GW-028

Annual DP Report (3 of 6)

2016

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID	**MB-23378**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **23378**			RunNo: **31658**					
Prep Date:	**1/25/2016**	Analysis Date: **1/25/2016**			SeqNo: **968855**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-23378**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID: **23378**			RunNo: **31658**					
Prep Date:	**1/25/2016**	Analysis Date: **1/25/2016**			SeqNo: **968856**		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			

Sample ID	**1601864-001BMS**	SampType: **MS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **23378**			RunNo: **31658**					
Prep Date:	**1/25/2016**	Analysis Date: **1/25/2016**			SeqNo: **968858**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0040	0.00020	0.005000	.00006177	79.6	75	125			

Sample ID	**1601864-001BMSD**	SampType: **MSD**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **23378**			RunNo: **31658**					
Prep Date:	**1/25/2016**	Analysis Date: **1/25/2016**			SeqNo: **968859**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0041	0.00020	0.005000	.00006177	80.1	75	125	0.688	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID	**MB-23438**	SampType: **MBLK**		TestCode: **MERCURY, TCLP**						
Client ID:	**PBW**	Batch ID: **23438**		RunNo: **31746**						
Prep Date:	**1/27/2016**	Analysis Date: **1/28/2016**		SeqNo: **971551**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	**LCS-23438**	SampType: **LCS**		TestCode: **MERCURY, TCLP**						
Client ID:	**LCSW**	Batch ID: **23438**		RunNo: **31746**						
Prep Date:	**1/27/2016**	Analysis Date: **1/28/2016**		SeqNo: **971552**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **MB-23359**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **23359**	RunNo: **31646**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968535** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-23359**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **23359**	RunNo: **31646**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968536** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	96.1	80	120			
Barium	ND	100	0.5000	0	94.0	80	120			
Cadmium	ND	1.0	0.5000	0	92.5	80	120			
Chromium	ND	5.0	0.5000	0	93.7	80	120			
Lead	ND	5.0	0.5000	0	92.9	80	120			
Selenium	ND	1.0	0.5000	0	95.8	80	120			
Silver	ND	5.0	0.1000	0	92.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **MB-23359**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **23359**	RunNo: **31646**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968316** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-23359**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **23359**	RunNo: **31646**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968317** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.46	0.020	0.5000	0	91.9	80	120			
Antimony	0.48	0.050	0.5000	0	95.5	80	120			
Arsenic	0.48	0.020	0.5000	0	96.1	80	120			
Barium	0.47	0.020	0.5000	0	94.0	80	120			
Beryllium	0.49	0.0030	0.5000	0	99.0	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.5	80	120			
Chromium	0.47	0.0060	0.5000	0	93.7	80	120			
Copper	0.47	0.0060	0.5000	0	94.5	80	120			
Iron	0.48	0.050	0.5000	0	95.5	80	120			
Lead	0.46	0.0050	0.5000	0	92.9	80	120			
Manganese	0.47	0.0020	0.5000	0	93.5	80	120			
Nickel	0.46	0.010	0.5000	0	92.2	80	120			
Potassium	44	1.0	50.00	0	88.6	80	120			
Selenium	0.48	0.050	0.5000	0	95.8	80	120			
Silver	0.092	0.0050	0.1000	0	92.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **LCS-23359**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **23359**	RunNo: **31646**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968317** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.47	0.050	0.5000	0	93.8	80	120			
Vanadium	0.49	0.050	0.5000	0	98.1	80	120			
Zinc	0.48	0.020	0.5000	0	95.2	80	120			

Sample ID **MB-23359**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **23359**	RunNo: **31648**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968397** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Sodium	ND	1.0								

Sample ID **LCS-23359**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **23359**	RunNo: **31648**
Prep Date: **1/22/2016**	Analysis Date: **1/25/2016**	SeqNo: **968398** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.1	80	120			
Magnesium	49	1.0	50.00	0	98.8	80	120			
Sodium	48	1.0	50.00	0	96.6	80	120			

Sample ID **MB-23359**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **23359**	RunNo: **31737**
Prep Date: **1/22/2016**	Analysis Date: **1/28/2016**	SeqNo: **971326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	ND	0.0060								

Sample ID **LCS-23359**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **23359**	RunNo: **31737**
Prep Date: **1/22/2016**	Analysis Date: **1/28/2016**	SeqNo: **971327** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.46	0.0060	0.5000	0	91.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **MB-R32136**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R32136**	RunNo: **32136**							
Prep Date:	Analysis Date: **2/4/2016**	SeqNo: **982430**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID **LCS-R32136**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R32136**	RunNo: **32136**							
Prep Date:	Analysis Date: **2/4/2016**	SeqNo: **982431**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.542		0.5000	0	108	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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QC SUMMARY REPORT

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WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **MB-R32136**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R32136**	RunNo: **32136**							
Prep Date:	Analysis Date: **1/29/2016**	SeqNo: **982433**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R32136**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R32136**	RunNo: **32136**							
Prep Date:	Analysis Date: **1/29/2016**	SeqNo: **982434**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.18		0.2000	0	90.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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QC SUMMARY REPORT

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WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **mb-1**	SampType: **MBLK**			TestCode: **SM2320B: Alkalinity**					
Client ID: **PBW**	Batch ID: **R31664**			RunNo: **31664**					
Prep Date:	Analysis Date: **1/25/2016**			SeqNo: **968939**		Units: **mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1**	SampType: **LCS**			TestCode: **SM2320B: Alkalinity**					
Client ID: **LCSW**	Batch ID: **R31664**			RunNo: **31664**					
Prep Date:	Analysis Date: **1/25/2016**			SeqNo: **968940**		Units: **mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.44	20.00	80.00	0	94.3	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **1601864-001ADUP**	SampType: **DUP**	TestCode: **Specific Gravity**							
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **R31723**	RunNo: **31723**							
Prep Date:	Analysis Date: **1/27/2016**	SeqNo: **970796**	Units:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.004	0						0.179	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

WO#: **1601864**

15-Feb-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, & 3 Inj Well

Sample ID **MB-23428**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **23428**	RunNo: **31755**
Prep Date: **1/27/2016**	Analysis Date: **1/28/2016**	SeqNo: **971754** 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-23428**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **23428**	RunNo: **31755**
Prep Date: **1/27/2016**	Analysis Date: **1/28/2016**	SeqNo: **971755** 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 **1601864-001AMS**	SampType: **MS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **23428**	RunNo: **31755**
Prep Date: **1/27/2016**	Analysis Date: **1/28/2016**	SeqNo: **971765** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5800	40.0	2000	3784	101	80	120			D

Sample ID **1601864-001AMSD**	SampType: **MSD**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **23428**	RunNo: **31755**
Prep Date: **1/27/2016**	Analysis Date: **1/28/2016**	SeqNo: **971766** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	5820	40.0	2000	3784	102	80	120	0.379	5	D

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
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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: NAVAJO REFINING CO Work Order Number: 1601864 RcptNo: 1

Received by/date: LM 01/22/16

Logged By: **Michelle Garcia** 1/22/2016 9:40:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 1/22/2016 11:23:27 AM Michelle Garcia

Reviewed By: JO 01/27/16

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: 2,2 (<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: MG

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	1.2	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standar ☐ **Rush**

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 167796

Project Manager:

Micki Schultz / Scott Denton / Mike Holder

Sampler: Elizabeth Salsberry

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.2

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. 1601864	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Fh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136 3	TCLP Metals, only /40 CFR Part 261/ SW-845 Method 1311
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	-001					X	X	
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	-001		X					
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001			X				
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001				X			
1/21/16	7:35	Liquid	Trip Blank	2	Neat	-002		X					
1/21/16	7:35	Liquid	Temperature Blank	1	Neat								

Date	Time	Relinquished by	Received by	Date	Time
1/21/2016	1:00	Elizabeth Salsberry			
Date	Time	Relinquished by	Received by	Date	Time
				01/22/16	0745

Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Combs and Andrew Contreras.

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.

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	WDW 1,2, & 3 Qrtly Inj Well
Samplers Name	Elizabeth Salsberry
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	1/21/2016 @ 7:30 a.m.
End Date and Time	1/21/2016 @ 7:40 a.m.

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

☐ P-849 sample point (first from east)
☑ P-851 sample point (second from east)
☐ P-856 sample point (third from east)
☐ P-857 sample point (fourth from east)

				Preservatives							
Container	Size	Material	# of Containers	Neat (None)	HCL	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1			3	X			X					Specific Gravity,HCO3, CO3, Cl, SO4, TDS pH, cond., Fl, Cation/anion ba., Br, Ehl40 CFR 136.3
2			1			X						VOCs/SW-846 Method 8260C (see attached list 'VOCs')
3			3		X							SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
4			2	X								R.C.I/40 CFR part 261
5			2	X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
6			2	X								Ca, K, Mg, Na/40 CFR 136.3
7			1	X								TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
8												
9												
10												

Field Data (Weather, Observations, Etc): 1/21/2016 Temp. 37.4 °F Humidity 70% Wind direction NW Wind Speed 11.5 mph Condition: Clear
Date and Time:

Field Temp. 40.7C Field pH 7.49

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HOLLYFRONTIER

July 11, 2016

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7014 3490 0000 6269 5918

RE: 2016 2nd Quarter Injection Report for Wells WDW-1, WDW-2 and WDW-3, Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the second quarter 2016 sampling results for fluids injected into WDW-1, WDW-2 and WDW-3 and a spread sheet showing various volumes and pressures as required under Permit Condition 2.I.1, Quarterly Reports.

Over the second quarter, the average injection pressure for all three wells was 1355 psig and the average flows were 131 gpm for WDW-1, 104 gpm for WDW-2 and 152 gpm for WDW-3. There were no significant losses from the glycol expansion tanks Well Annulus Monitoring System (WAMS). The quarterly effluent analyses indicated parameters are within permit limits.

This report covers the period from April 1, 2016 to June 30, 2016. We have disposed a total of 1,214,229 barrels of fluid into the three wells during the second quarter of 2016. The volume per well is:

- 417,759 barrels into WDW-1
- 331,533 barrels into WDW-2
- 483,519 barrels into WDW-3

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please contact Scott Denton at 575-748-5487.

Respectfully,

Robert O'Brien
Vice-President & Refinery Manager
HollyFrontier Navajo Refining LLC

Enc.

Electronic cc (w/enc.): R Orosco, R Combs, S Denton
Environmental File: Injection Wells/Reports C-115 & Quarterly/2015/4th quarter/2016-02-05 4th QTR Inj. Rpt. for Wells WDW-1,2,3

2016 SECOND QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
30-015-27592 WDW-1													**Previous Quarter**	37,950,483
Apr-16	1,361	1,400	1,312	125	134	113	338	511	199	3,171	4,594	3,874	133,178	38,083,661
May-16	1,387	1,400	1,383	135	140	125	362	544	222	3,411	4,800	4,286	143,265	38,226,926
Jun-16	1,343	1,400	1,335	133	146	80	607	857	178	3,365	5,006	2,743	141,316	38,368,242
30-015-20894 WDW-2													**Previous Quarter**	24,863,592
Apr-16	1,360	1,400	1,222	103	113	89	312	432	220	2,598	3,874	3,051	109,111	24,972,703
May-16	1,388	1,400	1,377	112	117	105	301	391	218	2,843	4,011	3,600	119,407	25,092,110
Jun-16	1,315	1,400	1,335	97	121	80	346	455	194	2,453	4,149	2,743	103,015	25,195,125
30-015-26575 WDW-3													**Previous Quarter**	15,259,706
Apr-16	1,355	1,395	1,338	152	161	138	726	900	683	3,856	5,520	4,731	161,973	15,421,679
May-16	1,375	1,390	1,335	160	165	148	625	807	621	4,049	5,657	5,074	170,061	15,591,740
Jun-16	1,313	1,386	1,335	143	168	22	668	907	584	3,607	5,760	754	151,485	15,743,225
													Total Injected fluids:	79,306,592

	Monthly Avg.	Monthly Avg.
WDW-1	1,364	131
WDW-2	1,354	104
WDW-3	1,348	152

	Total BBLS	Beginning Volume	Ending Volume
WDW1	417,759	37,950,483	38,368,242
WDW2	331,533	24,863,592	25,195,125
WDW3	483,519	15,259,706	15,743,225
	1,232,811		79,306,592

HOLLYFRONTIER

February 20, 2017

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7014 3490 0000 6269 6458

RE: 2016 4th Quarter Injection Report for Wells WDW-1, WDW-2 and WDW-3, Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the fourth quarter 2016 sampling results for fluids injected into WDW-1, WDW-2 and WDW-3 and a spread sheet showing various volumes and pressures as required under Permit Condition 2.I.1, Quarterly Reports.

Over the fourth quarter, the average injection pressure for all three wells was 1241 psig and the average flows were 117gpm for WDW-1, 94gpm for WDW-2 and 126gpm for WDW-3. There were no significant losses from the glycol expansion tanks Well Annulus Monitoring System (WAMS). The quarterly effluent analyses indicated parameters are within permit limits.

This report covers the period from October 1, 2016 to December 31, 2016. We have disposed a total of 1,050,057 barrels of fluid into the three wells during the fourth quarter of 2016. The volume per well is:

- 364,259 barrels into WDW-1
- 292,360 barrels into WDW-2
- 393,438 barrels into WDW-3

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please contact Scott Denton at 575-748-5487.

Respectfully,

Scott Denton
Environmental Manager
HollyFrontier Navajo Refining LLC

Enc.

Electronic cc (w/enc.): R Orosco, R Combs, S Denton, L Dade
Environmental File: Injection Wells/Reports C-115 & Quarterly/2016/4th quarter/2017-02-20 4th QTR Inj. Rpt. for Wells WDW-1,2,3

2016 FOURTH QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
30-015-27592 WDW-1													**Previous Quarter**	38,780,147
Oct-16	1,211	1,400	1,312	111	125	98	232	421	116	3,805	4,286	3,360	117,527	38,897,674
Nov-16	1,222	1,326	1,175	112	130	102	232	360	127	3,840	4,457	3,497	115,049	39,012,723
Dec-16	1,320	1,400	1,173	128	145	82	343	682	159	4,389	4,971	2,811	131,683	39,144,406
30-015-20894 WDW-2													**Previous Quarter**	25,516,942
Oct-16	1,209	1,400	1,132	83	94	60	290	407	217	2,846	3,223	2,057	87,824	25,604,766
Nov-16	1,201	1,325	1,122	80	107	55	327	502	211	2,743	3,669	1,886	82,295	25,687,061
Dec-16	1,308	1,400	1,182	119	330	70	322	461	146	4,080	11,314	2,400	122,241	25,809,302
30-015-26575 WDW-3													**Previous Quarter**	16,192,617
Oct-16	1,210	1,312	1,132	124	151	94	721	772	664	4,251	5,177	3,223	131,815	16,324,432
Nov-16	1,177	1,245	1,084	111	129	73	718	823	627	3,806	4,423	2,503	114,007	16,438,439
Dec-16	1,310	1,383	1,184	143	161	90	747	814	667	4,903	5,486	3,086	147,616	16,586,055
													Total Injected fluids:	81,539,763

	Monthly Avg.	Monthly Avg.
WDW-1	1,251	117
WDW-2	1,239	94
WDW-3	1,232	126
AVG.	1241	112

	Total BBLS	Beginning Volume	Ending Volume
WDW1	364,259	38,780,147	39,144,406
WDW2	292,360	25,516,942	25,809,302
WDW3	393,438	16,192,617	16,586,055
	1,050,057		81,539,763

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

November 16, 2016

Scott Denton
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WDW-1, 2, &3 Inj Well OrderNo.: 1610612

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 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

Case Narrative

WO#: **1610612**
Date: **11/16/2016**

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Analytical Comments for WDW-1,2, & 3 Effluent:
The above referenced water sample was analyzed by EPA 8260C and the corresponding analytical report is attached in the following pages. The analyst also performed an NIST library review of the sample and the tentatively identified compounds (TIC's) are listed with estimated concentrations; 3-chloro-2-methyl-1-propene (~1 ppb), dibromofluoromethane (~9 ppb) and dimethyl disulfide (~1 ppb).
The above referenced water sample was also analyzed by EPA 8270D and the corresponding analytical report is attached in the following pages.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst: **SUB**	
Ignitability	>200	0		°F	1	10/18/2016	R38745
SULFIDE, REACTIVE						Analyst: **SUB**	
Reactive Sulfide	ND	0.40		mg/L	1	10/18/2016	R38745
SPECIFIC GRAVITY						Analyst: **LGT**	
Specific Gravity	0.9997	0			1	10/27/2016 10:52:00 AM	R38258
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	35	2.0	*	mg/L	20	10/14/2016 12:19:11 AM	R37942
Chloride	360	25		mg/L	50	10/25/2016 9:50:38 PM	R38187
Bromide	0.72	0.10		mg/L	1	10/14/2016 12:06:47 AM	R37942
Phosphorus, Orthophosphate (As P)	ND	10	H	mg/L	20	10/14/2016 12:19:11 AM	R37942
Sulfate	1500	25		mg/L	50	10/25/2016 9:50:38 PM	R38187
Nitrate+Nitrite as N	ND	1.0		mg/L	5	10/14/2016 1:21:13 AM	R37942
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	4900	1.0		µmhos/cm	1	10/18/2016 4:54:00 PM	R38048
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
Total Alkalinity (as CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3210	20.0	*	mg/L	1	10/18/2016 6:58:00 PM	28098
CORROSIVITY						Analyst: **SUB**	
pH	8.23			pH Units	1	10/17/2016	R38745
CYANIDE, REACTIVE						Analyst: **SUB**	
Cyanide, Reactive	0.0250	0.0100		mg/L	1	10/25/2016	R38745
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.10	1.68	H	pH units	1	10/18/2016 4:54:00 PM	R38048
EPA METHOD 7470: MERCURY						Analyst: **DBD**	
Mercury	ND	0.00020		mg/L	1	10/18/2016 5:17:17 PM	28113
MERCURY, TCLP						Analyst: **DBD**	
Mercury	ND	0.020		mg/L	1	10/19/2016 5:06:28 PM	28165
EPA METHOD 6010B: TCLP METALS						Analyst: **MED**	
Arsenic	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Barium	ND	100		mg/L	1	10/24/2016 8:45:55 AM	28191

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **MED**	
Cadmium	ND	1.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Chromium	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Lead	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Selenium	ND	1.0		mg/L	1	10/24/2016 8:45:55 AM	28191
Silver	ND	5.0		mg/L	1	10/24/2016 8:45:55 AM	28191
EPA 6010B: METALS						Analyst: **MED**	
Aluminum	0.31	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Antimony	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Arsenic	0.040	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Barium	ND	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
Beryllium	ND	0.0030		mg/L	1	10/31/2016 10:15:38 AM	28190
Cadmium	ND	0.0020		mg/L	1	10/31/2016 10:15:38 AM	28190
Calcium	96	5.0		mg/L	5	11/7/2016 12:08:14 PM	28190
Chromium	ND	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Cobalt	ND	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Copper	0.017	0.0060		mg/L	1	10/31/2016 10:15:38 AM	28190
Iron	0.14	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Lead	ND	0.0050		mg/L	1	10/31/2016 10:15:38 AM	28190
Magnesium	36	1.0		mg/L	1	11/7/2016 12:04:39 PM	28190
Manganese	0.052	0.0020		mg/L	1	10/31/2016 10:15:38 AM	28190
Nickel	ND	0.010		mg/L	1	10/31/2016 10:15:38 AM	28190
Potassium	120	5.0		mg/L	5	10/31/2016 10:22:16 AM	28190
Selenium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Silver	ND	0.0050		mg/L	1	10/31/2016 10:15:38 AM	28190
Sodium	800	10		mg/L	10	11/7/2016 12:15:14 PM	28190
Thallium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Vanadium	ND	0.050		mg/L	1	10/31/2016 10:15:38 AM	28190
Zinc	0.027	0.020		mg/L	1	10/31/2016 10:15:38 AM	28190
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
2-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetonitrile	58	5.0		µg/L	1	10/20/2016	R38745
Allyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroprene	ND	0.50		µg/L	1	10/20/2016	R38745
Cyclohexane	ND	0.50		µg/L	1	10/20/2016	R38745
Diethyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Epichlorohydrin	ND	100		µg/L	1	10/20/2016	R38745
Ethyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Ethyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Ethyl tert-butyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Freon-113	ND	0.50		µg/L	1	10/20/2016	R38745
Isobutanol	ND	100		µg/L	1	10/20/2016	R38745
Isopropyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methacrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl ethyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl isobutyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Methylcyclohexane	ND	1.0		µg/L	1	10/20/2016	R38745
n-Amyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
n-Hexane	ND	0.50		µg/L	1	10/20/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/20/2016	R38745
Pentachloroethane	ND	5.0		µg/L	1	10/20/2016	R38745
p-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Propionitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Tetrahydrofuran	ND	0.50		µg/L	1	10/20/2016	R38745
Benzene	ND	0.50		µg/L	1	10/20/2016	R38745
Toluene	ND	0.50		µg/L	1	10/20/2016	R38745
Ethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	10/20/2016	R38745
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	10/20/2016	R38745
Naphthalene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetone	4.2	2.5		µg/L	1	10/20/2016	R38745
Bromobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Bromodichloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Bromoform	ND	0.50		µg/L	1	10/20/2016	R38745
Bromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Butanone	ND	2.5		µg/L	1	10/20/2016	R38745
Carbon disulfide	0.96	0.50		µg/L	1	10/20/2016	R38745
Carbon Tetrachloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroform	ND	0.50		µg/L	1	10/20/2016	R38745
Chloromethane	1.1	0.50		µg/L	1	10/20/2016	R38745
2-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
4-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,4-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Dichlorodifluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
2,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
Hexachlorobutadiene	ND	0.50		µg/L	1	10/20/2016	R38745
2-Hexanone	ND	0.50		µg/L	1	10/20/2016	R38745
Isopropylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methylene Chloride	ND	2.5		µg/L	1	10/20/2016	R38745
n-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
n-Propylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
sec-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Styrene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Trichloroethene (TCE)	ND	0.50		µg/L	1	10/20/2016	R38745
Trichlorofluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
mp-Xylenes	ND	1.0		µg/L	1	10/20/2016	R38745

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
o-Xylene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Amyl methyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butyl alcohol	ND	0.50		µg/L	1	10/20/2016	R38745
Acrolein	ND	2.5		µg/L	1	10/20/2016	R38745
Acrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Bromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Iodomethane	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Surr: 1,2-Dichlorobenzene-d4	105	0-0	S	%Rec	1	10/20/2016	R38745
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	10/20/2016	R38745
Surr: Toluene-d8	100	70-130		%Rec	1	10/20/2016	R38745
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
1,1-Biphenyl	ND	1.0		µg/L	1	10/29/2016	R38745
Atrazine	ND	1.0		µg/L	1	10/29/2016	R38745
Benzaldehyde	2.5	1.0		µg/L	1	10/29/2016	R38745
Caprolactam	ND	1.0		µg/L	1	10/29/2016	R38745
N-Nitroso-di-n-butylamine	ND	1.0		µg/L	1	10/29/2016	R38745
Acetophenone	ND	5.0		µg/L	1	10/29/2016	R38745
1-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4,5-Trichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dimethylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2,6-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chloronaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
3,3'-Dichlorobenzidine	ND	5.0		µg/L	1	10/29/2016	R38745
3-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	10/29/2016	R38745

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
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R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
4-Chloroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4-Chlorophenyl phenyl ether	ND	5.0		µg/L	1	10/29/2016	R38745
4-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4-Nitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
Acenaphthene	ND	5.0		µg/L	1	10/29/2016	R38745
Acenaphthylene	ND	5.0		µg/L	1	10/29/2016	R38745
Anthracene	ND	5.0		µg/L	1	10/29/2016	R38745
Benzo(g,h,i)perylene	ND	5.0		µg/L	1	10/29/2016	R38745
Benz(a)anthracene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(a)pyrene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(b)fluoranthene	ND	0.10		µg/L	1	10/29/2016	R38745
Benzo(k)fluoranthene	ND	0.10		µg/L	1	10/29/2016	R38745
Bis(2-chloroethoxy)methane	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-chloroethyl)ether	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-chloroisopropyl)ether	ND	5.0		µg/L	1	10/29/2016	R38745
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Butyl benzyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Carbazole	ND	5.0		µg/L	1	10/29/2016	R38745
Chrysene	ND	0.10		µg/L	1	10/29/2016	R38745
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	10/29/2016	R38745
Dibenzofuran	ND	5.0		µg/L	1	10/29/2016	R38745
Diethyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Dimethyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Di-n-butyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Di-n-octyl phthalate	ND	5.0		µg/L	1	10/29/2016	R38745
Fluoranthene	ND	5.0		µg/L	1	10/29/2016	R38745
Fluorene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachlorobenzene	ND	1.0		µg/L	1	10/29/2016	R38745
Hexachlorobutadiene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachlorocyclopentadiene	ND	5.0		µg/L	1	10/29/2016	R38745
Hexachloroethane	ND	5.0		µg/L	1	10/29/2016	R38745
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	10/29/2016	R38745
Isophorone	ND	5.0		µg/L	1	10/29/2016	R38745
Naphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/29/2016	R38745
N-Nitrosodi-n-propylamine	ND	5.0		µg/L	1	10/29/2016	R38745
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	10/29/2016	R38745
Pentachlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1610612-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 10/11/2016 9:00:00 AM
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
Phenanthrene	ND	5.0		µg/L	1	10/29/2016	R38745
Phenol	ND	5.0		µg/L	1	10/29/2016	R38745
Pyrene	ND	5.0		µg/L	1	10/29/2016	R38745
o-Toluidine	ND	2.0		µg/L	1	10/29/2016	R38745
Pyridine	ND	5.0		µg/L	1	10/29/2016	R38745
1,2,4,5-Tetrachlorobenzene	ND	5.0		µg/L	1	10/29/2016	R38745
Surr: 2,4,6-Tribromophenol	103	63-110		%Rec	1	10/29/2016	R38745
Surr: 2-Fluorobiphenyl	92.4	58-112		%Rec	1	10/29/2016	R38745
Surr: 2-Fluorophenol	87.2	47-109		%Rec	1	10/29/2016	R38745
Surr: Nitrobenzene-d5	83.6	58-110		%Rec	1	10/29/2016	R38745
Surr: Phenol-d5	85.4	52-105		%Rec	1	10/29/2016	R38745
Surr: Terphenyl-d14	46.0	22-133		%Rec	1	10/29/2016	R38745

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1610612-002
Matrix: TRIP BLANK
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Acetonitrile	ND	5.0		µg/L	1	10/20/2016	R38745
Allyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroprene	ND	0.50		µg/L	1	10/20/2016	R38745
Cyclohexane	ND	0.50		µg/L	1	10/20/2016	R38745
Diethyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Epichlorohydrin	ND	100		µg/L	1	10/20/2016	R38745
Ethyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Ethyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Ethyl tert-butyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Freon-113	ND	0.50		µg/L	1	10/20/2016	R38745
Isobutanol	ND	100		µg/L	1	10/20/2016	R38745
Isopropyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methacrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl ethyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl isobutyl ketone	ND	2.5		µg/L	1	10/20/2016	R38745
Methyl methacrylate	ND	2.5		µg/L	1	10/20/2016	R38745
Methylcyclohexane	ND	1.0		µg/L	1	10/20/2016	R38745
n-Amyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
n-Hexane	ND	0.50		µg/L	1	10/20/2016	R38745
Nitrobenzene	ND	5.0		µg/L	1	10/20/2016	R38745
Pentachloroethane	ND	5.0		µg/L	1	10/20/2016	R38745
p-isopropyltoluene	ND	0.50		µg/L	1	10/20/2016	R38745
Propionitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Tetrahydrofuran	ND	0.50		µg/L	1	10/20/2016	R38745
Benzene	ND	0.50		µg/L	1	10/20/2016	R38745
Toluene	ND	0.50		µg/L	1	10/20/2016	R38745
Ethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	10/20/2016	R38745
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	10/20/2016	R38745
Naphthalene	ND	0.50		µg/L	1	10/20/2016	R38745
Acetone	ND	2.5		µg/L	1	10/20/2016	R38745
Bromobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Bromodichloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Bromoform	ND	0.50		µg/L	1	10/20/2016	R38745
Bromomethane	ND	0.50		µg/L	1	10/20/2016	R38745

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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1610612-002
Matrix: TRIP BLANK
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
2-Butanone	ND	2.5		µg/L	1	10/20/2016	R38745
Carbon disulfide	ND	0.50		µg/L	1	10/20/2016	R38745
Carbon Tetrachloride	ND	0.50		µg/L	1	10/20/2016	R38745
Chlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Chloroform	ND	0.50		µg/L	1	10/20/2016	R38745
Chloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
4-Chlorotoluene	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
Dibromomethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,4-Dichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Dichlorodifluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloroethene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,3-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
2,2-Dichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
Hexachlorobutadiene	ND	0.50		µg/L	1	10/20/2016	R38745
2-Hexanone	ND	0.50		µg/L	1	10/20/2016	R38745
Isopropylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Methylene Chloride	ND	2.5		µg/L	1	10/20/2016	R38745
n-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
n-Propylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
sec-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
Styrene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butylbenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,2-DCE	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745

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

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1610612-002
Matrix: TRIP BLANK
Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,1-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,1,2-Trichloroethane	ND	0.50		µg/L	1	10/20/2016	R38745
Trichloroethene (TCE)	ND	0.50		µg/L	1	10/20/2016	R38745
Trichlorofluoromethane	ND	0.50		µg/L	1	10/20/2016	R38745
1,2,3-Trichloropropane	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl chloride	ND	0.50		µg/L	1	10/20/2016	R38745
mp-Xylenes	ND	1.0		µg/L	1	10/20/2016	R38745
o-Xylene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Amyl methyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butyl alcohol	ND	0.50		µg/L	1	10/20/2016	R38745
Acrolein	ND	2.5		µg/L	1	10/20/2016	R38745
Acrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Bromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
Iodomethane	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Surr: 1,2-Dichlorobenzene-d4	102	0-0	S	%Rec	1	10/20/2016	R38745
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	10/20/2016	R38745
Surr: Toluene-d8	98.0	70-130		%Rec	1	10/20/2016	R38745

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Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R37942**	RunNo: **37942**
Prep Date:	Analysis Date: **10/13/2016**	SeqNo: **1182401** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R37942**	RunNo: **37942**
Prep Date:	Analysis Date: **10/13/2016**	SeqNo: **1182402** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	107	90	110			
Bromide	2.6	0.10	2.500	0	103	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.6	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.3	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R38187**	RunNo: **38187**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1193019** 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: **R38187**	RunNo: **38187**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1193020** 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	96.7	90	110			
Sulfate	9.9	0.50	10.00	0	99.1	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/20/2016**	SeqNo: **1210379** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Ethyl methacrylate	ND	2.5								
Isobutanol	ND	10								
Methacrylonitrile	ND	2.5								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	2.5								
Propionitrile	ND	2.5								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Acetone	ND	2.5								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								
Bromomethane	ND	0.50								
2-Butanone	ND	2.5								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/20/2016**	SeqNo: **1210379** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.50								
2-Hexanone	ND	0.50								
Methylene Chloride	ND	2.5								
Styrene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	2.5								
Bromochloromethane	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								

Sample ID **LCS-R38745**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/20/2016**	SeqNo: **1210380** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.7	0	10.00	0	96.7	80	120			
Toluene	9.7	0	10.00	0	97.2	80	120			
Ethylbenzene	9.8	0	10.00	0	98.0	80	120			
Chlorobenzene	9.8	0	10.00	0	97.8	80	120			
1,1-Dichloroethene	9.7	0	10.00	0	96.7	80	120			
Tetrachloroethene (PCE)	9.5	0	10.00	0	95.0	80	120			
Trichloroethene (TCE)	9.7	0	10.00	0	96.6	80	120			
o-Xylene	10	0	10.00	0	102	80	120			

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/29/2016**	SeqNo: **1210383** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetophenone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,3,4,6-Tetrachlorophenol	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3,3'-Dichlorobenzidine	ND	5.0								
3-Nitroaniline	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
4-Bromophenyl phenyl ether	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benz(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ether	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	5.0								
Carbazole	ND	5.0								

Qualifiers:

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/29/2016**	SeqNo: **1210383** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	2.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
o-Toluidine	ND	5.0								
Pyridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID **LCS-R38745**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/29/2016**	SeqNo: **1210384** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.5	0	5.000	0	110	49	134			
2-Chlorophenol	4.6	0	5.000	0	91.4	50	131			
4-Chloro-3-methylphenol	5.1	0	5.000	0	102	42	139			
4-Nitrophenol	5.5	0	5.000	0	110	19	137			
Acenaphthene	5.0	0	5.000	0	101	36	122			
Bis(2-ethylhexyl)phthalate	4.9	0	5.000	0	98.6	43	142			
N-Nitrosodi-n-propylamine	4.3	0	5.000	0	86.8	46	140			

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS-R38745**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/29/2016**	SeqNo: **1210384** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	5.5	0	5.000	0	111	22	138			
Phenol	4.7	0	5.000	0	94.4	45	134			
Pyrene	4.5	0	5.000	0	90.8	45	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID	**MB-28113**	SampType: **MBLK**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID: **28113**			RunNo: **38030**					
Prep Date:	**10/17/2016**	Analysis Date: **10/18/2016**			SeqNo: **1185736**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	**LCS-28113**	SampType: **LCS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID: **28113**			RunNo: **38030**					
Prep Date:	**10/17/2016**	Analysis Date: **10/18/2016**			SeqNo: **1185737**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.6	80	120			

Sample ID	**1610612-001BMS**	SampType: **MS**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **28113**			RunNo: **38030**					
Prep Date:	**10/17/2016**	Analysis Date: **10/18/2016**			SeqNo: **1185804**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0061	0.00020	0.005000	0.0001625	118	75	125			

Sample ID	**1610612-001BMSD**	SampType: **MSD**			TestCode: **EPA Method 7470: Mercury**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **28113**			RunNo: **38030**					
Prep Date:	**10/17/2016**	Analysis Date: **10/18/2016**			SeqNo: **1185805**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0059	0.00020	0.005000	0.0001625	114	75	125	3.16	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-28165**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **28165**	RunNo: **38056**
Prep Date: **10/19/2016**	Analysis Date: **10/19/2016**	SeqNo: **1186813** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-28165**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **28165**	RunNo: **38056**
Prep Date: **10/19/2016**	Analysis Date: **10/19/2016**	SeqNo: **1186814** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	104	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-28191**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **28191**	RunNo: **38144**
Prep Date: **10/20/2016**	Analysis Date: **10/24/2016**	SeqNo: **1190360** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-28191**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **28191**	RunNo: **38144**
Prep Date: **10/20/2016**	Analysis Date: **10/24/2016**	SeqNo: **1190361** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	108	80	120			
Barium	ND	100	0.5000	0	96.0	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	97.0	80	120			
Lead	ND	5.0	0.5000	0	93.2	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	106	80	120			

Sample ID **TCLP FL#2-2661**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **28191**	RunNo: **38144**
Prep Date: **10/20/2016**	Analysis Date: **10/24/2016**	SeqNo: **1190451** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-28190**	SampType: **MBLK**	TestCode: **EPA 6010B: Metals**
Client ID: **PBW**	Batch ID: **28190**	RunNo: **38332**
Prep Date: **10/20/2016**	Analysis Date: **10/31/2016**	SeqNo: **1196520** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-28190**	SampType: **LCS**	TestCode: **EPA 6010B: Metals**
Client ID: **LCSW**	Batch ID: **28190**	RunNo: **38332**
Prep Date: **10/20/2016**	Analysis Date: **10/31/2016**	SeqNo: **1196521** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.55	0.020	0.5000	0	109	80	120			
Antimony	0.49	0.050	0.5000	0	98.4	80	120			
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.50	0.020	0.5000	0	100	80	120			
Beryllium	0.53	0.0030	0.5000	0	106	80	120			
Cadmium	0.51	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	99.5	80	120			
Cobalt	0.49	0.0060	0.5000	0	97.7	80	120			
Copper	0.50	0.0060	0.5000	0	99.6	80	120			
Iron	0.50	0.050	0.5000	0	101	80	120			
Lead	0.50	0.0050	0.5000	0	99.5	80	120			
Manganese	0.50	0.0020	0.5000	0	100	80	120			
Nickel	0.50	0.010	0.5000	0	99.9	80	120			
Potassium	50	1.0	50.00	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS-28190**	SampType: **LCS**	TestCode: **EPA 6010B: Metals**
Client ID: **LCSW**	Batch ID: **28190**	RunNo: **38332**
Prep Date: **10/20/2016**	Analysis Date: **10/31/2016**	SeqNo: **1196521** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.49	0.050	0.5000	0	99.0	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			
Thallium	0.49	0.050	0.5000	0	98.9	80	120			
Vanadium	0.53	0.050	0.5000	0	105	80	120			
Zinc	0.50	0.020	0.5000	0	101	80	120			

Sample ID **1610612-001BMS**	SampType: **MS**	TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **28190**	RunNo: **38332**
Prep Date: **10/20/2016**	Analysis Date: **10/31/2016**	SeqNo: **1196523** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.89	0.020	0.5000	0.3134	115	75	125			
Antimony	0.47	0.050	0.5000	0	94.3	75	125			
Arsenic	0.57	0.020	0.5000	0.04017	106	75	125			
Barium	0.50	0.020	0.5000	0.01602	96.0	75	125			
Beryllium	0.51	0.0030	0.5000	0	102	75	125			
Cadmium	0.50	0.0020	0.5000	0	99.7	75	125			
Chromium	0.47	0.0060	0.5000	0	94.3	75	125			
Cobalt	0.47	0.0060	0.5000	0.003260	93.6	75	125			
Copper	0.53	0.0060	0.5000	0.01704	103	75	125			
Iron	0.63	0.050	0.5000	0.1353	98.3	75	125			
Lead	0.47	0.0050	0.5000	0	94.8	75	125			
Manganese	0.53	0.0020	0.5000	0.05227	95.7	75	125			
Nickel	0.49	0.010	0.5000	0.006520	95.7	75	125			
Selenium	0.52	0.050	0.5000	0	103	75	125			
Silver	0.10	0.0050	0.1000	0	104	75	125			
Thallium	0.46	0.050	0.5000	0.01260	89.8	75	125			
Vanadium	0.52	0.050	0.5000	0.006120	103	75	125			
Zinc	0.53	0.020	0.5000	0.02719	99.6	75	125			

Sample ID **1610612-001BMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **28190**	RunNo: **38332**
Prep Date: **10/20/2016**	Analysis Date: **10/31/2016**	SeqNo: **1196524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.88	0.020	0.5000	0.3134	114	75	125	0.858	20	
Antimony	0.45	0.050	0.5000	0	90.8	75	125	3.77	20	
Arsenic	0.55	0.020	0.5000	0.04017	103	75	125	2.57	20	
Barium	0.49	0.020	0.5000	0.01602	94.6	75	125	1.42	20	
Beryllium	0.51	0.0030	0.5000	0	101	75	125	1.17	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- 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
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **1610612-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Metals**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38332**

Prep Date: **10/20/2016** Analysis Date: **10/31/2016** SeqNo: **1196524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.49	0.0020	0.5000	0	98.2	75	125	1.47	20	
Chromium	0.46	0.0060	0.5000	0	92.6	75	125	1.81	20	
Cobalt	0.46	0.0060	0.5000	0.003260	91.8	75	125	1.92	20	
Copper	0.54	0.0060	0.5000	0.01704	104	75	125	0.996	20	
Iron	0.64	0.050	0.5000	0.1353	102	75	125	2.59	20	
Lead	0.47	0.0050	0.5000	0	93.8	75	125	1.05	20	
Manganese	0.52	0.0020	0.5000	0.05227	94.4	75	125	1.23	20	
Nickel	0.48	0.010	0.5000	0.006520	94.3	75	125	1.45	20	
Selenium	0.51	0.050	0.5000	0	102	75	125	1.76	20	
Silver	0.10	0.0050	0.1000	0	103	75	125	1.49	20	
Thallium	0.45	0.050	0.5000	0.01260	86.9	75	125	3.22	20	
Vanadium	0.51	0.050	0.5000	0.006120	101	75	125	1.60	20	
Zinc	0.52	0.020	0.5000	0.02719	98.2	75	125	1.35	20	

Sample ID **1610612-001BMS** SampType: **MS** TestCode: **EPA 6010B: Metals**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38332**

Prep Date: **10/20/2016** Analysis Date: **10/31/2016** SeqNo: **1196526** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	180	5.0	50.00	123.0	104	75	125			

Sample ID **1610612-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Metals**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38332**

Prep Date: **10/20/2016** Analysis Date: **10/31/2016** SeqNo: **1196527** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	180	5.0	50.00	123.0	123	75	125	5.31	20	

Sample ID **MB-28190** SampType: **MBLK** TestCode: **EPA 6010B: Metals**

Client ID: **PBW** Batch ID: **28190** RunNo: **38490**

Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202197** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Sodium	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS-28190** SampType: **LCS** TestCode: **EPA 6010B: Metals**
Client ID: **LCSW** Batch ID: **28190** RunNo: **38490**
Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202198** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	52	1.0	50.00	0	103	80	120			
Sodium	51	1.0	50.00	0	102	80	120			

Sample ID **1610612-001BMS** SampType: **MS** TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38490**
Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202200** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	86	1.0	50.00	35.82	100	75	125			

Sample ID **1610612-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38490**
Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202201** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	86	1.0	50.00	35.82	101	75	125	0.560	20	

Sample ID **1610612-001BMS** SampType: **MS** TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38490**
Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202203** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	140	5.0	50.00	95.77	95.5	75	125			

Sample ID **1610612-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Metals**
Client ID: **WDW-1,2,&3 Effluen** Batch ID: **28190** RunNo: **38490**
Prep Date: **10/20/2016** Analysis Date: **11/7/2016** SeqNo: **1202211** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	150	5.0	50.00	95.77	105	75	125	3.14	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- 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
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1210388** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID **LCS-R38745**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/25/2016**	SeqNo: **1210389** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.542		0.5000	0	108	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R38745**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**
Client ID: **PBW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1210391** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R38745**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R38745**	RunNo: **38745**
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1210392** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.16		0.2000	0	80.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R38048**	RunNo: **38048**							
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1186486**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R38048**	RunNo: **38048**							
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1186487**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80.60	20.00	80.00	0	101	90	110			

Sample ID **mb-2**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R38048**	RunNo: **38048**							
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1186510**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-2**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R38048**	RunNo: **38048**							
Prep Date:	Analysis Date: **10/18/2016**	SeqNo: **1186511**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	81.52	20.00	80.00	0	102	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **1610612-001ADUP** SampType: **DUP** TestCode: **Specific Gravity**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R38258** RunNo: **38258**

Prep Date: Analysis Date: **10/27/2016** SeqNo: **1193976** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9993	0						0.0400	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1610612**

16-Nov-16

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-28098**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **28098**	RunNo: **38034**
Prep Date: **10/17/2016**	Analysis Date: **10/18/2016**	SeqNo: **1185818** 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-28098**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **28098**	RunNo: **38034**
Prep Date: **10/17/2016**	Analysis Date: **10/18/2016**	SeqNo: **1185819** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1050	20.0	1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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: NAVAJO REFINING CO Work Order Number: 1610612 RcptNo: 1

Received by/date: AC 10/13/16

Logged By: Ashley Gallegos 10/13/2016 8:30:00 AM AG

Completed By: Ashley Gallegos 10/13/2016 11:20:49 AM AG

Reviewed By: JC 10/23/16 JC 10/13/16

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 2 (<2 or >12 unless noted)

Adjusted? No

Checked by: AS

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: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 167796

Project Manager:

Micki Schultz / Scott Denton / Mike Holder

Sampler: Brady Hubbard

On Ice: X 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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1610C12	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X	
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X					
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X				
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X			
10/11/16	9:00	Liquid	Trip Blank	2	Neat	-002		X					
10/11/16	9:00	Liquid	Temperature Blank	1	Neat								

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
10-11-16	11:00	Brady Hubbard	Lindsey Concha	10/13/16	0830
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Send results to Scott Denton, Mike Holder, Robert Combs and Andrew Contreras.

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.

District I
P. O. Box 1980, Hobbs, NM 88241-1980
District II
P. O. Drawer DD, Artesia, NM 88211-0719
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

P. O. Box 6429
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

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2 Operator NAVAJO REFINING CO | **3 OGRID:** 15694 | **4 Month/Year** 01/2016

501 E MAIN PO BOX 159, ARTESIA, N.M. 88210 | **6 Page 1**

		INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW-1	D	143,486	1,377	W												
30-015-20894 WDW-2	D	90,343	1,329	W												
78890 ILLINOIS CAMP;MORROW NORTH																
30-015-26575 WDW-3	D	161,554	1,377	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	Date	Phone Number
	Randy Dade Environmental Specialist	4/18/2016	**575-748-3311**

District I
P. O. Box 1980, Hobbs, NM 88241-1980
District II
P. O. Drawer DD, Artesia, NM 88211-0719
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2 Operator NAVAJO REFINING CO | **3 OGRID:** 15694 | **4 Month/Year** 02/2016

501 E MAIN PO BOX 159, ARTESIA, N.M. 88210 | **6 Page** 1

		INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/conden-sate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Prod-uced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW-1	D	134,743	1,399	W												
30-015-20894 WDW-2	D	105,943	1,394	W												
78890 ILLINOIS CAMP;MORROW NORTH																
30-015-26575 WDW-3	D	160,457	1,387	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	Date	Phone Number
	Randy Dade, Environmental Specialist	4/18/2016	575-748-3311

District I
P. O. Box 1980, Hobbs, NM 88241-1980
District II
P. O. Drawer DD, Artesia, NM 88211-0719
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1000 Rio Brazos, Aztec, NM 84710

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2 Operator NAVAJO REFINING CO | **3 OGRID:** 15694 | **4 Month/Year** 03/2016

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		INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW-1	D	137,109	1,389	W												
30-015-20894 WDW-2	D	112,663	1,385	W												
78890 ILLINOIS CAMP;MORROW NORTH																
30-015-26575 WDW-3	D	167,931	1,384	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	Date	Phone Number
	Randy Dade, Environmental Specialist	4/18/2016	575-748-3311

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 04/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 **6 Page** 1 of 4

7 POOL NO. AND NAME / Property No. and Name / Well No. & U-L-S-T-R / API No.	8 CODE 1	INJECTION 9 Volume	INJECTION 10 Pressure	11 CODE 2	PRODUCTION 12 Barrels of Oil/condensate produced	PRODUCTION 13 Barrels of water produced	PRODUCTION 14 MCF Gas Produced	PRODUCTION 15 Days Produced	16 CODE 3	DISPOSITION OF OIL, GAS, AND WATER 17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	133,178	1,361	W												
30-015-20894 WDW - 2	D	109,111	1,360	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	161,973	1,355	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	7/14/2016	575-746-5281

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
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1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
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2 Operator NAVAJO REFINERY CO. | **3 OGRID:** 15694 | **4** 05/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 | **6 Page 1 of 4**

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	143,265	1,387	W												
30-015-20894 WDW - 2	D	119,407	1,388	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	170,061	1,375	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

L. R. DADE	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	07/14/216	575-746-5281
Signature	**Printed Name & Title**	**E-Mail Address**	**Date**	**Phone Number**

District I
1625 North French, Hobbs, NM 88241
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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 06/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 **6** Page 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER						
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	141,316	1,343	W												
30-015-20894 WDW - 2	D	103,015	1,315	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	151,485	1,313	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	07/14/216	575-746-5281

District I
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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 07/2016

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		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	133,920	1,290	W												
30-015-20894 WDW - 2	D	106,285	1,307	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	145,611	1,256	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

L. R. DADE	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	11/9/2016	575-746-5281
Signature	**Printed Name & Title**	**E-Mail Address**	**Date**	**Phone Number**

District I
1625 North French, Hobbs, NM 88241
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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 08/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 **6 Page 1 of 4**

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	140,297	1,312	W												
30-015-20894 WDW - 2	D	102,034	1,294	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	151,989	1,311	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

L. R. DADE	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	11/9/2016	575-746-5281
Signature	**Printed Name & Title**	**E-Mail Address**	**Date**	**Phone Number**

District I
1625 North French, Hobbs, NM 88241
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811 S. First St., Artesia, NM 88210
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State of New Mexico
Energy, Minerals & Natural Resources Department

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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 09/2016

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		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	147,086	1,363	W												
30-015-20894 WDW - 2	D	121,371	1,360	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	162,514	1,340	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

L. R. DADE	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	11/9/16	575-746-5281
Signature	**Printed Name & Title**	**E-Mail Address**	**Date**	**Phone Number**

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
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2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 10/2016

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		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	117,977	1,212	W												
30-015-20894 WDW - 2	D	88,217	1,211	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	132,857	1,214	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	11/9/16	575-746-5281

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South Saint Francis Drive
Santa Fe, NM 87505

OPERATOR'S MONTHLY REPORT

Form C-115 First Page
Revised January 22, 2004
Instruction on Reverse Side
1 ☐ **Amended Report**

2 Operator NAVAJO REFINERY CO. **3 OGRID:** 15694 **4** 11/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 **6 Page** 1 of 4

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	115,049	1,222	W												
30-015-20894 WDW - 2	D	82,295	1,201	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	114,007	1,177	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

Signature	Printed Name & Title	E-Mail Address	Date	Phone Number
	L. R. DADE ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	2/21/17	575-746-5281

District I
1625 North French, Hobbs, NM 88241
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 84710

State of New Mexico
Energy, Minerals & Natural Resources Department

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1220 South Saint Francis Drive
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OPERATOR'S MONTHLY REPORT

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2 Operator NAVAJO REFINERY CO. | **3 OGRID:** 15694 | **4** 12/2016

5 Address: 501 E. MAIN PO BOX 159, ARTESIA, NM. 88210 | **6 Page 1 of 4**

		INJECTION			PRODUCTION				DISPOSITION OF OIL, GAS, AND WATER							
7 POOL NO. AND NAME Property No. and Name Well No. & U-L-S-T-R API No.	8 CODE 1	9 Volume	10 Pressure	11 CODE 2	12 Barrels of Oil/condensate produced	13 Barrels of water produced	14 MCF Gas Produced	15 Days Produced	16 CODE 3	17 Point of Disposition	18 Gas BTU or Oil API Gravity	19 Oil on hand at beginning of month	20 Volume (Bbls/mcf)	21 Transporter Ogrid	22 CODE 4	23 Oil on hand at end of month
96918 NAVAJO PERMO-PENN																
30-015-27592 WDW - 1	D	131,683	1,320	W												
30-015-20894 WDW - 2	D	122,241	1,308	W												
78890 ILLINOIS CAMP; MORROW NORTH																
30-015-26575 WDW - 3	D	147,616	1,310	W												

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.
24

L. R. DADE	ENVIR. SPEC.	Lewis.Dade@hollyfrontier.com	2/21/2017	575-746-5281
Signature	**Printed Name & Title**	**E-Mail Address**	**Date**	**Phone Number**

APPENDIX B.2

Refinery Discharges – Treated Wastewater to Artesia POTW

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM		Total Discharge to COA GPM
1/1/16	18	0	18	2.8		20.8
1/2/16	37	0	37	1.5		38.5
1/3/16	48	0	48	0.0		48.0
1/4/16	57	0	57	0.0		57.0
1/5/16	51	33	84	0.6	Y1 blowdown meter repaired.	84.6
1/6/16	51	32	83	2.0		85.0
1/7/16	53	32	85	0.0		85.0
1/8/16	52	30	82	0.0		82.0
1/9/16	57	26	83	2.3		85.3
1/10/16	56	23	79	0.5		79.5
1/11/16	57	23	80	0.0		80.0
1/12/16	54	22	76	0.0		76.0
1/13/16	55	22	77	0.0		77.0
1/14/16	56	22	78	0.0		78.0
1/15/16	53	21	74	0.0		74.0
1/16/16	57	20	77	0.3		77.3
1/17/16	56	20	76	0.0		76.0
1/18/16	58	19	77	0.0		77.0
1/19/16	56	19	75	0.0		75.0
1/20/16	54	16	70	0.0		70.0
1/21/16	56	16	72	0.0		72.0
1/22/16	56	15	71	0.0		71.0
1/23/16	57	15	72	0.0		72.0
1/24/16	51	15	66	0.0		66.0
1/25/16	55	14	69	0.0		69.0
1/26/16	55	14	69	0.0		69.0
1/27/16	56	13	69	0.0		69.0
1/28/16	57	12	69	0.0		69.0
1/29/16	52	12	64	0.0		64.0
1/30/16	60	11	71	0.0		71.0
1/31/16	53	10	63	0.0		63.0
2/1/16	31	13	44	0.0	Y-11 blocked in due to leak on FFC OH water coolers @ 12 noon on 2/1/2016.	44.0
2/2/16	0	20	20	0.0		20.0
2/3/16	0	18	18	0.0		18.0
2/4/16	0	18	18	0.0		18.0
2/5/16	0	18	18	0.0		18.0
2/6/16	0	18	18	0.0		18.0

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM		Total Discharge to COA GPM
2/7/16	0	16	16	0.0		16.0
2/8/16	0	12	12	0.0		12.0
2/9/16	0	10	10	0.0		10.0
2/10/16	0	10	10	0.0		10.0
2/11/16	0	9	9	0.0		9.0
2/12/16	0	9	9	0.0		9.0
2/13/16	0	9	9	0.0		9.0
2/14/16	0	9	9	0.0		9.0
2/15/16	31	6	37	0.0	Y-11 opened back up after leaking exchanger was taken off line for repairs.	37.0
2/16/16	49	8	57	0.0		57.0
2/17/16	55	9	64	0.0		64.0
2/18/16	57	9	66	0.0		66.0
2/19/16	58	10	68	0.0		68.0
2/20/16	59	9	68	0.0		68.0
2/21/16	59	10	69	0.0		69.0
2/22/16	59	9	68	0.0		68.0
2/23/16	59	9	68	0.0		68.0
2/24/16	59	9	68	0.0		68.0
2/25/16	59	10	69	0.0		69.0
2/26/16	59	10	69	0.0		69.0
2/27/16	59	10	69	0.0		69.0
2/28/16	60	11	71	0.0		71.0
2/29/16	52	13	65	0.0		65.0
3/1/16	48	21	69	0.0		69.0
3/2/16	57	23	80	0.0		80.0
3/3/16	55	22	77	0.0		77.0
3/4/16	52	26	78	0.0		78.0
3/5/16	53	23	76	0.0		76.0
3/6/16	53	22	75	0.0		75.0
3/7/16	54	21	75	0.0		75.0
3/8/16	55	21	76	0.0		76.0
3/9/16	55	21	76	0.0		76.0
3/10/16	54	21	75	0.0		75.0
3/11/16	54	22	76	0.0		75.7
3/12/16	54	21	75	0.0		74.9
3/13/16	55	19	73	0.0		73.5
3/14/16	55	18	73	0.0		73.4
3/15/16	55	18	73	0.0		73.2

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
3/16/16	55	18	73	0.0	73.2
3/17/16	56	16	72	0.0	71.9
3/18/16	55	18	73	0.0	73.0
3/19/16	54	19	73	0.0	73.0
3/20/16	54	19	74	0.0	73.7
3/21/16	54	18	72	0.0	72.0
3/22/16	55	15	70	0.0	70.0
3/23/16	56	14	70	0.0	70.0
3/24/16	56	15	71	0.0	71.0
3/25/16	56	15	71	0.0	71.0
3/26/16	57	14	71	0.0	71.0
3/27/16	57	12	69	0.0	69.0
3/28/16	56	17	73	0.0	73.0
3/29/16	50	34	84	0.0	84.0
3/30/16	51	32	83	0.0	83.0
3/31/16	50	30	80	0.0	80.0
4/1/16	52	30	82	0.0	82.0
4/2/16	53	29	82	0.0	82.0
4/3/16	53	28	81	0.0	81.0
4/4/16	55	18	73	0.0	73.0
4/5/16	58	12	70	0.0	70.0
4/6/16	59	5	64	0.0	64.0
4/7/16	60	4	64	0.0	64.0
4/8/16	61	0	61	0.0	61.0
4/9/16	60	0	60	0.0	60.0
4/10/16	60	0	60	0.0	60.0
4/11/16	60	0	60	0.0	60.0
4/12/16	60	0	60	0.0	60.0
4/13/16	60	0	60	0.0	60.0
4/14/16	61	0	61	0.0	61.0
4/15/16	37	14	51	0.0	51.0
4/16/16	37	33	70	0.0	70.0
4/17/16	53	27	80	0.0	80.0
4/18/16	55	22	77	0.0	77.0
4/19/16	55	22	77	0.0	77.0
4/20/16	56	17	73	0.0	73.0
4/21/16	58	15	73	0.0	72.6
4/22/16	58	13	71	0.0	71.2

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
4/23/16	58	14	73	0.0	72.6
4/24/16	59	13	71	0.0	71.4
4/25/16	55	12	67	0.0	67.3
4/26/16	58	13	70	0.0	70.4
4/27/16	55	13	68	0.0	68.1
4/28/16	55	13	67	8.9	76.2
4/29/16	55	12	66	0.0	66.4
4/30/16	54	12	66	0.0	66.0
5/1/16	51	13	64	0.0	63.6
5/2/16	50	13	63	0.0	62.8
5/3/16	51	12	64	0.0	63.6
5/4/16	49	14	63	0.0	62.8
5/5/16	50	11	61	0.0	60.6
5/6/16	60	7	66	0.0	66.3
5/7/16	60	7	66	0.0	66.2
5/8/16	60	7	67	0.0	66.8
5/9/16	60	8	68	0.0	68.1
5/10/16	60	9	69	0.6	69.4
5/11/16	59	9	69	0.0	68.6
5/12/16	60	9	68	0.0	68.2
5/13/16	60	10	69	0.0	69.4
5/14/16	60	9	69	0.0	69.3
5/15/16	60	7	67	0.0	67.2
5/16/16	60	6	66	0.0	66.4
5/17/16	60	5	65	0.0	65.1
5/18/16	61	3	64	0.0	64.0
5/19/16	60	3	63	0.0	63.0
5/20/16	61	2	63	0.0	63.0
5/21/16	56	0	56	0.0	56.0
5/22/16	56	0	56	0.0	56.0
5/23/16	56	2	58	0.0	58.0
5/24/16	29	11	40	0.0	40.0
5/25/16	48	15	63	0.0	63.0
5/26/16	57	14	71	0.0	71.0
5/27/16	58	12	70	0.0	70.0
5/28/16	58	12	70	0.0	70.0
5/29/16	58	14	72	0.0	72.0
5/30/16	58	14	72	0.0	72.0

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
5/31/16	61	14	75	0.0	75.0
6/1/16	58	13	71	0.0	71.0
6/2/16	18	16	34	0.0	34.0
6/3/16	27	11	38	0.0	38.0
6/4/16	61	7	68	0.0	68.0
6/5/16	61	7	68	0.0	68.0
6/6/16	61	8	69	0.0	69.0
6/7/16	60	12	72	0.0	72.0
6/8/16	57	18	75	0.0	75.0
6/9/16	56	17	73	0.0	73.0
6/10/16	47	7	54	0.0	54.0
6/11/16	49	0	49	0.0	49.0
6/12/16	56	0	56	0.0	56.0
6/13/16	61	0	61	0.0	61.0
6/14/16	61	0	61	0.0	61.0
6/15/16	61	0	61	0.0	61.0
6/16/16	57	15	72	0.0	72.0
6/17/16	56	18	75	0.0	74.6
6/18/16	56	18	74	0.0	74.3
6/19/16	56	20	76	0.0	76.4
6/20/16	57	19	76	0.0	75.8
6/21/16	57	17	74	0.0	74.3
6/22/16	57	17	74	0.0	73.8
6/23/16	57	17	73	0.0	73.4
6/24/16	57	17	73	0.0	73.4
6/25/16	57	17	74	0.0	73.9
6/26/16	57	18	74	0.0	74.5
6/27/16	57	17	74	0.0	73.7
6/28/16	56	17	73	0.0	73.2
6/29/16	56	17	73	0.0	73.0
6/30/16	54	18	71	0.0	71.5
7/1/16	52	18	70	0.0	70.1
7/2/16	49	17	67	0.0	67.0
7/3/16	52	19	72	0.0	71.6
7/4/16	56	22	78	0.0	77.7
7/5/16	56	21	77	0.0	76.9
7/6/16	56	21	77	0.0	76.6
7/7/16	56	21	76	0.0	76.3

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
7/8/16	56	21	76	0.0	76.2
7/9/16	55	21	76	0.0	76.4
7/10/16	56	21	78	0.0	77.6
7/11/16	56	21	77	0.0	77.0
7/12/16	58	14	72	0.0	72.0
7/13/16	60	7	67	0.0	67.0
7/14/16	60	4	64	0.0	64.0
7/15/16	60	1	61	0.0	61.0
7/16/16	60	3	63	0.0	63.0
7/17/16	61	3	64	0.0	64.0
7/18/16	59	4	63	0.0	63.0
7/19/16	56	20	76	0.0	76.0
7/20/16	49	42	91	0.0	91.0
7/21/16	46	38	84	0.0	84.0
7/22/16	36	32	68	0.0	68.0
7/23/16	30	29	59	0.0	59.0
7/24/16	27	27	54	0.0	54.0
7/25/16	42	26	68	0.0	68.0
7/26/16	54	27	81	0.0	81.0
7/27/16	54	26	80	0.0	80.0
7/28/16	56	20	76	0.0	76.0
7/29/16	54	26	80	0.0	80.0
7/30/16	55	24	79	0.0	79.0
7/31/16	55	21	76	0.0	76.0
8/1/16	57	15	72	0.3	72.3
8/2/16	57	16	73	0.0	73.0
8/3/16	58	13	71	0.0	71.0
8/4/16	60	9	69	0.0	69.0
8/5/16	60	9	69	0.0	69.0
8/6/16	60	9	69	0.0	69.0
8/7/16	60	9	69	1.4	70.4
8/8/16	57	17	74	2.4	76.4
8/9/16	54	22	76	1.6	77.6
8/10/16	49	38	87	0.0	87.0
8/11/16	49	38	87	2.5	89.5
8/12/16	50	38	88	2.9	90.9
8/13/16	50	37	87	2.8	89.8
8/14/16	49	37	86	3.0	89.0

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
8/15/16	50	36	86	1.4	87.4
8/16/16	50	36	86	2.5	88.5
8/17/16	50	37	87	2.9	89.9
8/18/16	54	37	91	0.1	91.1
8/19/16	51	37	88	0.0	88.0
8/20/16	51	38	89	0.0	89.1
8/21/16	52	38	89	0.0	89.5
8/22/16	50	37	86	0.0	86.4
8/23/16	49	36	86	0.0	85.8
8/24/16	35	26	61	0.0	61.4
8/25/16	40	17	56	0.0	56.3
8/26/16	25	28	53	0.0	53.3
8/27/16	42	60	102	0.0	101.9
8/28/16	21	28	49	0.0	49.4
8/29/16	21	30	51	0.0	51.0
8/30/16	42	59	101	0.0	101.0
8/31/16	43	58	101	0.0	101.0
9/1/16	42	58	100	3.0	103.0
9/2/16	43	58	101	0.5	101.5
9/3/16	43	58	101	0.0	101.0
9/4/16	43	58	101	0.0	101.0
9/5/16	41	62	103	0.0	103.0
9/6/16	40	62	102	0.0	102.0
9/7/16	41	62	103	0.0	103.0
9/8/16	41	62	103	0.0	103.0
9/9/16	41	60	101	0.0	101.0
9/10/16	41	58	99	0.0	99.0
9/11/16	42	58	100	0.0	100.0
9/12/16	41	59	100	0.0	100.0
9/13/16	46	44	90	0.0	90.0
9/14/16	59	5	64	0.0	63.8
9/15/16	59	2	61	0.0	60.8
9/16/16	59	0	59	1.5	60.3
9/17/16	59	0	59	0.0	59.3
9/18/16	59	0	59	2.5	61.3
9/19/16	58	3	61	2.8	63.9
9/20/16	58	5	63	2.1	65.4
9/21/16	58	4	62	1.8	63.7

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
9/22/16	58	4	62	1.4	63.7
9/23/16	58	3	61	2.0	63.2
9/24/16	59	0	59	3.0	61.9
9/25/16	59	0	59	3.0	61.8
9/26/16	56	7	63	0.9	63.9
9/27/16	53	24	77	2.8	79.8
9/28/16	54	23	77	2.0	79.0
9/29/16	54	21	75	2.5	77.5
9/30/16	54	21	75	2.9	77.8
10/1/16	52	23	75	3.0	78.4
10/2/16	54	22	76	3.0	79.4
10/3/16	52	22	74	2.0	76.5
10/4/16	51	21	72	2.4	74.5
10/5/16	52	18	69	3.0	72.5
10/6/16	53	16	69	2.8	72.0
10/7/16	38	15	52	3.0	55.3
10/8/16	34	13	47	1.8	48.8
10/9/16	28	14	41	0.0	41.4
10/10/16	30	16	45	0.0	45.2
10/11/16	33	16	49	0.0	49.3
10/12/16	49	15	64	1.6	65.6
10/13/16	44	15	59	3.0	62.0
10/14/16	34	10	44	2.9	46.9
10/15/16	45	13	58	1.8	59.8
10/16/16	61	42	103	1.1	104.1
10/17/16	64	33	97	3.0	100.0
10/18/16	69	48	117	2.9	119.9
10/19/16	68	45	113	3.0	116.0
10/20/16	80	43	123	2.9	125.9
10/21/16	65	45	110	2.9	112.9
10/22/16	69	43	112	0.4	112.4
10/23/16	74	42	116	1.0	117.0
10/24/16	79	41	120	2.9	122.9
10/25/16	69	52	121	0.5	121.5
10/26/16	73	55	128	2.1	130.1
10/27/16	71	54	125	0.0	125.0
10/28/16	78	54	132	0.0	132.0
10/29/16	71	53	124	0.0	124.0

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM		Total Discharge to COA GPM
10/30/16	78	51	129	0.0		129.0
10/31/16	**54**	**51**	105	0.0	Both blowdown meters were calibrated yesterday	105.0
11/1/16	54	52	106	0.0		106.0
11/2/16	53	53	106	2.8		108.8
11/3/16	53	56	109	1.9		110.9
11/4/16	56	47	103	0.0		103.0
11/5/16	60	28	88	0.0		88.0
11/6/16	61	25	86	0.0		86.0
11/7/16	61	23	84	0.0		84.0
11/8/16	60	21	81	0.0		81.0
11/9/16	59	20	79	0.0		79.0
11/10/16	60	19	79	0.0		79.0
11/11/16	53	19	72	0.0		72.0
11/12/16	62	18	80	0.0		80.0
11/13/16	62	18	80	0.0		80.0
11/14/16	62	18	80	0.0		80.0
11/15/16	62	19	81	1.9		82.9
11/16/16	61	20	81	2.9		83.9
11/17/16	61	18	79	2.9		81.9
11/18/16	61	18	79	0.4		79.4
11/19/16	61	17	78	0.0		78.0
11/20/16	60	16	76	3.0		79.0
11/21/16	61	16	76	2.9		79.2
11/22/16	61	15	76	0.6		76.7
11/23/16	61	13	74	1.1		75.4
11/24/16	61	13	74	1.5		75.6
11/25/16	61	13	73	2.4		75.9
11/26/16	60	13	73	2.9		76.4
11/27/16	61	13	74	3.8		78.2
11/28/16	61	13	74	3.0		77.0
11/29/16	55	12	67	2.8		69.8
11/30/16	51	13	64	3.0		67.0
12/1/16	52	13	65	2.1		67.1
12/2/16	61	12	73	1.4		74.4
12/3/16	61	10	71	3.0		74.0
12/4/16	61	10	71	2.5		73.5
12/5/16	62	10	72	2.9		74.9
12/6/16	62	10	72	2.6		74.6

Cooling Tower Blowdown to City	Y-11 GPM	Y-1 GPM	Total GPM	WWT to POTW GPM	Total Discharge to COA GPM
12/7/16	62	9	71	3.0	74.0
12/8/16	62	9	71	0.4	71.4
12/9/16	61	8	69	2.9	71.9
12/10/16	61	9	70	1.6	71.6
12/11/16	62	9	71	2.3	73.3
12/12/16	61	9	70	2.5	72.5
12/13/16	62	1	63	2.9	65.9
12/14/16	61	0	61	2.8	63.8
12/15/16	62	0	62	2.5	64.5
12/16/16	62	0	62	1.6	63.6
12/17/16	63	7	70	2.8	72.8
12/18/16	57	39	96	0.6	96.6
12/19/16	62	22	84	2.9	86.9
12/20/16	62	0	62	3.0	65.0
12/21/16	62	0	62	3.0	65.0
12/22/16	63	0	63	2.1	65.1
12/23/16	63	0	63	1.4	64.4
12/24/16	64	0	64	1.9	65.9
12/25/16	64	0	64	3.0	67.0
12/26/16	62	0	62	2.5	64.5
12/27/16	62	0	62	1.4	63.4
12/28/16	62	1	63	2.5	65.5
12/29/16	60	0	60	3.0	63.0
12/30/16	50	0	50	3.0	53.0
12/31/16	41	0	41	1.7	42.7
		Total gal	37,515,793	348,390	37,864,182
		Total bbl	893,233	8,295	901,528

APPENDIX B.3

Refinery Discharges – RO Reject Water Discharge

HOLLYFRONTIER.

February 11, 2016

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: WQA-OCD-CO-2015-002
Monthly Report – January 2016 Reporting Period

Dear Sirs:

In accordance with Exhibit A, paragraph 5, to Agreed Compliance Order No. WQA-OCD-CO-2015-002 (the Order), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's January 2016 monthly report, for the period of January 1-31, 2016, under the Order.

Specifically, this report covers the January 2016 reporting period and includes the following data and information as required by Exhibit A, Paragraph 2 and Paragraph 5.a – c:

- Daily discharge flow measurements for each reverse osmosis (RO) unit and for all RO units together.
- Calculation of stipulated penalties, if any, required under Section III, Paragraph 2 of the Order.
- Results of the monthly discharge sample results.
- Updates on any new developments related to the treatment and disposal of RO reject fluid at the facility.

A discussion of each topic is provided below and the associated data is provided in Attachments 1 through 3.

Daily RO Reject Fluid Discharge Flow Measurements

Flow rate for the RO reject fluid is monitored from the two permanent RO units and the temporary RO unit on a daily basis. Daily discharge volumes are provided in Attachment 1.

Stipulated Penalties

In accordance with Exhibit A, Paragraph 1 of the Order, Navajo submitted the GW-028 discharge permit modification request on May 22, 2015, prior to 30 days from April 27, 2015, the date of the Order. Therefore, for the entire January reporting period, Paragraph III.2.b.i.2 of the Order is applicable. Stipulated penalties were calculated for each day following Navajo's submittal of the permit modification request, and prior to OCD action on that request, as follows:

- $100 per day for each daily RO reject fluid discharge volume between 10,000 and 15,000 barrels from January 1 through January 31.
- $500 per day for each daily RO reject fluid discharge volume that exceeds 15,000 barrels from January 1 through January 31.

Navajo has calculated a penalty of $2,700 for January 2016. The daily discharge volume exceeded the 10,000 barrels/day (bbl/day) limit, but was under 15,000 barrels total, on 27 days in January. Calculations conducted in accordance with Paragraph III.2.b.i.2 of the Agreed Compliance Order are provided in Attachment 2.

Payment of the stipulated penalty will be sent to the OCD Director's mailing address within 30 days after the date of this monthly report pursuant to Paragraph III.2.b. of the Order.

Monthly Discharge Sample Results

Navajo collected a sample of the RO reject fluid discharge from both the permanent RO units (combined discharge) and the temporary RO unit on January 5, 2016. The analytical lab report for these samples is provided in Attachment 3.

Updates Regarding Treatment and Disposal of RO Reject Fluid

As described in the Order, Navajo is working to enhance its water management system and reduce the total volume of RO reject fluid that is discharged pursuant to its groundwater discharge permit. Navajo is currently preparing a notification to submit to OCD for Discharge Permit GW-028 authorization regarding installation of a third permanent primary RO unit to replace the temporary RO unit and the installation of a secondary RO unit to reduce the total volume of RO reject fluid produced. Navajo is also evaluating options for the underground injection, or other options for discharge, of RO reject fluid.

On January 12, 2016, Navajo submitted formal comments to OCD regarding the draft modified conditions to Discharge Permit GW-028 that were posted for public comment. OCD issued the final modified permit conditions on February 4, 2016.

Navajo is currently preparing an early submittal of the Renewal Application for Discharge Permit GW-028. The Renewal Application will include a permit application for construction and operation of water management ponds for evaporation of RO reject fluid and additional potential fluid streams.

Navajo is committed to proactively meeting the requirements of the Order and working cooperatively with OCD. If you have any questions or comments, please contact me at 575-746-5487.

Sincerely,

Scott M. Denton
Environmental Manager

Enclosures:

Attachment 1: Daily Discharge Flow Rates
Attachment 2: Stipulated Penalty Calculation
Attachment 3: Analytical Lab Report

cc. HFC: D. McWatters, R. O'Brien, M. Holder
OCD: A. Marks, B. Brancard

Attachment 1
Daily Discharge Flow Rates

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Temporary Unit		Daily Discharge Volume
	Metered Data		Combined RO Reject Discharge (Calculated)		Total RO Reject Discharge (Calculated from Log Data)		
	GPM	GPM	GPM	BBL/DAY	GPM	BBL/DAY	BBL
	SOUTH	NORTH					
1/1/2016	124	107	231	7,920	100	3443	11,363
1/2/2016	132	106	238	8,160	100	3440	11,600
1/3/2016	133	108	241	8,263	103	3537	11,800
1/4/2016	136	106	242	8,297	108	3692	11,989
1/5/2016	128	106	234	8,023	105	3593	11,616
1/6/2016	128	105	233	7,989	105	3606	11,595
1/7/2016	129	99	228	7,817	108	3696	11,513
1/8/2016	130	81	211	7,234	113	3873	11,107
1/9/2016	132	72	204	6,994	118	4046	11,040
1/10/2016	129	75	204	6,994	121	4137	11,131
1/11/2016	129	79	208	7,131	117	4016	11,147
1/12/2016	131	83	214	7,337	117	3996	11,333
1/13/2016	131	87	218	7,474	118	4044	11,518
1/14/2016	131	80	211	7,234	121	4146	11,380
1/15/2016	130	75	205	7,029	121	4149	11,178
1/16/2016	130	85	215	7,371	117	4010	11,381
1/17/2016	129	89	218	7,474	117	4021	11,495
1/18/2016	128	81	209	7,166	114	3913	11,079
1/19/2016	131	86	217	7,440	125	4284	11,724
1/20/2016	129	82	211	7,234	119	4090	11,324
1/21/2016	129	85	214	7,337	100	3423	10,760
1/22/2016	127	75	202	6,926	124	4244	11,170
1/23/2016	130	83	213	7,303	125	4285	11,588
1/24/2016	89	82	171	5,863	107	3684	9,547
1/25/2016	95	86	181	6,206	126	4332	10,538
1/26/2016	90	82	172	5,897	129	4406	10,303
1/27/2016	91	79	170	5,829	100	3439	9,268
1/28/2016	90	83	173	5,931	96	3280	9,211
1/29/2016	92	78	170	5,829	79	2717	8,546
1/30/2016	88	92	180	6,171	130	4447	10,618
1/31/2016	94	85	179	6,137	137	4709	10,846

Attachment 2
Stipulated Penalty Calculation

Calculation of Stipulated Penalties – January 2016

Order Section III., Paragraph Number	Penalty	Payment per day	No. of Days (per violation)	Amount
2.b.i	Exceedance of the 10,000 barrel per day RO reject fluid discharge volume limit specified in Discharge Permit GW-028:	--	--	--
2.b.i.1	- **Prior** to Navajo submitting a discharge permit modification application	$1,000		$0
2.b.i.2	- If the daily volume is between 10,000 and 15,000 barrels **after** Navajo submits discharge permit modification application	$100	27	$2,700
2.b.i.2	- If the daily volume exceeds 15,000 barrels **after** Navajo submits discharge permit modification application	$500		$0
2.b.ii	Failure to conduct sampling as required in Exhibit A of Order	$2,000		$0
2.b.iii	Failure to timely submit any report or notifications as required in Exhibit A of Order	$1,000		$0
2.b.iv	Failure to record the daily discharge flow from the permanent and the temporary RO units	$1,000		$0
		Total Amount:		**$2,700**

Attachment 3
Analytical Lab 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

January 28, 2016

Robert Combs

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Monthly RO Reject OrderNo.: 1601099

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2016 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: Navajo Refining Company
Client Sample ID: R.O. Reject
Project: Monthly RO Reject
Collection Date: 1/5/2016 9:30:00 AM
Lab ID: 1601099-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Arsenic	ND	0.0050		mg/L	5	1/6/2016 1:32:23 PM	A31277
Lead	ND	0.0025		mg/L	5	1/6/2016 1:32:23 PM	A31277
Selenium	0.010	0.0050		mg/L	5	1/6/2016 1:32:23 PM	A31277
Uranium	0.0060	0.0025		mg/L	5	1/6/2016 1:32:23 PM	A31277
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: **SUB**	
Radium-226	1.66	0.702		pCi/L	1	1/18/2016	R31549
Radium-226 ±	0.756	0.702		pCi/L	1	1/18/2016	R31549
Radium-228	0.359	0.727		pCi/L	1	1/18/2016	R31549
Radium-228 ±	0.347	0.727		pCi/L	1	1/18/2016	R31549
EPA METHOD 300.0: ANIONS						Analyst: **SRM**	
Fluoride	3.5	2.0		mg/L	20	1/6/2016 7:19:06 PM	R31305
Chloride	490	50		mg/L	100	1/8/2016 2:52:36 PM	R31350
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	1/6/2016 7:19:06 PM	R31305
Nitrogen, Nitrate (As N)	2.0	0.10		mg/L	1	1/6/2016 7:06:41 PM	R31305
Sulfate	2100	50		mg/L	100	1/8/2016 2:52:36 PM	R31350
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	4000	200	*D	mg/L	1	1/9/2016 1:12:00 PM	23119
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: **SUB**	
Cyanide	ND	0.0100		mg/L	1	1/12/2016	R31534
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.90	1.68	H	pH units	1	1/8/2016 6:09:48 PM	R31363
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Aluminum	ND	0.020		mg/L	1	1/7/2016 2:02:10 PM	B31306
Barium	0.062	0.0020		mg/L	1	1/7/2016 2:02:10 PM	B31306
Boron	0.11	0.040		mg/L	1	1/7/2016 2:02:10 PM	B31306
Cadmium	ND	0.0020		mg/L	1	1/7/2016 2:02:10 PM	B31306
Chromium	ND	0.0060		mg/L	1	1/7/2016 2:02:10 PM	B31306
Cobalt	0.0081	0.0060		mg/L	1	1/7/2016 2:02:10 PM	B31306
Copper	ND	0.0060		mg/L	1	1/7/2016 2:02:10 PM	B31306
Iron	ND	0.020		mg/L	1	1/7/2016 2:02:10 PM	B31306
Manganese	ND	0.0020		mg/L	1	1/7/2016 2:02:10 PM	B31306
Molybdenum	ND	0.0080		mg/L	1	1/7/2016 2:02:10 PM	B31306
Nickel	ND	0.010		mg/L	1	1/7/2016 2:02:10 PM	B31306
Silver	ND	0.0050		mg/L	1	1/7/2016 2:02:10 PM	B31306
Zinc	0.028	0.010		mg/L	1	1/7/2016 2:02:10 PM	B31306
EPA METHOD 245.1: MERCURY						Analyst: **pmf**	

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: R.O. Reject
Project: Monthly RO Reject
Collection Date: 1/5/2016 9:30:00 AM
Lab ID: 1601099-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 245.1: MERCURY						Analyst: **pmf**	
Mercury	ND	0.00020		mg/L	1	1/7/2016 5:06:46 PM	23109
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/11/2016 1:44:54 PM	23126
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1221	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1232	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1242	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1248	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1254	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Aroclor 1260	ND	1.0		µg/L	1	1/18/2016 1:31:00 PM	23160
Surr: Decachlorobiphenyl	84.0	17.7-151		%REC	1	1/18/2016 1:31:00 PM	23160
Surr: Tetrachloro-m-xylene	53.2	20.6-151		%REC	1	1/18/2016 1:31:00 PM	23160
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/11/2016 11:03:11 AM	23110
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/11/2016 11:03:11 AM	23110
Surr: DNOP	104	70-141		%REC	1	1/11/2016 11:03:11 AM	23110
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/7/2016 11:23:15 AM	A31304
Surr: BFB	89.1	49.5-130		%REC	1	1/7/2016 11:23:15 AM	A31304
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	1/27/2016 7:55:12 PM	23161
1-Methylnaphthalene	ND	2.0		µg/L	1	1/27/2016 7:55:12 PM	23161
2-Methylnaphthalene	ND	2.0		µg/L	1	1/27/2016 7:55:12 PM	23161
Benzo(a)pyrene	ND	0.070		µg/L	1	1/27/2016 7:55:12 PM	23161
Surr: Benzo(e)pyrene	63.4	33.4-129		%REC	1	1/27/2016 7:55:12 PM	23161
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Toluene	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Ethylbenzene	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Carbon Tetrachloride	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Chloroform	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,1-Dichloroethane	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,1-Dichloroethene	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: R.O. Reject
Project: Monthly RO Reject
Collection Date: 1/5/2016 9:30:00 AM
Lab ID: 1601099-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Methylene Chloride	ND	3.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Vinyl chloride	ND	1.0		µg/L	1	1/7/2016 12:30:43 PM	R31318
Xylenes, Total	ND	1.5		µg/L	1	1/7/2016 12:30:43 PM	R31318
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%REC	1	1/7/2016 12:30:43 PM	R31318
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	1	1/7/2016 12:30:43 PM	R31318
Surr: Dibromofluoromethane	94.9	70-130		%REC	1	1/7/2016 12:30:43 PM	R31318
Surr: Toluene-d8	97.7	70-130		%REC	1	1/7/2016 12:30:43 PM	R31318
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	1/14/2016	23205

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly RO Reject
Collection Date:
Lab ID: 1601099-002
Matrix: TRIP BLANK
Received Date: 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/11/2016 2:05:35 PM	23126
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/7/2016 12:06:11 PM	A31304
Surr: BFB	92.8	49.5-130		%REC	1	1/7/2016 12:06:11 PM	A31304
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Toluene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Ethylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Naphthalene	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1-Methylnaphthalene	ND	4.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
2-Methylnaphthalene	ND	4.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Acetone	ND	10		µg/L	1	1/7/2016 12:59:40 PM	R31318
Bromobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Bromodichloromethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Bromoform	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Bromomethane	ND	3.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
2-Butanone	ND	10		µg/L	1	1/7/2016 12:59:40 PM	R31318
Carbon disulfide	ND	10		µg/L	1	1/7/2016 12:59:40 PM	R31318
Carbon Tetrachloride	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Chlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Chloroethane	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Chloroform	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Chloromethane	ND	3.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
2-Chlorotoluene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
4-Chlorotoluene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
cis-1,2-DCE	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Dibromochloromethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Dibromomethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318

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

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly RO Reject
Collection Date:
Lab ID: 1601099-002
Matrix: TRIP BLANK
Received Date: 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1-Dichloroethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1-Dichloroethene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2-Dichloropropane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,3-Dichloropropane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
2,2-Dichloropropane	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Hexachlorobutadiene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
2-Hexanone	ND	10		µg/L	1	1/7/2016 12:59:40 PM	R31318
Isopropylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
4-Isopropyltoluene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
4-Methyl-2-pentanone	ND	10		µg/L	1	1/7/2016 12:59:40 PM	R31318
Methylene Chloride	ND	3.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
n-Butylbenzene	ND	3.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
n-Propylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
sec-Butylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Styrene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
tert-Butylbenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
trans-1,2-DCE	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Trichlorofluoromethane	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Vinyl chloride	ND	1.0		µg/L	1	1/7/2016 12:59:40 PM	R31318
Xylenes, Total	ND	1.5		µg/L	1	1/7/2016 12:59:40 PM	R31318
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%REC	1	1/7/2016 12:59:40 PM	R31318
Surr: 4-Bromofluorobenzene	97.1	70-130		%REC	1	1/7/2016 12:59:40 PM	R31318
Surr: Dibromofluoromethane	95.3	70-130		%REC	1	1/7/2016 12:59:40 PM	R31318
Surr: Toluene-d8	97.0	70-130		%REC	1	1/7/2016 12:59:40 PM	R31318

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

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID **MB-B**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958208** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID **LCS-B**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958209** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.55	0.020	0.5000	0	109	85	115			
Barium	0.50	0.0020	0.5000	0	99.6	85	115			
Boron	0.50	0.040	0.5000	0	99.3	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.3	85	115			
Chromium	0.49	0.0060	0.5000	0	97.8	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.4	85	115			
Copper	0.48	0.0060	0.5000	0	97.0	85	115			
Iron	0.51	0.020	0.5000	0	102	85	115			
Manganese	0.48	0.0020	0.5000	0	96.3	85	115			
Molybdenum	0.50	0.0080	0.5000	0	101	85	115			
Nickel	0.48	0.010	0.5000	0	95.0	85	115			
Silver	0.092	0.0050	0.1000	0	91.8	85	115			
Zinc	0.48	0.010	0.5000	0	95.5	85	115			

Sample ID **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958210** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	100	50	150			
Barium	0.0020	0.0020	0.002000	0	101	50	150			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- 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
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	**LLLCS-B**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**BatchQC**	Batch ID:	**B31306**	RunNo:	**31306**					
Prep Date:		Analysis Date:	**1/7/2016**	SeqNo:	**958210**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	ND	0.040	0.04000	0	99.6	50	150			
Cadmium	0.0021	0.0020	0.002000	0	103	50	150			
Chromium	0.0067	0.0060	0.006000	0	112	50	150			
Cobalt	ND	0.0060	0.006000	0	94.7	50	150			
Copper	0.0062	0.0060	0.006000	0	103	50	150			
Manganese	0.0020	0.0020	0.002000	0	100	50	150			
Molybdenum	ND	0.0080	0.008000	0	78.8	50	150			
Nickel	ND	0.010	0.005000	0	143	50	150			
Silver	ND	0.0050	0.005000	0	67.4	50	150			
Zinc	ND	0.010	0.005000	0	144	50	150			

Sample ID	**LLLCS-B**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**BatchQC**	Batch ID:	**B31306**	RunNo:	**31306**					
Prep Date:		Analysis Date:	**1/7/2016**	SeqNo:	**958215**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.023	0.020	0.02000	0	114	50	150			

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957740** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.026	0.0010	0.02500	0	104	85	115			
Lead	0.012	0.00050	0.01250	0	97.9	85	115			
Selenium	0.028	0.0010	0.02500	0	112	85	115			
Uranium	0.012	0.00050	0.01250	0	97.7	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957742** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0010	0.0010	0.001000	0	103	50	150			
Lead	ND	0.00050	0.0005000	0	99.1	50	150			
Selenium	0.0011	0.0010	0.001000	0	114	50	150			
Uranium	ND	0.00050	0.0005000	0	98.0	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957743** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								
Uranium	ND	0.00050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	**MB-23109**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**23109**	RunNo:	**31316**					
Prep Date:	**1/7/2016**	Analysis Date:	**1/7/2016**	SeqNo:	**958535**	Units:	**mg/L**			

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

Sample ID	**LCS-23109**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**23109**	RunNo:	**31316**					
Prep Date:	**1/7/2016**	Analysis Date:	**1/7/2016**	SeqNo:	**958536**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R31305**	RunNo: **31305**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **958138** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R31305**	RunNo: **31305**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **958139** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	96.5	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.4	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R31350**	RunNo: **31350**
Prep Date:	Analysis Date: **1/8/2016**	SeqNo: **959773** 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: **R31350**	RunNo: **31350**
Prep Date:	Analysis Date: **1/8/2016**	SeqNo: **959774** 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	96.6	90	110			
Sulfate	9.8	0.50	10.00	0	98.2	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID	**MB-23126**	SampType:	**MBLK**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**PBW**	Batch ID:	**23126**	RunNo:	**31378**					
Prep Date:	**1/8/2016**	Analysis Date:	**1/12/2016**	SeqNo:	**960604**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	**LCS-23126**	SampType:	**LCS**	TestCode:	**EPA Method 8011/504.1: EDB**					
Client ID:	**LCSW**	Batch ID:	**23126**	RunNo:	**31378**					
Prep Date:	**1/8/2016**	Analysis Date:	**1/12/2016**	SeqNo:	**960605**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.096	0.010	0.1000	0	95.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **MB-23110**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **23110**	RunNo: **31293**
Prep Date: **1/7/2016**	Analysis Date: **1/7/2016**	SeqNo: **958706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		100	70	141			

Sample ID **LCS-23110**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **23110**	RunNo: **31354**
Prep Date: **1/7/2016**	Analysis Date: **1/11/2016**	SeqNo: **959930** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	119	52.4	154			
Surr: DNOP	0.60		0.5000		119	70	141			

Sample ID **LCSD-23110**	SampType: **LCSD**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSS02**	Batch ID: **23110**	RunNo: **31354**
Prep Date: **1/7/2016**	Analysis Date: **1/11/2016**	SeqNo: **960009** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.0	1.0	5.000	0	99.9	52.4	154	17.6	28.3	
Surr: DNOP	0.47		0.5000		93.8	70	141	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **A31304**	RunNo: **31304**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958494** 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	18		20.00		90.6	49.5	130			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **A31304**	RunNo: **31304**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958495** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.1	80	120			
Surr: BFB	20		20.00		97.7	49.5	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	**MB-23160**	SampType:	**MBLK**	TestCode:	**EPA Method 8082: PCB's**					
Client ID:	**PBW**	Batch ID:	**23160**	RunNo:	**31486**					
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**	SeqNo:	**963636**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.8		2.500		112	17.7	151			
Surr: Tetrachloro-m-xylene	2.1		2.500		83.2	20.6	151			

Sample ID	**LCS-23160**	SampType:	**LCS**	TestCode:	**EPA Method 8082: PCB's**					
Client ID:	**LCSW**	Batch ID:	**23160**	RunNo:	**31486**					
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**	SeqNo:	**963637**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.2	1.0	5.000	0	43.7	15	131			
Aroclor 1260	4.3	1.0	5.000	0	85.8	15	162			
Surr: Decachlorobiphenyl	2.6		2.500		104	17.7	151			
Surr: Tetrachloro-m-xylene	1.7		2.500		66.8	20.6	151			

Sample ID	**LCSD-23160**	SampType:	**LCSD**	TestCode:	**EPA Method 8082: PCB's**					
Client ID:	**LCSS02**	Batch ID:	**23160**	RunNo:	**31486**					
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**	SeqNo:	**963638**	Units:	**µg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.4	1.0	5.000	0	47.5	15	131	8.33	24.4	
Aroclor 1260	4.4	1.0	5.000	0	87.9	15	162	2.49	28	
Surr: Decachlorobiphenyl	2.4		2.500		97.6	17.7	151	0	0	
Surr: Tetrachloro-m-xylene	1.7		2.500		67.2	20.6	151	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958568** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.3	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	19	1.0	20.00	0	95.6	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	104	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.7		10.00		97.3	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**
28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** Units: **µg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	9.4		10.00		94.3	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company
Project: Monthly RO Reject

Sample ID **MB-23161**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**
Client ID: **PBW**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970959** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	13		20.00		65.7	33.4	129			

Sample ID **LCS-23161**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970960** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	29	2.0	40.00	0	72.2	54.6	110			
1-Methylnaphthalene	29	2.0	40.10	0	72.1	49.1	116			
2-Methylnaphthalene	29	2.0	40.00	0	73.0	52.5	111			
Benzo(a)pyrene	0.18	0.070	0.2510	0	71.7	62	107			
Surr: Benzo(e)pyrene	14		20.00		71.0	33.4	129			

Sample ID **LCSD-23161**	SampType: **LCSD**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS02**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970961** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	31	2.0	40.00	0	77.0	54.6	110	6.37	20	
1-Methylnaphthalene	31	2.0	40.10	0	77.0	49.1	116	6.56	20	
2-Methylnaphthalene	31	2.0	40.00	0	77.4	52.5	111	5.85	20	
Benzo(a)pyrene	0.19	0.070	0.2510	0	75.7	62	107	5.41	20	
Surr: Benzo(e)pyrene	14		20.00		71.4	33.4	129	0		

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **MB-23205**	SampType: **MBLK**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **PBW**	Batch ID: **23205**	RunNo: **31418**
Prep Date: **1/14/2016**	Analysis Date: **1/14/2016**	SeqNo: **961552** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID **LCS-23205**	SampType: **LCS**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSW**	Batch ID: **23205**	RunNo: **31418**
Prep Date: **1/14/2016**	Analysis Date: **1/14/2016**	SeqNo: **961553** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	24	2.5	20.00	0	119	64.4	135			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	**MB-R31534**	SampType:	**MBLK**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**PBW**	Batch ID:	**R31534**	RunNo:	**31534**					
Prep Date:		Analysis Date:	**1/12/2016**	SeqNo:	**965188**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND	0.0100								

Sample ID	**LCS-R31534**	SampType:	**LCS**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**LCSW**	Batch ID:	**R31534**	RunNo:	**31534**					
Prep Date:		Analysis Date:	**1/12/2016**	SeqNo:	**965189**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		0.515		0.5000	0	103	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID	**MB-R31549**	SampType:	**MBLK**	TestCode:	**EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID:	**PBW**	Batch ID:	**R31549**	RunNo:	**31549**
Prep Date:		Analysis Date:	**1/18/2016**	SeqNo:	**965696** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.468	0.573								
Radium-226 ±	0.435	0.573								
Radium-228	0.175	0.698								
Radium-228 ±	0.319	0.698								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601099**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID **MB-23119**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **23119**	RunNo: **31342**
Prep Date: **1/7/2016**	Analysis Date: **1/9/2016**	SeqNo: **959480** 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-23119**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **23119**	RunNo: **31342**
Prep Date: **1/7/2016**	Analysis Date: **1/9/2016**	SeqNo: **959481** 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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

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: NAVAJO REFINING CO Work Order Number: 1601099 RcptNo: 1

Received by/date: 01/06/16

Logged By: Lindsay Mangin 1/6/2016 9:56:00 AM

Completed By: Lindsay Mangin 1/6/2016 9:56:20 AM

Reviewed By: 01/06/16

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: 1 (<2 or >12 unless noted)

Adjusted? 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	3.1	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush_____

Project Name:

Monthly R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Elizabeth Salsberry

On Ice: X Yes ☐ No

Sample Temperature: 3.1

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. 1601099	8260B:WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB	Air Bubbles (Y or N)
1/5/15	9:30	liquid	R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	-001									X		X	X	X	X		
1/5/15	9:30	liquid	R.O. Reject	3-40ml VOA	HCL	-001	X															
1/5/15	9:30	liquid	R.O. Reject	1-500ml P	HNO3	-001					X											
1/5/15	9:30	liquid	R.O. Reject	1-125ml P	HNO3	-001			X													
1/5/15	9:30	liquid	R.O. Reject	1-500ml P	NaOH	-001				X												
1/5/15	9:30	liquid	R.O. Reject	2- 1L P	HNO3	-001								X								
1/5/15	9:30	liquid	R.O. Reject	3-40ml VOA	Na2S2O3	-001															X	
1/5/15	9:30	liquid	R.O. Reject	2 - 1L Glass	unpres	-001							X									
1/5/15	9:30	liquid	R.O. Reject	1 - 1L Glass	unpres	-001		X														
1/5/15	9:30	liquid	R.O. Reject	3-40ml VOA	HCl	-001						X										
1/5/15	9:30	liquid	R.O. Reject	1-250mlGlass	unpres	-001						X										
1/5/15	9:30	liquid	R.O. Reject	1 - 1L Glass	H2SO4	-001										X						
1/5/15	9:30	liquid	Trip Blank	2-40ml VOA	HCL	-002																

Date:	Time:	Relinquished by:	Received by:	Date	Time
				01/06/16	0956
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn

VOCs: 1,1,1-Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene; 1,1,2-Trichloroethane; 1,1,2-Trichloroethylene; 1,1-Dichloroethane; 1,1-Dichloroethene; 1,2-Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform; Dichloromethane; Ethylbenzene; Toluene; Total Xylenes; Vinyl Chloride

SVOCs: benzo(a)pyrene, phenol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Monthly RO Reject Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Biannual RO Reject
Samplers Name	Elizabeth Salsberry
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	1/5/2016 @ 9:25 a.m.
End Date and Time	1/5/2016 @ 9:40 a.m.

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: ☑ North Field R.O. Reject Discarge ☐ South Field R.O. Reject Discarge

				Preservatives								
Container	Size	Material	# of Containers	Neat (None)	HCL	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1	500ml	Plastic	2	X			X					pH, Cl, F, S04, NO2/NO3, TDS
2	40ml	VOA	3		X							8015 GRO
3	500ml	Plastic	1			X						6020 total metals, 7470 Hg
4	125ml	Plastic	1			X						6020 Dissolved Metals
5	500ml	Plastic	2					X				Cyanide
6	1L	Plastic	3			X						Radium 226/228
7	40ml	VOA	2		X							8260 see attached list
8	1L	Glass	1	X								8270 see attached list
9	1L	Glass	2	X								8082 PCBs
10	40ml	VOA	2	X								8015 DRO
11	40ml	VOA	2		X							Radium 226/228

Field Data (Weather, Observations, Etc): 1/5/2016 Tmp.33.8 °F, Humidity 100%, Wind Dir. Calm, Wind Speed Calm, Conditions Overcast

Date and Time:

Field Temp. 19.5C Field pH 7.23

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

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

January 28, 2016

Robert Combs

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Monthly Temporary R.O. Reject OrderNo.: 1601101

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/6/2016 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 **1601101**
Date Reported: **1/28/2016**

CLIENT: Navajo Refining Company
Project: Monthly Temporary R.O. Reject
Lab ID: 1601101-001 **Matrix:** AQUEOUS

Client Sample ID: Temporary R.O. Reject
Collection Date: 1/5/2016 10:10:00 AM
Received Date: 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Arsenic	ND	0.0050		mg/L	5	1/6/2016 1:42:40 PM	A31277
Lead	ND	0.00050		mg/L	1	1/6/2016 1:37:32 PM	A31277
Selenium	0.0083	0.0050		mg/L	5	1/6/2016 1:42:40 PM	A31277
Uranium	0.0055	0.00050		mg/L	1	1/6/2016 1:37:32 PM	A31277
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: **SUB**	
Radium-226	1.58	0.850		pCi/L	1	1/18/2016	R31549
Radium-226 ±	0.79	0.850		pCi/L	1	1/18/2016	R31549
Radium-228	0.546	0.826		pCi/L	1	1/18/2016	R31549
Radium-228 ±	0.407	0.826		pCi/L	1	1/18/2016	R31549
EPA METHOD 300.0: ANIONS						Analyst: **SRM**	
Fluoride	2.3	0.10		mg/L	1	1/6/2016 7:31:30 PM	R31305
Chloride	400	10		mg/L	20	1/6/2016 7:43:54 PM	R31305
Nitrogen, Nitrite (As N)	ND	2.0		mg/L	20	1/6/2016 7:43:54 PM	R31305
Nitrogen, Nitrate (As N)	1.6	0.10		mg/L	1	1/6/2016 7:31:30 PM	R31305
Sulfate	1600	25		mg/L	50	1/8/2016 3:05:00 PM	R31350
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3470	20.0	*	mg/L	1	1/7/2016 7:22:00 PM	23090
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: **SUB**	
Cyanide	ND	0.0100		mg/L	1	1/12/2016	R31534
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.04	1.68	H	pH units	1	1/8/2016 6:14:20 PM	R31363
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **ELS**	
Aluminum	ND	0.020		mg/L	1	1/7/2016 2:04:13 PM	B31306
Barium	0.051	0.0020		mg/L	1	1/7/2016 2:04:13 PM	B31306
Boron	0.090	0.040		mg/L	1	1/7/2016 2:04:13 PM	B31306
Cadmium	ND	0.0020		mg/L	1	1/7/2016 2:04:13 PM	B31306
Chromium	ND	0.0060		mg/L	1	1/7/2016 2:04:13 PM	B31306
Cobalt	0.0085	0.0060		mg/L	1	1/7/2016 2:04:13 PM	B31306
Copper	ND	0.0060		mg/L	1	1/7/2016 2:04:13 PM	B31306
Iron	ND	0.020		mg/L	1	1/7/2016 2:04:13 PM	B31306
Manganese	ND	0.0020		mg/L	1	1/7/2016 2:04:13 PM	B31306
Molybdenum	ND	0.0080		mg/L	1	1/7/2016 2:04:13 PM	B31306
Nickel	ND	0.010		mg/L	1	1/7/2016 2:04:13 PM	B31306
Silver	ND	0.0050		mg/L	1	1/7/2016 2:04:13 PM	B31306
Zinc	0.031	0.010		mg/L	1	1/7/2016 2:04:13 PM	B31306
EPA METHOD 245.1: MERCURY						Analyst: **pmf**	

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Temporary R.O. Reject
Project: Monthly Temporary R.O. Reject
Collection Date: 1/5/2016 10:10:00 AM
Lab ID: 1601101-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 245.1: MERCURY						Analyst: **pmf**	
Mercury	ND	0.00020		mg/L	1	1/7/2016 5:08:51 PM	23109
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/11/2016 2:26:15 PM	23126
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1221	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1232	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1242	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1248	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1254	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Aroclor 1260	ND	1.0		µg/L	1	1/18/2016 2:07:07 PM	23160
Surr: Decachlorobiphenyl	96.0	17.7-151		%REC	1	1/18/2016 2:07:07 PM	23160
Surr: Tetrachloro-m-xylene	64.8	20.6-151		%REC	1	1/18/2016 2:07:07 PM	23160
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/11/2016 11:24:38 AM	23110
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/11/2016 11:24:38 AM	23110
Surr: DNOP	102	70-141		%REC	1	1/11/2016 11:24:38 AM	23110
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/7/2016 12:29:54 PM	A31304
Surr: BFB	90.3	49.5-130		%REC	1	1/7/2016 12:29:54 PM	A31304
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	1/27/2016 8:24:29 PM	23161
1-Methylnaphthalene	ND	2.0		µg/L	1	1/27/2016 8:24:29 PM	23161
2-Methylnaphthalene	ND	2.0		µg/L	1	1/27/2016 8:24:29 PM	23161
Benzo(a)pyrene	ND	0.070		µg/L	1	1/27/2016 8:24:29 PM	23161
Surr: Benzo(e)pyrene	61.0	33.4-129		%REC	1	1/27/2016 8:24:29 PM	23161
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Toluene	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Ethylbenzene	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Carbon Tetrachloride	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Chloroform	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,1-Dichloroethane	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,1-Dichloroethene	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Temporary R.O. Reject
Project: Monthly Temporary R.O. Reject
Collection Date: 1/5/2016 10:10:00 AM
Lab ID: 1601101-001 **Matrix:** AQUEOUS **Received Date:** 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Methylene Chloride	ND	3.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Vinyl chloride	ND	1.0		µg/L	1	1/7/2016 1:28:37 PM	R31318
Xylenes, Total	ND	1.5		µg/L	1	1/7/2016 1:28:37 PM	R31318
Surr: 1,2-Dichloroethane-d4	95.1	70-130		%REC	1	1/7/2016 1:28:37 PM	R31318
Surr: 4-Bromofluorobenzene	97.4	70-130		%REC	1	1/7/2016 1:28:37 PM	R31318
Surr: Dibromofluoromethane	101	70-130		%REC	1	1/7/2016 1:28:37 PM	R31318
Surr: Toluene-d8	94.3	70-130		%REC	1	1/7/2016 1:28:37 PM	R31318
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	1/14/2016	23205

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly Temporary R.O. Reject
Collection Date:
Lab ID: 1601101-002
Matrix: TRIP BLANK
Received Date: 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/11/2016 3:27:54 PM	23126
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/7/2016 12:53:36 PM	A31304
Surr: BFB	91.9	49.5-130		%REC	1	1/7/2016 12:53:36 PM	A31304
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Toluene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Ethylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Naphthalene	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1-Methylnaphthalene	ND	4.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
2-Methylnaphthalene	ND	4.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Acetone	ND	10		µg/L	1	1/7/2016 1:57:34 PM	R31318
Bromobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Bromodichloromethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Bromoform	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Bromomethane	ND	3.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
2-Butanone	ND	10		µg/L	1	1/7/2016 1:57:34 PM	R31318
Carbon disulfide	ND	10		µg/L	1	1/7/2016 1:57:34 PM	R31318
Carbon Tetrachloride	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Chlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Chloroethane	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Chloroform	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Chloromethane	ND	3.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
2-Chlorotoluene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
4-Chlorotoluene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
cis-1,2-DCE	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Dibromochloromethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Dibromomethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: Trip Blank
Project: Monthly Temporary R.O. Reject
Collection Date:
Lab ID: 1601101-002
Matrix: TRIP BLANK
Received Date: 1/6/2016 9:56:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **AG**	
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1-Dichloroethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1-Dichloroethene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2-Dichloropropane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,3-Dichloropropane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
2,2-Dichloropropane	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Hexachlorobutadiene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
2-Hexanone	ND	10		µg/L	1	1/7/2016 1:57:34 PM	R31318
Isopropylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
4-Isopropyltoluene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
4-Methyl-2-pentanone	ND	10		µg/L	1	1/7/2016 1:57:34 PM	R31318
Methylene Chloride	ND	3.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
n-Butylbenzene	ND	3.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
n-Propylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
sec-Butylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Styrene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
tert-Butylbenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
trans-1,2-DCE	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Trichlorofluoromethane	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Vinyl chloride	ND	1.0		µg/L	1	1/7/2016 1:57:34 PM	R31318
Xylenes, Total	ND	1.5		µg/L	1	1/7/2016 1:57:34 PM	R31318
Surr: 1,2-Dichloroethane-d4	95.0	70-130		%REC	1	1/7/2016 1:57:34 PM	R31318
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	1/7/2016 1:57:34 PM	R31318
Surr: Dibromofluoromethane	98.8	70-130		%REC	1	1/7/2016 1:57:34 PM	R31318
Surr: Toluene-d8	93.1	70-130		%REC	1	1/7/2016 1:57:34 PM	R31318

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
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-B**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958208** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID **LCS-B**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958209** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.55	0.020	0.5000	0	109	85	115			
Barium	0.50	0.0020	0.5000	0	99.6	85	115			
Boron	0.50	0.040	0.5000	0	99.3	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.3	85	115			
Chromium	0.49	0.0060	0.5000	0	97.8	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.4	85	115			
Copper	0.48	0.0060	0.5000	0	97.0	85	115			
Iron	0.51	0.020	0.5000	0	102	85	115			
Manganese	0.48	0.0020	0.5000	0	96.3	85	115			
Molybdenum	0.50	0.0080	0.5000	0	101	85	115			
Nickel	0.48	0.010	0.5000	0	95.0	85	115			
Silver	0.092	0.0050	0.1000	0	91.8	85	115			
Zinc	0.48	0.010	0.5000	0	95.5	85	115			

Sample ID **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958210** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	100	50	150			
Barium	0.0020	0.0020	0.002000	0	101	50	150			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- 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
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958210** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	ND	0.040	0.04000	0	99.6	50	150			
Cadmium	0.0021	0.0020	0.002000	0	103	50	150			
Chromium	0.0067	0.0060	0.006000	0	112	50	150			
Cobalt	ND	0.0060	0.006000	0	94.7	50	150			
Copper	0.0062	0.0060	0.006000	0	103	50	150			
Manganese	0.0020	0.0020	0.002000	0	100	50	150			
Molybdenum	ND	0.0080	0.008000	0	78.8	50	150			
Nickel	ND	0.010	0.005000	0	143	50	150			
Silver	ND	0.0050	0.005000	0	67.4	50	150			
Zinc	ND	0.010	0.005000	0	144	50	150			

Sample ID **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958215** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.023	0.020	0.02000	0	114	50	150			

Sample ID **1601101-001IMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **Temporary R.O. Rej**	Batch ID: **B31306**	RunNo: **31306**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958432** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.60	0.020	0.5000	0.009780	118	70	130			
Barium	0.52	0.0020	0.5000	0.05058	93.3	70	130			
Boron	0.62	0.040	0.5000	0.08985	106	70	130			
Cadmium	0.48	0.0020	0.5000	0	95.8	70	130			
Chromium	0.47	0.0060	0.5000	0.005280	93.6	70	130			
Cobalt	0.44	0.0060	0.5000	0.008500	86.5	70	130			
Copper	0.51	0.0060	0.5000	0	101	70	130			
Iron	0.40	0.020	0.5000	0.01090	78.1	70	130			
Manganese	0.46	0.0020	0.5000	0.0005000	91.8	70	130			
Molybdenum	0.44	0.0080	0.5000	0	88.8	70	130			
Nickel	0.44	0.010	0.5000	0	88.0	70	130			
Silver	0.074	0.0050	0.1000	0	73.7	70	130			
Zinc	0.47	0.010	0.5000	0.03096	87.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**1601101-001IMSD**	SampType:	**MSD**	TestCode:	**EPA Method 200.7: Dissolved Metals**					
Client ID:	**Temporary R.O. Rej**	Batch ID:	**B31306**	RunNo:	**31306**					
Prep Date:		Analysis Date:	**1/7/2016**	SeqNo:	**958433**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.60	0.020	0.5000	0.009780	118	70	130	0.352	20	
Barium	0.53	0.0020	0.5000	0.05058	95.1	70	130	1.73	20	
Boron	0.63	0.040	0.5000	0.08985	108	70	130	1.23	20	
Cadmium	0.49	0.0020	0.5000	0	97.4	70	130	1.66	20	
Chromium	0.48	0.0060	0.5000	0.005280	94.4	70	130	0.791	20	
Cobalt	0.45	0.0060	0.5000	0.008500	88.0	70	130	1.66	20	
Copper	0.51	0.0060	0.5000	0	102	70	130	0.313	20	
Iron	0.44	0.020	0.5000	0.01090	86.1	70	130	9.50	20	
Manganese	0.47	0.0020	0.5000	0.0005000	93.0	70	130	1.28	20	
Molybdenum	0.46	0.0080	0.5000	0	92.8	70	130	4.42	20	
Nickel	0.45	0.010	0.5000	0	89.7	70	130	2.02	20	
Silver	0.074	0.0050	0.1000	0	73.9	70	130	0.298	20	
Zinc	0.48	0.010	0.5000	0.03096	90.2	70	130	2.75	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957740** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.026	0.0010	0.02500	0	104	85	115			
Lead	0.012	0.00050	0.01250	0	97.9	85	115			
Selenium	0.028	0.0010	0.02500	0	112	85	115			
Uranium	0.012	0.00050	0.01250	0	97.7	85	115			

Sample ID **LLLCS**	SampType: **LCSLL**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957742** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0010	0.0010	0.001000	0	103	50	150			
Lead	ND	0.00050	0.0005000	0	99.1	50	150			
Selenium	0.0011	0.0010	0.001000	0	114	50	150			
Uranium	ND	0.00050	0.0005000	0	98.0	50	150			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A31277**	RunNo: **31277**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **957743** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								
Uranium	ND	0.00050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-23109**	SampType:	**MBLK**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**PBW**	Batch ID:	**23109**	RunNo:	**31316**					
Prep Date:	**1/7/2016**	Analysis Date:	**1/7/2016**	SeqNo:	**958535**	Units:	**mg/L**			

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

Sample ID	**LCS-23109**	SampType:	**LCS**	TestCode:	**EPA Method 245.1: Mercury**					
Client ID:	**LCSW**	Batch ID:	**23109**	RunNo:	**31316**					
Prep Date:	**1/7/2016**	Analysis Date:	**1/7/2016**	SeqNo:	**958536**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R31305**	RunNo: **31305**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **958138** 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								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R31305**	RunNo: **31305**
Prep Date:	Analysis Date: **1/6/2016**	SeqNo: **958139** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	96.5	90	110			
Chloride	4.9	0.50	5.000	0	97.8	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.4	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R31350**	RunNo: **31350**
Prep Date:	Analysis Date: **1/8/2016**	SeqNo: **959773** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R31350**	RunNo: **31350**
Prep Date:	Analysis Date: **1/8/2016**	SeqNo: **959774** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.8	0.50	10.00	0	98.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **1601101-001DMS** SampType: **MS** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **Temporary R.O. Rej** Batch ID: **23126** RunNo: **31371**

Prep Date: **1/8/2016** Analysis Date: **1/11/2016** SeqNo: **960526** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.086	0.010	0.1000	0	85.8	40.3	153			

Sample ID **1601101-001DMSD** SampType: **MSD** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **Temporary R.O. Rej** Batch ID: **23126** RunNo: **31371**

Prep Date: **1/8/2016** Analysis Date: **1/11/2016** SeqNo: **960527** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.086	0.010	0.1000	0	86.2	40.3	153	0.568	29.5	

Sample ID **MB-23126** SampType: **MBLK** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **PBW** Batch ID: **23126** RunNo: **31378**

Prep Date: **1/8/2016** Analysis Date: **1/12/2016** SeqNo: **960604** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID **LCS-23126** SampType: **LCS** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **LCSW** Batch ID: **23126** RunNo: **31378**

Prep Date: **1/8/2016** Analysis Date: **1/12/2016** SeqNo: **960605** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.096	0.010	0.1000	0	95.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-23110**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **23110**	RunNo: **31293**
Prep Date: **1/7/2016**	Analysis Date: **1/7/2016**	SeqNo: **958706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		100	70	141			

Sample ID **LCS-23110**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **23110**	RunNo: **31354**
Prep Date: **1/7/2016**	Analysis Date: **1/11/2016**	SeqNo: **959930** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.0	1.0	5.000	0	119	52.4	154			
Surr: DNOP	0.60		0.5000		119	70	141			

Sample ID **LCSD-23110**	SampType: **LCSD**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSS02**	Batch ID: **23110**	RunNo: **31354**
Prep Date: **1/7/2016**	Analysis Date: **1/11/2016**	SeqNo: **960009** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.0	1.0	5.000	0	99.9	52.4	154	17.6	28.3	
Surr: DNOP	0.47		0.5000		93.8	70	141	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **A31304**	RunNo: **31304**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958494** 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	18		20.00		90.6	49.5	130			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **A31304**	RunNo: **31304**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958495** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.1	80	120			
Surr: BFB	20		20.00		97.7	49.5	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-23160**	SampType:	**MBLK**		TestCode:	**EPA Method 8082: PCB's**				
Client ID:	**PBW**	Batch ID:	**23160**		RunNo:	**31486**				
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**		SeqNo:	**963636**	Units:	**µg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.8		2.500		112	17.7	151			
Surr: Tetrachloro-m-xylene	2.1		2.500		83.2	20.6	151			

Sample ID	**LCS-23160**	SampType:	**LCS**		TestCode:	**EPA Method 8082: PCB's**				
Client ID:	**LCSW**	Batch ID:	**23160**		RunNo:	**31486**				
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**		SeqNo:	**963637**	Units:	**µg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.2	1.0	5.000	0	43.7	15	131			
Aroclor 1260	4.3	1.0	5.000	0	85.8	15	162			
Surr: Decachlorobiphenyl	2.6		2.500		104	17.7	151			
Surr: Tetrachloro-m-xylene	1.7		2.500		66.8	20.6	151			

Sample ID	**LCSD-23160**	SampType:	**LCSD**		TestCode:	**EPA Method 8082: PCB's**				
Client ID:	**LCSS02**	Batch ID:	**23160**		RunNo:	**31486**				
Prep Date:	**1/12/2016**	Analysis Date:	**1/18/2016**		SeqNo:	**963638**	Units:	**µg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.4	1.0	5.000	0	47.5	15	131	8.33	24.4	
Aroclor 1260	4.4	1.0	5.000	0	87.9	15	162	2.49	28	
Surr: Decachlorobiphenyl	2.4		2.500		97.6	17.7	151	0	0	
Surr: Tetrachloro-m-xylene	1.7		2.500		67.2	20.6	151	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958568** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.3	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Chlorobenzene	19	1.0	20.00	0	95.6	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	104	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.7		10.00		97.3	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** 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								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** Units: **µg/L**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R31318**	RunNo: **31318**
Prep Date:	Analysis Date: **1/7/2016**	SeqNo: **958569** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	9.4		10.00		94.3	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-23161**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**
Client ID: **PBW**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970959** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	13		20.00		65.7	33.4	129			

Sample ID **LCS-23161**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970960** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	29	2.0	40.00	0	72.2	54.6	110			
1-Methylnaphthalene	29	2.0	40.10	0	72.1	49.1	116			
2-Methylnaphthalene	29	2.0	40.00	0	73.0	52.5	111			
Benzo(a)pyrene	0.18	0.070	0.2510	0	71.7	62	107			
Surr: Benzo(e)pyrene	14		20.00		71.0	33.4	129			

Sample ID **LCSD-23161**	SampType: **LCSD**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS02**	Batch ID: **23161**	RunNo: **31727**
Prep Date: **1/12/2016**	Analysis Date: **1/27/2016**	SeqNo: **970961** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	31	2.0	40.00	0	77.0	54.6	110	6.37	20	
1-Methylnaphthalene	31	2.0	40.10	0	77.0	49.1	116	6.56	20	
2-Methylnaphthalene	31	2.0	40.00	0	77.4	52.5	111	5.85	20	
Benzo(a)pyrene	0.19	0.070	0.2510	0	75.7	62	107	5.41	20	
Surr: Benzo(e)pyrene	14		20.00		71.4	33.4	129	0		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- B Analyte detected in the associated Method Blank
- D Sample Diluted Due to Matrix
- 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
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID **MB-23205**	SampType: **MBLK**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **PBW**	Batch ID: **23205**	RunNo: **31418**
Prep Date: **1/14/2016**	Analysis Date: **1/14/2016**	SeqNo: **961552** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID **LCS-23205**	SampType: **LCS**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSW**	Batch ID: **23205**	RunNo: **31418**
Prep Date: **1/14/2016**	Analysis Date: **1/14/2016**	SeqNo: **961553** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	24	2.5	20.00	0	119	64.4	135			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-R31534**	SampType:	**MBLK**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**PBW**	Batch ID:	**R31534**	RunNo:	**31534**					
Prep Date:		Analysis Date:	**1/12/2016**	SeqNo:	**965188**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	**LCS-R31534**	SampType:	**LCS**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**LCSW**	Batch ID:	**R31534**	RunNo:	**31534**					
Prep Date:		Analysis Date:	**1/12/2016**	SeqNo:	**965189**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.515		0.5000	0	103	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1601101**

28-Jan-16

Client: Navajo Refining Company

Project: Monthly Temporary R.O. Reject

Sample ID	**MB-R31549**	SampType:	**MBLK**	TestCode:	**EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID:	**PBW**	Batch ID:	**R31549**	RunNo:	**31549**
Prep Date:		Analysis Date:	**1/18/2016**	SeqNo:	**965696** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.468	0.573								
Radium-226 ±	0.435	0.573								
Radium-228	0.175	0.698								
Radium-228 ±	0.319	0.698								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		