**							
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610188**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20962**	RunNo: **20962**							
Prep Date:	Analysis Date: **9/2/2014**	SeqNo: **610189**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	81	20	80.00	0	101	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408F37**

09-Oct-14

Client: Western Refining Southwest, Inc.

Project: San Juan River 8-28-14

Sample ID	**MB-15087**	SampType:	**MBLK**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**PBW**	Batch ID:	**15087**		RunNo:	**21012**				
Prep Date:	**9/3/2014**	Analysis Date:	**9/5/2014**		SeqNo:	**611700**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-15087**	SampType:	**LCS**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**LCSW**	Batch ID:	**15087**		RunNo:	**21012**				
Prep Date:	**9/3/2014**	Analysis Date:	**9/5/2014**		SeqNo:	**611701**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Sample ID	**1408F37-002DMS**	SampType:	**MS**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**Downstream**	Batch ID:	**15087**		RunNo:	**21012**				
Prep Date:	**9/3/2014**	Analysis Date:	**9/5/2014**		SeqNo:	**611711**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5370	100	5000	220.0	103	80	120			

Sample ID	**1408F37-002DMSD**	SampType:	**MSD**		TestCode:	**SM2540C MOD: Total Dissolved Solids**				
Client ID:	**Downstream**	Batch ID:	**15087**		RunNo:	**21012**				
Prep Date:	**9/3/2014**	Analysis Date:	**9/5/2014**		SeqNo:	**611712**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5290	100	5000	220.0	101	80	120	1.50	5	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1408F37 RcptNo: 1

Received by/date: MG 08/29/14

Logged By: Celina Sessa 8/29/2014 8:25:00 AM Celina Sessa

Completed By: Celina Sessa 8/29/2014 10:23:29 AM Celina Sessa

Reviewed By: 08/29/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 12 (<2 or >12 unless noted)

Adjusted? 12

Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
San Juan River 8-28-14

Project #:

Project Manager:

Sampler: Bob + Matt
On Ice: ☑ Yes ☐ No
Sample Temperature: 1.0'

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1408F37	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals BTA	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	DRO-Extended 8015B	Dissolved Metals	cations/anions TDS, Eg, Alk	Air Bubbles (Y or N)
8-28-14	8:00	H_2O	upstream	5-VOA	HCl	-001			X							X					
				1-500ml	amber	-001												X			
				1-500ml	HNO_3	-001							X								
			filter	1-250ml	HNO_3	-001													X		
				1-250ml	H_2SO_4	-001														X	
				1-500ml	—	-001														X	
8-28-14	10:00		Downstream	5-VOA	HCl	-002			X							X					
				1-500ml	amber	-002												X			
				1-500ml	HNO_3	-002							X								
			filter	1-500ml	HNO_3	-002													X		
				1-250ml	H_2SO_4	-002														X	
				1-500ml	—	-002														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-28-14	1310	Robert Krakow	Matt Walter	8/28/14	1310
8/28/14	1800	Matt Walter	Michelle Garcia	08/29/14	0825

Remarks: Trip Blank -006
Rinsate - BTEX only -005

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
San Juan River 8-28-14

Project #:

Project Manager:

Sampler: Bob & Matt

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408F37	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals TOTAL	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	DRO-Extended 8015B	Dissolved metals	cations/Anions, TDS Ec, ALK	Air Bubbles (Y or N)
8-28-14	9:00	H_2O	North of 45	5-VOA	HCl	-003			X							X					
				1-500ml	amber	-003												X			
				1-500ml	HNO_3	-003							X								
			filter	1-250ml	HNO_3	-003													X		
				1-250ml	H_2SO_4	-003														X	
				1-500ml	—	-003														X	
8-28-14	9:30		North of 46	5-VOA	HCl	-004			X							X					
				1-500ml	amber	-004												X			
				1-500ml	HNO_3	-004							X								
			filter	1-250ml	HNO_3	-004													X		
				1-250ml	H_2SO_4	-004														X	
				1-500ml	—	-004														X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-28-14	1310	Robert Kraker	Christine Walters	8/28/14	1310
8/28/14	1800	Christine Walters	Matt Dunn	08/29/14	0825

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 16, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4166
FAX (505) 632-3911

RE: San Juan River Bluff 8-26-14 OrderNo.: 1408D76

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 8/27/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Outfall #2
Project: San Juan River Bluff 8-26-14 **Collection Date:** 8/26/2014 8:10:00 AM
Lab ID: 1408D76-001 **Matrix:** AQUEOUS **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.50	0.10		mg/L	1	8/27/2014 12:13:57 PM	R20852
Chloride	9.2	0.50		mg/L	1	8/27/2014 12:13:57 PM	R20852
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/27/2014 12:13:57 PM	R20852
Bromide	0.11	0.10		mg/L	1	8/27/2014 12:13:57 PM	R20852
Nitrogen, Nitrate (As N)	0.37	0.10		mg/L	1	8/27/2014 12:13:57 PM	R20852
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/27/2014 12:13:57 PM	R20852
Sulfate	98	10		mg/L	20	8/27/2014 12:51:10 PM	R20852
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/30/2014 1:41:17 PM	15037
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	9/4/2014 12:12:46 PM	R21000
Barium	0.089	0.020		mg/L	1	9/4/2014 12:12:46 PM	R21000
Cadmium	ND	0.0020		mg/L	1	9/4/2014 12:12:46 PM	R21000
Calcium	100	5.0		mg/L	5	9/4/2014 12:14:30 PM	R21000
Chromium	ND	0.0060		mg/L	1	9/4/2014 12:12:46 PM	R21000
Copper	ND	0.0060		mg/L	1	9/4/2014 12:12:46 PM	R21000
Iron	ND	0.020		mg/L	1	9/4/2014 12:12:46 PM	R21000
Lead	ND	0.0050		mg/L	1	9/4/2014 12:12:46 PM	R21000
Magnesium	22	1.0		mg/L	1	9/4/2014 12:12:46 PM	R21000
Manganese	ND	0.0020		mg/L	1	9/4/2014 12:12:46 PM	R21000
Potassium	1.7	1.0		mg/L	1	9/4/2014 12:12:46 PM	R21000
Selenium	ND	0.050		mg/L	1	9/4/2014 12:12:46 PM	R21000
Silver	ND	0.0050		mg/L	1	9/4/2014 12:12:46 PM	R21000
Sodium	60	1.0		mg/L	1	9/4/2014 12:12:46 PM	R21000
Uranium	ND	0.10		mg/L	1	9/4/2014 12:12:46 PM	R21000
Zinc	ND	0.020		mg/L	1	9/4/2014 12:12:46 PM	R21000
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/30/2014 8:10:35 AM	15047
Barium	0.19	0.020		mg/L	1	8/30/2014 8:10:35 AM	15047
Cadmium	ND	0.0020		mg/L	1	8/30/2014 8:10:35 AM	15047
Chromium	0.0072	0.0060		mg/L	1	8/30/2014 8:10:35 AM	15047
Lead	ND	0.0050		mg/L	1	8/30/2014 8:10:35 AM	15047
Selenium	ND	0.050		mg/L	1	8/30/2014 8:10:35 AM	15047
Silver	ND	0.0050		mg/L	1	8/30/2014 8:10:35 AM	15047
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 6:30:05 PM	R20995
Toluene	ND	1.0		µg/L	1	9/4/2014 6:30:05 PM	R20995

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Outfall #2
Project: San Juan River Bluff 8-26-14 **Collection Date:** 8/26/2014 8:10:00 AM
Lab ID: 1408D76-001 **Matrix:** AQUEOUS **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 6:30:05 PM	R20995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 6:30:05 PM	R20995
Xylenes, Total	ND	2.0		µg/L	1	9/4/2014 6:30:05 PM	R20995
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%REC	1	9/4/2014 6:30:05 PM	R20995
Surr: 4-Bromofluorobenzene	95.1	70-130		%REC	1	9/4/2014 6:30:05 PM	R20995
Surr: Dibromofluoromethane	102	70-130		%REC	1	9/4/2014 6:30:05 PM	R20995
Surr: Toluene-d8	85.8	70-130		%REC	1	9/4/2014 6:30:05 PM	R20995
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	320	1.0	H	mg CO2/L	1	8/28/2014 11:35:14 AM	R20890
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	350	20		mg/L CaCO3	1	8/28/2014 11:35:14 AM	R20890
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/28/2014 11:35:14 AM	R20890
Total Alkalinity (as CaCO3)	350	20		mg/L CaCO3	1	8/28/2014 11:35:14 AM	R20890

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Outfall #3
Project: San Juan River Bluff 8-26-14 **Collection Date:** 8/26/2014 8:00:00 AM
Lab ID: 1408D76-002 **Matrix:** AQUEOUS **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGP**	
Fluoride	0.19	0.10		mg/L	1	8/27/2014 1:03:35 PM	R20852
Chloride	3.3	0.50		mg/L	1	8/27/2014 1:03:35 PM	R20852
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/27/2014 1:03:35 PM	R20852
Bromide	ND	0.10		mg/L	1	8/27/2014 1:03:35 PM	R20852
Nitrogen, Nitrate (As N)	0.12	0.10		mg/L	1	8/27/2014 1:03:35 PM	R20852
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	8/27/2014 1:03:35 PM	R20852
Sulfate	43	10		mg/L	20	8/27/2014 1:15:59 PM	R20852
EPA METHOD 7470: MERCURY						Analyst: **MMD**	
Mercury	ND	0.00020		mg/L	1	8/30/2014 1:46:48 PM	15037
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	9/4/2014 12:16:22 PM	R21000
Barium	0.071	0.020		mg/L	1	9/4/2014 12:16:22 PM	R21000
Cadmium	ND	0.0020		mg/L	1	9/4/2014 12:16:22 PM	R21000
Calcium	35	1.0		mg/L	1	9/4/2014 12:16:22 PM	R21000
Chromium	ND	0.0060		mg/L	1	9/4/2014 12:16:22 PM	R21000
Copper	ND	0.0060		mg/L	1	9/4/2014 12:16:22 PM	R21000
Iron	ND	0.020		mg/L	1	9/4/2014 12:16:22 PM	R21000
Lead	ND	0.0050		mg/L	1	9/4/2014 12:16:22 PM	R21000
Magnesium	6.1	1.0		mg/L	1	9/4/2014 12:16:22 PM	R21000
Manganese	0.0022	0.0020		mg/L	1	9/4/2014 12:16:22 PM	R21000
Potassium	1.9	1.0		mg/L	1	9/4/2014 12:16:22 PM	R21000
Selenium	ND	0.050		mg/L	1	9/4/2014 12:16:22 PM	R21000
Silver	ND	0.0050		mg/L	1	9/4/2014 12:16:22 PM	R21000
Sodium	17	1.0		mg/L	1	9/4/2014 12:16:22 PM	R21000
Uranium	ND	0.10		mg/L	1	9/4/2014 12:16:22 PM	R21000
Zinc	ND	0.020		mg/L	1	9/4/2014 12:16:22 PM	R21000
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	8/30/2014 8:12:00 AM	15047
Barium	0.073	0.020		mg/L	1	8/30/2014 8:12:00 AM	15047
Cadmium	ND	0.0020		mg/L	1	8/30/2014 8:12:00 AM	15047
Chromium	ND	0.0060		mg/L	1	8/30/2014 8:12:00 AM	15047
Lead	ND	0.0050		mg/L	1	8/30/2014 8:12:00 AM	15047
Selenium	ND	0.050		mg/L	1	8/30/2014 8:12:00 AM	15047
Silver	ND	0.0050		mg/L	1	8/30/2014 8:12:00 AM	15047
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 7:59:24 PM	R20995
Toluene	ND	1.0		µg/L	1	9/4/2014 7:59:24 PM	R20995

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Outfall #3
Project: San Juan River Bluff 8-26-14 **Collection Date:** 8/26/2014 8:00:00 AM
Lab ID: 1408D76-002 **Matrix:** AQUEOUS **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 7:59:24 PM	R20995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 7:59:24 PM	R20995
Xylenes, Total	ND	2.0		µg/L	1	9/4/2014 7:59:24 PM	R20995
Surr: 1,2-Dichloroethane-d4	106	70-130		%REC	1	9/4/2014 7:59:24 PM	R20995
Surr: 4-Bromofluorobenzene	94.5	70-130		%REC	1	9/4/2014 7:59:24 PM	R20995
Surr: Dibromofluoromethane	102	70-130		%REC	1	9/4/2014 7:59:24 PM	R20995
Surr: Toluene-d8	87.0	70-130		%REC	1	9/4/2014 7:59:24 PM	R20995
CARBON DIOXIDE						Analyst: **JRR**	
Total Carbon Dioxide	86	1.0	H	mg CO2/L	1	8/28/2014 12:27:14 PM	R20890
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	95	20		mg/L CaCO3	1	8/28/2014 12:27:14 PM	R20890
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/28/2014 12:27:14 PM	R20890
Total Alkalinity (as CaCO3)	95	20		mg/L CaCO3	1	8/28/2014 12:27:14 PM	R20890

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Seep #1
Project: San Juan River Bluff 8-26-14 **Collection Date:** 8/26/2014 7:30:00 AM
Lab ID: 1408D76-003 **Matrix:** AQUEOUS **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGP**
Fluoride	0.23	0.10		mg/L	1	8/27/2014 1:28:23 PM	R20852
Chloride	230	10		mg/L	20	8/27/2014 1:40:48 PM	R20852
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	8/27/2014 1:28:23 PM	R20852
Bromide	2.7	0.10		mg/L	1	8/27/2014 1:28:23 PM	R20852
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	8/27/2014 1:28:23 PM	R20852
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	8/27/2014 1:40:48 PM	R20852
Sulfate	1600	25		mg/L	50	8/28/2014 11:13:41 PM	R20888
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst:	**KJH**
Benzene	ND	1.0		µg/L	1	9/4/2014 8:29:06 PM	R20995
Toluene	ND	1.0		µg/L	1	9/4/2014 8:29:06 PM	R20995
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 8:29:06 PM	R20995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 8:29:06 PM	R20995
Xylenes, Total	ND	2.0		µg/L	1	9/4/2014 8:29:06 PM	R20995
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	9/4/2014 8:29:06 PM	R20995
Surr: 4-Bromofluorobenzene	92.7	70-130		%REC	1	9/4/2014 8:29:06 PM	R20995
Surr: Dibromofluoromethane	94.4	70-130		%REC	1	9/4/2014 8:29:06 PM	R20995
Surr: Toluene-d8	85.5	70-130		%REC	1	9/4/2014 8:29:06 PM	R20995
CARBON DIOXIDE						Analyst:	**JRR**
Total Carbon Dioxide	350	1.0	H	mg CO2/L	1	8/28/2014 12:35:23 PM	R20890
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	380	20		mg/L CaCO3	1	8/28/2014 12:35:23 PM	R20890
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	8/28/2014 12:35:23 PM	R20890
Total Alkalinity (as CaCO3)	380	20		mg/L CaCO3	1	8/28/2014 12:35:23 PM	R20890

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
Project: San Juan River Bluff 8-26-14 **Collection Date:**
Lab ID: 1408D76-004 **Matrix:** TRIP BLANK **Received Date:** 8/27/2014 4:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **KJH**	
Benzene	ND	1.0		µg/L	1	9/4/2014 8:58:47 PM	R20995
Toluene	ND	1.0		µg/L	1	9/4/2014 8:58:47 PM	R20995
Ethylbenzene	ND	1.0		µg/L	1	9/4/2014 8:58:47 PM	R20995
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/4/2014 8:58:47 PM	R20995
Xylenes, Total	ND	2.0		µg/L	1	9/4/2014 8:58:47 PM	R20995
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	9/4/2014 8:58:47 PM	R20995
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	9/4/2014 8:58:47 PM	R20995
Surr: Dibromofluoromethane	98.7	70-130		%REC	1	9/4/2014 8:58:47 PM	R20995
Surr: Toluene-d8	85.3	70-130		%REC	1	9/4/2014 8:58:47 PM	R20995

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607023** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607024** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	93.9	90	110			
Chloride	4.7	0.50	5.000	0	93.5	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.4	90	110			
Bromide	2.4	0.10	2.500	0	95.4	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.7	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.3	90	110			
Sulfate	9.5	0.50	10.00	0	95.2	90	110			

Sample ID **1408D76-001BMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Outfall #2**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607026** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.92	0.10	0.5000	0.4994	84.3	72.7	110			
Chloride	14	0.50	5.000	9.218	96.0	92.6	107			
Nitrogen, Nitrite (As N)	0.89	0.10	1.000	0	88.5	75.5	104			
Bromide	2.3	0.10	2.500	0.1078	86.6	85.1	108			
Nitrogen, Nitrate (As N)	2.7	0.10	2.500	0.3701	91.9	87.8	111			
Phosphorus, Orthophosphate (As P	4.2	0.50	5.000	0	85.0	81.3	101			

Sample ID **1408D76-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Outfall #2**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607027** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.92	0.10	0.5000	0.4994	84.4	72.7	110	0.0760	20	
Chloride	14	0.50	5.000	9.218	96.5	92.6	107	0.175	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **1408D76-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **Outfall #2**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607027** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.89	0.10	1.000	0	88.8	75.5	104	0.259	20	
Bromide	2.3	0.10	2.500	0.1078	86.5	85.1	108	0.0572	20	
Nitrogen, Nitrate (As N)	2.7	0.10	2.500	0.3701	91.8	87.8	111	0.109	20	
Phosphorus, Orthophosphate (As P	4.3	0.50	5.000	0	86.2	81.3	101	1.40	20	

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607088** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20852**	RunNo: **20852**
Prep Date:	Analysis Date: **8/27/2014**	SeqNo: **607089** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	98.7	90	110			
Chloride	4.7	0.50	5.000	0	93.3	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.8	90	110			
Sulfate	9.5	0.50	10.00	0	95.0	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R20888**	RunNo: **20888**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607812** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R20888**	RunNo: **20888**
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607813** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	95.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611315** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
mp-Xylenes	ND	1.0								
o-Xylene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.0	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.7	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.9	70	130			
Surr: Toluene-d8	8.9		10.00		89.3	70	130			

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611316** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	20	1.0	20.00	0	100	80	120			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.4	70	130			
Surr: Toluene-d8	8.9		10.00		89.1	70	130			

Sample ID **1408D76-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **Outfall #2**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611318** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25	1.0	20.00	0	127	70	130			
Toluene	19	1.0	20.00	0	95.9	67.5	123			
Surr: 1,2-Dichloroethane-d4	11		10.00		109	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.2	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	8.6		10.00		86.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **1408D76-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **Outfall #2**	Batch ID: **R20995**	RunNo: **20995**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611319** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	114	70	130	11.1	20	
Toluene	19	1.0	20.00	0	96.8	67.5	123	0.955	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.2		10.00		92.0	70	130	0	0	
Surr: Dibromofluoromethane	9.5		10.00		95.4	70	130	0	0	
Surr: Toluene-d8	8.8		10.00		87.8	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID	**MB-15037**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **15037**			RunNo: **20907**					
Prep Date:	**8/29/2014**	Analysis Date: **8/30/2014**			SeqNo: **608339**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-15037**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID: **15037**			RunNo: **20907**					
Prep Date:	**8/29/2014**	Analysis Date: **8/30/2014**			SeqNo: **608340**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0054	0.00020	0.005000	0	107	80	120			

Sample ID	**1408D76-002CMS**	SampType: **MS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**Outfall #3**	Batch ID: **15037**			RunNo: **20907**					
Prep Date:	**8/29/2014**	Analysis Date: **8/30/2014**			SeqNo: **608352**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	96.7	75	125			

Sample ID	**1408D76-002CMSD**	SampType: **MSD**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**Outfall #3**	Batch ID: **15037**			RunNo: **20907**					
Prep Date:	**8/29/2014**	Analysis Date: **8/30/2014**			SeqNo: **608353**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	107	75	125	9.88	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R21000**	RunNo: **21000**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611209** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Uranium	ND	0.10								
Zinc	ND	0.020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R21000**	RunNo: **21000**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611210** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	97.6	80	120			
Barium	0.47	0.020	0.5000	0	94.4	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.8	80	120			
Calcium	49	1.0	50.00	0	98.0	80	120			
Chromium	0.47	0.0060	0.5000	0	94.2	80	120			
Copper	0.48	0.0060	0.5000	0	95.6	80	120			
Iron	0.47	0.020	0.5000	0	94.4	80	120			
Lead	0.47	0.0050	0.5000	0	93.9	80	120			
Magnesium	50	1.0	50.00	0	101	80	120			
Manganese	0.46	0.0020	0.5000	0	92.7	80	120			
Potassium	49	1.0	50.00	0	98.8	80	120			
Selenium	0.47	0.050	0.5000	0	94.6	80	120			
Silver	0.49	0.0050	0.5000	0	97.6	80	120			
Sodium	50	1.0	50.00	0	100	80	120			
Uranium	0.44	0.10	0.5000	0	88.3	80	120			
Zinc	0.47	0.020	0.5000	0	94.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **1408D76-002DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **Outfall #3**	Batch ID: **R21000**	RunNo: **21000**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611229** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.53	0.020	0.5000	0	106	75	125			
Barium	0.56	0.020	0.5000	0.07088	96.9	75	125			
Cadmium	0.50	0.0020	0.5000	0	101	75	125			
Calcium	84	1.0	50.00	34.56	98.1	75	125			
Chromium	0.49	0.0060	0.5000	0	98.4	75	125			
Copper	0.50	0.0060	0.5000	0	99.7	75	125			
Iron	0.49	0.020	0.5000	0	98.6	75	125			
Lead	0.49	0.0050	0.5000	0	97.3	75	125			
Magnesium	57	1.0	50.00	6.149	102	75	125			
Manganese	0.48	0.0020	0.5000	0.002200	96.4	75	125			
Potassium	52	1.0	50.00	1.883	100	75	125			
Selenium	0.51	0.050	0.5000	0	102	75	125			
Silver	0.47	0.0050	0.5000	0	94.6	75	125			
Sodium	68	1.0	50.00	17.23	101	75	125			
Uranium	0.46	0.10	0.5000	0	92.2	75	125			
Zinc	0.50	0.020	0.5000	0	99.0	75	125			

Sample ID **1408D76-002DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **Outfall #3**	Batch ID: **R21000**	RunNo: **21000**
Prep Date:	Analysis Date: **9/4/2014**	SeqNo: **611230** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	104	75	125	2.15	20	
Barium	0.55	0.020	0.5000	0.07088	94.9	75	125	1.78	20	
Cadmium	0.49	0.0020	0.5000	0	98.4	75	125	2.38	20	
Calcium	83	1.0	50.00	34.56	97.8	75	125	0.135	20	
Chromium	0.48	0.0060	0.5000	0	95.9	75	125	2.65	20	
Copper	0.49	0.0060	0.5000	0	97.8	75	125	1.94	20	
Iron	0.49	0.020	0.5000	0	98.0	75	125	0.606	20	
Lead	0.48	0.0050	0.5000	0	95.3	75	125	2.10	20	
Magnesium	56	1.0	50.00	6.149	99.1	75	125	2.46	20	
Manganese	0.47	0.0020	0.5000	0.002200	94.4	75	125	2.15	20	
Potassium	50	1.0	50.00	1.883	97.2	75	125	2.86	20	
Selenium	0.51	0.050	0.5000	0	102	75	125	0.558	20	
Silver	0.47	0.0050	0.5000	0	93.8	75	125	0.809	20	
Sodium	66	1.0	50.00	17.23	96.8	75	125	2.83	20	
Uranium	0.45	0.10	0.5000	0	90.1	75	125	2.38	20	
Zinc	0.48	0.020	0.5000	0	96.6	75	125	2.50	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **MB-15047**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **15047**	RunNo: **20905**
Prep Date: **8/29/2014**	Analysis Date: **8/30/2014**	SeqNo: **608262** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-15047**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **15047**	RunNo: **20905**
Prep Date: **8/29/2014**	Analysis Date: **8/30/2014**	SeqNo: **608263** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.3	80	120			
Barium	0.49	0.020	0.5000	0	98.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.7	80	120			
Chromium	0.49	0.0060	0.5000	0	97.4	80	120			
Lead	0.48	0.0050	0.5000	0	97.0	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.48	0.0050	0.5000	0	97.0	80	120			

Sample ID **1408D76-002CMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Outfall #3**	Batch ID: **15047**	RunNo: **20905**
Prep Date: **8/29/2014**	Analysis Date: **8/30/2014**	SeqNo: **608278** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	75	125			
Barium	0.55	0.020	0.5000	0.07284	95.0	75	125			
Cadmium	0.48	0.0020	0.5000	0	96.1	75	125			
Chromium	0.48	0.0060	0.5000	0	96.3	75	125			
Lead	0.47	0.0050	0.5000	0	94.4	75	125			
Selenium	0.47	0.050	0.5000	0	93.8	75	125			
Silver	0.49	0.0050	0.5000	0	98.6	75	125			

Sample ID **1408D76-002CMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Outfall #3**	Batch ID: **15047**	RunNo: **20905**
Prep Date: **8/29/2014**	Analysis Date: **8/30/2014**	SeqNo: **608279** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	104	75	125	1.53	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID	**1408D76-002CMSD**	SampType:	**MSD**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**Outfall #3**	Batch ID:	**15047**	RunNo:	**20905**
Prep Date:	**8/29/2014**	Analysis Date:	**8/30/2014**	SeqNo:	**608279** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.55	0.020	0.5000	0.07284	95.9	75	125	0.783	20	
Cadmium	0.49	0.0020	0.5000	0	97.4	75	125	1.30	20	
Chromium	0.49	0.0060	0.5000	0	97.7	75	125	1.35	20	
Lead	0.48	0.0050	0.5000	0	96.5	75	125	2.16	20	
Selenium	0.47	0.050	0.5000	0	94.7	75	125	1.02	20	
Silver	0.50	0.0050	0.5000	0	99.7	75	125	1.11	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1408D76**

16-Sep-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 8-26-14

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R20890**	RunNo: **20890**							
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607928**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R20890**	RunNo: **20890**							
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607929**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	99.7	90	110			

Sample ID **1408d76-001b ms**	SampType: **MS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **Outfall #2**	Batch ID: **R20890**	RunNo: **20890**							
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607932**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	410	20	80.00	347.6	76.5	34.9	123			

Sample ID **1408d76-001b msd**	SampType: **MSD**	TestCode: **SM2320B: Alkalinity**							
Client ID: **Outfall #2**	Batch ID: **R20890**	RunNo: **20890**							
Prep Date:	Analysis Date: **8/28/2014**	SeqNo: **607933**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	410	20	80.00	347.6	78.9	34.9	123	0.488	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1408D76** RcptNo: **1**

Received by/date: 08/27/14

Logged By: **Lindsay Mangin** 8/27/2014 4:55:00 AM

Completed By: **Lindsay Mangin** 8/27/2014 6:43:53 AM

Reviewed By: TO 08/27/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No	NA
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes ✔	No	No VOA Vials
11. Were any sample containers received broken?	Yes	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: 4 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted? NO
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: Date:

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
San Juan River Bluff 8-26-14

Project #:

Project Manager:

Sampler: Bob & Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408D76
8-26-14	8:10	H_2O	outfall #2	3-VOA	HCl	-001
				1-500ml	HNO_3	
			filter	1-250ml	HNO_3	
				1-250ml	H_2SO_4	
				1-500ml		
8-26-14	8:00		outfall #3	3-VOA	HCl	-002
				1-500ml	HNO_3	
			filter	1-250ml	HNO_3	
				1-250ml	H_2SO_4	
				1-500ml		

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals Total	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Alkalinity, CO_2	6010 Total Dissolved Metals			Air Bubbles (Y or N)
									X						
						X									
												X			
							X								
											X				
									X						
						X									
												X			
							X								
											X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-26-14	1340	Robert Krakow	Matt Walte	8/26/14	1340
8/26/14	1730	Matt Walte		08/27/14	0755

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
San Juan River Bluff 8-26-14

Project #:

Project Manager:

Sampler: Bob + Matt
On Ice: ☒ Yes ☐ No
Sample Temperature: 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1408D74
8-26-14	7:30	H2O	Seep #1	3-VOA	HCl	-003
				1-500		
				1-250	H2SO4	
			TRIP BLANK	2-VOA	HCl	-004
				08/27/14		

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Gen. chem. Alkalinity	Gen. chem. anions, Cl's		Air Bubbles (Y or N)
									X					
											X			
												X		
									X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-26-14	1340	Robert Krakow	Matt Walker	8/26/14	1340
8/26/14	1730	Matt Walker		08/27/14	0755

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

TABLE 2
Analytical Methods and Target Analytes

VOCs (EPA Method 8260B) [1]
- Target List
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl tert butyl ether (MTBE)
SVOCs - (EPA Method 8270)
- Method List
TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics
TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics
Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2
Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance
TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids
General Chemistry - Anions (EPA Method 300.0)
Fluoride
Chloride
Bromide
Nitrogen, Nitrite (as N)
Nitrogen, Nitrate (as N)
Phosphorous, Orthophosphate (As P)
Sulfate
General Chemistry - Alkalinity (EPA Method 310.1)
Alkalinity, Total
Carbonate
Bicarbonate

Total Recoverable Metals (EPA Method 6010B/7470)	
- Target List (not applicable to River Terrace Sampling Events)	
Arsenic	*Lead*
Barium	*Mercury*
Cadmium	*Selenium*
Chromium	*Silver*
- Target List (for River Terrace Sampling Events Only)	
Lead	
Mercury (DW-1 ONLY)	
Dissolved Metals (EPA Method 6010B / 7470)	
- Target List (for Refinery Complex, Outfalls, and River)	
Arsenic	*Manganese*
Barium	*Mercury*
Cadmium	*Potassium*
Calcium	*Selenium*
Chromium	*Silver*
Copper	*Sodium*
Iron	*Uranium*
Lead	*Zinc*
Magnesium	

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezomenter Wells only, per the River Terrace Bioventing System Monitoring Plan.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 14, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Seeps 4-1-14 OrderNo.: 1404092

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1404092**
Date Reported: **4/14/2014**

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: #1
Project: Seeps 4-1-14
Collection Date: 4/1/2014 10:30:00 AM
Lab ID: 1404092-001
Matrix: AQUEOUS
Received Date: 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.30	0.10		mg/L	1	4/2/2014 4:25:19 PM	R17774
Chloride	150	10		mg/L	20	4/2/2014 4:37:43 PM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/2/2014 4:25:19 PM	R17774
Bromide	1.9	0.10		mg/L	1	4/2/2014 4:25:19 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 4:25:19 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 4:25:19 PM	R17774
Sulfate	1200	25	*	mg/L	50	4/5/2014 5:32:20 AM	R17830
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/3/2014 2:23:42 PM	R17772
Toluene	ND	1.0		µg/L	1	4/3/2014 2:23:42 PM	R17772
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 2:23:42 PM	R17772
Methyl tert-butyl ether (MTBE)	66	1.0		µg/L	1	4/3/2014 2:23:42 PM	R17772
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 2:23:42 PM	R17772
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	4/3/2014 2:23:42 PM	R17772
Surr: 4-Bromofluorobenzene	102	70-130		%REC	1	4/3/2014 2:23:42 PM	R17772
Surr: Dibromofluoromethane	105	70-130		%REC	1	4/3/2014 2:23:42 PM	R17772
Surr: Toluene-d8	91.4	70-130		%REC	1	4/3/2014 2:23:42 PM	R17772
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	390	1.0	H	mg CO2/L	1	4/2/2014 5:55:54 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	430	20		mg/L CaCO3	1	4/2/2014 5:55:54 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 5:55:54 PM	R17767
Total Alkalinity (as CaCO3)	430	20		mg/L CaCO3	1	4/2/2014 5:55:54 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** #6
Project: Seeps 4-1-14 **Collection Date:** 4/1/2014 10:45:00 AM
Lab ID: 1404092-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	ND	0.10		mg/L	1	4/2/2014 4:50:07 PM	R17774
Chloride	1600	100	*	mg/L	200	4/5/2014 5:57:10 AM	R17830
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	4/2/2014 5:02:32 PM	R17774
Bromide	ND	2.0		mg/L	20	4/2/2014 5:02:32 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 4:50:07 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 4:50:07 PM	R17774
Sulfate	1500	25	*	mg/L	50	4/5/2014 5:44:45 AM	R17830
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/3/2014 3:50:05 PM	R17772
Toluene	ND	1.0		µg/L	1	4/3/2014 3:50:05 PM	R17772
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 3:50:05 PM	R17772
Methyl tert-butyl ether (MTBE)	5.8	1.0		µg/L	1	4/3/2014 3:50:05 PM	R17772
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 3:50:05 PM	R17772
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	4/3/2014 3:50:05 PM	R17772
Surr: 4-Bromofluorobenzene	104	70-130		%REC	1	4/3/2014 3:50:05 PM	R17772
Surr: Dibromofluoromethane	105	70-130		%REC	1	4/3/2014 3:50:05 PM	R17772
Surr: Toluene-d8	98.4	70-130		%REC	1	4/3/2014 3:50:05 PM	R17772
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	390	1.0	H	mg CO2/L	1	4/2/2014 6:13:51 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	420	20		mg/L CaCO3	1	4/2/2014 6:13:51 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 6:13:51 PM	R17767
Total Alkalinity (as CaCO3)	420	20		mg/L CaCO3	1	4/2/2014 6:13:51 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** #9
Project: Seeps 4-1-14 **Collection Date:** 4/1/2014 11:00:00 AM
Lab ID: 1404092-003 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.50	0.10		mg/L	1	4/2/2014 5:14:56 PM	R17774
Chloride	550	25	*	mg/L	50	4/5/2014 6:09:34 AM	R17830
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	4/2/2014 5:27:21 PM	R17774
Bromide	2.0	0.10		mg/L	1	4/2/2014 5:14:56 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 5:14:56 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	4/2/2014 5:27:21 PM	R17774
Sulfate	2000	25	*	mg/L	50	4/5/2014 6:09:34 AM	R17830
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/3/2014 4:18:43 PM	R17772
Toluene	ND	1.0		µg/L	1	4/3/2014 4:18:43 PM	R17772
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 4:18:43 PM	R17772
Methyl tert-butyl ether (MTBE)	24	1.0		µg/L	1	4/3/2014 4:18:43 PM	R17772
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 4:18:43 PM	R17772
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	4/3/2014 4:18:43 PM	R17772
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	4/3/2014 4:18:43 PM	R17772
Surr: Dibromofluoromethane	109	70-130		%REC	1	4/3/2014 4:18:43 PM	R17772
Surr: Toluene-d8	97.0	70-130		%REC	1	4/3/2014 4:18:43 PM	R17772
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	290	1.0	H	mg CO2/L	1	4/2/2014 6:32:19 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	320	20		mg/L CaCO3	1	4/2/2014 6:32:19 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 6:32:19 PM	R17767
Total Alkalinity (as CaCO3)	320	20		mg/L CaCO3	1	4/2/2014 6:32:19 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
Project: Seeps 4-1-14 **Collection Date:**
Lab ID: 1404092-004 **Matrix:** TRIP BLANK **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **cadg**	
Benzene	ND	1.0		µg/L	1	4/3/2014 4:47:34 PM	R17772
Toluene	ND	1.0		µg/L	1	4/3/2014 4:47:34 PM	R17772
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 4:47:34 PM	R17772
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 4:47:34 PM	R17772
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 4:47:34 PM	R17772
Surr: 1,2-Dichloroethane-d4	101	70-130		%REC	1	4/3/2014 4:47:34 PM	R17772
Surr: 4-Bromofluorobenzene	98.0	70-130		%REC	1	4/3/2014 4:47:34 PM	R17772
Surr: Dibromofluoromethane	103	70-130		%REC	1	4/3/2014 4:47:34 PM	R17772
Surr: Toluene-d8	91.7	70-130		%REC	1	4/3/2014 4:47:34 PM	R17772

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404092**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: Seeps 4-1-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512157** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512158** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.8	90	110			
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.5	0.10	2.500	0	98.1	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.2	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.2	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512214** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	93.6	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.4	0.10	2.500	0	97.8	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404092**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: Seeps 4-1-14

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.6	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.8	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17830**	RunNo: **17830**
Prep Date:	Analysis Date: **4/4/2014**	SeqNo: **513962** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17830**	RunNo: **17830**
Prep Date:	Analysis Date: **4/4/2014**	SeqNo: **513963** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.1	90	110			
Sulfate	9.5	0.50	10.00	0	94.7	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17830**	RunNo: **17830**
Prep Date:	Analysis Date: **4/4/2014**	SeqNo: **514005** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17830**	RunNo: **17830**
Prep Date:	Analysis Date: **4/4/2014**	SeqNo: **514006** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Sulfate	9.5	0.50	10.00	0	95.1	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404092**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: Seeps 4-1-14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512644** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.5		10.00		94.6	70	130			

Sample ID **1404092-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **#1**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512647** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	70	130			
Toluene	20	1.0	20.00	0	99.1	67.5	123			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.5	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.5	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Sample ID **1404092-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **#1**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512648** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130	0.926	20	
Toluene	19	1.0	20.00	0	94.7	67.5	123	4.49	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.7		10.00		97.4	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		103	70	130	0	0	
Surr: Toluene-d8	10		10.00		101	70	130	0	0	

Sample ID **100ng lcs1**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512777** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404092**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: Seeps 4-1-14

Sample ID **100ng lcs1**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512777** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	19	1.0	20.00	0	96.5	80	120			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.7	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID **b3**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512791** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.4		10.00		94.1	70	130			

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R17772**	RunNo: **17772**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512792** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	19	1.0	20.00	0	93.8	80	120			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.5	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.8		10.00		97.8	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404092**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: Seeps 4-1-14

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511976**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511977**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78	20	80.00	0	97.0	90	110			

Sample ID **mb-2**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511991**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511992**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	82	20	80.00	0	102	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1404092 RcptNo: 1

Received by/date: 04/02/14

Logged By: **Lindsay Mangin** 4/2/2014 9:45:00 AM

Completed By: **Lindsay Mangin** 4/2/2014 10:33:15 AM

Reviewed By: 04/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 3 (<2 or >12 unless noted)

Adjusted? no

Checked by: CS

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #30 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Seeps 4-1-14

Project #:

Project Manager:

Sampler: Matt + Bob
On Ice: ☑ Yes ☐ No
Sample Temperature: 1.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402092	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Alk, CO_2				Air Bubbles (Y or N)
4-1-14	10:30	H_2O	#1	3-VOA	HCl	-001										X						
				1-500	N													X				
				1-250	H_2SO_4									X								
	10:45		#6	3-VOA	HCl	-002										X						
				1-500														X				
				1-250	H_2SO_4									X								
	11:00		#9	3-VOA	HCl	-003										X						
				1-500														X				
				1-250	H_2SO_4									X								
			TRIP BLANK			-004																

Date:	Time:	Relinquished by:	Received by:	Date	Time
4-1-14	1601	Robert Bracken	Chantha Walter	4/1/14	1601
4/1/14	1749	Chantha Walter		04/02/14	0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 14, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: San Juan River Bluff 4/1/14 OrderNo.: 1404091

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 45
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:45:00 AM
Lab ID: 1404091-001 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/2/2014 10:35:48 PM	12504
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/2/2014 10:35:48 PM	12504
Surr: DNOP	96.8	76-161		%REC	1	4/2/2014 10:35:48 PM	12504
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/4/2014 2:31:53 PM	R17799
Surr: BFB	95.7	80.4-118		%REC	1	4/4/2014 2:31:53 PM	R17799
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.20	0.10		mg/L	1	4/2/2014 1:56:25 PM	R17774
Chloride	3.8	0.50		mg/L	1	4/2/2014 1:56:25 PM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/2/2014 1:56:25 PM	R17774
Bromide	ND	0.10		mg/L	1	4/2/2014 1:56:25 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 1:56:25 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 1:56:25 PM	R17774
Sulfate	92	10		mg/L	20	4/2/2014 2:33:39 PM	R17774
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:29:27 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:42:37 PM	R17809
Barium	0.071	0.020		mg/L	1	4/3/2014 12:58:12 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 12:58:12 PM	R17788
Calcium	42	1.0		mg/L	1	4/3/2014 12:58:12 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 12:58:12 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 12:58:12 PM	R17788
Iron	0.033	0.020		mg/L	1	4/3/2014 12:58:12 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 12:58:12 PM	R17788
Magnesium	6.9	1.0		mg/L	1	4/3/2014 12:58:12 PM	R17788
Manganese	0.022	0.0020		mg/L	1	4/3/2014 12:58:12 PM	R17788
Potassium	2.0	1.0		mg/L	1	4/3/2014 12:58:12 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 12:58:12 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 12:58:12 PM	R17788
Sodium	32	1.0		mg/L	1	4/3/2014 12:58:12 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 12:58:12 PM	R17788
Zinc	ND	0.020		mg/L	1	4/3/2014 12:58:12 PM	R17788
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:01:16 PM	12551
Barium	0.086	0.020		mg/L	1	4/5/2014 1:01:16 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:01:16 PM	12551

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 45
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:45:00 AM
Lab ID: 1404091-001 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:01:16 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:01:16 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:01:16 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:01:16 PM	12551
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Naphthalene	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
2-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Acetone	ND	10		µg/L	1	4/3/2014 2:29:45 PM	R17789
Bromobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Bromodichloromethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Bromoform	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Bromomethane	ND	3.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
2-Butanone	ND	10		µg/L	1	4/3/2014 2:29:45 PM	R17789
Carbon disulfide	ND	10		µg/L	1	4/3/2014 2:29:45 PM	R17789
Carbon Tetrachloride	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Chlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Chloroethane	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Chloroform	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Chloromethane	ND	3.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
2-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
4-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
cis-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Dibromochloromethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Dibromomethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: North Of 45
Project: San Juan River Bluff 4/1/14
Collection Date: 4/1/2014 9:45:00 AM
Lab ID: 1404091-001
Matrix: AQUEOUS
Received Date: 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloroethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1-Dichloroethene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,3-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
2,2-Dichloropropane	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Hexachlorobutadiene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
2-Hexanone	ND	10		µg/L	1	4/3/2014 2:29:45 PM	R17789
Isopropylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
4-Isopropyltoluene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
4-Methyl-2-pentanone	ND	10		µg/L	1	4/3/2014 2:29:45 PM	R17789
Methylene Chloride	ND	3.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
n-Butylbenzene	ND	3.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
n-Propylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
sec-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Styrene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
tert-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
trans-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Trichlorofluoromethane	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Vinyl chloride	ND	1.0		µg/L	1	4/3/2014 2:29:45 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 2:29:45 PM	R17789
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	4/3/2014 2:29:45 PM	R17789
Surr: 4-Bromofluorobenzene	92.4	70-130		%REC	1	4/3/2014 2:29:45 PM	R17789
Surr: Dibromofluoromethane	96.4	70-130		%REC	1	4/3/2014 2:29:45 PM	R17789
Surr: Toluene-d8	101	70-130		%REC	1	4/3/2014 2:29:45 PM	R17789
SM 2540 C: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	259	20.0		mg/L	1	4/7/2014 12:12:00 PM	12549
CARBON DIOXIDE						Analyst: **JML**	

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Qualifiers:

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O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 45
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:45:00 AM
Lab ID: 1404091-001 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	89	1.0	H	mg CO2/L	1	4/2/2014 4:04:22 PM	R17767
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**	
Conductivity	380	0.010		µmhos/cm	1	4/2/2014 4:04:22 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:04:22 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 4:04:22 PM	R17767
Total Alkalinity (as CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:04:22 PM	R17767

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 46
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:30:00 AM
Lab ID: 1404091-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/3/2014 9:50:46 AM	12504
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/3/2014 9:50:46 AM	12504
Surr: DNOP	95.8	76-161		%REC	1	4/3/2014 9:50:46 AM	12504
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/4/2014 3:01:59 PM	R17799
Surr: BFB	99.5	80.4-118		%REC	1	4/4/2014 3:01:59 PM	R17799
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.20	0.10		mg/L	1	4/2/2014 2:46:03 PM	R17774
Chloride	3.8	0.50		mg/L	1	4/2/2014 2:46:03 PM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/2/2014 2:46:03 PM	R17774
Bromide	ND	0.10		mg/L	1	4/2/2014 2:46:03 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 2:46:03 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 2:46:03 PM	R17774
Sulfate	87	10		mg/L	20	4/2/2014 2:58:27 PM	R17774
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:34:51 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:44:25 PM	R17809
Barium	0.071	0.020		mg/L	1	4/3/2014 1:01:56 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:01:56 PM	R17788
Calcium	41	1.0		mg/L	1	4/3/2014 1:01:56 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:01:56 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:01:56 PM	R17788
Iron	0.030	0.020		mg/L	1	4/3/2014 1:01:56 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:01:56 PM	R17788
Magnesium	6.8	1.0		mg/L	1	4/3/2014 1:01:56 PM	R17788
Manganese	0.015	0.0020		mg/L	1	4/3/2014 1:01:56 PM	R17788
Potassium	1.9	1.0		mg/L	1	4/3/2014 1:01:56 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:01:56 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:01:56 PM	R17788
Sodium	31	1.0		mg/L	1	4/3/2014 1:01:56 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:01:56 PM	R17788
Zinc	ND	0.020		mg/L	1	4/3/2014 1:01:56 PM	R17788
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:02:36 PM	12551
Barium	0.090	0.020		mg/L	1	4/5/2014 1:02:36 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:02:36 PM	12551

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 46
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:30:00 AM
Lab ID: 1404091-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:02:36 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:02:36 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:02:36 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:02:36 PM	12551
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Naphthalene	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
2-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Acetone	ND	10		µg/L	1	4/3/2014 4:32:58 PM	R17789
Bromobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Bromodichloromethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Bromoform	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Bromomethane	ND	3.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
2-Butanone	ND	10		µg/L	1	4/3/2014 4:32:58 PM	R17789
Carbon disulfide	ND	10		µg/L	1	4/3/2014 4:32:58 PM	R17789
Carbon Tetrachloride	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Chlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Chloroethane	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Chloroform	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Chloromethane	ND	3.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
2-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
4-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
cis-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Dibromochloromethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Dibromomethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789

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Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
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S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: North Of 46
Project: San Juan River Bluff 4/1/14
Collection Date: 4/1/2014 9:30:00 AM
Lab ID: 1404091-002
Matrix: AQUEOUS
Received Date: 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloroethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1-Dichloroethene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,3-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
2,2-Dichloropropane	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Hexachlorobutadiene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
2-Hexanone	ND	10		µg/L	1	4/3/2014 4:32:58 PM	R17789
Isopropylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
4-Isopropyltoluene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
4-Methyl-2-pentanone	ND	10		µg/L	1	4/3/2014 4:32:58 PM	R17789
Methylene Chloride	ND	3.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
n-Butylbenzene	ND	3.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
n-Propylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
sec-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Styrene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
tert-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
trans-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Trichlorofluoromethane	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Vinyl chloride	ND	1.0		µg/L	1	4/3/2014 4:32:58 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 4:32:58 PM	R17789
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1	4/3/2014 4:32:58 PM	R17789
Surr: 4-Bromofluorobenzene	87.3	70-130		%REC	1	4/3/2014 4:32:58 PM	R17789
Surr: Dibromofluoromethane	103	70-130		%REC	1	4/3/2014 4:32:58 PM	R17789
Surr: Toluene-d8	100	70-130		%REC	1	4/3/2014 4:32:58 PM	R17789
SM 2540 C: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	262	20.0		mg/L	1	4/7/2014 12:12:00 PM	12549
CARBON DIOXIDE						Analyst: **JML**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Of 46
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:30:00 AM
Lab ID: 1404091-002 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	89	1.0	H	mg CO2/L	1	4/2/2014 4:17:37 PM	R17767
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**	
Conductivity	390	0.010		µmhos/cm	1	4/2/2014 4:17:37 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:17:37 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 4:17:37 PM	R17767
Total Alkalinity (as CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:17:37 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Upstream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 10:15:00 AM
Lab ID: 1404091-003 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/3/2014 12:37:18 AM	12504
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/3/2014 12:37:18 AM	12504
Surr: DNOP	91.6	76-161		%REC	1	4/3/2014 12:37:18 AM	12504
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/4/2014 3:32:09 PM	R17799
Surr: BFB	105	80.4-118		%REC	1	4/4/2014 3:32:09 PM	R17799
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.20	0.10		mg/L	1	4/2/2014 3:10:52 PM	R17774
Chloride	3.9	0.50		mg/L	1	4/2/2014 3:10:52 PM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/2/2014 3:10:52 PM	R17774
Bromide	ND	0.10		mg/L	1	4/2/2014 3:10:52 PM	R17774
Nitrogen, Nitrate (As N)	0.12	0.10		mg/L	1	4/2/2014 3:10:52 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 3:10:52 PM	R17774
Sulfate	96	10		mg/L	20	4/2/2014 3:23:16 PM	R17774
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:36:36 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:46:11 PM	R17809
Barium	0.072	0.020		mg/L	1	4/3/2014 1:05:29 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:05:29 PM	R17788
Calcium	41	1.0		mg/L	1	4/3/2014 1:05:29 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:05:29 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:05:29 PM	R17788
Iron	0.024	0.020		mg/L	1	4/3/2014 1:05:29 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:05:29 PM	R17788
Magnesium	7.1	1.0		mg/L	1	4/3/2014 1:05:29 PM	R17788
Manganese	0.028	0.0020		mg/L	1	4/3/2014 1:05:29 PM	R17788
Potassium	2.0	1.0		mg/L	1	4/3/2014 1:05:29 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:05:29 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:05:29 PM	R17788
Sodium	36	1.0		mg/L	1	4/3/2014 1:05:29 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:05:29 PM	R17788
Zinc	0.023	0.020		mg/L	1	4/3/2014 1:05:29 PM	R17788
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:03:54 PM	12551
Barium	0.086	0.020		mg/L	1	4/5/2014 1:03:54 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:03:54 PM	12551

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Upstream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 10:15:00 AM
Lab ID: 1404091-003 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:03:54 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:03:54 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:03:54 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:03:54 PM	12551
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Naphthalene	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
2-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Acetone	ND	10		µg/L	1	4/3/2014 5:03:49 PM	R17789
Bromobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Bromodichloromethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Bromoform	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Bromomethane	ND	3.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
2-Butanone	ND	10		µg/L	1	4/3/2014 5:03:49 PM	R17789
Carbon disulfide	ND	10		µg/L	1	4/3/2014 5:03:49 PM	R17789
Carbon Tetrachloride	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Chlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Chloroethane	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Chloroform	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Chloromethane	ND	3.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
2-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
4-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
cis-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Dibromochloromethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Dibromomethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Upstream
Project: San Juan River Bluff 4/1/14
Collection Date: 4/1/2014 10:15:00 AM
Lab ID: 1404091-003
Matrix: AQUEOUS
Received Date: 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloroethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1-Dichloroethene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,3-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
2,2-Dichloropropane	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Hexachlorobutadiene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
2-Hexanone	ND	10		µg/L	1	4/3/2014 5:03:49 PM	R17789
Isopropylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
4-Isopropyltoluene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
4-Methyl-2-pentanone	ND	10		µg/L	1	4/3/2014 5:03:49 PM	R17789
Methylene Chloride	ND	3.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
n-Butylbenzene	ND	3.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
n-Propylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
sec-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Styrene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
tert-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
trans-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Trichlorofluoromethane	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Vinyl chloride	ND	1.0		µg/L	1	4/3/2014 5:03:49 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 5:03:49 PM	R17789
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	4/3/2014 5:03:49 PM	R17789
Surr: 4-Bromofluorobenzene	94.0	70-130		%REC	1	4/3/2014 5:03:49 PM	R17789
Surr: Dibromofluoromethane	105	70-130		%REC	1	4/3/2014 5:03:49 PM	R17789
Surr: Toluene-d8	96.5	70-130		%REC	1	4/3/2014 5:03:49 PM	R17789
SM 2540 C: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	269	20.0		mg/L	1	4/7/2014 12:12:00 PM	12549
CARBON DIOXIDE						Analyst: **JML**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Upstream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 10:15:00 AM
Lab ID: 1404091-003 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	89	1.0	H	mg CO2/L	1	4/2/2014 4:26:19 PM	R17767
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**	
Conductivity	400	0.010		µmhos/cm	1	4/2/2014 4:26:19 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	99	20		mg/L CaCO3	1	4/2/2014 4:26:19 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 4:26:19 PM	R17767
Total Alkalinity (as CaCO3)	99	20		mg/L CaCO3	1	4/2/2014 4:26:19 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Down Stream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:00:00 AM
Lab ID: 1404091-004 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	4/3/2014 1:07:35 AM	12504
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	4/3/2014 1:07:35 AM	12504
Surr: DNOP	111	76-161		%REC	1	4/3/2014 1:07:35 AM	12504
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/4/2014 4:02:20 PM	R17799
Surr: BFB	86.3	80.4-118		%REC	1	4/4/2014 4:02:20 PM	R17799
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.20	0.10		mg/L	1	4/2/2014 3:35:41 PM	R17774
Chloride	4.2	0.50		mg/L	1	4/2/2014 3:35:41 PM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/2/2014 3:35:41 PM	R17774
Bromide	ND	0.10		mg/L	1	4/2/2014 3:35:41 PM	R17774
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	4/2/2014 3:35:41 PM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/2/2014 3:35:41 PM	R17774
Sulfate	91	10		mg/L	20	4/2/2014 3:48:05 PM	R17774
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:38:21 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:48:00 PM	R17809
Barium	0.071	0.020		mg/L	1	4/3/2014 1:09:05 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:09:05 PM	R17788
Calcium	45	1.0		mg/L	1	4/3/2014 1:09:05 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:09:05 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:09:05 PM	R17788
Iron	0.023	0.020		mg/L	1	4/3/2014 1:09:05 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:09:05 PM	R17788
Magnesium	7.1	1.0		mg/L	1	4/3/2014 1:09:05 PM	R17788
Manganese	0.060	0.0020		mg/L	1	4/3/2014 1:09:05 PM	R17788
Potassium	1.9	1.0		mg/L	1	4/3/2014 1:09:05 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:09:05 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:09:05 PM	R17788
Sodium	34	1.0		mg/L	1	4/3/2014 1:09:05 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:09:05 PM	R17788
Zinc	0.021	0.020		mg/L	1	4/3/2014 1:09:05 PM	R17788
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:05:16 PM	12551
Barium	0.089	0.020		mg/L	1	4/5/2014 1:05:16 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:05:16 PM	12551

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Down Stream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:00:00 AM
Lab ID: 1404091-004 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:05:16 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:05:16 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:05:16 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:05:16 PM	12551
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Naphthalene	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
2-Methylnaphthalene	ND	4.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Acetone	ND	10		µg/L	1	4/3/2014 5:34:39 PM	R17789
Bromobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Bromodichloromethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Bromoform	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Bromomethane	ND	3.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
2-Butanone	ND	10		µg/L	1	4/3/2014 5:34:39 PM	R17789
Carbon disulfide	ND	10		µg/L	1	4/3/2014 5:34:39 PM	R17789
Carbon Tetrachloride	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Chlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Chloroethane	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Chloroform	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Chloromethane	ND	3.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
2-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
4-Chlorotoluene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
cis-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Dibromochloromethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Dibromomethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789

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Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Down Stream
Project: San Juan River Bluff 4/1/14
Collection Date: 4/1/2014 9:00:00 AM
Lab ID: 1404091-004
Matrix: AQUEOUS
Received Date: 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloroethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1-Dichloroethene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,3-Dichloropropane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
2,2-Dichloropropane	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Hexachlorobutadiene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
2-Hexanone	ND	10		µg/L	1	4/3/2014 5:34:39 PM	R17789
Isopropylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
4-Isopropyltoluene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
4-Methyl-2-pentanone	ND	10		µg/L	1	4/3/2014 5:34:39 PM	R17789
Methylene Chloride	ND	3.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
n-Butylbenzene	ND	3.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
n-Propylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
sec-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Styrene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
tert-Butylbenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
trans-1,2-DCE	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Trichlorofluoromethane	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Vinyl chloride	ND	1.0		µg/L	1	4/3/2014 5:34:39 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 5:34:39 PM	R17789
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	4/3/2014 5:34:39 PM	R17789
Surr: 4-Bromofluorobenzene	90.5	70-130		%REC	1	4/3/2014 5:34:39 PM	R17789
Surr: Dibromofluoromethane	94.7	70-130		%REC	1	4/3/2014 5:34:39 PM	R17789
Surr: Toluene-d8	97.1	70-130		%REC	1	4/3/2014 5:34:39 PM	R17789
SM 2540 C: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	272	20.0		mg/L	1	4/7/2014 12:12:00 PM	12549
CARBON DIOXIDE						Analyst: **JML**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Down Stream
Project: San Juan River Bluff 4/1/14 **Collection Date:** 4/1/2014 9:00:00 AM
Lab ID: 1404091-004 **Matrix:** AQUEOUS **Received Date:** 4/2/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	91	1.0	H	mg CO2/L	1	4/2/2014 4:35:02 PM	R17767
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JML**	
Conductivity	400	0.010		µmhos/cm	1	4/2/2014 4:35:02 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:35:02 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 4:35:02 PM	R17767
Total Alkalinity (as CaCO3)	100	20		mg/L CaCO3	1	4/2/2014 4:35:02 PM	R17767

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB-12549**	SampType: **MBLK**	TestCode: **SM 2540 C: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **12549**	RunNo: **17841**
Prep Date: **4/4/2014**	Analysis Date: **4/7/2014**	SeqNo: **514543** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-12549**	SampType: **LCS**	TestCode: **SM 2540 C: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **12549**	RunNo: **17841**
Prep Date: **4/4/2014**	Analysis Date: **4/7/2014**	SeqNo: **514544** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Sample ID **1404091-002DMS**	SampType: **MS**	TestCode: **SM 2540 C: Total Dissolved Solids**
Client ID: **North Of 46**	Batch ID: **12549**	RunNo: **17841**
Prep Date: **4/4/2014**	Analysis Date: **4/7/2014**	SeqNo: **514547** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1290	20.0	1000	262.0	103	80	120			

Sample ID **1404091-002DMSD**	SampType: **MSD**	TestCode: **SM 2540 C: Total Dissolved Solids**
Client ID: **North Of 46**	Batch ID: **12549**	RunNo: **17841**
Prep Date: **4/4/2014**	Analysis Date: **4/7/2014**	SeqNo: **514548** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1290	20.0	1000	262.0	103	80	120	0	5	

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512157** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512158** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.8	90	110			
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.5	0.10	2.500	0	98.1	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.2	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.2	90	110			
Sulfate	9.4	0.50	10.00	0	94.4	90	110			

Sample ID **1404091-001DMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **North Of 45**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512171** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.69	0.10	0.5000	0.2001	97.1	76.4	109			
Chloride	8.8	0.50	5.000	3.799	100	90.1	116			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	97.9	85.2	109			
Bromide	2.5	0.10	2.500	0	101	85.9	111			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	102	93.8	111			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	98.3	81.1	108			

Sample ID **1404091-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **North Of 45**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512172** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.69	0.10	0.5000	0.2001	97.0	76.4	109	0.0729	20	
Chloride	8.8	0.50	5.000	3.799	100	90.1	116	0.0432	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **1404091-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **North Of 45**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512172** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	97.9	85.2	109	0.0204	20	
Bromide	2.5	0.10	2.500	0	100	85.9	111	0.191	20	
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	102	93.8	111	0.125	20	
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	98.8	81.1	108	0.491	20	

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512214** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	93.6	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.4	0.10	2.500	0	97.8	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.6	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.8	90	110			
Sulfate	9.4	0.50	10.00	0	94.3	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB-12504**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **12504**	RunNo: **17730**
Prep Date: **4/2/2014**	Analysis Date: **4/2/2014**	SeqNo: **511654** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.39		0.5000		77.7	76	161			

Sample ID **LCS-12504**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **12504**	RunNo: **17730**
Prep Date: **4/2/2014**	Analysis Date: **4/2/2014**	SeqNo: **511665** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.20	2.500	0	116	79.2	165			
Surr: DNOP	0.24		0.2500		95.4	76	161			

Sample ID **1404091-001CMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **North Of 45**	Batch ID: **12504**	RunNo: **17730**
Prep Date: **4/2/2014**	Analysis Date: **4/2/2014**	SeqNo: **511684** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	0.20	2.500	0	123	72.1	156			
Surr: DNOP	0.25		0.2500		101	76	161			

Sample ID **1404091-001CMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **North Of 45**	Batch ID: **12504**	RunNo: **17730**
Prep Date: **4/2/2014**	Analysis Date: **4/2/2014**	SeqNo: **511685** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.5	0.20	2.500	0	99.2	72.1	156	21.3	20	R
Surr: DNOP	0.19		0.2500		76.7	76	161	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**R17799**	RunNo:	**17799**					
Prep Date:		Analysis Date:	**4/4/2014**	SeqNo:	**513545**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	20		20.00		99.2	80.4	118			

Sample ID	**2.5UG GRO LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**R17799**	RunNo:	**17799**					
Prep Date:		Analysis Date:	**4/4/2014**	SeqNo:	**513546**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.52	0.050	0.5000	0	103	80	120			
Surr: BFB	22		20.00		109	80.4	118			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512719** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%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								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
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	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
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	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512719** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	3.0								
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	2.0								
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								
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	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.7	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512721** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	18	1.0	20.00	0	90.4	80	120			
Chlorobenzene	19	1.0	20.00	0	95.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512721** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	23	1.0	20.00	0	117	90	143			
Trichloroethene (TCE)	20	1.0	20.00	0	97.6	70	130			
Surr: 1,2-Dichloroethane-d4	7.3		10.00		73.3	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.6	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.8	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID **1404091-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **North Of 45**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512725** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.1	70	130			
Toluene	17	1.0	20.00	0.2660	85.6	67.5	123			
Chlorobenzene	19	1.0	20.00	0	92.9	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	113	81.9	134			
Trichloroethene (TCE)	18	1.0	20.00	0	89.1	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.8	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.9	70	130			
Surr: Toluene-d8	9.6		10.00		96.2	70	130			

Sample ID **1404091-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **North Of 45**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512726** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.6	70	130	3.67	20	
Toluene	18	1.0	20.00	0.2660	86.2	67.5	123	0.711	20	
Chlorobenzene	18	1.0	20.00	0	90.2	70	130	2.97	20	
1,1-Dichloroethene	21	1.0	20.00	0	105	81.9	134	7.97	20	
Trichloroethene (TCE)	16	1.0	20.00	0	79.6	70	130	11.2	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130	0	0	
Surr: 4-Bromofluorobenzene	8.8		10.00		87.8	70	130	0	0	
Surr: Dibromofluoromethane	9.7		10.00		96.5	70	130	0	0	
Surr: Toluene-d8	10		10.00		101	70	130	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID	**1404091-001d dup**	SampType:	**dup**	TestCode:	**SM2510B: Specific Conductance**				
Client ID:	**North Of 45**	Batch ID:	**R17767**	RunNo:	**17767**				
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**512022**	Units:	**µmhos/cm**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	390	0.010						1.85	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID	**MB-12508**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **12508**			RunNo: **17752**					
Prep Date:	**4/2/2014**	Analysis Date: **4/2/2014**			SeqNo: **511357**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-12508**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID: **12508**			RunNo: **17752**					
Prep Date:	**4/2/2014**	Analysis Date: **4/2/2014**			SeqNo: **511358**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.4	80	120			

Sample ID	**1404091-001FMS**	SampType: **MS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**North Of 45**	Batch ID: **12508**			RunNo: **17752**					
Prep Date:	**4/2/2014**	Analysis Date: **4/2/2014**			SeqNo: **511360**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.6	75	125			

Sample ID	**1404091-001FMSD**	SampType: **MSD**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**North Of 45**	Batch ID: **12508**			RunNo: **17752**					
Prep Date:	**4/2/2014**	Analysis Date: **4/2/2014**			SeqNo: **511361**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	97.6	75	125	0.924	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R17788**	RunNo: **17788**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512533** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Uranium	ND	0.10								
Zinc	ND	0.020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R17788**	RunNo: **17788**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512534** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.020	0.5000	0	97.4	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.8	80	120			
Calcium	49	1.0	50.00	0	97.5	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Copper	0.49	0.0060	0.5000	0	97.5	80	120			
Iron	0.48	0.020	0.5000	0	96.2	80	120			
Lead	0.49	0.0050	0.5000	0	97.1	80	120			
Magnesium	49	1.0	50.00	0	98.0	80	120			
Manganese	0.47	0.0020	0.5000	0	95.0	80	120			
Potassium	47	1.0	50.00	0	94.2	80	120			
Selenium	0.50	0.050	0.5000	0	99.2	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			
Sodium	48	1.0	50.00	0	96.5	80	120			
Uranium	0.50	0.10	0.5000	0	100	80	120			
Zinc	0.48	0.020	0.5000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R17809**	RunNo: **17809**
Prep Date:	Analysis Date: **4/5/2014**	SeqNo: **513373** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R17809**	RunNo: **17809**
Prep Date:	Analysis Date: **4/5/2014**	SeqNo: **513374** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID **MB-12551**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **12551**	RunNo: **17809**
Prep Date: **4/4/2014**	Analysis Date: **4/5/2014**	SeqNo: **513371** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID **LCS-12551**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **12551**	RunNo: **17809**
Prep Date: **4/4/2014**	Analysis Date: **4/5/2014**	SeqNo: **513372** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.7	80	120			
Barium	0.48	0.020	0.5000	0	95.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.4	80	120			
Chromium	0.48	0.0060	0.5000	0	95.1	80	120			
Lead	0.47	0.0050	0.5000	0	94.5	80	120			
Selenium	0.50	0.050	0.5000	0	100	80	120			
Silver	0.098	0.0050	0.1000	0	98.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404091**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4/1/14

Sample ID	**mb-1**	SampType:	**mblk**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511976**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID	**lcs-1**	SampType:	**lcs**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511977**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78	20	80.00	0	97.0	90	110			

Sample ID	**mb-2**	SampType:	**mblk**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**PBW**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511991**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID	**lcs-2**	SampType:	**lcs**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**LCSW**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511992**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	82	20	80.00	0	102	90	110			

Sample ID	**1404091-004d ms**	SampType:	**ms**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**Down Stream**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511997**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	140	20	80.00	101.4	49.9	65.2	112			S

Sample ID	**1404091-004d msd**	SampType:	**msd**	TestCode:	**SM2320B: Alkalinity**					
Client ID:	**Down Stream**	Batch ID:	**R17767**	RunNo:	**17767**					
Prep Date:		Analysis Date:	**4/2/2014**	SeqNo:	**511998**	Units:	**mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	140	20	80.00	101.4	42.1	65.2	112	4.52	20	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1404091** RcptNo: **1**

Received by/date: KM 04/02/14

Logged By: **Lindsay Mangin** **4/2/2014 9:45:00 AM**

Completed By: **Ashley Gallegos** **4/2/2014 10:39:58 AM**

Reviewed By: 04/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ✔	NA ☐
10. VOA vials have zero headspace?	Yes ✔	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 12 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? no
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by: CS

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
San Juan River 4-1-14

Project #:

Project Manager:

Sampler: Bob & Matt
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402091	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO Extended 8015B	WQCC Dissolved metals	Cations/Anions, TDS, EC, Alk, CO_2	Air Bubbles (Y or N)
4-1-14	9:45	H_2O	North of 45	5-VOA	HCl	-001			X							X					
				1-liter	amber													X			
				1-500ml	HNO_3								X								
			filtered	1-250ml	HNO_3														X		
				1-500ml																	
				1-250ml	H_2SO_4														X		
4-1-14	9:30		North of 46	5-VOA	HCl	-002			X							X					
				1-liter	amber													X			
				1-500ml	HNO_3								X								
			filter	1-250ml	HNO_3														X		
				1-500ml																	
				1-250ml	H_2SO_4														X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
4-1-14	1601	Robert Knakon	Misty Wheeler	4/1/14	1601
4/1/14	1749	Misty Wheeler		04/02/14	0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: San Juan River 4-1-14

Project #:

Project Manager:

Sampler: Matt + Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402091	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / [redacted])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	DRO-Extended 8015B	WQCC Dissolved metals	Cations/Anions, TDS, Ec, Alk, Ca		Air Bubbles (Y or N)
4-1-14	10:15	H_2O	up Stream	5-VOA	HCl	-003			X							X						
				1-liter	amber													X				
				1-500	HNO_3								X						#			
			filter	1-250	HNO_3														X			
				1-500	/																	
				1-250	H_2SO_4														X	X		
4-1-14	9:00		Down Stream	5-VOA	HCl	-004			X							X						
				1-liter	amber													X				
				1-500	HNO_3								X									
			filter	1-250	HNO_3														X			
				1-500	/																	
				1-250	H_2SO_4															X		

Date:	Time:	Relinquished by:	Received by:	Date	Time
4-1-14	1601	Robert Krakow	Matt Walker	4/1/14	1601
4/1/14	1749	Matt Walker			

Date:	Time:	Relinquished by:	Received by:	Date	Time
				04/02/14	0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 14, 2014

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: San Juan River Bluff 4-1-14 OrderNo.: 1404099

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 4/2/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-001A

Client Sample ID: Outfall #2
Collection Date: 4/1/2014 11:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 6:05:32 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 6:05:32 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 6:05:32 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 6:05:32 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 6:05:32 PM	R17789
Surr: 1,2-Dichloroethane-d4	108	70-130		%REC	1	4/3/2014 6:05:32 PM	R17789
Surr: 4-Bromofluorobenzene	89.7	70-130		%REC	1	4/3/2014 6:05:32 PM	R17789
Surr: Dibromofluoromethane	102	70-130		%REC	1	4/3/2014 6:05:32 PM	R17789
Surr: Toluene-d8	98.4	70-130		%REC	1	4/3/2014 6:05:32 PM	R17789

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Outfall #2
Project: San Juan River Bluff 4-1-14
Collection Date: 4/1/2014 11:30:00 AM
Lab ID: 1404099-001B
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.56	0.10		mg/L	1	4/3/2014 7:06:26 AM	R17774
Chloride	7.6	0.50		mg/L	1	4/3/2014 7:06:26 AM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/3/2014 7:06:26 AM	R17774
Bromide	0.10	0.10		mg/L	1	4/3/2014 7:06:26 AM	R17774
Nitrogen, Nitrate (As N)	3.7	0.10		mg/L	1	4/3/2014 7:06:26 AM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/3/2014 7:06:26 AM	R17774
Sulfate	77	10		mg/L	20	4/3/2014 7:18:50 AM	R17774
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	320	1.0	H	mg CO2/L	1	4/2/2014 5:09:07 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	340	20		mg/L CaCO3	1	4/2/2014 5:09:07 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 5:09:07 PM	R17767
Total Alkalinity (as CaCO3)	340	20		mg/L CaCO3	1	4/2/2014 5:09:07 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-001C

Client Sample ID: Outfall #2
Collection Date: 4/1/2014 11:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:40:06 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:49:46 PM	R17809
Barium	0.079	0.020		mg/L	1	4/3/2014 1:19:42 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:19:42 PM	R17788
Calcium	94	1.0		mg/L	1	4/3/2014 1:19:42 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:19:42 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:19:42 PM	R17788
Iron	ND	0.020		mg/L	1	4/3/2014 1:19:42 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:19:42 PM	R17788
Magnesium	20	1.0		mg/L	1	4/3/2014 1:19:42 PM	R17788
Manganese	0.0053	0.0020		mg/L	1	4/3/2014 1:19:42 PM	R17788
Potassium	1.3	1.0		mg/L	1	4/3/2014 1:19:42 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:19:42 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:19:42 PM	R17788
Sodium	54	1.0		mg/L	1	4/3/2014 1:19:42 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:19:42 PM	R17788
Zinc	ND	0.020		mg/L	1	4/3/2014 1:19:42 PM	R17788

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-001D

Client Sample ID: Outfall #2
Collection Date: 4/1/2014 11:30:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/3/2014 5:13:54 PM	12531
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:06:36 PM	12551
Barium	0.080	0.020		mg/L	1	4/5/2014 1:06:36 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:06:36 PM	12551
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:06:36 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:06:36 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:06:36 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:06:36 PM	12551

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-002A

Client Sample ID: Outfall #3
Collection Date: 4/1/2014 11:45:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 6:36:25 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 6:36:25 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 6:36:25 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 6:36:25 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 6:36:25 PM	R17789
Surr: 1,2-Dichloroethane-d4	105	70-130		%REC	1	4/3/2014 6:36:25 PM	R17789
Surr: 4-Bromofluorobenzene	91.4	70-130		%REC	1	4/3/2014 6:36:25 PM	R17789
Surr: Dibromofluoromethane	101	70-130		%REC	1	4/3/2014 6:36:25 PM	R17789
Surr: Toluene-d8	98.7	70-130		%REC	1	4/3/2014 6:36:25 PM	R17789

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Outfall #3
Project: San Juan River Bluff 4-1-14
Collection Date: 4/1/2014 11:45:00 AM
Lab ID: 1404099-002B
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.39	0.10		mg/L	1	4/3/2014 7:31:14 AM	R17774
Chloride	13	0.50		mg/L	1	4/3/2014 7:31:14 AM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/3/2014 7:31:14 AM	R17774
Bromide	0.11	0.10		mg/L	1	4/3/2014 7:31:14 AM	R17774
Nitrogen, Nitrate (As N)	3.3	0.10		mg/L	1	4/3/2014 7:31:14 AM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/3/2014 7:31:14 AM	R17774
Sulfate	120	10		mg/L	20	4/3/2014 7:43:39 AM	R17774
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	330	1.0	H	mg CO2/L	1	4/2/2014 5:24:27 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	350	20		mg/L CaCO3	1	4/2/2014 5:24:27 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 5:24:27 PM	R17767
Total Alkalinity (as CaCO3)	350	20		mg/L CaCO3	1	4/2/2014 5:24:27 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-002C

Client Sample ID: Outfall #3
Collection Date: 4/1/2014 11:45:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:45:34 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:51:31 PM	R17809
Barium	0.060	0.020		mg/L	1	4/3/2014 1:23:18 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:23:18 PM	R17788
Calcium	110	5.0		mg/L	5	4/3/2014 1:25:02 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:23:18 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:23:18 PM	R17788
Iron	ND	0.020		mg/L	1	4/3/2014 1:23:18 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:23:18 PM	R17788
Magnesium	21	1.0		mg/L	1	4/3/2014 1:23:18 PM	R17788
Manganese	ND	0.0020		mg/L	1	4/3/2014 1:23:18 PM	R17788
Potassium	1.9	1.0		mg/L	1	4/3/2014 1:23:18 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:23:18 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:23:18 PM	R17788
Sodium	68	1.0		mg/L	1	4/3/2014 1:23:18 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:23:18 PM	R17788
Zinc	0.034	0.020		mg/L	1	4/3/2014 1:23:18 PM	R17788

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-002D

Client Sample ID: Outfall #3
Collection Date: 4/1/2014 11:45:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/3/2014 5:15:40 PM	12531
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:08:23 PM	12551
Barium	0.060	0.020		mg/L	1	4/5/2014 1:08:23 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:08:23 PM	12551
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:08:23 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:08:23 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:08:23 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:08:23 PM	12551

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Outfall #3D
Project: San Juan River Bluff 4-1-14
Collection Date: 4/1/2014 11:45:00 AM
Lab ID: 1404099-003A
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	4/3/2014 7:07:15 PM	R17789
Toluene	ND	1.0		µg/L	1	4/3/2014 7:07:15 PM	R17789
Ethylbenzene	ND	1.0		µg/L	1	4/3/2014 7:07:15 PM	R17789
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/3/2014 7:07:15 PM	R17789
Xylenes, Total	ND	1.5		µg/L	1	4/3/2014 7:07:15 PM	R17789
Surr: 1,2-Dichloroethane-d4	110	70-130		%REC	1	4/3/2014 7:07:15 PM	R17789
Surr: 4-Bromofluorobenzene	88.8	70-130		%REC	1	4/3/2014 7:07:15 PM	R17789
Surr: Dibromofluoromethane	104	70-130		%REC	1	4/3/2014 7:07:15 PM	R17789
Surr: Toluene-d8	99.0	70-130		%REC	1	4/3/2014 7:07:15 PM	R17789

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Outfall #3D
Project: San Juan River Bluff 4-1-14
Collection Date: 4/1/2014 11:45:00 AM
Lab ID: 1404099-003B
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Fluoride	0.39	0.10		mg/L	1	4/3/2014 8:20:53 AM	R17774
Chloride	13	0.50		mg/L	1	4/3/2014 8:20:53 AM	R17774
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	4/3/2014 8:20:53 AM	R17774
Bromide	0.11	0.10		mg/L	1	4/3/2014 8:20:53 AM	R17774
Nitrogen, Nitrate (As N)	3.3	0.10		mg/L	1	4/3/2014 8:20:53 AM	R17774
Phosphorus, Orthophosphate (As P)	ND	0.50		mg/L	1	4/3/2014 8:20:53 AM	R17774
Sulfate	120	10		mg/L	20	4/3/2014 8:33:18 AM	R17774
CARBON DIOXIDE						Analyst: **JML**	
Total Carbon Dioxide	330	1.0	H	mg CO2/L	1	4/2/2014 5:40:11 PM	R17767
SM2320B: ALKALINITY						Analyst: **JML**	
Bicarbonate (As CaCO3)	350	20		mg/L CaCO3	1	4/2/2014 5:40:11 PM	R17767
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	4/2/2014 5:40:11 PM	R17767
Total Alkalinity (as CaCO3)	350	20		mg/L CaCO3	1	4/2/2014 5:40:11 PM	R17767

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-003C

Client Sample ID: Outfall #3D
Collection Date: 4/1/2014 11:45:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/2/2014 5:47:19 PM	12508
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 12:56:28 PM	R17809
Barium	0.061	0.020		mg/L	1	4/3/2014 1:26:55 PM	R17788
Cadmium	ND	0.0020		mg/L	1	4/3/2014 1:26:55 PM	R17788
Calcium	110	5.0		mg/L	5	4/3/2014 1:32:28 PM	R17788
Chromium	ND	0.0060		mg/L	1	4/3/2014 1:26:55 PM	R17788
Copper	ND	0.0060		mg/L	1	4/3/2014 1:26:55 PM	R17788
Iron	ND	0.020		mg/L	1	4/3/2014 1:26:55 PM	R17788
Lead	ND	0.0050		mg/L	1	4/3/2014 1:26:55 PM	R17788
Magnesium	21	1.0		mg/L	1	4/3/2014 1:26:55 PM	R17788
Manganese	ND	0.0020		mg/L	1	4/3/2014 1:26:55 PM	R17788
Potassium	1.8	1.0		mg/L	1	4/3/2014 1:26:55 PM	R17788
Selenium	ND	0.050		mg/L	1	4/3/2014 1:26:55 PM	R17788
Silver	ND	0.0050		mg/L	1	4/3/2014 1:26:55 PM	R17788
Sodium	69	5.0		mg/L	5	4/3/2014 1:32:28 PM	R17788
Uranium	ND	0.10		mg/L	1	4/3/2014 1:26:55 PM	R17788
Zinc	ND	0.020		mg/L	1	4/3/2014 1:26:55 PM	R17788

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: San Juan River Bluff 4-1-14
Lab ID: 1404099-003D

Client Sample ID: Outfall #3D
Collection Date: 4/1/2014 11:45:00 AM
Matrix: Aqueous

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 7470: MERCURY						Analyst: **JML**	
Mercury	ND	0.00020		mg/L	1	4/3/2014 5:17:25 PM	12531
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.020		mg/L	1	4/5/2014 1:10:08 PM	12551
Barium	0.060	0.020		mg/L	1	4/5/2014 1:10:08 PM	12551
Cadmium	ND	0.0020		mg/L	1	4/5/2014 1:10:08 PM	12551
Chromium	ND	0.0060		mg/L	1	4/5/2014 1:10:08 PM	12551
Lead	ND	0.0050		mg/L	1	4/5/2014 1:10:08 PM	12551
Selenium	ND	0.050		mg/L	1	4/5/2014 1:10:08 PM	12551
Silver	ND	0.0050		mg/L	1	4/5/2014 1:10:08 PM	12551

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512157** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512158** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.8	90	110			
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.5	0.10	2.500	0	98.1	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.2	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.2	90	110			
Sulfate	9.4	0.50	10.00	0	94.4	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512214** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	101	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R17774**	RunNo: **17774**
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **512215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.6	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Bromide	2.4	0.10	2.500	0	97.8	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.6	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.8	90	110			
Sulfate	9.4	0.50	10.00	0	94.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID **5mL rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512735** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.7	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R17789**	RunNo: **17789**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512736** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	18	1.0	20.00	0	90.4	80	120			
Surr: 1,2-Dichloroethane-d4	7.3		10.00		73.3	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.6	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.8	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID	**MB-12508**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12508**	RunNo:	**17752**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/2/2014**	SeqNo:	**511357**	Units:	**mg/L**			

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

Sample ID	**LCS-12508**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12508**	RunNo:	**17752**					
Prep Date:	**4/2/2014**	Analysis Date:	**4/2/2014**	SeqNo:	**511358**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.4	80	120			

Sample ID	**MB-12531**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12531**	RunNo:	**17786**					
Prep Date:	**4/3/2014**	Analysis Date:	**4/3/2014**	SeqNo:	**512451**	Units:	**mg/L**			

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

Sample ID	**LCS-12531**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12531**	RunNo:	**17786**					
Prep Date:	**4/3/2014**	Analysis Date:	**4/3/2014**	SeqNo:	**512452**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	80	120			

Sample ID	**1404099-003DMS**	SampType:	**MS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Outfall #3D**	Batch ID:	**12531**	RunNo:	**17786**					
Prep Date:	**4/3/2014**	Analysis Date:	**4/3/2014**	SeqNo:	**512456**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.0	75	125			

Sample ID	**1404099-003DMSD**	SampType:	**MSD**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**Outfall #3D**	Batch ID:	**12531**	RunNo:	**17786**					
Prep Date:	**4/3/2014**	Analysis Date:	**4/3/2014**	SeqNo:	**512457**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	75	125	1.48	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **R17788**	RunNo: **17788**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512533** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Uranium	ND	0.10								
Zinc	ND	0.020								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **R17788**	RunNo: **17788**
Prep Date:	Analysis Date: **4/3/2014**	SeqNo: **512534** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.020	0.5000	0	97.4	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.8	80	120			
Calcium	49	1.0	50.00	0	97.5	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Copper	0.49	0.0060	0.5000	0	97.5	80	120			
Iron	0.48	0.020	0.5000	0	96.2	80	120			
Lead	0.49	0.0050	0.5000	0	97.1	80	120			
Magnesium	49	1.0	50.00	0	98.0	80	120			
Manganese	0.47	0.0020	0.5000	0	95.0	80	120			
Potassium	47	1.0	50.00	0	94.2	80	120			
Selenium	0.50	0.050	0.5000	0	99.2	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			
Sodium	48	1.0	50.00	0	96.5	80	120			
Uranium	0.50	0.10	0.5000	0	100	80	120			
Zinc	0.48	0.020	0.5000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID	**1404099-003CMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17788**		RunNo:	**17788**				
Prep Date:		Analysis Date:	**4/3/2014**		SeqNo:	**512551**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.56	0.020	0.5000	0.06130	99.4	75	125			
Cadmium	0.51	0.0020	0.5000	0	102	75	125			
Chromium	0.49	0.0060	0.5000	0	98.7	75	125			
Copper	0.51	0.0060	0.5000	0	102	75	125			
Iron	0.50	0.020	0.5000	0	99.9	75	125			
Lead	0.49	0.0050	0.5000	0	99.0	75	125			
Magnesium	71	1.0	50.00	21.11	99.9	75	125			
Manganese	0.49	0.0020	0.5000	0.001490	97.9	75	125			
Potassium	51	1.0	50.00	1.847	97.4	75	125			
Selenium	0.57	0.050	0.5000	0	114	75	125			
Silver	0.098	0.0050	0.1000	0	97.9	75	125			
Uranium	0.51	0.10	0.5000	0	101	75	125			
Zinc	0.51	0.020	0.5000	0.006620	99.7	75	125			

Sample ID	**1404099-003CMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17788**		RunNo:	**17788**				
Prep Date:		Analysis Date:	**4/3/2014**		SeqNo:	**512552**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.57	0.020	0.5000	0.06130	101	75	125	1.38	20	
Cadmium	0.52	0.0020	0.5000	0	103	75	125	1.12	20	
Chromium	0.50	0.0060	0.5000	0	100	75	125	1.32	20	
Copper	0.52	0.0060	0.5000	0	104	75	125	1.82	20	
Iron	0.49	0.020	0.5000	0	98.9	75	125	0.990	20	
Lead	0.50	0.0050	0.5000	0	99.5	75	125	0.578	20	
Magnesium	71	1.0	50.00	21.11	99.6	75	125	0.206	20	
Manganese	0.50	0.0020	0.5000	0.001490	99.5	75	125	1.54	20	
Potassium	51	1.0	50.00	1.847	97.4	75	125	0.0257	20	
Selenium	0.57	0.050	0.5000	0	114	75	125	0.261	20	
Silver	0.099	0.0050	0.1000	0	98.6	75	125	0.774	20	
Uranium	0.52	0.10	0.5000	0	104	75	125	3.09	20	
Zinc	0.51	0.020	0.5000	0.006620	101	75	125	1.11	20	

Sample ID	**1404099-003CMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17788**		RunNo:	**17788**				
Prep Date:		Analysis Date:	**4/3/2014**		SeqNo:	**512554**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	380	5.0	250.0	109.0	106	75	125			
Sodium	330	5.0	250.0	68.96	103	75	125			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID	**1404099-003CMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17788**		RunNo:	**17788**				
Prep Date:		Analysis Date:	**4/3/2014**		SeqNo:	**512555**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	390	5.0	250.0	109.0	114	75	125	4.59	20	
Sodium	340	5.0	250.0	68.96	108	75	125	4.21	20	

Sample ID	**MB**	SampType:	**MBLK**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**PBW**	Batch ID:	**R17809**		RunNo:	**17809**				
Prep Date:		Analysis Date:	**4/5/2014**		SeqNo:	**513373**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	**LCS**	SampType:	**LCS**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**R17809**		RunNo:	**17809**				
Prep Date:		Analysis Date:	**4/5/2014**		SeqNo:	**513374**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.5	80	120			

Sample ID	**1404099-003CMS**	SampType:	**MS**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17809**		RunNo:	**17809**				
Prep Date:		Analysis Date:	**4/5/2014**		SeqNo:	**513384**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.7	75	125			

Sample ID	**1404099-003CMSD**	SampType:	**MSD**		TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**Outfall #3D**	Batch ID:	**R17809**		RunNo:	**17809**				
Prep Date:		Analysis Date:	**4/5/2014**		SeqNo:	**513385**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.48	0.020	0.5000	0	95.6	75	125	0.902	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID	**MB-12551**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**PBW**	Batch ID:	**12551**	RunNo:	**17809**
Prep Date:	**4/4/2014**	Analysis Date:	**4/5/2014**	SeqNo:	**513371** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	**LCS-12551**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**
Client ID:	**LCSW**	Batch ID:	**12551**	RunNo:	**17809**
Prep Date:	**4/4/2014**	Analysis Date:	**4/5/2014**	SeqNo:	**513372** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.7	80	120			
Barium	0.48	0.020	0.5000	0	95.0	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.4	80	120			
Chromium	0.48	0.0060	0.5000	0	95.1	80	120			
Lead	0.47	0.0050	0.5000	0	94.5	80	120			
Selenium	0.50	0.050	0.5000	0	100	80	120			
Silver	0.098	0.0050	0.1000	0	98.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1404099**

14-Apr-14

Client: Western Refining Southwest, Inc.

Project: San Juan River Bluff 4-1-14

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511976**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511977**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78	20	80.00	0	97.0	90	110			

Sample ID **mb-2**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511991**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R17767**	RunNo: **17767**							
Prep Date:	Analysis Date: **4/2/2014**	SeqNo: **511992**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	82	20	80.00	0	102	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1404099** RcptNo: **1**

Received by/date: RM 04/02/14

Logged By: **Ashley Gallegos** **4/2/2014 9:45:00 AM**

Completed By: **Ashley Gallegos** **4/2/2014 11:29:08 AM**

Reviewed By: 04/02/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☑	
9. Was preservative added to bottles?	Yes ☑	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 9 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? No Yes
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

FOR DISSOLVED METALS ANALYSIS: ADDED 0.4 mL HNO_3 TO ~0058 FOR ACCEPTABLE pH. HELD IN LOGIN FOR 24 HOURS AFTER PRESERVATION 4/02/14 CBZ

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person	
Regarding:			
Client Instructions:			

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: ~~#50 CR4990~~ Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: San Juan River Bluff. 4-1-14

Project #:

Project Manager:

Sampler: Matt Bob

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.4

HEAL No. 1404099

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Dissolved Metals	Alk. CO_2			Air Bubbles (Y or N)
4-1-14	11:30	H_2O	outfall #2	3-VOA	HCl	-001										X						
				1-500	HNO_3								X									
				1-250	HNO_3													X				
				1-250	H_2SO_4									X					~~X~~			
				1-500															X			
	11:45		outfall #3	3-VOA	HCl	-002										X						
				1-500	HNO_3								X									
				1-~~500~~ 250	HNO_3													X				
				1-250	H_2SO_4									X								
				1-500															X			

Date: 4-1-14 Time: 1601 Relinquished by: Robert Bracken

Received by: Christine Walters Date: 4/1/14 Time: 1601

Date: 4/1/14 Time: 1749 Relinquished by: Christine Walters

Received by: [signature] Date: 04/02/14 Time: 0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
San Juan River Bluff 4-1-14

Project #:

Project Manager:

Sampler: Matt + Bob
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1404095	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE only	8270 (Semi-VOA)	Dissolved Metals	Alk, Cl			Air Bubbles (Y or N)
4-1-14	11:45	H2O	outfall #3D	3-VOA	HCl	-003										X						
				1-500	HNO_3								X									
			filter	1-250	HNO_3													X				
				1-250	H_2SO_4									X								
				1-500															X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
4-1-14	1601	Robert Krakow	Christie Walker	4/1/14	1601
4/1/14	1749	Christie Walker		04/02/14	0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Rpt	T	Analyte	Units	Synonym	MDL	LOD	LOQ
☐	A	Aluminum	mg/L		0.004123	0	
☐	A	Antimony	mg/L		0.022393	0	
☑	A	Arsenic	mg/L		0.018673	0	
☑	A	Barium	mg/L		0.000790	0	
☐	A	Beryllium	mg/L		0.000113	0	
☐	A	Boron	mg/L		0.012703	0	
☑	A	Cadmium	mg/L		0.000558	0	
☑	A	Calcium	mg/L		0.055778	0	
☑	A	Chromium	mg/L		0.001537	0	
☐	A	Cobalt	mg/L		0.001307	0	
☑	A	Copper	mg/L		0.002482	0	
☑	A	Iron	mg/L		0.003231	0	
☑	A	Lead	mg/L		0.004822	0	
☑	A	Magnesium	mg/L		0.008294	0	
☑	A	Manganese	mg/L		0.000409	0	
☐	A	Molybdenum	mg/L		0.003016	0	
☐	A	Nickel	mg/L		0.001275	0	
☑	A	Potassium	mg/L		0.04975	0	
☑	A	Selenium	mg/L		0.024390	0	
☐	A	Silicon	mg/L		0.008201	0	
☑	A	Silver	mg/L		0.000421	0	
☑	A	Sodium	mg/L		0.080371	0	
☐	A	Strontium	mg/L		0.00015	0	
☐	A	Thallium	mg/L		0.017170	0	
☐	A	Tin	mg/L		0.005269	0	
☐	A	Titanium	mg/L		0.000334	0	
☑	A	Uranium	mg/L		0.01086	0	
☐	A	Vanadium	mg/L		0.001088	0	
☑	A	Zinc	mg/L		0.000434	0	
☐	C	Silica	mg/L		0.01755	0	
☐	I	Yttrium	%		0	0	
☐	I	Yttrium Radial	%		0	0	

+ Hg

Dissolved Metals

Appendix C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory

QUALITY ASSURANCE PLAN

Effective Date: August 13th, 2014

Revision 9.9

www.hallenvironmental.com

Control Number: 00000157

Approved By:

Andy Freeman
Laboratory Manager

8/12/14
Date

Approved By:

Carolyn Swanson
Quality Assurance/Quality Control Officer

8/13/2014
Date

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Approved By:

8/13/14

Ian Cameron Date
Assistant Laboratory Manager

8-13-14

John Caldwell Date
Assistant Laboratory Manager
Semi-Volatiles Technical Director

8-13-14

Rene Aguilera Date
Volatiles Technical Director

8/13/14

Tiffany Shaw Date
Metals Technical Director

8/13/14

Stacey McCoy Date
Wet Chemistry Technical Director

8/13/14

Stephanie Shaffers Date
Microbiology Technical Director

Table of Contents

3.0 Introduction

Purpose of Document

The purpose of this Quality Assurance Plan is to formally document the quality assurance policies and procedures of Hall Environmental Analysis Laboratory, Inc. (HEAL), for the benefit of its employees, clients, and accrediting organizations. HEAL continually implements all aspects of this plan as an essential and integral part of laboratory operations in order to ensure that high quality data is produced in an efficient and effective manner.

Objectives

The objective of HEAL is to achieve and maintain excellence in environmental testing. This is accomplished by developing, incorporating and documenting the procedures and policies specified by each of our accrediting authorities and outlined in this plan. These activities are carried out by a laboratory staff that is analytically competent, well-qualified, and highly trained. An experienced management team, knowledgeable in their area of expertise, monitors them. Finally, a comprehensive quality assurance program governs laboratory practices and ensures that the analytical results are valid, defensible, reproducible, reconstructable and of the highest quality.

HEAL establishes and thoroughly documents its activities to ensure that all data generated and processed will be scientifically valid and of known and documented quality. Routine laboratory activities are detailed in method specific standard operating procedures (SOP). All data reported meets the applicable requirements for the specific method or methods that are referenced, ORELAP, TCEQ, EPA, client specific requirements and/or State Bureaus. In the event that these requirements are ever in contention with each other, it is HEAL's policy to always follow the most prudent requirement available. For specific method requirements refer to HEAL's Standard Operating Procedures (SOP's), EPA methods, Standard Methods 20th edition, ASTM methods or state specific methods.

HEAL management ensures that this document is correct in terms of required accuracy and data reproducibility, and that the procedures contain proper quality control measures. HEAL management additionally ensures that all equipment is reliable, well-maintained and appropriately calibrated. The procedures and practices of the laboratory are geared towards not only strictly following our regulatory requirements but also allowing the flexibility to conform to client specific specifications. Meticulous records are maintained for all samples and their respective analyses so that results are well-documented and defensible in a court of law.

The HEAL Quality Assurance/Quality Control Officer (QA/QCO) and upper management are responsible for supervising and administering this quality assurance program, and

ensuring each individual is responsible for its proper implementation. All HEAL management remains committed to the encouragement of excellence in analytical testing and will continue to provide the necessary resources and environment conducive to its achievement.

Policies

Understanding that quality cannot be mandated, it is the policy of this laboratory to provide an environment that encourages all staff members to take pride in the quality of their work. In addition to furnishing proper equipment and supplies, HEAL stresses the importance of continued training and professional development. Further, HEAL recognizes the time required for data interpretation. Therefore, no analyst should feel pressure to sacrifice data quality for data quantity. Each staff member must perform with the highest level of integrity and professional competence, always being alert to problems that could compromise the quality of their technical work.

Management and senior personnel supervise analysts closely in all operations. Under no circumstance is the willful act or fraudulent manipulation of analytical data condoned. Such acts must be reported immediately to HEAL management. Reported acts will be assessed on an individual basis and resulting actions could result in dismissal. The laboratory staff is encouraged to speak with lab managers or senior management if they feel that there are any undo commercial, financial, or other pressures, which might adversely affect the quality of their work; or in the event that they suspect that data quality has been compromised in any way. HEAL's Quality Assurance/Quality Control Officer is available if any analyst and/or manager wishes to anonymously report any suspected or known breaches in data integrity.

Understanding the importance of meeting customer requirements in addition to the requirements set forth in statutory and regulatory requirements, HEAL shall periodically seek feedback from customers and evaluate the feedback in order to initiate improvements.

All proprietary rights and client information at HEAL (including national security concerns) are considered confidential. No information will be given out without the express verbal or written permission of the client. All reports generated will be held in the strictest of confidence.

HEAL shall continually improve the effectiveness of its management system through the use of the policies and procedures outlined in this Quality Assurance Plan. Quality control results, internal and external audit findings, management reviews, new and continual training and corrective and preventive actions are continually evaluated to identify possible improvements and to ensure that appropriate communication processes are taking place regarding the effectiveness of the management system. HEAL shall ensure that the

integrity of the quality system is maintained when changes to the system are planned and implemented.

This is a controlled document. Each copy is assigned a unique tracking number and when released to a client or accrediting agency the QA/QCO keeps the tracking number on file. This document is reviewed on an annual basis to ensure that it is valid and representative of current practices at HEAL.

4.0 Organization and Responsibility

Company

HEAL is accredited in accordance with the 2009 TNI standard (see NELAC accredited analysis list in the QA Department or on the company website), through ORELAP and TCEQ and by the Arizona Department of Health Services. Additionally, HEAL is qualified as defined under the State of New Mexico Water Quality Control Commission regulations and the New Mexico State Drinking Water Bureau. HEAL is a locally owned small business that was established in 1991. HEAL is a full service environmental analysis laboratory with analytical capabilities that include both organic and inorganic methodologies and has performed analyses of soil, water, and air as well as various other matrices for many sites in the region. HEAL's client base includes local, state and federal agencies, private consultants, commercial industries as well as individual homeowners. HEAL has performed as a subcontractor to the state of New Mexico and to the New Mexico Department of Transportation. HEAL has been acclaimed by its customers as producing quality results and as being adaptive to client-specific needs.

The laboratory is divided into an organic section, an inorganic section and a microbiology section. Each section has a designated manager/technical director. The technical directors report directly to the laboratory manager, who oversees all operations.

Certifications

ORELAP – NELAC Oregon Primary accrediting authority.

TCEQ – NELAC Texas Secondary accrediting authority.

The Arizona Department of Health Services

The New Mexico Drinking Water Bureau

See our website at www.hallenvironmental.com or the QA Office for copies of current licenses and licensed parameters.

In the event of a certification being revoked or suspended, HEAL will notify, in writing, those clients that require the affected certification.

Personnel

HEAL management ensures the competence of all who operate equipment, perform environmental tests, evaluate results, and sign test reports. Personnel performing specific tasks shall be qualified on the basis of appropriate education, training, experience and /or demonstrated skills.

HEAL ensures that all personnel are aware of the relevance and importance of their activities and how each employee contributes to the achievement of the objectives defined throughout this document.

All personnel shall be responsible for complying with HEAL's quality assurance/quality control requirements that pertain to their technical function. Each technical staff member must have a combination of experience and education to adequately demonstrate specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures, and records management.

All employees' training certificates and diplomas are kept on file with demonstrations of capability for each method they perform. An Organizational Chart can be found at the end of this section and a personnel list is available in the current Controlled Document Logbook.

Laboratory Director

The Laboratory Director is responsible for overall technical direction and business leadership of HEAL. The Laboratory Manager, the Project Manager and Quality Assurance/Quality Control Officer report directly to the Laboratory Director. Someone with a minimum of 7 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

Laboratory Manager/Lead Technical Director

The Laboratory Manager shall exercise day–to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results. The Laboratory Manager shall be experienced in the fields of accreditation for which the laboratory is approved or seeking accreditation. The Laboratory Manager shall certify that personnel with appropriate educational and/or technical background perform all tests for which HEAL is accredited. Such certification shall be documented.

The Laboratory Manager shall monitor standards of performance in quality control and quality assurance and monitor the validity of the analyses performed and data generated at HEAL to assure reliable data.

The Laboratory Manager is responsible for the daily operations of the laboratory. The Laboratory Manager is the lead technical director of the laboratory and, in conjunction with the section technical directors, is responsible for coordinating activities within the laboratory with the overall goal of efficiently producing high quality data within a reasonable time frame.

In events where employee scheduling or current workload is such that new work cannot be incorporated, without missing hold times, the Laboratory Manager has authority to modify employee scheduling, re-schedule projects or, when appropriate, allocate the work to approved subcontracting laboratories.

Additionally, the laboratory manager reviews and approves new analytical procedures and methods, and performs a final review of most analytical results. The Laboratory Manager provides technical support to both customers and HEAL staff.

The Laboratory Manager also observes the performance of supervisors to ensure that good laboratory practices and proper techniques are being taught and utilized, and to assist in overall quality control implementation and strategic planning for the future of the company. Other duties include assisting in establishing laboratory policies that lead to the fulfillment of requirements for various certification programs, assuring that all Quality Assurance and Quality Control documents are reviewed and approved, and assisting in conducting Quality Assurance Audits.

The laboratory manager addresses questions or complaints that cannot be answered by the section managers.

The Laboratory Manager shall have a bachelor's degree in a chemical, environmental, biological sciences, physical sciences or engineering field, and at least five years of experience in the environmental analysis of representative inorganic and organic analytes for which the laboratory seeks or maintains accreditation.

Assistant Laboratory Manager

The Assistant Laboratory Manager shall aid the Laboratory Manager in exercising day–to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results. The Assistant Laboratory Manager shall be experienced in the fields of accreditation for which the laboratory is approved or seeking accreditation.

The Assistant Laboratory Manager is responsible for helping the Laboratory Manager in the daily operations of the laboratory. In conjunction with the section Technical Directors, the Assistant Laboratory Manager is responsible for coordinating activities within the laboratory with the overall goal of efficiently producing high quality data within a reasonable time frame.

The Assistant Laboratory Manager shall have at least ten years of experience in environmental analysis of representative inorganic and/or organic analytes for which the laboratory seeks or maintains accreditation.

Quality Assurance Quality Control Officer

The Quality Assurance/Quality Control Officer (QA/QCO) serves as the focal point for QA/QC and shall be responsible for the oversight and/or review of quality control data. The QA/QCO functions independently from laboratory operations and shall be empowered to halt unsatisfactory work and/or prevent the reporting of results generated from an out-of-control measurement system. The QA/QCO shall objectively evaluate data and perform assessments without any outside/managerial influence. The QA/QCO shall have direct access to the highest level of management at which decisions are made on laboratory policy and/or resources. The QA/QCO shall notify laboratory management of deficiencies in the quality system in periodic, independent reports.

The QA/QCO shall have general knowledge of the analytical test methods for which data review is performed and have documented training and/or experience in QA/QC procedures and in the laboratory's quality system. The QA/QCO will have a minimum of a BS in a scientific or related field and a minimum of three years of related experience.

The QA/QCO shall schedule and conduct internal audits as per the Internal Audit SOP at least annually, monitor and trend Corrective Action Reports as per the Data Validation SOP, periodically review control charts for out of control conditions, and initiate any appropriate corrective actions.

The QA/QCO shall oversee the analysis of proficiency testing in accordance with our standards and monitor any corrective actions issued as a result of this testing.

The QA/QCO reviews all standard operating procedures and statements of work in order to assure their accuracy and compliance to method and regulatory requirements.

The QA/QCO shall be responsible for maintaining and updating this quality manual.

Project Managers

The role of the project manager is to act as a liaison between HEAL and our clients. The Project Manager updates clients on the status of projects in-house, prepares quotations for new work, and is responsible for HEAL's marketing effort.

All new work is assessed by the Project Manager and reviewed with the other managers so as to not exceed the laboratory's capacity. In events where employee scheduling or current workload is such that new work cannot be incorporated without missing hold times, the Project Manager has authority to re-schedule projects.

It is also the duty of the project manager to work with the Laboratory Manager and QA/QCO to insure that before new work is undertaken, the resources required and accreditations requested are available to meet the client's specific needs.

Additionally, the Project Manager can initiate the review of the need for new analytical procedures and methods, and perform a final review of some analytical results. The Project Manager provides technical support to customers. Someone with a minimum of 2 years of directly related experience and a bachelor's degree in a scientific or engineering discipline should fill this position.

Technical Directors

Technical Directors are full-time members of the staff at HEAL who exercise day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results for their department within HEAL. A Technical Director's duties shall include, but not be limited to, monitoring standards of performance in quality control and quality assurance, monitoring the validity of the analyses performed and the data generated in their sections to ensure reliable data, overseeing training and supervising departmental staff, scheduling incoming work for their sections, and monitoring laboratory personnel to ensure that proper procedures and techniques are being utilized. They supervise and implement new Quality Control procedures as directed by the QA/QCO, update and maintain quality control records including, but not limited to, training forms, IDOCs, ADOCPs, and MDLs, and evaluate laboratory personnel in their Quality Control activities. In addition, technical directors are responsible for upholding the spirit and intent of HEAL's data integrity procedures.

As Technical Directors of their associated section, they review analytical data to acknowledge that data meets all criteria set forth for good Quality Assurance practices. Someone with a minimum of 2 years of experience in the environmental analysis of representative analytes for which HEAL seeks or maintains accreditation and a bachelor's degree in a scientific or related discipline should fill this position.

The education requirements for a Technical Director may be waived at the discretion of HEAL's accrediting agencies.

Health and Safety / Chemical Hygiene Officer

Refer to the most recent version of the Health and Safety and Chemical Hygiene Plans for the roles, responsibilities, and basic requirements of the Health and Safety Officer (H&SO) and the Chemical Hygiene Officer (CHO). These jobs can be executed by the same employee.

Analyst I, II and III

Analysts are responsible for the analysis of various sample matrices including, but not limited to, solid, aqueous, and air, as well as the generation of high quality data in accordance with the HEAL SOPs and QA/QC guidelines in a reasonable time as prescribed by standard turnaround schedules or as directed by the Section Manager or Laboratory Manager.

Analysts are responsible for making sure all data generated is entered in the database in the correct manner and the raw data is reviewed, signed and delivered to the appropriate peer for review. An analyst reports daily to the section manager and will inform them as to material needs of the section specifically pertaining to the analyses performed by the analyst. Additional duties may include preparation of samples for analysis, maintenance of lab instruments or equipment, and cleaning and providing technical assistance to lower level laboratory staff.

The senior analyst in the section may be asked to perform supervisory duties as related to operational aspects of the section. The analyst may perform all duties of a lab technician.

The position of Analyst is a full or part time hourly position and is divided into three levels, Analyst I, II, and III. All employees hired into an Analyst position at HEAL must begin as an Analyst I and remain there at a minimum of three months regardless of their education and experience. Analyst I must have a minimum of an AA in a related field or equivalent experience (equivalent experience means years of related experience can be substituted for the education requirement). An Analyst I is responsible for analysis, instrument operation, including calibration and data reduction. Analyst II must have a minimum of an AA in a related field or equivalent experience and must have documented and demonstrated aptitude to perform all functions of an Analyst II. An Analyst II is responsible for the full analysis of their test methods, routine instrument maintenance, purchase of consumables as dictated by their Technical Director, advanced data reduction, and basic data review. Analyst II may also assist Analyst III in method development and, as dictated by their Technical Director, may be responsible for the review and/or revision of their method specific SOPs. Analyst III must have Bachelor's degree or equivalent experience and must have documented and demonstrated aptitude to perform all functions of an Analyst III. An Analyst III is responsible for all tasks completed by an Analyst I and II as well as advanced data review, non-routine instrument maintenance, assisting their technical director in basic supervisory duties and method development.

Laboratory Technician

A laboratory technician is responsible for providing support to analysts in the organics, inorganics and disposal departments. Laboratory Technicians can assist analysts in basic sample preparation, general laboratory maintenance, glassware washing, chemical inventories, sample disposal and sample kit preparation. This position can be filled by someone without the education and experience necessary to obtain a position as an analyst.

Sample Control Manager

The sample control manager is responsible for receiving samples and reviewing the sample login information after it has been entered into the computer. The sample control manager also checks the samples against the chain-of-custody for any sample and/or labeling discrepancies prior to distribution.

The sample control manager is responsible for sending out samples to the sub-contractors along with the review and shipping of field sampling bottle kits. The sample control manager acts as a liaison between the laboratory and field sampling crew to ensure that the appropriate analytical test is assigned. If a discrepancy is noted, the sample control manager or sample custodian will contact the customer to resolve any questions or problems. The sample control manager is an integral part of the customer service team.

This position should be filled by someone with a high school diploma and a minimum of 2 years of related experience and can also be filled by a senior manager.

Sample Custodians

Sample Custodians work directly under the Sample Control Manager. They are responsible for sample intake into the laboratory and into the LIMS. Sample Custodians take orders from our clients and prepare appropriate bottle kits to meet the clients' needs. Sample Custodians work directly with the clients in properly labeling and identifying samples as well as properly filling out legal COCs. When necessary, Sample Custodians contact clients to resolve any questions or problems associated with their samples. Sample Custodians are responsible for distributing samples throughout the laboratory and are responsible for notifying analysts of special circumstances such as short holding times or improper sample preservation upon receipt.

Sample Disposal Custodian

The sample disposal custodian is responsible for characterizing and disposing of samples in accordance to the most recent version of the sample disposal SOP. The sample disposal custodian collects waste from the laboratory and transports it to the disposal warehouse for storage and eventual disposal. The sample disposal custodian is responsible for maintaining the disposal warehouse and following the requirements for documentation, integrity, chemical hygiene and health and safety as set forth in the various HEAL administrative SOPs. The sample disposal custodian is responsible for overseeing any laboratory technicians employed at the disposal warehouse.

This position should be filled by someone with a high school diploma and a minimum of 1 year of related experience.

Bookkeeper

The Bookkeeper is responsible for the preparation of quarterly financials and quarterly payroll reports. The bookkeeper monitors payables, receivables, deposits, pays all bills and maintains an inventory of administrative supplies. The Bookkeeper completes final data package assembly and oversees the consignment of final reports. The Bookkeeper assists in the project management of drinking water compliance samples for NMED and NMEFC and any other tasks as assigned by the Laboratory Manager. This position should be filled by someone with a degree in accounting or a minimum of a high school diploma and at least 4 years of directly related experience.

Administrative Assistant

The Administrative Assistant is responsible for aiding administrative staff in tasks that include but are not limited to: the processing and consignment of final reports, and the generation of client specific spreadsheets. This position should be filled by someone with a minimum of a high school diploma.

IT Specialist

The IT Specialist is responsible for the induction and maintenance of all hard and software technology not maintained through a service agreement. The IT Specialist follows the requirements of this document, all regulatory documents and the EPAs Good Automated Laboratory Practices. This position should be filled by someone with a degree in a computer related field, or at least two years of directly related experience.

Delegations in the Absence of Key Personnel

Planned absences shall be preceded by notification to the Laboratory Manager. The appropriate staff members shall be informed of the absence. In the case of unplanned absences, the superior shall either assume the responsibilities and duties or delegate the responsibilities and duties to another appropriately qualified employee.

In the event that the Laboratory Manager is absent for a period of time exceeding fifteen consecutive calendar days, another full-time staff member meeting the basic qualifications and competent to temporarily perform this function will be designated. If this absence exceeds thirty-five consecutive calendar days, HEAL will notify ORELAP in writing of the absence and the pertinent qualifications of the temporary laboratory manager.

Laboratory Personnel Qualification and Training

All personnel joining HEAL shall undergo orientation and training. During this period the new personnel shall be introduced to the organization and their responsibilities, as well as the policies and procedures of the company. They shall also undergo on-the-job training and shall work with trained staff. They will be shown required tasks and be observed while performing them.

When utilizing staff undergoing training, appropriate supervision shall be dictated and overseen by the appropriate section technical director. Prior to analyzing client samples, a new employee, or an employee new to a procedure, must meet the following basic requirements. The SOP and Method(s) for the analysis must be read and signed by the employee indicating that they read, understand, and intend to comply with the requirements of the documents. The employee must undergo documented training. Training is conducted by a senior analyst familiar with the procedure and overseen by the section Technical Director. This training is documented by any means deemed appropriate by the trainer and section Technical Director, and kept on file in the employees file located in the QA/QCO's office. The employee must perform a successful Initial Demonstration of Capability (IDOC). See the current Document Control Logbook for the training documents and checklists utilized at HEAL to ensure that all of these requirements are met. Once all of the above requirements are met it is incumbent upon the section Technical Director to determine at which point the employee can begin to perform the test unsupervised. A Certification to Complete Work Unsupervised (see the current Document Control Logbook) is then filled out by the employee and technical director.

IDOCs are required for all new analysts and methods prior to sample analysis. IDOCs are also required any time there is a change in the instrument, analyte list or method. If more than twelve months have passed since an analyst performed an IDOC and they

have not performed the method and/or have not met the continuing DOC requirements, the analyst must perform an IDOC prior to resuming the test.

All IDOCs shall be documented through the use of the certification form which can be found in the current Document Control Logbook. IDOCs are performed by analyzing four Laboratory Control Spikes (LCSs). Using the results of the LCSs the mean recovery is calculated in the appropriate reporting units and the standard deviations of the population sample (n-1) (in the same units) as well as the relative percent difference for each parameter of interest. When it is not possible or pertinent to determine mean and standard deviations HEAL assesses performance against establish and documented criteria dictated in the method SOP. The mean and standard deviation are compared to the corresponding acceptance criteria for precision and accuracy in the test method (if applicable) or in laboratory-generated acceptance criteria. In the event that the HEAL SOP or test method(s) fail to establish the pass/fail criteria the default limits of +/- 20% for calculated recovery and <20% relative percent difference based on the standard deviation will be utilized. If all parameters meet the acceptance criteria, the IDOC is successfully completed. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter and the analyst must either locate and correct the source of the problem and repeat the test for all parameters of interest or repeat the test for all parameters that failed to meet criteria. Repeat failure, however, confirms a general problem with the measurement system. If this occurs the source of the problem must be identified and the test repeated for all parameters of interest.

New employees that do not have prior analysis experience will not be allowed to perform analysis until they have demonstrated attention to detail with minimal errors in the assigned tasks. To ensure a sustained level of quality performance among staff members, continuing demonstration of capability shall be performed at least once a year. These are as an Annual Documentation of Continued Proficiency (ADOCP).

At least once per year an ADOCP must be completed. This is achieved by the acceptable performance of a blind sample (typically by using a PT sample, but can be a single blind (to the analyst) sample), by performing another IDOC, or by summarizing the data of four consecutive laboratory control samples with acceptable levels of precision and accuracy (these limits are those currently listed in the LIMS for an LCS using the indicated test method(s).) ADOCPs are documented using a standard form and are kept on file in each analyst's employee folder. ADOCPs may be demonstrated as an analyst group utilizing LIMS control charting, so long as all listed analysts participated, the results are consecutive and pass the requirements for precision and accuracy.

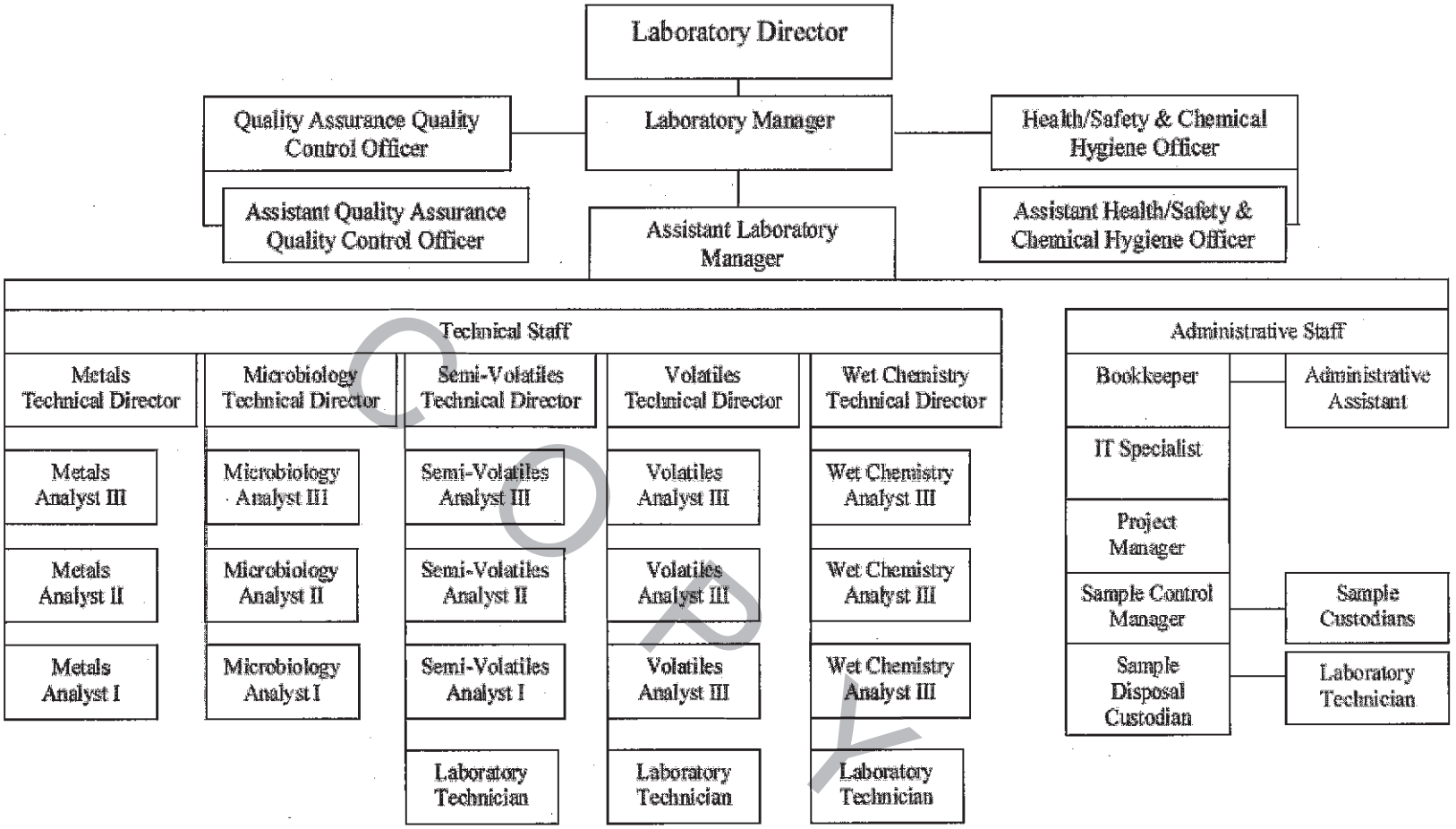
Each new employee shall be provided with data integrity training as a formal part of their new employee orientation. Each new employee will sign an ethics and data integrity agreement to ensure that they understand that data quality is our main objective. Every HEAL employee recognizes that although turnaround time is

important, quality is put above any pressure to complete the task expediently. Analysts are not compensated for passing QC parameters nor are incentives given for the quantity of work produced. Data Integrity and Ethics training are performed on an annual basis in order to remind all employees of HEAL's policy on data quality. Employees are required to understand that any infractions of the laboratory data integrity procedures will result in a detailed investigation that could lead to very serious consequences including immediate termination, debarment, or civil/criminal prosecution.

Training for each member of HEAL's technical staff is further established and maintained through documentation that each employee has read, understood, and is using the latest version of this Quality Assurance Manual. Training courses or workshops on specific equipment, analytical techniques, or laboratory procedures are documented through attendance sheets, certificates of attendance, training forms,. or quizzes. This training documentation is located in analyst specific employee folders in the QA/QCO Office. On the front of all methods, SOPs, and procedures for HEAL, there is a signoff sheet that is signed by all pertinent employees, indicating that they have read, understand, and agree to perform the most recent version of the document.

The effectiveness of training will be evaluated during routine data review, annual employee reviews, and internal and external audits. Repetitive errors, complaints and audit findings serve as indicators that training has been ineffective. When training is deemed to have been ineffective a brief review of the training process will be completed and a re-training conducted as soon as possible.

HEAL Personnel Chart



5.0 Receipt and Handling of Samples

Reviewing Requests, Tenders and Contracts

All contracts and written requests by clients are closely reviewed to ensure that the client's data quality objectives can be met to their specifications. This review includes making sure that HEAL has the resources necessary to perform the tests to the clients specifications.

When HEAL is unable to meet the clients specifications their samples will be subcontracted to an approved laboratory capable of meeting the client's data quality objectives.

Sampling

Procedures

HEAL does not provide field sampling for any projects. Sample kits are prepared and provided for clients upon request. The sample kits contain the appropriate sampling containers (with a preservative when necessary), labels, blue ice (The use of "blue ice" by anyone except HEAL personnel is discouraged because it generally does not maintain the appropriate temperature of the sample. If blue ice is used, it should be completely frozen at the time of use, the sample should be chilled before packing, and special notice taken at sample receipt to be certain the required temperature has been maintained.), a cooler, chain-of-custody forms, plastic bags, bubble wrap, and any special sampling instructions. Sample kits are reviewed prior to shipment for accuracy and completeness.

Containers

Containers which are sent out for sampling are purchased by HEAL from a commercial source. Glass containers are certified "EPA Cleaned" QA level 1. Plastic containers are certified clean when required. These containers are received with a Certificate of Analysis verifying that the containers have been cleaned according to the EPA wash procedure. Containers are used once and discarded. If the samples are collected and stored in inappropriate containers the laboratory may not be able to accurately quantify the amount of the desired components. In this case, re-sampling may be required.

Preservation

If sampling for analyte(s) requires preservation, the sample custodians fortify the containers prior to shipment to the field, or provide the preservative for the sampler to add in the field. The required preservative is introduced into the vials in uniform amounts

and done so rapidly to minimize the risk of contamination. Vials that contain a preservative are labeled appropriately. If the samples are stored with inappropriate preservatives, the laboratory may not be able to accurately quantify the amount of the desired components. In this case re-sampling may be required.

Refer to the current Login SOP and/or the current price book for detailed sample receipt and handling procedures, appropriate preservation and holding time requirements.

Sample Custody

Chain-of-Custody Form

A Chain-of-Custody (COC) form is used to provide a record of sample chronology from the field to receipt at the laboratory. HEAL's COC contains the client's name, address, phone and fax numbers, the project name and number, the project manager's name, and the field sampler's name. It also identifies the date and time of sample collection, sample matrix, field sample ID number, number/volume of sample containers, sample temperature upon receipt, and any sample preservative information.

There is also a space to record the HEAL ID number assigned to samples after they are received. Next to the sample information is a space for the client to indicate the desired analyses to be performed. There is a section for the client to indicate the data package level as well as any accreditation requirements. Finally, there is a section to track the actual custody of the samples. The custody section contains lines for signatures, dates and times when samples are relinquished and received. The COC form also includes a space to record special sample related instructions, sampling anomalies, time constraints, and any sample disposal considerations.

It is paramount that all COCs arrive at HEAL complete and accurate so that the samples can be processed and allocated for testing in a timely and efficient manner. A sample chain-of-custody form can be found in the current Document Control Logbook or on line at www.hallenvironmental.com.

Should a specific project or client require the use of an internal COC, advanced notification and approval must be obtained. The use of internal COCs are not part of our standard operating procedure.

Receiving Samples

Samples are received by authorized HEAL personnel. Upon arrival, the COC is compared to the respective samples. After the samples and COC have been determined to be complete and accurate, the sampler signs over the COC. The HEAL staff member in turn signs the chain-of-custody, also noting the current date, time, and sample temperature. This relinquishes custody of the samples from the sampler and

delegates sample custody to HEAL. The first (white) copy of the COC form is filed in the appropriate sample folder. The second (yellow) copy of the COC form is filed in the COC file in the sample control manager's office. The third (pink) copy of the COC form is given to the person who has relinquished custody of the samples.

Logging in Samples and Storage

Standard Operating Procedures have been established for the receiving and tracking of all samples (refer to the current HEAL Login SOP). These procedures ensure that samples are received and properly logged into the laboratory and that all associated documentation, including chain of custody forms, is complete and consistent with the samples received. Each sample set is given a unique HEAL tracking ID number. Individual sample locations within a defined sample set are given a unique sample ID suffix-number. Labels with the HEAL numbers, and tests requested, are generated and placed on their respective containers. The pH of preserved, non-volatile samples is checked and noted if out of compliance. Due to the nature of the samples, the pHs of volatiles samples are checked after analysis. Samples are reviewed prior to being distributed for analysis.

All samples received that are requested for compliance, whether on the COC or by contract, will be identified as compliance samples in the LIMS so as to properly notify the analytical staff that they are to be analyzed in accordance with the test method(s) as well as the compliance requirements.

Samples are distributed for analysis based upon the requested tests. In the event that sample volume is limited and different departments at HEAL are required to share the sample, volatile work takes precedence and will always be analyzed first before the sample is sent to any other department for analysis.

Care will be taken to store samples isolated from laboratory contaminants, standards and highly contaminated samples.

All samples that require thermal preservation shall be acceptably stored at a temperature range just above freezing to 6 °C unless specified at another range by the SOP and Method.

Each project (sample set) is entered into the Laboratory Information Management System (LIMS) with a unique ID that will be identified on every container. The ID tag includes the Lab ID, Client ID, date and time of collection, and the analysis/analyses to be performed. The LIMS continually updates throughout the lab. Therefore, at any time, an analyst or manager may inquire about a project and/or samples status. For more information about the login procedures, refer to the Sample Login SOP.

Disposal of Samples

Samples are held at HEAL for a minimum of thirty days and then transferred to the HEAL warehouse for disposal. Analytical results are used to characterize their respective sample contamination level(s) so that the proper disposal can be performed. These wastes will be disposed of according to their hazard as well as their type and level of contamination. Refer to the Hall Environmental Analysis Laboratory Chemical Hygiene Plan and current Sample Disposal SOP for details regarding waste disposal.

Waste drums are provided by an outside agency. These drums are removed by the outside agency and disposed of in a proper manner.

The wastes that are determined to be non-hazardous are disposed of as non-hazardous waste in accordance with the Chemical Hygiene Plan and Sample Disposal SOP.

6.0 Analytical Procedures

All analytical methods used at HEAL incorporate necessary and sufficient Quality Assurance and Quality Control practices. A Standard Operating Procedure (SOP) is used to provide the necessary criteria to yield acceptable results. These procedures are reviewed at least annually and revised as necessary and are attached as a pdf file in the Laboratory Information Management System (LIMS) for easy access by each analyst. The sample is often consumed or altered during the analytical process. Therefore, it is important that each step in the analytical process be correctly followed in order to yield valid data.

When unforeseen problems arise, the analyst, technical director, and, when necessary, laboratory manager meet to discuss the factors involved. The analytical requirements are evaluated and a suitable corrective action or resolution is established. The client is notified in the case narrative with the final report or before, if the validity of their result is in question.

List of Procedures Used

Typically, the procedures used by HEAL are EPA approved methodologies or 20th edition Standard Methods. However, proprietary methods for client specific samples are sometimes used. On occasion, multiple methods or multiple method revisions are used, in this event the SOP is written to include the requirements of all referenced methods. The following tables list EPA and Standard Methods Method numbers with their corresponding analytes and/or instrument classification.

Methods Utilized at HEAL

Drinking Water(DW) Non-Potable Water (NPW) Solids (S)

Methodology	Matrix	Title of Method
180.1	DW NPW	"Turbidity (Nephelometric)"
200.2	DW NPW	"Sample Preparation Procedure For Spectrochemical Determination of Total Recoverable Elements"
200.7	DW NPW	"Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry"
200.8	DW NPW	"Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry."
245.1	DW NPW	"Mercury (Manual Cold Vapor Technique)"

300.0	DW NPW S	"Determination of Inorganic Anions by Ion Chromatography"
413.2	NPW S	"Oil and Grease"
418.1	NPW S	"Petroleum Hydrocarbons (Spectrophotometric, Infrared)"
504.1	DW	"EDB, DBCP and 123TCP in Water by Microextraction and Gas Chromatography"
524.2	DW	"Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry"
552.3	DW	"Determination of Haloacetic Acids and Dalapon in Drinking Water by Ion-Exchange Liquid-Solid Extraction and Gas Chromatography with an Electron Capture Detector"
624	NPW	Appendix A to Part 136 Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater Method 624-Purgeables"
1311	S	"Toxicity Characteristic Leaching Procedure"
1311ZHE	S	"Toxicity Characteristic Leaching Procedure"
1664A	NPW	"N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material) by Extraction and Gravimetry"
3005A	NPW	"Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy"
3010A	NPW	"Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy"
3050B	S	"Acid Digestion of Sediment, Sludge, and Soils"
3510C	DW NPW	"Separatory Funnel Liquid-Liquid Extraction"
3540	S	"Soxhlet Extraction"
3545	S	"Pressurized Fluid Extraction(PFE)"
3665	NPW S	"Sulfuric Acid/Permanganate Cleanup"
5030B	NPW	"Purge-and-Trap for Aqueous Samples"
5035	S	"Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples"
6010B	NPW S	"Inductively Coupled Plasma-Atomic Emission Spectrometry"

7470A	NPW	"Mercury in Liquid Waste (Manual Cold-Vapor Technique)"
7471A	S	"Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)"
8021B	NPW S	"Aromatic and Halogenated Volatiles By Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors"
8015D	NPW	"Nonhalogenated Volatile Organics by Gas Chromatography"
	S	(Gasoline Range and Diesel Range Organics)
8081A	NPW S	"Organochlorine Pesticides by Gas Chromatography"
8082	NPW S	"Polychlorinated Biphenyls (PCBs) by Gas Chromatography"
8260B	NPW S	"Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"
8270C	NPW S	"Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"
8310	NPW S	"Polynuclear Aromatic Hydrocarbons"
9060	NPW	"Total Organic Carbon"
9067	NPW S	"Phenolics (Spectrophotometric, MBTH With Distillation)"
9095A	S	"Paint Filter Liquids Test"
H-8167	DW NPW	"Method 8167 Chlorine, Total"
Walkley/Black	S	FOC/TOC WB
SM2320 B	DW NPW	"Alkalinity"
SM2340B	NPW	"2340 Hardness"
SM2510B	DW NPW	"2510 Conductivity"
SM2540 B	NPW	"Total Solids Dried at 103-105° C"
SM2540 C	DW NPW	"Total Dissolved Solids Dried at 180° C"
SM2540 D	NPW	"Total Suspended Solids Dried at 103-105° C"
SM4500-H+B	DW NPW	"pH Value"
SM4500-NH3 C	NPW S	"4500-NH3" Ammonia
SM4500-Norg	NPW	"4500-Norg" Total Kjeldahl Nitrogen (TKN)

C	S	
SM5210 B	NPW	"5210 B. 5-day BOD Test"
SM5310 B	DW	"5310" Total Organic Carbon (TOC)
SM9223B	NPW DW	"9223 Enzyme Substrate Coliform Test"
8000B	NPW S	"Determinative Chromatographic Separations"
8000C	NPW S	"Determinative Chromatographic Separations"

Criteria for Standard Operating Procedures

HEAL has Standard Operating Procedures (SOPs) for each of the test methods listed above. These SOPs are based upon the listed methods and detail the specific procedure and equipment utilized as well as the quality requirements necessary to prove the integrity of the data. SOPs are reviewed or revised every twelve months or sooner if necessary. The review/revision is documented in the Master SOP Logbook filed in the QA/QC Office. All SOPs are available in the LIMS under the Documents and SOPs menu.
Hand written corrections or alterations to SOPs are not permitted. In the event that a correction is needed and a revision is not immediately possible, a corrective action report will be generated documenting the correction or alteration, signed by the section Technical Director and the QA/QC Officer and will be scanned into the current SOP and will document the change until a new revision is possible.

Controlled documents such as calibration summary forms, analysis bench sheets, etc. are tracked as appendices in SOPs, through the Controlled Document Logbook with copies available through the LIMS or through the MOAL as bound logbooks.

Each HEAL test method SOP shall include or reference the following topics where applicable:

Identification of the test method;
Applicable matrix or matrices;
Limits of detection and quantitation;
Scope and application, including parameters to be analyzed;
Summary of the test method;
Definitions;
Interferences;
Safety;
Equipment and supplies;
Reagents and standards;

Sample collection, preservation, shipment and storage;
Quality control parameters;
Calibration and standardization;
Procedure;
Data analysis and calculations;
Method performance;
Pollution prevention;
Data assessment and acceptance criteria for quality control measures;
Corrective actions for out-of-control data;
Contingencies for handling out-of-control or unacceptable data;
Waste management;
References; and
Any tables, diagrams, flowcharts and validation data.

7.0 Calibration

All equipment and instrumentation used at HEAL are operated, maintained and calibrated according to manufacturers' guidelines, as well as criteria set forth in applicable analytical methodology. Personnel who have been properly trained in their procedures perform the operation and calibration. Brief descriptions of the calibration processes for our major laboratory equipment and instruments are found below.

Thermometers

The thermometers in the laboratory are used to measure the temperatures of the refrigerators, freezers, ovens, water baths, incubators, hot blocks, ambient laboratory conditions, TCLP Extractions, digestion blocks, and samples at the time of log-in. All NIST traceable thermometers are either removed from use upon their documented expiration date or they are checked annually with a NIST-certified thermometer and a correction factor is noted on each thermometer log. See the most current Login SOP for detailed procedures on this calibration procedure.

Data Loggers are used to record refrigerator temperatures. These data loggers are calibrated quarterly with NIST-certified thermometers.

The NIST thermometer should be recalibrated at least every five years or whenever the thermometer has been exposed to temperature extremes.

Refrigerators/Freezers

Each laboratory refrigerator or freezer contains a thermometer capable of measuring to a minimum precision of 0.1°C. The thermometers are kept with the bulb immersed in liquid. Each day of use, the temperatures of the refrigerators are recorded to insure that the refrigerators are within the required designated range. Samples are stored separately from the standards to reduce the risk of contamination.

See the current Catastrophic Failure SOP for the procedure regarding how to handle failed refrigerators or freezers.

Ovens

The ovens contain thermometers graduated by 1° C. The ovens are calibrated quarterly against NIST thermometers and checked each day of use as required and in whatever way is dictated by or appropriate for the method in use.

Analytical and Table Top Balances

The table top balances are capable of weighing to a minimum precision of 0.01 grams. The analytical balances are capable of weighing to a minimum precision of 0.0001 grams. Records are kept of daily calibration checks for the balances in use. Working weights are used in these checks. The balances are annually certified by an outside source and the certifications are on file with the QA/QCO.

Balances, unless otherwise indicated by method specific SOPs, will be checked each day of use with at least two weights that will bracket the working range of the balance for the day. Daily balance checks will be done using working weights that are calibrated annually against Class S weights. Class S weights are calibrated by an external provider as required. The Class S weights are used once a year, or more frequently if required, to assign values to the Working Weights. During the daily balance checks, the working weights are compared to their assigned values and must pass in order to validate the calibration of the balance. The assigned values, as well as the daily checks, for the working weights are recorded in the balance logbook for each balance.

Instrument Calibration

An instrument calibration is the relationship between the known concentrations of a set of calibration standards introduced into an analytical instrument and the measured response they produce. Calibration curve standards are a prepared series of aliquots at various known concentration levels from a primary source reference standard. Specific mathematical types of calibration techniques are outlined in SW-846 8000B and/or 8000C. The entire initial calibration must be performed prior to sample analyses.

The lowest standard in the calibration curve must be at or below the required reporting limit.

Refer to the current SOP to determine the minimum requirement for calibration points.

Most compounds tend to be linear and a linear approach should be favored when linearity is suggested by the calibration data. Non-linear calibration should be considered only when a linear approach cannot be applied. It is not acceptable to use an alternate calibration procedure when a compound fails to perform in the usual manner. When this occurs, it is indicative of instrument issues or operator error.

If a non-linear calibration curve fit is employed, a minimum of six calibration levels must be used for second-order (quadratic) curves.

When more than 5 levels of standards are analyzed in anticipation of using second-order calibration curves, all calibration points MUST be used regardless of the calibration option employed. The highest or lowest calibration point may be excluded for the purpose of narrowing the calibration range and meeting the requirements for a specific calibration option. Otherwise, unjustified exclusion of calibration data is expressly forbidden.

Analytical methods vary in QC acceptance criteria. HEAL follows the method specific guidelines for QC acceptance. The specific acceptance criteria are outlined in the analytical methods and their corresponding SOPs.

pH Meter

The pH meter measures to a precision of 0.01 pH units. The pH calibration logbook contains the calibration before each use, or each day of use, if used more than once per day. It is calibrated using a minimum of 3 certified buffers. Also available with the pH meter is a magnetic stirrer with a temperature sensor. See the current pH SOP (SM4500 H+ B) for specific details regarding calibration of the pH probe.

Other Analytical Instrumentation and Equipment

The conductivity probe is calibrated as needed and checked daily when in use.

Eppendorf (or equivalent brands) pipettes are checked gravimetrically prior to use.

Standards

All of the source reference standards used are ordered from a reliable commercial vendor. A Certificate of Analysis (CoA), which verifies the quality of the standard, accompanies the standards from the vendor. The Certificates of Analysis are dated and stored on file by the Technical Directors or their designee. These standards are traceable to the National Institute of Standards (NIST). When salts are purchased and used as standards the certificate of purity must be obtained from the vendor and filed with the CoAs.

All standard solutions, calibration curve preparations, and all other quality control solutions are labeled in a manner that can be traced back to the original source reference standard. All source reference standards are entered into the LIMS with an appropriate description of the standard. Dilutions of the source reference standard (or any mixes of the source standards) are fully tracked in the LIMS. Standards are labeled with the date opened for use and with an expiration date.

As part of the quality assurance procedures at HEAL, analysts strictly adhere to manufacturer recommendations for storage times/expiration dates and policies of analytical standards and quality control solutions.

Reagents

HEAL ensures that the reagents used are of acceptable quality for their intended purpose. This is accomplished by ordering high quality reagents and adhering to good laboratory practices so as to minimize contamination or chemical degradation. All reagents must meet any specifications noted in the analytical method. Refer to the current Purchase of Consumables SOP for details on how this is accomplished and documented.

Upon receipt, all reagents are assigned a separate ID number, and logged into the LIMS. All reagents shall be labeled with the date received into the laboratory and again with the date opened for use. Recommended shelf life, as defined by the manufacturer, shall be documented and controlled. Dilutions or solutions prepared shall be clearly labeled, dated, and initialed. These solutions are traceable back to their primary reagents and do not extend beyond the expiration date listed for the primary reagent.

All gases used with an instrument shall meet specifications of the manufacturer. All safety requirements that relate to maximum and/or minimum allowed pressure, fitting types, and leak test frequency, shall be followed. When a new tank of gas is placed in use, it shall be checked for leaks and the date put in use will be written in the instrument maintenance logbook.

HEAL continuously monitors the quality of the reagent water and provides the necessary indicators for maintenance of the purification systems in order to assure that the quality of laboratory reagent water meets established criteria for all analytical methods. The majority of HEAL methods utilize medium quality deionized reagent water maintained at a resistivity greater than 1MΩ in accordance with SM1080.

Reagent blank samples are also analyzed to ensure that no contamination is present at detectable levels. The frequency of reagent blank analysis is typically the same as calibration verification samples. Refrigerator storage blanks are stored in the volatiles refrigerator for a period of one week and analyzed and replaced once a week.

8.0 Maintenance

Maintenance logbooks are kept for each major instrument and all support equipment in order to document all repair and maintenance. In the front of the logbook, the following information is included:

Unique Name of the Item or Equipment
Manufacturer
Type of Instrument
Model Number
Serial Number
Date Received and Date Placed into Service
Location of Instrument
Condition of Instrument Upon Receipt

For routine maintenance, the following information shall be included in the log:

Maintenance Date
Maintenance Description
Maintenance Performed by Initials

A manufacturer service agreement (or equivalent) covers most major instrumentation to assure prompt and reliable response to maintenance needs beyond HEAL instrument operator capabilities.

Refer to the current Maintenance and Troubleshooting SOP for each section in the laboratory for further information.

9.0 Data Integrity

For HEAL's policy on ethics and data integrity, see section 3.0 of this document. Upon being hired, and annually thereafter, all employees at HEAL undergo documented data integrity training. All new employees sign an Ethics and Data Integrity Agreement, documenting their understanding of the high standards of integrity required at HEAL and outlining their responsibilities in regards to ethics and data integrity. See the current Document Control Logbook for a copy of this agreement.

In instances of ethical concern, analysts are required to report the known or suspected concern to their Technical Director, the Laboratory Manager, or the QA/QCO. This will be done in a confidential and receptive environment, allowing all employees to privately discuss ethical issues or report items of ethical concern.

Once reported and documented, the ethical concern will be immediately elevated to the Laboratory Manager and the need for an investigation, analyst remediation, or termination will be determined on a case-by-case basis.

All reported instances of ethical concern will be thoroughly documented and handled in a manner sufficient to rectify any breaches in data integrity with an emphasis on preventing similar incidences from happening in the future.

10.0 Quality Control

Internal Quality Control Checks

HEAL utilizes various internal quality control checks, including duplicates, matrix spikes, matrix spike duplicates, method blanks, laboratory control spikes, laboratory control spike duplicates, surrogates, internal standards, calibration standards, quality control charts, proficiency tests and calculated measurement uncertainty.

Refer to the current method SOP to determine the frequency and requirements of all quality controls. In the event that the frequency of analysis is not indicated in the method specific SOP, duplicate samples, laboratory control spikes (LCS), Method Blanks (MB), and matrix spikes and matrix spike duplicates (MS/MSD) are analyzed for every batch of twenty samples.

When sample volume is limited on a test that requires an MS/MSD an LCSD shall be analyzed to demonstrate precision and accuracy and when possible a sample duplicate will be analyzed.

Duplicates are identical tests repeated for the same sample or matrix spike in order to determine the precision of the test method. A Relative Percent Difference (RPD) is calculated as a measure of this precision. Unless indicated in the SOP, the default acceptance limit is </= 20%.

Matrix Spikes and Matrix Spike Duplicates are spiked samples (MS/MSD) that are evaluated with a known added quantity of a target compound. This is to help determine the accuracy of the analyses and to determine the matrix effects on analyte recovery. A percent recovery is calculated to assess the quality of the accuracy. In the event that the acceptance criteria is not outlined in the SOP, a default limit of 70-130% will be utilized. When an MSD is employed an RPD is calculated and when not indicated in the SOP shall be acceptable at </= 20%.

> In an effort to evaluate all received matricies, MS/MSD samples are chosen randomly. Notable exceptions to this policy are when a client requests the MS/MSD be analyzed utilizing their sample or in the event the matrix requires such a significant dilution that utilizing it as an MS/MSD is impractical.

When appropriate for the method, a Method Blank should be analyzed with each batch of samples processed to assess contamination levels in the laboratory. MBs consist of all the reagents measured and treated as they are with samples, except without the samples. This enables the laboratory to ensure clean reagents and procedures. Guidelines should be in place for accepting or rejecting data based on the level of contamination in the blank. In the event that these guidelines are not dictated by the SOP or in client specific work plans, the MB should be less than the MDL reported for the analyte being reported.

It is important to note that the LIMS qualifies samples for Method Blank failures when the amount in the blank is greater than the sample's listed PQL.

A Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) are reagent blanks, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system. Guidelines are outlined in each SOP for the frequency and pass fail requirements for LCS and LCSDs. These limits can be set utilizing control charts as discussed below.

Surrogates are utilized when dictated by method and are substances with properties that mimic the analytes of interest. The surrogate is an analyte that is unlikely to be found in environmental samples. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for surrogates.

Internal Standards are utilized when dictated by the method and are known amounts of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for Internal Standards.

Proficiency Test (PT) Samples are samples provided by an unbiased third party. They are typically analyzed twice a year, between five and seven months apart, or at any other interval as defined in the method SOP. They contain a pre-determined concentration of the target compound, which is unknown to HEAL. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples. PT results are reported as normal samples, within the working range of the associated calibration curve. In the event an analyte concentration is less than the PQL, the result shall be reported as less than the PQL.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Upon receiving a Not Acceptable PT result for any analyte, a root cause analysis is conducted and the cause of the failure determined and corrected. As defined by TNI, two

out of the past three PTs must be acceptable to maintain accreditation for any given analyte. If this requirement is not met, a successful history will be reestablished by the analysis of an additional PT sample. For accredited tests, the PT provider will be notified, when the PT is for corrective action purposes. The analysis dates of successive PT samples for the same TNI accredited analyte shall be at least fifteen days apart.

Calibration standards are standards run to calibrate. Once the calibration is established the same standards can be analyzed as Continuing Calibration Verifications (CCV), used to confirm the consistency of the instrumentation. Calibration standards can be utilized at the beginning and end of each batch, or more frequently as required. Typically Continuing Calibration Blanks (CCB) are run in conjunction with CCVs. Refer to the current method SOP for frequency and pass/fail requirements of CCVs and CCBs.

Control Limits are limits of acceptable ranges of the values of quality control checks. The control limits approximate a 99% confidence interval around the mean recovery. Any matrix spike, surrogate, or LCS results outside of the control limits require further evaluation and assessment. This should begin with the comparison of the results from the samples or matrix spike with the LCS results. If the recoveries of the analytes in the LCS are outside of the control limits, then the problem may lie with the application of the extraction, with cleanup procedures, or with the chromatographic procedure. Once the problem has been identified and addressed, corrective action may include reanalysis of samples or re-extraction followed by reanalysis. When the LCS results are within the control limits, the issue may be related to the sample matrix or to the use of an inappropriate extraction, cleanup, and/or determinative method for the matrix. If the results are to be used for regulatory compliance monitoring, then steps must be taken to demonstrate that the analytes of concern can be determined in the sample matrix at the levels of interest. Data generated with laboratory control samples that fall outside of the established control limits are judged to be generated during an "out-of-control" situation. These data are considered suspect and shall be repeated or reported with qualifiers.

Control limits are to be updated only by Technical Directors, Section Supervisors or the Quality Assurance Officer. Control limits should be established and updated according to the requirements of the method being utilized. When the method does not specify, and control limits are to be generated or updated for a test, the following guidelines shall be utilized.

Limits should typically be generated utilizing the most recent 20-40 data values. In order to obtain an even distribution across multiple instruments and to include more than a single day's worth of data, surrogate limits should be generated using around 100 data values. The data values used shall not reuse values that were included in the previous Control Limit update. The data values shall also be reviewed by the LIMS for any Grubbs Outliers, and if identified, the outliers must be removed prior to generating new limits. The results used to update control limits should meet all other QC criteria associated with the determinative method. For example, MS/MSD recoveries from a GC/MS procedure should be generated from samples analyzed after a valid tune and a valid initial calibration that includes all

analytes of interest. Additionally, no analyte should be reported when it is beyond the working range of the calibration currently in use. MS/MSD and surrogate limits should be generated using the same set of extraction, cleanup, and analysis procedures.

All generated limits should be evaluated for appropriateness. Where limits have been established for MS/MSD samples, the LCS/LCSD limits should fall within those limits, as the LCS/LCSD are prepared in a clean matrix. Surrogate limits should be updated using all sample types and should be evaluated to ensure that all instruments as well as a reasonable dispersion across days are represented by the data. LCS/LCSD recovery limits should be evaluated to verify that they are neither inappropriately wide nor unreasonably tight. The default LCS/LCSD acceptance limits of 70-130% and RPD of 20% (or those limits specified by the method for LCS/LCSD and/or CCV acceptability), should be used to help make this evaluation. Technical directors may choose to use warning limits when they feel their generated limits are too wide, or default LCS limits when they feel their limits have become arbitrarily tight.

Once new Control Limits have been established and updated in the LIMS, the Control Charts shall be printed and reviewed by the appropriate section supervisor and primary analyst performing the analysis for possible trends and compared to the previous Control Charts. The technical director initials the control charts, indicating that they have been reviewed and that the updated Limits have been determined to be accurate and appropriate. Any manual alterations to the limits will be documented and justified on the printed control chart. These initialed charts are then filed in the QA/QCO office.

Once established, control limits should be reviewed after every 20-30 data values and updated at least every six months, provided that there are sufficient points to do so. The limits used to evaluate results shall be those in place at the time that the sample was analyzed. Once limits are updated, those limits apply to all subsequent analyses.

When updating surrogate control limits, all data, regardless of sample/QC type, shall be updated together and assigned one set of limits for the same method/matrix.

In the event that there are insufficient data points to update limits that are over a year old, the default limits, as established in the method or SOP, shall be re-instated. Refer to the requirements in SW-846 method 8000B and 8000C for further guidance on generating control limits.

Calculated Measurement Uncertainty is calculated annually using LCSs in order to determine the laboratory specific uncertainty associated with each test method. These uncertainty values are available to our clients upon request and are utilized as a trending tool internally to determine the effectiveness of new variables introduced into the procedure over time.

Client Requested QC

Occasionally certain clients will require QC that is not defined by or covered in the SOPs. These special requests will be issued to all analysts and data reviewers in writing and the analysts and data reviewers will be provided with guidance on how to properly document the client requested deviation/QC in their preparation and analytical batches.

Precision, Accuracy, Detection Levels

Precision

The laboratory uses sample duplicates, laboratory control spike duplicates, and matrix spike duplicates to assess precision in terms of relative percent difference (RPD). HEAL requires the RPD to fall within the 99% confidence interval of established control charts or an RPD of less than 20% if control charts are not available. RPD's greater than these limits are considered out-of-control and require an appropriate response.

$$RPD = 2 \times \frac{(\text{Sample Result} - \text{Duplicate Result})}{(\text{Sample Result} + \text{Duplicate Result})} \times 100$$

Accuracy

The accuracy of an analysis refers to the difference between the calculated value and the actual value of a measurement. The accuracy of a laboratory result is evaluated by comparing the measured amount of QC reference material recovered from a sample and the known amount added. Control limits can be established for each analytical method and sample matrix. Recoveries are assessed to determine the method efficiency and/or the matrix effect.

Analytical accuracy is expressed as the Percent Recovery (%R) of an analyte or parameter. A known amount of analyte is added to an environmental sample before the sample is prepared and subsequently analyzed. The equation used to calculate percent recovery is:

$$\%Recovery = \{(concentration^* \text{ recovered})/(concentration^* \text{ added})\} \times 100$$

*or amount

HEAL requires that the Percent Recovery to fall within the 99 % confidence interval of established control limits. A value that falls outside of the confidence interval requires a warning and process evaluation. The confidence intervals are calculated by determining the mean and sample standard deviation. If control limits are not available, the range of 80 to 120% is used unless the specific method dictates

otherwise. Percent Recoveries outside of this range mandate additional action such as analyses by Method of Standard Additions, additional sample preparation(s) where applicable, method changes, and out-of-control action or data qualification.

Detection Limit

Current practices at HEAL define the Detection Limit (DL) as the smallest amount that can be detected above the baseline noise in a procedure within a stated confidence level.

HEAL presently utilizes an Instrument Detection Limit (IDL), a Method Detection Limit (MDL), and a Practical Quantitation Limit (PQL). The relationship between these levels is approximately
IDL: MDL: PQL = 1:5:5.

The IDL is a measure of the sensitivity of an analytical instrument. The IDL is the amount which, when injected, produces a detectable signal in 99% of the analyses at that concentration. An IDL can be considered the minimum level of analyte concentration that is detectable above random baseline noise.

The MDL is a measure of the sensitivity of an analytical method. MDL studies are required annually for each quality system matrix, technology and analyte, unless indicated otherwise in the referenced method. An MDL determination (as required in 40CFR part 136 Appendix B) consists of replicate spiked samples carried through all necessary preparation steps. The spike concentration is three times the standard deviation of three replicates of spikes. At least seven replicates are spiked and analyzed and their standard deviation(s) calculated. Routine variability is critical in passing the 10 times rule and is best achieved by running the MDLs over different days and when possible over several calibration events. Standard Methods and those methods used for drinking water analysis must have MDL studies that are performed over a period of at least three days in order to include day to day variations. The method detection limit (MDL) can be calculated using the standard deviation according to the formula:

$$MDL = s * t\ (99\%),$$

where t (99%) is the Student's t-value for the 99% confidence interval. The t-value depends on the number of trials used in calculating the sample standard deviation, so choose the appropriate value according to the number of trials.

Number of Trials	t(99%)
6	3.36
7	3.14
8	3.00
9	2.90

The calculated MDL must not be less than 10 times the spiked amount or the study must be performed again with a lower concentration.

Where there are multiple MDL values for the same test method in the LIMS the highest MDL value is utilized.

The PQL is significant because different laboratories can produce different MDLs although they may employ the same analytical procedures, instruments and sample matrices. The PQL is about two to five times the MDL and represents a practical, and routinely achievable, reporting level with a good certainty that the reported value is reliable. It is often determined by regulatory limits. The reported PQL for a sample is dependent on the dilution factor utilized during sample analysis.

In the event that an analyte will not be reported less than the PQL, an MDL study is not required and a PQL check shall be done, at least annually, in place of the MDL study. The PQL check shall consist of a QC sample spiked at or below the PQL. All sample-processing and analysis steps of the analytical method shall be included in the PQL check and shall be done for each quality system matrix, technology, and analyte. A successful check is one where the recovery of each analyte is within the established method acceptance criteria. When this criterion is not defined by the method or SOP, a default limit of +/-50% shall be utilized.

Quality Control Parameter Calculations

Mean

The sample mean is also known as the arithmetic average. It can be calculated by adding all of the appropriate values together, and dividing this sum by the number of values.

$$\text{Average} = (\Sigma x_l) / n$$

x_l = the value x in the l^{th} trial
n = the number of trials

Standard Deviation

The sample standard deviation, represented by s, is a measure of dispersion. The dispersion is considered to be the difference between the average and each of the

values x_i. The variance, s^2, can be calculated by summing the squares of the differences and dividing by the number of differences. The sample standard deviation, s, can be found by taking the square root of the variance.

$$\text{Standard deviation} = s = [\Sigma (x_i - \text{average})^2 / (n - 1)]^{1/2}$$

Percent Recovery (LCS and LCSD)

$$\text{Percent Recovery} = \frac{\text{(Spike Sample Result)}}{\text{(Spike Added)}} \times 100$$

Percent Recovery (MS, MSD)

$$\text{Percent Recovery} = \frac{\text{(Spike Sample Result – Sample Result)}}{\text{(Spike Added)}} \times 100$$

Control Limits

Control Limits are calculated by the LIMS using the average percent recovery (x), and the standard deviation (s).

Upper Control Limit = x + 3s
Lower Control Limit = x – 3s

These control limits approximate a 99% confidence interval around the mean recovery.

Grubbs Outliers

Grubbs Outliers are calculated by the LIMS during the generation of control limits and uncertainties. An outlier is an observation that appears to deviate markedly from other observations in the sample set and are removed, unless documented otherwise.

Identify both the lowest and highest values in the sample set. Use the following equations to determine the T values.

$$T = \frac{x_{max} - x_{mean}}{sd} \quad \text{(for the largest value)}$$

$$T = \frac{x_{mean} - x_{min}}{sd} \quad \text{(for the smallest value)}$$

Compare the T values to the Grubbs' critical value table. If either value of T is greater than the critical value (assuming a 5% risk) for the sample size, the point(s) must be dropped then the calculation repeated for both the lowest and highest value using the new mean and standard deviation.
The Grubbs test is repeated until there are no longer any outliers detected. Keep in mind you must have at least 20 data points available to generate your limits.

RPD (Relative Percent Difference)

Analytical precision is expressed as a percentage of the difference between the results of duplicate samples for a given analyst. Relative percent difference (RPD) is calculated as follows:

$$RPD = 2 \times \frac{(\text{Sample Result} - \text{Duplicate Result})}{(\text{Sample Result} + \text{Duplicate Result})} \times 100$$

Uncertainty Measurements

Uncertainty, as defined by ISO, is the parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. Ultimately, uncertainty measurements are used to state how good a test result is and to allow the end user of the data to properly interpret their reported data. All procedures allow for some uncertainty. For most analyses, the components and estimates of uncertainty are reduced by following well-established test methods. To further reduce uncertainty, results generally are not reported below the lowest calibration point (PQL) or above the highest calibration point (UQL). Understanding that there are many influential quantities affecting a measurement result, so many in fact that it is impossible to identify all of them, HEAL calculates measurement uncertainty at least annually using LCSs. These estimations of measurement uncertainty are kept on file in the method folders in the QA/QC office.

Measurement Uncertainty contributors are those that may be determined statistically. These shall be generated by estimating the overall uncertainty in the entire analytical process by measuring the dispersion of values obtained from laboratory control samples over time. At least 20 of the most recent LCS data points are gathered. The standard deviation(s) is calculated using these LCS data points. Since it can be

assumed that the possible estimated values of the spikes are approximately normally distributed with approximate standard deviation(s), the unknown value of the spike is believed to lie in 95% confidence interval, corresponding to an uncertainty range of +/- 2(s).

Calculate standard deviation (s) and 95% confidence interval according to the following formulae:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}}$$

Where: s = standard deviation
x = number in series
$\bar{x}$ = calculated mean of series
n = number of samples taken

$95\%\ confidence = 2 \times s$

Example: Assuming that after gathering 20 of the most recent LCS results for Bromide, we have calculated the standard deviations of the values and achieved a result of 0.0326, our measurement of uncertainty for Bromide (at 95% confidence = 2 x s) is 0.0652.

Total Nitrogen

Total nitrogen is calculated as follows:

Total Nitrogen = TKN + NO_2 + NO_3

Langelier Saturation Index

The Langelier Saturation Index (LSI) is calculated as follows:

Solids Factor (SF) =(Log10[TDS] - 1) / 10
Ca Hardness Factor (HF) = Log10([Ca] x 2.497) - 0.4
Alkalinity Factor (AF) = Log10[Alkalinity]
Temp. Factor (TF) = -13.12 x Log10(°C + 273) + 34.55
pHs (pH @ saturation) =(9.3 + SF + TF) - (HF + AF)
LSI = pH - pH_s

Calibration Calculations

1. Response Factor or Calibration Factor:

$RF = ((A_x)(C_{is}))/((A_{is})(C_x))$ $CF=(A_x)/(C_x)$

a. Average RF or CF

$RF_{AVE} = \Sigma RF_i / n$

b. Standard Deviation

$s = SQRT \{ [\Sigma (RF_i - RF_{AVE})^2] / (n-1) \}$

c. Relative Standard Deviation

$RSD = s / RF_{AVE}$

Where:
A_x = Area of the compound
C_x = Concentration of the compound
A_{is} = Area of the internal standard
C_{is} = Concentration of the internal standard
n = number of pairs of data
RF_i = Response Factor (or other determined value)
RF_{AVE} = Average of all the response factors
Σ = the sum of all the individual values

2. Linear Regression

$y=mx+b$

a. Slope (m)

$m =(n\Sigma x_i y_i - (n\Sigma x_i)*(n\Sigma y_i)) / (n\Sigma x_i^2 - (\Sigma x_i)^2)$

b. Intercept (b)

$b = y_{AVE} - m*(x_{AVE})$

c. Correlation Coefficient (cc)

$$CC\ (r) = \{ \Sigma((x_i - x_{ave})*(y_i - y_{ave})) \} / \{ SQRT((\Sigma(x_i - x_{ave})^2)*(\Sigma(y_i - y_{ave})^2)) \}$$

Or

$$CC\ (r) = [(\Sigma w * \Sigma wxy) - (\Sigma wx * \Sigma wy)] / (sqrt(([(\Sigma w * \Sigma wx^2) - (\Sigma wx * \Sigma wx)] * [(\Sigma w * \Sigma wy^2) - (\Sigma wy * \Sigma wy)])))]$$

d. Coefficient of Determination

$$COD\ (r^2) = CC*CC$$

Where:
y = Response (Area) Ratio A_x/A_{is}
x = Concentration Ratio C_x/C_{is}
m = slope
b = intercept
n = number of replicate x,y pairs
x_i = individual values for independent variable
y_i = individual values for dependent variable
Σ = the sum of all the individual values
x_{ave} = average of the x values
y_{ave} = average of the y values
w = weighting factor, for equal weighting w=1

3. Quadratic Regression

$$y = ax^2 + bx + c$$

a. Coefficient of Determination

$$COD\ (r^2) = (\Sigma(y_i - y_{ave})^2 - \{[(n-1)/(n-p)] * [\Sigma(y_i - Y_i)^2]\}) / \Sigma(y_i - y_{ave})^2$$

Where:
y = Response (Area) Ratio A_x/A_{is}
x = Concentration Ratio C_x/C_{is}
a = x^2 coefficient
b = x coefficient
c = intercept
y_i = individual values for each dependent variable
x_i = individual values for each independent variable
y_{ave} = average of the y values
n = number of pairs of data
p = number of parameters in the polynomial equation (I.e., 3 for third order, 2 for second order)

$Yi = ((2*a*(C_x/C_{is})^2)-b^2+b+(4*a*c))/(4a)$

b. Coefficients (a,b,c) of a Quadratic Regression

$a = S_{(x2y)}S_{(xx)}-S_{(xy)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$

$b = S_{(xy)}S_{(x2x2)}-S_{(x2y)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$

$c = [(\Sigma yw)/n] - b*[(\Sigma xw)/n] - a*[\Sigma(x^2w)/n]$

Where:
n = number of replicate x,y pairs
x = x values
y = y values
$w = S^{-2} / (\Sigma S^{-2}/n)$
$S_{(xx)} = (\Sigma x^2w) - [(\Sigma xw)^2 / n]$
$S_{(xy)} = (\Sigma xyw) - [(\Sigma xw)*(\Sigma yw) / n]$
$S_{(xx2)} = (\Sigma x^3w) - [(\Sigma xw)*(\Sigma x^2w) / n]$
$S_{(x2y)} = (\Sigma x^2yw) - [(\Sigma x^2w)*(\Sigma yw) / n]$
$S_{(x2x2)} = (\Sigma x^4w) - [(\Sigma x^2w)^2 / n]$
Or If unweighted calibration, w=1
S(xx) = (Sx2) - [(Sx)2 / n]
S(xy) = (Sxy) - [(Sx)*(Sy) / n]
S(xx2) = (Sx3) - [(Sx)*(Sx2) / n]
S(x2y) = (Sx2y) - [(Sx2)*(Sy) / n]
S(x2x2) = (Sx4) - [(Sx2)2 / n]

Weighting

Weighting of 1/x or $1/x^2$ is permissible for linear calibrations. Weighting shall not be employed for quadratic calibrations. When weighting, use the above equations by substituting x for 1/x or $1/x^2$.

Concentration Calculations

On-Column Concentration for Average RRF Calibration using Internal Standard

On-Column Concentration $C_x = ((A_x)(C_{is}))/((A_{is})(RF_{AVE}))$

On-Column Concentration for Average CF Calibration using External Standard

On-Column Concentration $C_x = (A_x)/(CF_{AVE})$

On-Column Concentration for Linear Calibration

If determining an external standard, then exclude the A_{is} and C_{is} for internal standards

On-Column Concentration $C_x = ((\text{Absolute}\{[(A_x)/(A_{is})] - b\})/m) * C_{is}$

Where: m = slope
b = intercept
A_x = Area of the Sample
C_{is} = Concentration of the Internal Standard
A_{is} = Area of the Internal Standard

On-Column Concentration for Quadratic Calibration

If determining an external standard, then exclude the A_{is} and C_{is} for internal standards

On-Column Concentration $=[(+SQRT(b^2-(4*a*(c-y)))-b)/(2*a)] * C_{is}$

Where: a = x^2 coefficient
b = x coefficient
c = intercept
y = Area Ratio = A_x/A_{is}
C_{is} = Concentration of the Internal Standard

Final Concentration (Wet Weight)

$$\text{Concentration for Extracted Samples} = \frac{(\text{On-Column Conc})(\text{Dilution})(\text{Final Volume})}{(\text{Initial Amount})(\text{Injection Volume})}$$

$$\text{Concentration for Purged Samples} = \frac{(\text{On-Column Conc})(\text{Purged Amount})(\text{Dilution})}{(\text{Purged Amount})}$$

Dry Weight Concentration

$$\text{Dry Weight Concentration} = \frac{\text{Final Concentration Wet Weight} * 100}{\% \text{ Solids}}$$

Percent Difference

$$\% \text{ Difference} = \frac{\text{Absolute(Continuing Calibration RRF - Average RRF)}}{\text{Average RRF}} * 100$$

Percent Drift

$$\% \text{ Drift} = \frac{\text{Absolute(Calculated Concentration - Theoretical Concentration)}}{\text{Theoretical Concentration}} * 100$$

Dilution Factor

Dilution Factor =(Volume of Solvent + Solute) / Volume of Solute

Relative Retention Time

RRT =RT of Compound / RT of ISTD

Breakdown Percent

$$\text{Breakdown} = \frac{\text{Area of DDD + Area of DDE}}{\text{Average (DDT, DDE and DDD)}}$$

-or-

$$\frac{\text{Area of Endrin Ketone + Area of Endrin Aldehyde}}{\text{Average (Endrin, Endrin Ketone, Endrin Aldehyde)}}$$

11.0 Data Reduction, Validation, Reporting, and Record Keeping

All data reported must be of the highest possible accuracy and quality. During the processes of data reduction, validation, and report generation, all work is thoroughly checked to insure that error is minimized.

Data Reduction

The analyst who generated the data usually performs the data reduction. The calculations include evaluation of surrogate recoveries (where applicable), and other miscellaneous calculations related to the sample quantitation.

If the results are computer generated, then the formulas must be confirmed by hand calculations, at minimum, one per batch.

See the current Data Validation SOP for details regarding data reduction.

Validation

A senior analyst, most often the section supervisor, validates the data. All data undergoes peer review. If an error is detected, it is brought to the analyst's attention so that he or she can rectify the error, and perform further checks to ensure that all data for that batch is sound. Previous and/or common mistakes are stringently monitored throughout the validation process. Data is reported using appropriate significant figure criteria. In most cases, two significant digits are utilized, but three significant digits can be used in QC calculations. Significant digits are not rounded until after the last step of a sample calculation. All final reports undergo a review by the laboratory manager, the project manager, or their designee, to provide a logical review of all results before they are released to the client.

If data is to be manually transferred between media, the transcribed data is checked by a peer. This includes data typing, computer data entry, chromatographic data transfer, data table inclusion to a cover letter, or when data results are combined with other data fields.

All hand-written data from run logs, analytical standard logbooks, hand-entered data logbooks, or on instrument-generated chromatograms, are systematically archived should the need for future retrieval arise.

See the current Data Validation SOP for details regarding data validation.

Reports and Records

All records at HEAL are retained and maintained through the procedures outlined in the most recent version of the Records Control SOP.

Sample reports are compiled by the Laboratory Information Management System (LIMS). Most data is transferred directly from the instruments to the LIMS. After being processed by the analyst and reviewed by a data reviewer, final reports are approved and signed by the senior laboratory management. A comparative analysis of the data is performed at this point. For example, if TKN and NH3 are analyzed on the same sample, the NH3 result should never be greater than the TKN result. Lab results and reports are released only to appropriately designated individuals. Release of the data can be by fax, email, electronic deliverables, or mailed hard copy.

When a project is completed, the final report, chain of custody, any relevant supporting data, and the quality assurance/control worksheets are scanned as a .pdf file onto the main server. Original client folders are kept on file and are arranged by project number. Additionally, all electronic data is backed up routinely on the HEAL main server. The backup includes raw data, chromatograms, and report documents. Hard copies of chromatograms are stored separately according to the instrument and the analysis date. All records and analytical data reports are retained in a secure location as permanent records for a minimum period of five years (unless specified otherwise in a client contract). Access to archived information shall be documented with an access log. Access to archived electronic reports and data will be password protected. In the event that HEAL transfers ownership or terminates business practices, complete records will be maintained or transferred according to the client's instructions.

After issuance, the original report shall remain unchanged. If a correction to the report is necessary, then an additional document shall be issued. This document shall have a title of "Addendum to Test Report or Correction to Original Report", or equivalent. Demonstration of original report integrity comes in two forms. First, the report date is included on each page of the final report. Second, each page is numbered in sequential order, making the addition or omission of any data page(s) readily detectable.

12.0 Corrective Action

Refer to the most recent version of the Data Validation SOP for the procedure utilized in filling out a Corrective Action Report. A blank copy of the corrective action report is available in the current Document Control Logbook.

The limits that have been defined for data acceptability also form the basis for corrective action initiation. Initiation of corrective action occurs when the data generated from continuing calibration standard, sample surrogate recovery, laboratory control spike, matrix spike, or sample duplicates exceed acceptance criteria. If corrective action is necessary, the analyst or the section supervisor will coordinate to take the following guidelines into consideration in order to determine and correct the measurement system deficiency:

Check all calculations and data measurements systems (Calibrations, reagents, instrument performance checks, etc.).

Assure that proper procedures were followed.

Unforeseen problems that arise during sample preparation and/or sample analysis that lead to treating a sample differently from documented procedures shall be documented with a corrective action report. The section supervisor and laboratory manager shall be made aware of the problem at the time of the occurrence. See the appropriate SOP regarding departures from documented procedures.

Continuing calibration standards below acceptance criteria cannot be used for reporting analytical data unless method specific criteria states otherwise.

Continuing calibration standards above acceptance criteria can be used to report data as long as the failure is isolated to a single standard and the corresponding samples are non-detect for the failing analyte.

Samples with non-compliant surrogate recoveries should be reanalyzed, unless deemed un-necessary by the supervisor for matrix, historical data, or other analysis-related anomalies.

Laboratory and Matrix Spike acceptance criteria vary significantly depending on method and matrix. Analysts and supervisors meet and discuss appropriate corrective action measures as spike failures occur.

In the event that results must be reported with associated QC failures, the data must be qualified appropriately to notify the end user of the QC failure.

Sample duplicates with RPD values outside control limits require supervisor evaluation and possible reanalysis.

A second mechanism for initiation of corrective action is that resulting from Quality Assurance performance audits, system audits, inter- and intra-laboratory comparison studies. Corrective Actions initiated through this mechanism will be monitored and coordinated by the laboratory QA/QCO.

All corrective action forms are entered in the LIMS and included with the raw data for peer review, signed by the technical director of the section and included in the case narrative to the client whose samples were affected. All Corrective action forms in the LIMS are reviewed by the QA/QCO.

13.0 Quality Assurance Audits, Reports and Complaints

Internal/External Systems' Audits, Performance Evaluations, and Complaints

Several procedures are used to assess the effectiveness of the quality control system. One of these methods includes internal performance evaluations, which are conducted by the use of control samples, replicate measurements, and control charts. External performance audits, which are conducted by the use of inter-laboratory checks, such as participation in laboratory evaluation programs and performance evaluation samples available from a NELAC-accredited Proficiency Standard Vendor, are another method.

Proficiency samples will be obtained twice per year from an appropriate vendor for all tests and matrices for which we are accredited and for which PTs are available. HEAL participates in soil, waste water, drinking water, and underground storage tank PT studies. Copies of results are available upon request. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities, and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates, and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples, HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Internal Audits are performed annually by the QA/QCO in accordance with the current Internal Audit SOP. The system audit consists of a qualitative inspection of the QA system in the laboratory and an assessment of the adequacy of the physical facilities for sampling, calibration, and measurement. This audit includes a careful evaluation and review of laboratory quality control procedures. Internal audits are performed using the guidelines outlined below, which include, but are not limited to:

1. Review of staff qualifications, demonstration of capability, and personnel training programs
2. Storage and handling of reagents, standards, and samples
3. Standard preparation logbook and LIMS procedures
4. Extraction logbooks
5. Raw data logbooks
6. Analytical logbooks or batch printouts and instrument maintenance logbooks

7. Data review procedures
8. Corrective action procedures
9. Review of data packages, which is performed regularly by the lab manager/QA Officer.

The QA/QCO will conduct these audits on an annual basis.

Management Reviews

HEAL management shall periodically, and at least annually, conduct a review of the laboratory's quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. The review shall take account of:

1. the suitability and implementation of policies and procedures
2. reports from managerial and supervisory personnel
3. the outcome of recent internal audits
4. corrective and preventive actions
5. assessments by external bodies
6. the results of inter-laboratory comparisons or proficiency tests
7. changes in volume and type of work
8. client feed back
9. complaints
10. other relevant factors, such as laboratory health and safety, QC activities, resources, and staff training.

Findings from management reviews and the actions that arise from them shall be recorded and any corrective actions that arise shall be completed in an appropriate and agreed upon timescale.

Complaints

Complaints from clients are documented and given to the laboratory manager. The lab manager shall review the information and contact the client. If doubt is raised concerning the laboratory's policies or procedures, then an audit of the section or sections may be performed. All records of complaints and subsequent actions shall be maintained in the client compliant logbook for five years unless otherwise stated.

Internal and External Reports

The QA/QCO is responsible for preparation and submission of quality assurance reports to the appropriate management personnel as problems and issues arise. These reports

include the assessment of measurement systems, data precision and accuracy, and the results of performance and system audits. Additionally, they include significant QA problems, corrective actions, and recommended resolution measures. Reports of these Quality Assurance Audits describe the particular activities audited, procedures utilized in the examination and evaluation of laboratory records, and data validation procedures. Finally, there are procedures for evaluating the performance of Quality Control and Quality Assurance activities, and laboratory deficiencies and the implementation of corrective actions with the review requirements.

14.0 References (Analytical Protocols Utilized at HEAL)

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22. Technical Notes on Drinking Water Methods, U.S. Environmental Protection Agency, October 1994.

23. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, USEPA SW-846, 3rd Edition, Updates I, II, IIA, IIB, III, December, 1996.

Appendix D

BLOOMFIELD TERMINAL SEWER BOXES - Inspection & Repair Schedule

Sewer Box Number	Location	Type Material	Drawing Reference	Actual Inspection Date	Inspection results Pass/Fail	Repairs/Maint Needed	Repairs/Maint Completion date
1	Northwest of Main Pipe Bridge	Concrete	D-500-500-134	Not Tested	N/A	N/A	N/A
2	Southeast of Precipitator	Steel	D-500-500-134	Not Tested	N/A	N/A	N/A
3	Southeast of Main Blower	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
4	Southeast of Old Desalter	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
5	Southeast of Control Room	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
6	Southeast of Reformer	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
7	Southwest of Mainblower	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
8	South of E-113's	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
9	South of P-105's	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
10	West of New Desalter	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
11	South of T-102	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
12	South of P-103;s	Concrete	D-500-500-124	N/A	O/S	N/A	N/A
13	In Roadway South of FCCU	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
14	In Roadway Southwest of C-801's	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
15	In Roadway Southeast of Wet Gas	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
16	South of Treater	Concrete	D-500-500-134	N/A	O/S	N/A	N/A
17	In Roadway East of DHT	Steel	D-500-500-134	Not Tested	N/A	N/A	N/A
18	In Roadway Southeast of Poly Unit	Concrete	D-500-500-134	Not Tested	N/A	N/A	N/A

N/A = Not Applicable
O//S = Out of Service

BLOOMFIELD TERMINAL SUMPS - Inspection & Repair Schedule

Sump Number	Location	Type Material	Drawing Reference	Actual Inspection Date	Inspection results Pass/Fail	Repairs/Maint Needed	Repairs/Maint Completion date
16	Sump @ S.W. Side Of Tk. 3	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
17	Sump Between Tk. 3 & 4	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
18	Sump Between Tk. 4 & 5	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
19	Sump @ N.Side Of Tk. 5	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
20	Sump Between Tk. 11 & 12	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
21	Sump Between Tk. 13 & 14	Concrete	D-000-900-023	7/22/2014	Pass	None	N/A
22	Sump @ N. Side Of Tk. 17	Sump Removed	D-000-900-023	Removed	N/A	N/A	N/A
23	Sump @ N.E. Side Of Tk. 18	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
24	Sump @ N.E. Side Of Tk. 19	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
25	Sump @ S.W. Side Of Tk. 20	DW Steel	D-000-900-023	7/22/2014	Pass	None	N/A
26	Sump @ S. Side Of Tk. 23	Concrete	D-000-900-023	7/21/2014	Pass	None	N/A
27	Sump @ E. Side Of Tk. 24	DW Steel	D-000-900-023	7/21/2014	Pass	None	N/A
28	Sump @ E. Side Of Tk. 25	DW Steel	D-000-900-023	7/21/2014	Pass	None	N/A
29	Sump @ N.W. Side Of Tk. 26	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
30	Sump @ S.E. Side Of Tk. 27	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
31	Sump @ West Side Of Tk. 28	Concrete	D-000-900-023	7/21/2014	N/A	N/A	N/A
32	Sump @ N.E. Side Of Tk. 29	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
33	Sump @ S.W. Side Of Tk. 30	Concrete	D-000-900-023	7/22/2014	Pass	None	N/A
34	Sump @ N.W. Side Of Tk. 31	Concrete	D-000-900-023	7/22/2014	Pass	None	N/A
35	Sump @ S.E. Side Of Tk. 31	Concrete	D-000-900-023	7/22/2014	Pass	None	N/A
36	Sump @ East Side Of Tk. 32	Concrete	D-000-900-023	7/22/2014	Pass	None	N/A
37	Sump @ N.E. Side Of Tk. 35	DW Steel	D-000-900-023	7/23/2014	Pass	None	N/A
38	Sump @ N.E. Side Of Tk. 36	DW Steel	D-000-900-023	7/22/2014	Pass	None	N/A
39	Sump @ S. Side Of Tk. 18	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
40	Sump @ S. Side Of Tk. 19	Concrete	D-000-900-023	7/23/2014	Pass	None	N/A
41	Sump @ S. Side Of Flare	Concrete	D-000-900-023	O/S	O/S	N/A	N/A
42	Sump @ N.W. Of Precipitator	Concrete	D-000-900-023	O/S	O/S	N/A	N/A

DW = Double Wall
O/S = Out of Service
N/A = Not Applicalble

13.0 BLOOMFIELD TERMINAL UNDERGROUND PROCESS AND WASTEWATER LINES - Inspection & Repair Schedule

Line Number	Description (Service)	Line Size	Line Length L/F	Starting Location	End Location	Drawing Reference	Construction Material	Next Inspection Scheduled	Last Inspection Date	Inspection Results Pass/Fail	Test/ Inspection Method	Repairs/Maint Needed	Repairs-Maint Completion date
1	Effilent Wtr. Transfer Line	6	3250	Effilent Pond Outlet Pump P-616	Effluent Transfer P-671	D-500-800-031	PVC	2015	Jul-10	Pass	Hydrostatic	None	N/A
2	Effilent Wtr. Trans. Pump	6	908	North Evaporation Pond Outlet	Effilent Transfer Pump P-671	D-500-800-031	PVC	2014	Aug-14	Fail	Hydrostatic	Repairs/Maint Needed	N/A
3	Effilent Wtr. Pump Disch.	6	2797	Effluent Transfer P-671	Injection Well Building	D-500-800-031	PVC	2014	Aug-14	Pass	Hydrostatic	None	N/A
4	Injection Well Recir. Line	6	2512	Injection Well Building	North Evaporation Pond	D-500-800-031	PVC	2014	Aug-14	Pass	Hydrostatic	None	N/A
5	River Terrace Transfer Line	2	277	River Terrace Processing Skid	River Pump Building Water Basin	D-500-800-043	PVC	2016	Aug-11	Pass	Hydrostatic	None	N/A
6	Crude Transfer Line	10	215	Pipe Rack East Of LPG Stg Tks.	Pipe Rack Southwest of Tk. # 31	D-700-800-106 (F-2)	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
7	Steam Header at Terminals	6	215	Pipe Rack Southwest of Tk. # 31	Pipe Rack East Of LPG Stg. Tks.	N/A	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
8	Condensate Return Header	4	215	Pipe Rack East Of LPG Stg Tks.	Pipe Rack Southwest of Tk. # 31	N/A	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
9	Premium Reciepts to Tk 32/36	4	218	Pipe Rack East Of LPG Bullets	Pipe Rack Southwest of Tk. # 31	D-600-800-118 (H-17)	Carbon steel	2017	May-12	Pass	Hydrostatic	None	
10	ULSD Sales Line	10	218	Pipe Rack Southwest of Tk. # 31	Filter Pad Area North Of Loading Pad	D-700-800-100 (D-2)	Carbon steel	2017	Praxair 2012	Pass	Praxair	None	N/A
11	Unleaded Gasoline Sales	10	218	Pipe Rack Southwest of Tk. # 31	Filter Pad Area North Of Loading Pad	D-700-800-100 (C-2)	Carbon steel	2017	Praxair 2012	Pass	Praxair	None	N/A
12	Transmix Sales from Tk #30	10	218	Pipe Rack Southwest of Tk. # 31	Filter Pad Area North Of Loading Pad	D-700-800-100 (C-2)	Carbon steel	2014					
13	Subgrade receipts to tanks 13, 14	4	218	Pipe Rack Southwest of Tk. # 31	Area Northeast of B-21	D-600-800-118 (G-17)	Carbon steel	2017	Apr-12	Pass	Hydrostatic	None	
14	VRU Effluent	3	275	Pipe Rack Southwest of Tk. # 31	East of B-21	D-600-800-114 (D-1)	Carbon steel	2015	Aug-10	Pass	Hydrostatic	None	N/A
26	VRU Effluent	4	410	East of B-21	Manifold @ VRU Unit	D-700-800-106 (D-17)	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
15	VRU Return (Former Poly Feed Lines)	2		Area Northeast of B-21	Pipe Rack Southwest of Tk. # 31	N/A	Carbon steel	*Temporarily Out of Service					
16	LPG Rerun Line	2		Area Northeast of B-21	Pipe Rack Southwest of Tk. # 31	N/A	Carbon steel	*Temporarily Out of Service					
17	Saturate To Storage	2		Pipe Rack Southwest of Tk. # 31	Area Northeast of B-21	N/A	Carbon steel	*Temporarily Out of Service					
18	C-4 To Storage	2		Pipe Rack Southwest of Tk. # 31	Area Northeast of B-21	N/A	Carbon steel	*Temporarily Out of Service					
19	C-3 To Storage	2		Pipe Rack Southwest of Tk. # 31	Area Northeast of B-21	N/A	Carbon steel	*Temporarily Out of Service					
20	Sour Naphtha sales From Tk. 23	8	534	Pipe Rack Southwest of Tk. # 31	Filter Pad Area North Of Loading Pad	D-700-800-100 (C-3)	Carbon steel	2017	Praxair 2012	Pass	Praxair	None	N/A
21	Dyed Diesel Sales From Tk.18	6	534	Pipe Rack Southwest of Tk. # 31	Filter Pad Area North Of Loading Pad	D-700-800-100 (C-2)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
22	Slop Line From Loading Rack	4	180	Gasoline Rack Sump	West of Terminal Office	N/A	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
23	ULSD/Naptha receipts	6	750	South West Of Tk.# 25	West of truck unload rack	D-600-800-118 (J-1)	Carbon steel	2017	Dec-12	Pass	Hydrostatic	None	N/A
24	blinded	8	392	Pipe Rack West Of Tk.# 36	Filter Pad Area North Of Loading Pad	D-700-800-100 (E-3)	Carbon steel	*Temporarily Out of Service					
25	Premium Sales from Tk. 32	6	392	Pipe Rack West Of Tk.# 36	Filter Pad Area North Of Loading Pad	D-700-800-100 (E-3)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
27	Naphta Feed To VRU Unit	4		Transfer Pump @ Tk. # 44	Manifold @ VRU Unit	NewTech 595-M-601	Carbon steel	*Temporarily Out of Service					
28	blinded	4		Manifold @ VRU Unit	Naptha Fill Line To Tk. # 44	NewTech 595-M-601	Carbon steel	*Temporarily Out of Service					
29	Off-Road Diesel To Bays #1 & 2	8	150	From F-706 Filter Piping	To Meter Spools @ Bays # 1&2	D-700-800-100 (C-17)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
30	Off road diesel To Bay # 3	6	150	From F-706 Filter Piping	To Meter Spools @ Bays # 3	D-700-800-100 (C-17)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A

*All lines that are temporarily out of service due to suspension of refining operations were steamed out and are hydrocarbon free

13.0 BLOOMFIELDTERMINAL UNDERGROUND PROCESS AND WASTEWATER LINES - Inspection & Repair Schedule

Line Number	Description (Service)	Line Size	Line Length L/F	Starting Location	End Location	Drawing Reference	Construction Material	Next Inspection Scheduled	Last Inspection Date	Inspection Results Pass/Fail	Test/ Inspection Method	Repairs/Maint Needed	Repairs-Maint Completion date
31	Premiun Sales Line	10	150	From F-705 Filter Piping	To Meter Spools @ Bays # 1,2 & 3	D-700-800-100 (C-17)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
32	Unleaded GasolineSales Line	10	150	From F-704 Filter Piping	To Meter Spools @ Bays # 1,2 & 3	D-700-800-100 (C-17)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
33	ULSD To Bay # 4	8	150	From F-703 Filter Piping	To Meter Spool @ Bay # 4	D-700-800-100 (D-17)	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
34	Ethanol Pump Suction Line	8	160	From Tk. # 45 Outlet Nozzel	To P-707 & P-707A Pump Suction	D-700-800-007	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
35	Ethanol Unloading Line	4	160	From P-706 Pump Discharge	To Tk. # 45 Inlet Nozzel	D-700-800-007	Carbon steel	2017	praxair 2012	Pass	Praxair	None	N/A
36	Naphtha Unloading Line	6		Suction Manifold @ P-607A	Unloading line @ Tk. #18 and 19	B-600-500-296	Carbon steel	*Temporarily Out of Service					
37	Naptha Rundown To Tk.# 35	3		Line From North Pipe Rack Area	To Tk. # 35 Fill Nozzle	B-600-500-232	Carbon steel	*Temporarily Out of Service					
38	Naptha Feed Line to Unit	4		From P-607A Pump Discharge	To North Pipe Rack Feed To Units	B-600-500-236	Carbon steel	*Temporarily Out of Service					
39	Cooling Water Supply Line	12		From # 1 Cooling Tower Pumps	To Rack Area @ Reformer Unit	D-500-500-011	Carbon steel	*Temporarily Out of Service					
40	Cooling Water Return Line	12		From Rack Area @ Reformer	To #1 Cooling Tower Water Inlet	D-500-500-011	Carbon steel	*Temporarily Out of Service					
41	Cooling Water Supply Line	20		From # 2 Cooling Tower Pumps	To S. End of FCC Unit @ Twr. 207 Area	D-201-500-123	Carbon steel	*Temporarily Out of Service					
42	Cooling Water Return Line	20		From South End of FCC Unit	To # 2 Cooling Tower Water Inlet	D-201-500-123	Carbon steel	*Temporarily Out of Service					
43	Sewer Transfer Line	10	54	From Main Sewer Box # 12	To Main Sewer Box # 11	D-500-500-402	Carbon steel	2014					
44	Sewer Transfer Line	10	46	From Main Sewer Box # 11	To Observation Access Can # 10	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
45	Sewer Transfer Line	12	33	From Observation Access Can #10	To Observation Access Can # 6	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
46	Sewer Transfer Line	12	73	From Observation Access Can # 6	To Main Sewer Box # 5	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
47	Sewer Transfer Line	14	69	From Main Sewer Box # 5	To Observation Access Can # 4	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
48	Sewer Transfer Line	14	86	From Observation Access Can #4	To Main Sewer Box # 3	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
49	Sewer Transfer Line	12	62	From Main Sewer Box # 9	To main Sewer Box # 8	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
50	Sewer Transfer Line	12	66	From Main Sewer Box # 8	To Main Sewer Box # 7	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
51	Sewer Transfer Line	14	86	From Main Sewer Box # 7	To Main Sewer Box # 3	D-500-500-402	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
52	Sewer Transfer Line	14	145	From Main Sewer Box # 3	To Observation Access Can #2	D-500-500-402	Carbon steel	2014					
53	Sewer Transfer Line	14	100	From Observation Access Can #2	To Main Sewer Box # 1	D-500-500-402	Carbon steel	2014					
54	Sewer Transfer Line	12/10	56	From Main Sewer Box # 1	To Inlet @ API Seperator	D-500-500-106	Carbon steel	2014					
55	Sewer Collection Manifold	8>4	56	Area East Side of # 4 Boiler	To North Side of Sewer Box # 12	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
56	Sewer Collection Manifold	10>4	164	Area @ & Around Crude Twr.	To North Side Of Sewer Box # 11	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
57	Sewer Collection Manifold	8>4	100	Area @ & Around E-106A & B	To Northwest Of Sewer Box # 10	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
58	Sewer Collection Manifold	6	10	Area @ V-101A Desalter	To East Side Of Sewer Box # 10	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A

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13.0 BLOOMFIELD TERMINAL UNDERGROUND PROCESS AND WASTEWATER LINES - Inspection & Repair Schedule

Line Number	Description (Service)	Line Size	Line Length L/F	Starting Location	End Location	Drawing Reference	Construction Material	Next Inspection Scheduled	Last Inspection Date	Inspection Results Pass/Fail	Test/ Inspection Method	Repairs/Maint Needed	Repairs-Maint Completion date
59	Sewer Collection Manifold	10>4	452	Area Thru Reformer Pump Row	To Observation Access Can # 6	D-500-500-098	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
60	Sewer Collection Manifold	10>4	316	Area Along East Side of Reformer	To Observation Access Can # 6	D-500-500-098	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
61	Sewer Collection Manifold	8>4	60	Area @ & Around V101 Desalter	To Observation Access Can #4	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
62	Sewer Collection Manifold	8>4	140	Area @ & Around T-101 Tower	To West Side Of Sewer Box # 9	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
63	Sewer Collection Manifold	8>4	104	Area @ & Around P101 Charge P.	To North Side Of Sewer Box # 9	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
64	Sewer Collection Manifold	8>4	88	Area @ & Around T-103 Tower	To Northwest Side Of Sewer Box # 8	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
65	Sewer Collection Manifold	8>4	92	Area @ & Around Heavy Oil Exch.	To North Side Of Sewer Box # 8	D-500-500-402	Carbon steel	2015	Jul-10	Pass	Hydrostatic	None	N/A
66	Sewer Collection Manifold	8>4	41	Area @ & Around Main Air Blower	To Northwest Side Of Sewer Box # 3	D-500-500-134	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
67	Sewer Collection Manifold	6>3	324	Area @ Burner Fuel Loading and Manifold	To Observation Access Can (Precipitator)	D-600-500-127	Carbon steel	2014					
68	Sewer Collection Manifold	4	141	Area Drains @ Air Building	To Sewer Transfer Line(Box # 1 to API)	D-500-500-160	Carbon steel	2014					
69	Sewer Collection Manifold	4	86	P-224 Pump & Cat Surface Drain	To Sewer Transfer Line From FCC Process	D-201-500-001	Carbon steel	2014	Jul-09	Pass	Hydrostatic	None	N/A
70	Sewer Collect./Transfer Line	6	896	Gas Con Unit Collection M.H.	To FCC Sewer Box Manhole # 13	D-201-500-001	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
71	Sewer Transfer Line	10	35	From FCC Sewer Box M.H. # 13	To FCC Sewer Box # 14 (Roadway)	D-201-500-001	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
72	Sewer Transfer Line	10	235	From FCC Sewer Box M.H. #14	To 20" Inlet @ API	D-500-500-106	Carbon steel	2014					
73	Sewer Collection Manifold	6/4	335	Area @ & Around Gas Con. Unit	To Gas Con. Unit Sewer Collection	D-200-200-233	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
74	Sewer Transfer Line	10	159	From Treater Main Sewer Box # 16	To Sewer Box #15 - S.E. Of C-204	D-500-500-166	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
75	Sewer Transfer Line	10	162	Sewer Box #15 - S.E. Of C-204	To 20" Inlet @ API	D-500-500-105	Carbon steel	2014					
76	Sewer Collection Manifold	10>4	411	Area In & Around Treater Unit	To Treater Sewer Box At South Side Of Unit	D-500-500-122	Carbon steel	2016	Aug-11	Pass	Hydrostatic	None	N/A
77	Sewer Collection Manifold	6>2		Area In & Around Poly Unit	To Inlet Bay @ API	D-500-500-126	Carbon steel	out of service	May-09	Pass	Hydrostatic	None	N/A
78	Sewer Transfer Line	10	130	From Sewer Box # 17 @ DHT Unit	To Sewer Box # 18 @ S.E. Corner of Poly	D-500-500-097	Carbon steel	2016	Aug-11	Pass	Replaced with Stainless Steel Piping	None	N/A
79	Sewer Transfer Line	12	35	From Sewer Box # 18	To Inlet Manifold @ API Basin Area		Carbon steel	2014					
80	Sewer Collection Manifold	10>4	635	Area In & Around DHT/Larox Unit	To Sewer Box # 18 @ S.E. Corner of DHT		Carbon steel	2016	Aug-11	Pass	Hydrotest	None	N/A
81	Crude Transfer Line	12	99	Pipe Rack East Of LPG Stg Tks.	Pipe Rack South of Crude Unloading Bays	D-000-900-023	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
82	Crude Transfer Line	12	194	Pipe Rack South of Crude Unloading Bays	Berm South of Tank #43	D-000-900-023	Carbon steel	2018	Dec-13	Pass	Praxair	None	N/A
83	Sewer Transfer Line	4	822	Discharge at Tk #37	Valve box at corner Northeast of DHT	AMEC 6/7	Carbon Steel/PVC	2015	Jun-10	Pass	Hydrostatic	None	N/A
84	Sales Line from Tk #3 & 4	8	300	Area West of API Separator	DHT Option City		Carbon Steel	*Temporarily Out of Service					
85	Diesel Reciepts (truck)	6	25	Roadway SW of Tk #17	Piperack btwn Tk #34 and Tk #25	D-800-600-104(F-1)	Carbon Steel	2015	Jun-10	Pass	Hydrotest	None	N/A
86	Premium/Uneaded Reciepts	6	25	Roadway SW of Tk #17	Piperack btwn Tk #24 and Tk #25	D-600-800-099 D-600-800-113	Carbon Steel	2015	Jun-10	Pass	Hydrotest	None	N/A
87	Groundwater Recovery Transfer Line	3	970	Tk #38	Slop Line NE of Tk #31	D-600-800-121	Carbon Steel	2015	Aug-10	Pass	Hydrotest	None	N/A
88	Injection Well Transfer	4	45	Injection Well Building	Downhole Injection Well	D-500-800-031	Carbon Steel	2015	Oct-10	Pass	Hydrotest	None	N/A

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13.0 BLOOMFIELDTERMINAL UNDERGROUND PROCESS AND WASTEWATER LINES - Inspection & Repair Schedule

Line Number	Description (Service)	Line Size	Line Length L/F	Starting Location	End Location	Drawing Reference	Construction Material	Next Inspection Scheduled	Last Inspection Date	Inspection Results Pass/Fail	Test/ Inspection Method	Repairs/Maint Needed	Repairs-Maint Completion date
89	VRU Return to Tanks 13 and 14	3	32	Pipe Bridge South of Tanks 13 and 14	Exits inside South Wall of Containtment Berm	B-600-500-532	Carbon Steel	2016	Jan-11	Pass	Hydrostatic	None	N/A
90	Tie-in Tank 11 Crude to LACT	6	116	Pipe Bridge North of LACT Unit	10 ft East of Tie-in to LACT Unit	B-600-500-561	Carbon Steel	2016	Dec-11	Pass	Hydrostatic	None	N/A
91	Crude to Tank 11	6	34	Under Pipe Rack South of Tank 11	Exits Berm South of Tank 11	B-600-500-558	Carbon Steel	2016	11-Nov	Pass	Hydrostatic	None	N/A

Total Linear Feet of Lines 23509

Appendix E

Waste 2014

I. Hazardous Waste

Pick-up Date	Manifest #	Description	Containers		Quantity	Destination	Treatment	Cert. of Disposal/
			No.	Type				
1/16/2014	000083562 DAT	UN1993 Waste Flammable Liquids Vac Truck Sludge	4	DM	208 G	21st Centruy Envirn. Mgmt. of Nevada, LLC 2095 Newlands Dr. E Fernley, NV 89468	H141-Incineration	Yes
1/16/2014	000083563 DAT	NA3077 Hazardous Waste Solid Waste API PPE	1	BX	CF	21st Centruy Envirn. Mgmt. of Nevada, LLC 2095 Newlands Dr. E Fernley, NV 89468	H040-Incineration	Yes
3/13/2014	000083703 DAT	NA3082 Hazardous Waste Liquids Main Column Bottoms	7	DM	364 G	Clean Harbors Aragonite LLC 11600 N Aftus Road Aragonite, UT 84029	H040-Incineration	Yes
		NA3077 Hazardous Waste Solid Waste Main Column Bottoms	2	DM	880 P			
		NA3077 Hazardous Waste Solid Waste Contaminated PPE	1	CF	1 Y			
		UN1325 Flammable Solid Organic Benzene Terminal Filter Pads	1	DM	760 P			
4/8/2014	000083755 DAT	NA3682 Hazardous Waste Liquid (Benzene) Pipeline Sludge	2	DM	104 G	Clean Harbors Aragonite LLC 11600 N Aftus Road Aragonite, UT 84029	H040-Incineration	Yes
4/8/2014	000083756 DAT	NA3082 Hazardous Waste Liquid (Benzene) 16" Pipeline Cleanout	1	DM	840 P	Clean Harbors Aragonite LLC 11600 N Aftus Road Aragonite, UT 84029	H040-Incineration	Yes
		NA3077 Hazardous Waste Solid (Benzene, Lead) Tank 41 PPE and Debris	1	DM	140 P			
		RQ NA3077 Hazardous Waste Solid (Benzene, Lead) Tank 41 PPE and Debris	7	DM	3500 P			

I. Hazardous Waste

Pick-up Date	Manifest #	Description	Containers		Quantity	Destination	Treatment	Cert. of Disposal/
			No.	Type				
7/8/2014	007695675 FLE	RQ NA3077 Hazardous Waste Solid (K170) FCC Cleanup	1	DM	380 P	Clean Harbors Aragonite LLC 11600 N Aftus Road Aragonite, UT 84029	H040-Incineration	Yes
		NA3077, Hazardous Waste, Solid (Benzene) Starlake Rags	1	DM	380 P			
9/19/2014	003901901 SKS	NA 3082, Hazardous Waste, Liquid (Benzene) VRU Glycol	5	DM	2280 P	Safety-Kleen Systems, Inc. 1722 Cooper Creek Road Denton, TX 76208	H061-Incineration	Yes
11/3/2014	007695963 FLE	NA3077 Hazardous Waste, Solid (Benzene) Lybrook Vac Truck Cleanout	19	CM	7600 P	Clean Harbors Aragonite LLC 11600 N Aftus Road Aragonite, UT 84029	H040-Incineration	Yes
		NA3077 Hazardous Waste, Solid (Benzene) Vac Truck Cleanout	4	CF	2800 P			
		RQ UN1993 Waste Flammable Liquids (Benzene) Contaminated DRA	1	DM	52 G			
		RQ UN1993 Waste Flammable Liquids (Benzene) Tank 31 Sump Overflow	1	DM	52 G			

P = Pounds
CY = Cubic Yard Box
DF = Plastic drum
CF = Fiber board yard box
DM = Drum
G = Gallons