GW – 028

2015 Annual Discharge Permit Report

PART 11 OF 16

March 2016

WO#:	1510410
	02-Nov-15

and the second	o Refining Co ly RO Reject									
Sample ID rb	0.00	ype: MBL	K	Tor	tCodo:	DA Mothed	8260B: VOL			
		5.0					8260B: VUL	AILES		
Client ID: PBW		ID: R29			RunNo:					
Prep Date:	Analysis D	ate: 10/8	8/2015	;	SeqNo:	894164	Units: µg/L			
Analyte	Result		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.

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

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WO#:	1510410
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	avajo Refining Co Ionthly RO Rejec	- ·								
Sample ID rb	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batc	h ID: R2	9397	F	RunNo: 2	9397				
Prep Date:	Analysis [Date: 10)/8/2015	5	eqNo: 8	94164	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 9.5		10.00		95.3	70	130			
Surr: 4-Bromofluorobenze	ene 10		10.00		101	70	130			
Surr: Dibromofluorometha	ane 9.7		10.00		97.4	70	130			
Surr: Toluene-d8	9.9		10.00		99.3	70	130			

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0.41

21

0.070

0.5020

20.00

Client: Project:		efining Co RO Reject									
Sample ID MB-21	1812	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: PBW		Batch	h ID: 21	812	F	RunNo: 2	9527				
Prep Date: 10/1	3/2015	Analysis D	Date: 10	0/14/2015	S	SeqNo: 8	98372	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
aphthalene		ND	2.0								
Methylnaphthalene		ND	2.0								
Methylnaphthalene		ND	2.0								
enzo(a)pyrene		ND	0.070								
Surr: Benzo(e)pyrene	е	21		20.00		103	37.2	136			
Sample ID LCS-2	21812	SampT	ype: LC	s	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSW	V	Batch	h ID: 21	812	F	RunNo: 2	9527				
Prep Date: 10/1:	3/2015	Analysis D	Date: 10	0/14/2015	S	SeqNo: 8	98374	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
aphthalene		65	2.0	80.00	0	80.7	57.8	83.9			
Methylnaphthalene		67	2.0	80.20	0	83.1	43.5	88.5			

0

81.7

107

56.3

37.2

98.6

136

Qualifiers:

Benzo(a)pyrene

Surr: Benzo(e)pyrene

Value exceeds Maximum Contaminant Level. *

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- S % Recovery outside of range due to dilution or matrix
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- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- **Reporting Detection Limit** RL
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1510410

02-Nov-15

WO#:

Client: Project:		Refining Co ly RO Reject	- ·								
Sample ID	MB-21920	SampT	ype: ME	BLK	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID:	PBW	Batch	ID: 21	920	F	RunNo: 2	9663				
Prep Date:	10/20/2015	Analysis D	ate: 10	0/20/2015	S	SeqNo: 9	03297	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	l Recoverable	ND	2.5								
Sample ID	LCS-21920	SampT	ype: LC	s	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID:	LCSW	Batch	ID: 21	920	F	RunNo: 2	9663				
Prep Date:	10/20/2015	Analysis D	ate: 10	0/20/2015	S	SeqNo: 9	03298	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	l Recoverable	19	2.5	20.00	0	96.2	64.4	135			

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- 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

0.451

Client: Project:		Refining Company y RO Reject				
Sample ID Client ID: Prep Date:	MB-R29838 PBW	SampType: MBLK Batch ID: R29838 Analysis Date: 10/20/2015	TestCode: EPA 335.4: T RunNo: 29838 SeqNo: 908961	Total Cyanide Subbed		
Analyte Cyanide		Result PQL SPK value ND 0.0100	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
	LCS-R29838 LCSW	SampType: LCS Batch ID: R29838 Analysis Date: 10/20/2015	TestCode: EPA 335.4: T RunNo: 29838 SeqNo: 908962	Total Cyanide Subbed		
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual

0

90.2

90

110

0.5000

Qualifiers:

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- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- **Reporting Detection Limit** RL

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WO#:	1510410
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Client: Project:		Refining Co RO Reject									
Sample ID MB-	R29838	SampT	ype: ME	3LK	Tes	tCode: El	PA 903.1: R	a 226 and EP	A 904.0: I	Ra 228-Subbe	d
Client ID: PBV	v	Batch	h ID: R2	9838	F	RunNo: 2	9838				
Prep Date:		Analysis D	ate: 10	0/21/2015	S	SeqNo: 9	08965	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0.209	0.513								
Radium-226 ±		0.319	0.513								
Radium-228		0.221	0.666								
Radium-228 ±		0.31	0.666								
Sample ID MB-	R29838	SampT	Type: ME	BLK	Tes	tCode: El	PA 903.1: R	a 226 and EP	A 904.0: I	Ra 228-Subbe	d
Client ID: PBV	v	Batch	h ID: R2	9838	F	RunNo: 2	9838				
Prep Date:		Analysis D)ate: 10	0/21/2015	5	SeqNo: 9	08967	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0.411	0.965								
Radium-226 ±		0.571	0.965								
Radium-228		0.403	0.785								
Radium-228 ±		0.384	0.785								

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- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Project:		Refining Co y RO Reject	- ·								
Sample ID Client ID: Prep Date:	MB-21779 PBW 10/11/2015		ype: ME ID: 21 ate: 1(F	tCode: SI RunNo: 2 SeqNo: 8	9476	DD: Total Dis Units: mg/L		lids	
Analyte Total Dissolved	Solids	Result ND	PQL 20.0	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date:	LCS-21779 LCSW 10/11/2015		ype: LC 1D: 21 ate: 1(779	F	tCode: Si RunNo: 2 SeqNo: 8	9476	DD: Total Dis Units: mg/L		lids	
Analyte Total Dissolved	Solids	Result 999	PQL 20.0	SPK value 1000	SPK Ref Val	%REC 99.9	LowLimit 80	HighLimit 120	%RPD	RPDLimit	Qual

Qualifiers:

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- 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

WO#: 1510410 02-Nov-15

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	HALL
193	ENVIRONMENTAL
	ANALYSIS
60	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:	1510410		RcptNo:	1
Received by/date:	10/08/15				
Logged By: Lindsay Mangin	10/8/2015 9:07:00 AM		A HAD		
Completed By: Lindsay Mangin	10/8/2015 12:40:53 PM		Auto		
Reviewed By:	10/08/15		000		
Chain of Custody	10108/12		1 Juli	-	10
1. Custody seals intact on sample bottles?	3	Yes 🗹	No D	-Not-Present V	
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 sample	s?	Yes 🗹	No 🗆	NA 🗆	
5. Were all samples received at a temperatu	ire 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 tes	t(s)?	Yes 🔽	No 🗌		
B. Are samples (except VOA and ONG) prop	erly 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 bro	oken?	Yes	No 🔽		
12		N	No 🗌	# of preserved bottles checked 7 for pH:	1
 Does paperwork match bottle labels? (Note discrepancies on chain of custody) 		Yes 🔽			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:	Ju
Special Handling (if applicable)		-	-		
16. Was client notified of all discrepancies wit	h this order?	Yes 🗌	No 🗌	NA 🗹	1
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 S	eal Date	Signed By	1	

Clonk	10.00									Ĩ		L		Y		>	2	Q	
CIIGHT	Navajo	Navajo Refinery		X Standard	C Rush	ų				4	AN		SIS	ANALYSIS LABORATORY	B	2		0	12
				Project Name:						. >	h.ww	allen	ironn	www.hallenvironmental.com	com				:
Mailing A	ddress:	P.O. Box	Mailing Address: P.O. Box 159 Artesia,	Monthly R.O. R	Reject			4	901 H	awkir	IS NE	- All	andne	4901 Hawkins NE - Albuquerque, NM 87109	MN	3710	Ø		
NM 88211-0159	1-0159			Project #: P.O.). # 167796				Tel. 505-345-3975	5-34	-397		Fax 6	505-345-4107	15-41	07			
Phone #: 575-748-3311	575-748	3-3311										Anal	sis l	Analysis Request	st				
email or	Fax#: 57	email or Fax#: 575-746-5451	51	Project Manager:	ger:					_			(8						
QA/QC Package: X Standard	ackage: ard		Level 4 (Full Validation)	Robert Combs	ŝ						0		Ra-228						
□ Other				Sampler:	Elizabeth Salsberry	alsberry		-	_	əp			+97			_	sbil		
C EDD (Type)	Type)			No.	X Yes	O No	States in		1.0.0	iue/		101	2-e)	5			٥S		
				Sample Temperature:	berature:	0.01			112.23	SIC)	84 - C		3) (E	oride		-91	00001.044		
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	e HEALNO	-0 -0 -0	8270C: WQ 8260B:WQ	6010B: WQ	335.4: Tots	8015: GRC 7470: Merc	8082: PCB	Radioactivit	Sulfate Chlo	Phenols Fluoride	Nitrate/Nitri	Total Disso	Hd	803:1.408
10/7/15		9:35 liquid	R.O. Reject	2 - 500ml P	1-unpres H2SO4	C	10							×	×	×	×	×	
10/7/15		9:35 liquid	R.O. Reject	3-40ml VOA	HCL	-00		×				_		-					_
10/7/15		9:35 liquid	R.O. Reject	1-500ml P	HNO3	00-	(-	_		×				_				
10/7/15		9:35 liquid	R.O. Reject	1-125ml P	HNO3	-00	(×		-			-	_	_			
10/7/15	-	9:35 liquid	R.O. Reject	1-500ml P	NaOH	-00	-			×					_				
10/7/15		9:35 liquid	R.O. Reject	2-1L P	HNO3	-00		_			_	_	×		_	_	_		
10/7/15		9:35 liquid	R.O. Reject	3-40ml VOA	Na2S203	-0-					_			-	_	_	_		×
10/7/15		9:35 liquid	R.O. Reject	2 - 1L Glass	unpres	-001					-	×			_	_	_		
10/7/15		9:35 liquid	R.O. Reject	1 - 1L Glass	unpres	100-		×			-	_		-	-	-	_		
10/7/15		9:35 liquid	R.O. Reject	3-40ml VOA	HCI	00-	~				×			-	-	_	_		
10/7/15		9:35 liquid	R.O. Reject	1-250mlGlastunpres	nnpres	-00	(×			_	_	_	_		
10/7/15		liquid	R.O. Reject	1 - 1L Glass	H2SO4	100-					_			~	×				
10/7/15		9:35 liquid	Trip Blank	A	HCL	-00:	N	_			-	_		-	-	_	_	_	
Date: 1017 115	Time:		Pizo	Received by:	Sen-	Date 0/08/15	Time 0907	Remarks: Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn VOCs: 1,1,1-Trichloroethame, 1,1,2,2-Tetrachloroethame, 1,1,2,2-Tetrachloroethylene; 1,1,2	s, Al, Be 1,1-Tric	B, Cd, lloroeth	Cr. Co. Inte: 1,1	2u, Fe, 2,2-Tet	Pb, Mn, achioro	Hg, Mo,	Ni, Se	Ag, U Tetrac	Zn hloroet	hylene	5,1,5
Date:	Time:	Relinquished by:	ed by:			Date	Time	Trichloroethane; 1,1,2-Trichloroethylene; 1,1-Dichloroethane; 1,1-Dichloroethene; 1 Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform; Dichloromethane; Ethylbenzene; Toluene; Total Xylenes, Viryl Chloride	thane; thane; tethane;	.1,2-Trit 2-Dichli Ethylbe	hioroethar proethar izerie, 7	ethane; 1,1,2-Trichloroethylene; 1,1-Dichloroeth ethane; 1,2-Dichloroethane; Benzene; Carbon 1 nethane; Ethylbenzene; Toluene; Total Xylenes	, 1-Dicht ene; Ca Total X	bon Tet tenes, \	rachlor finyl Ci	Unchion ide; Ct iloride	oether	NI E E	arre; 1,1-Dichloroetherre; 1,2- etrachloride; Chloroform; , Vinyl Chloride

	1	
Ø	6	5

jo Refining Coupany, LLC esia, NM 88210 () 575.748.3311 x) 575.746 5451 S. Main

Monthly RO Reject Sample Attachment Details

1111111	2			One
Sample Type	Grab	Time Weighted Composite	Flow Weighted Composite	Parts / Sample Intervals (

Samplers Affiliation Navajo Refining Co. LLC Start Date and Time 10/7/2015 @ 9:55 am End Date and Time 10/7/2015 @ 9:50 am

Project Name Bianrual RO Reject Samplers Name Elizabeth Salsberry

HOLLYFRONTIER The HollyFronter Comparies

LINSI	cal Property
Solid	
Liquid	2
Sludge	

Type of Sampler | Directly to sample jars

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

Analysis and/or Method Requested pH, CI, F, S04, NO2/NO3, TDS 6020 total metals, 7470 Hg 6020 Dissolved Metals 8260 see attached list 8270 see attached list Radium 226/228 Radium 226/228 8082 PCBs 8015 DRO 8015 CRO Cyanide Other NaHSO4 NaOH Na2S203 Preservatives × H2SO4 HCL HN03 × × × × × (None) Neat ×× × × Containers # of N ŝ 2 2 N 3 N VOA Plastic Plastic Plastic Glass Glass VOA VOA Material Plastic VOA 40ml 500ml 125ml 500ml 40ml 500ml 40ml Size 40ml 7 7 = Container 3 4 40 9 60 σ 10 -N 1-

10/7/2015 Tmp.62.6 °F, Humidity 88%, Wind Dir: North, Wind Speed 8.1 mph, Conditions Partly Cloudy Field Data (Weather, Observations, Etc): Date and Time:

Field pH 7.92 ield Temp. 24.9C

Shipping Media Ice 2 Other Other

Storage Method

Ice 🖸 Other

Refrigerated



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

October 30, 2015

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

RE: Monthly Temporary RO Reject

OrderNo.: 1510416

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/8/2015 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1510416 Date Reported: 10/30/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly Temporary RO Reject

1510416-001

Lab ID:

Client Sample ID: Temporary R.O. Reject Collection Date: 10/7/2015 8:55:00 AM Received Date: 10/8/2015 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst:	DBD
Arsenic	ND	0.0050		mg/L	5	10/20/2015 6:39:18 PM	B2968
Lead	ND	0.00050		mg/L	1	10/20/2015 4:04:11 PM	B2968
Selenium	0.0094	0.0010		mg/L	1	10/20/2015 4:04:11 PM	B2968
Uranium	0.0059	0.00050		mg/L	1	10/20/2015 4:04:11 PM	B2968
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBE	D				Analyst	SUB
Radium-226	1.75	0.678		pCi/L	1	10/21/2015	R2983
Radium-226 ±	0.852	0.678		pCi/L	1	10/21/2015	R2983
Radium-228	1	0.662		pCi/L	1	10/21/2015	R2983
Radium-228 ±	0.416	0.662		pCi/L	1	10/21/2015	R2983
EPA METHOD 300.0: ANIONS						Analyst:	LGT
Fluoride	3.8	2.0		mg/L	20	10/8/2015 9:53:17 PM	R2941
Chloride	68	10		mg/L	20	10/8/2015 9:53:17 PM	R2941
Sulfate	1800	25		mg/L	50	10/20/2015 1:16:14 AM	R2966
Nitrate+Nitrite as N	1.5	1.0		mg/L	5	10/20/2015 1:41:03 AM	R2966
SM2540C MOD: TOTAL DISSOLVED SC	LIDS					Analyst:	KS
Total Dissolved Solids	3220	20.0	*	mg/L	1	10/12/2015 3:12:00 PM	21779
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst	SUB
Cyanide	ND	0.0100		mg/L	1	10/20/2015	R2983
SM4500-H+B: PH						Analyst:	MRA
рН	7.80	1.68	н	pH units	1	10/9/2015 2:20:53 PM	R2945
EPA METHOD 200.7: DISSOLVED META	LS					Analyst:	ELS
Aluminum	ND	0.020		mg/L	1	10/15/2015 5:32:19 PM	C2957
Barium	0.069	0.0020		mg/L	1	10/14/2015 8:23:38 PM	C2954
Boron	0.11	0.040		mg/L	1	10/15/2015 5:32:19 PM	C2957
Cadmium	ND	0.0020		mg/L	1	10/15/2015 5:32:19 PM	C2957
Chromium	ND	0.0060		mg/L	1	10/14/2015 8:23:38 PM	C2954
Cobalt	ND	0.0060		mg/L	1	10/14/2015 8:23:38 PM	C2954
Copper	ND	0.0060		mg/L	1	10/14/2015 8:23:38 PM	C2954
Iron	0.039	0.020		mg/L	1	10/14/2015 8:23:38 PM	C2954
Manganese	0.012	0.0020		mg/L	1	10/14/2015 8:23:38 PM	C2954
Molybdenum	ND	0.0080		mg/L	1	10/15/2015 5:32:19 PM	C2957
Nickel	ND	0.010		mg/L	1	10/14/2015 8:23:38 PM	C2954
Silver	ND	0.0050		mg/L	1	10/14/2015 8:23:38 PM	C2954
Zinc	0.023	0.010		mg/L	1	10/16/2015 7:52:40 PM	B296
EPA METHOD 245.1: MERCURY						Analyst:	JLF
Mercury	ND	0.00020		mg/L	1	10/15/2015 12:45:19 PM	1 21848
Refer to the QC Summary report ar	d sample log	rin checklis	t for fl	agged OC da	ta and n	reservation information	1

Matrix: AQUEOUS

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

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 Page 1 of 23

P Sample pH Not In Range

RL Reporting Detection Limit

Analytical Report Lab Order 1510416 Date Reported: 10/30/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject: Monthly Temporary RO RejectLab ID: 1510416-001

Client Sample ID: Temporary R.O. Reject Collection Date: 10/7/2015 8:55:00 AM Received Date: 10/8/2015 9:07:00 AM

Analyses	Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB					Analyst	JME
1,2-Dibromoethane	ND	0.010	µg/L	1	10/15/2015 3:45:45 PM	21803
EPA METHOD 8082: PCB'S					Analyst	SCC
Aroclor 1016	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	
Aroclor 1221	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	
Aroclor 1232	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	21811
Aroclor 1242	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	21811
Aroclor 1248	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	21811
Aroclor 1254	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	21811
Aroclor 1260	ND	1.0	µg/L	1	10/15/2015 2:28:06 AM	21811
Surr: Decachlorobiphenyl	82.0	17.7-151	%REC	1	10/15/2015 2:28:06 AM	21811
Surr: Tetrachloro-m-xylene	76.4	20.6-151	%REC	1	10/15/2015 2:28:06 AM	21811
EPA METHOD 8015M/D: DIESEL RAM	IGE				Analyst	том
Diesel Range Organics (DRO)	ND	1.0	mg/L	1	10/12/2015 5:55:41 PM	21793
Motor Oil Range Organics (MRO)	ND	5.0	mg/L	1	10/12/2015 5:55:41 PM	21793
Surr: DNOP	126	72-136	%REC	1	10/12/2015 5:55:41 PM	21793
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	10/9/2015 4:55:33 PM	R2942
Surr: BFB	90.2	57.8-137	%REC	1	10/9/2015 4:55:33 PM	R2942
EPA METHOD 8310: PAHS					Analyst	SCC
Naphthalene	ND	2.0	µg/L	1	10/14/2015 5:02:42 PM	21812
1-Methylnaphthalene	ND	2.0	µg/L	1	10/14/2015 5:02:42 PM	21812
2-Methylnaphthalene	ND	2.0	µg/L	1	10/14/2015 5:02:42 PM	21812
Benzo(a)pyrene	ND	0.070	µg/L	1	10/14/2015 5:02:42 PM	21812
Surr: Benzo(e)pyrene	75.2	37.2-136	%REC	1	10/14/2015 5:02:42 PM	21812
EPA METHOD 8260B: VOLATILES					Analyst	AG
Benzene	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Toluene	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Ethylbenzene	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Carbon Tetrachloride	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Chloroform	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
1,1-Dichloroethane	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
1,1-Dichloroethene	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Methylene Chloride	ND	3.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/8/2015 5:06:31 PM	R2939
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R2939

Matrix: AQUEOUS

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

* 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 Page 2 of 23
- P Sample pH Not In Range
- RL Reporting Detection Limit

Analytical Report Lab Order 1510416 Date Reported: 10/30/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Project: Monthly Temporary RO Reject

Client Sample ID: Temporary R.O. Reject Collection Date: 10/7/2015 8:55:00 AM

Lab ID: 1510416-001	Matrix:	AQUEOUS	Received 1	Date: 10	/8/2015 9:07:00 AM	
Analyses	Result	RL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	AG
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R29397
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R29397
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R29397
Vinyl chloride	ND	1.0	µg/L	1	10/8/2015 5:06:31 PM	R29397
Xylenes, Total	ND	1.5	µg/L	1	10/8/2015 5:06:31 PM	R29397
Surr: 1,2-Dichloroethane-d4	92.1	70-130	%REC	1	10/8/2015 5:06:31 PM	R29397
Surr: 4-Bromofluorobenzene	105	70-130	%REC	1	10/8/2015 5:06:31 PM	R29397
Surr: Dibromofluoromethane	97.3	70-130	%REC	1	10/8/2015 5:06:31 PM	R29397
Surr: Toluene-d8	101	70-130	%REC	1	10/8/2015 5:06:31 PM	R29397
TOTAL PHENOLICS BY SW-846 9067					Analyst	SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	10/20/2015	21920

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	в	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 23
	ND	Not Detected at the Reporting Limit	Р	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		

Analytical Report Lab Order 1510416

Date Reported: 10/30/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly Temporary RO Reject

1510416-002

Lab ID:

Collection Date:

Client Sample ID: Trip Blank

Matrix: TRIP BLANK Received Date: 10/8/2015 9:07:00 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	10/15/2015 4:27:08 PM	21803
EPA METHOD 8260B: VOLATILES						Analyst:	AG
Benzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Toluene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Ethylbenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2-Dibromoethane (EDB)	ND	1.0		μg/L	1	10/8/2015 5:35:16 PM	R2939
Naphthalene	ND	2.0		μg/L	1	10/8/2015 5:35:16 PM	R2939
1-Methylnaphthalene	ND	4.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
2-Methylnaphthalene	ND	4.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Acetone	ND	10		µg/L	1	10/8/2015 5:35:16 PM	R293
Bromobenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Bromodichloromethane	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R293
Bromoform	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R293
Bromomethane	ND	3.0		µg/L	1	10/8/2015 5:35:16 PM	R293
2-Butanone	ND	10		μg/L	1	10/8/2015 5:35:16 PM	R293
Carbon disulfide	ND	10		µg/L	1	10/8/2015 5:35:16 PM	R293
Carbon Tetrachloride	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R293
Chlorobenzene	ND	1.0		μg/L	1	10/8/2015 5:35:16 PM	R293
Chloroethane	ND	2.0		µg/L	1	10/8/2015 5:35:16 PM	R293
Chloroform	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Chloromethane	ND	3.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
2-Chlorotoluene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
4-Chlorotoluene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R293
cis-1,2-DCE	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Dibromochloromethane	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Dibromomethane	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2-Dichlorobenzene	ND	1.0		μg/L	1	10/8/2015 5:35:16 PM	R2939
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
Dichlorodifluoromethane	ND	1.0		μg/L	1	10/8/2015 5:35:16 PM	R293
1,1-Dichloroethane	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,1-Dichloroethene	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2-Dichloropropane	ND	1.0		µg/L	1	10/8/2015 5:35:16 PM	R2939

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

* 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 Page 4 of 23
- P Sample pH Not In Range
- RL Reporting Detection Limit

Analytical Report Lab Order 1510416

Date Reported: 10/30/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly Temporary RO Reject

1510416-002

Lab ID:

Collection Date:

Matrix: TRIP BLANK Received Date: 10/8/2015 9:07:00 AM

Analyses	Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	AG
1,3-Dichloropropane	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R29397
2,2-Dichloropropane	ND	2.0	µg/L	1	10/8/2015 5:35:16 PM	R29397
1,1-Dichloropropene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R29397
Hexachlorobutadiene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R29397
2-Hexanone	ND	10	µg/L	1	10/8/2015 5:35:16 PM	R29397
Isopropylbenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
4-Isopropyltoluene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R29397
4-Methyl-2-pentanone	ND	10	µg/L	1	10/8/2015 5:35:16 PM	R2939
Methylene Chloride	ND	3.0	μg/L	1	10/8/2015 5:35:16 PM	R29397
n-Butylbenzene	ND	3.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
n-Propylbenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
sec-Butylbenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Styrene	ND	1.0	μg/L	1	10/8/2015 5:35:16 PM	R2939
tert-Butylbenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Tetrachloroethene (PCE)	ND	1.0	μg/L	1	10/8/2015 5:35:16 PM	R2939
trans-1,2-DCE	ND	1.0	μg/L	1	10/8/2015 5:35:16 PM	R2939
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Trichlorofluoromethane	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
1,2,3-Trichloropropane	ND	2.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Vinyl chloride	ND	1.0	µg/L	1	10/8/2015 5:35:16 PM	R2939
Xylenes, Total	ND	1.5	µg/L	1	10/8/2015 5:35:16 PM	R2939
Surr: 1,2-Dichloroethane-d4	96.3	70-130	%REC	1	10/8/2015 5:35:16 PM	R2939
Surr: 4-Bromofluorobenzene	103	70-130	%REC	1	10/8/2015 5:35:16 PM	R2939
Surr: Dibromofluoromethane	98.2	70-130	%REC	1	10/8/2015 5:35:16 PM	R2939
Surr: Toluene-d8	97.9	70-130	%REC	1	10/8/2015 5:35:16 PM	R29397

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 23
	ND	Not Detected at the Reporting Limit	Р	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		

Client Sample ID: Trip Blank

WO#: 1510416

3	0-	0	CI	-1	5	

Client: Project:		Navajo Refining C Monthly Tempora		eject							
Sample ID	MB-C	B-C SampType: MBLK			TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	PBW	Bate	h ID: C2	9542	F	RunNo: 2	9542				
Prep Date:		Analysis	Date: 10	0/14/2015	S	SeqNo: 8	98765	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Copper		ND	0.0060								
Iron		ND	0.020								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Silver		ND	0.0050								
Sample ID	LCS-C	LCS-C SampType: LCS			Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Bate	ch ID: C2	9542	RunNo: 29542						
Prep Date:		Analysis	Date: 10	0/14/2015	S	SeqNo: 8	98766	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.51	0.0020	0.5000	0	103	85	115			
Chromium		0.50	0.0060	0.5000	0	100	85	115			
Cobalt		0.48	0.0060	0.5000	0	96.6	85	115			
Copper		0.47	0.0060	0.5000	0	94.0	85	115			
Iron		0.49	0.020	0.5000	0	98.8	85	115			
Manganese		0.47	0.0020	0.5000	0	93.6	85	115			
Nickel		0.48	0.010	0.5000	0	96.9	85	115			
Silver		0.091	0.0050	0.1000	0	90.6	85	115			
Sample ID	LLLCS	-C Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	BatchC	C Bate	h ID: C2	9542	F	RunNo: 2	9542				
Prep Date:		Analysis	Date: 10	0/14/2015	s	SeqNo: 8	98767	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020	0.002000	0	96.0	50	150			
Chromium		ND	0.0060	0.006000	0	91.3	50	150			
Cobalt		ND	0.0060	0.006000	0	94.3	50	150			
Copper		0.0061	0.0060	0.006000	0	102	50	150			
Iron		ND	0.020	0.02000	0	97.4	50	150			
Manganese		ND	0.0020	0.002000	0	94.5	50	150			
Nickel		ND	0.010	0.005000	0	92.2	50	150			
Silver		ND	0.0050	0.005000	0	95.4	50	150			

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

Page 6 of 23

WO#:	1510416
	30-Oct-15

Client:		Navajo Re	efining C	ompany								
Project:		Monthly T	31333		eject							
Sample ID	MRC		Somo	Type: ME		Too		A Mothod	200.7: Disso	vod Motol		
	PBW		•	h ID: C2			RunNo: 2		200.7. DISSO	veu meta	5	
Prep Date:	FDW								Lipito: mall			
Prep Date:			Analysis I	Date: 10			eqNo: 9	0085	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum			ND	0.020								
Boron			ND ND	0.040								
Cadmium Molybdenum			ND	0.0020								
Molybuenum			ND	0.0080								
Sample ID	LCS-C		Samp	Type: LC	S	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	S	
Client ID:	LCSW		Bato	h ID: C2	9574	F	RunNo: 2	9574				
Prep Date:			Analysis I	Date: 10	/15/2015	S	eqNo: 90	00086	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum			0.51	0.020	0.5000	0	103	85	115			
Boron			0.50	0.040	0.5000	0	100	85	115			
Cadmium			0.48	0.0020	0.5000	0	96.7	85	115			
Molybdenum			0.51	0.0080	0.5000	0	101	85	115			
Molybdenum Sample ID	LLLCS	-C	1. de cultore	0.0080 Type: LC		1.4.32	193593		115 200.7: Dissol	ved Metal	s	
Sample ID	LLLCS BatchG		Samp		SLL	Tes	193593	PA Method	1004037	ved Metal	s	
Sample ID		C	Samp	Type: LC	SLL 9574	Tes	tCode: Ef	PA Method 9574	1004037	ved Metal	s	
Sample ID Client ID:		C	Samp Bato	Type: LC	SLL 9574 0/15/2015	Tes	tCode: EF	PA Method 9574	200.7: Dissol Units: mg/L	ved Metal	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte		C	Samp Bato Analysis I	Type: LC h ID: C2 Date: 10	SLL 9574 0/15/2015	Tes F S	tCode: EF RunNo: 29 SeqNo: 90	PA Method 9574 00087	200.7: Dissol			Qual
Sample ID Client ID: Prep Date: Analyte Aluminum		C	Samp Bato Analysis I Result	Type: LC h ID: C2 Date: 10 PQL	SLL 9574)/15/2015 SPK value	Tes F S SPK Ref Val	tCode: Ef RunNo: 29 SeqNo: 90 %REC	PA Method 9574 00087 LowLimit	200.7: Dissol Units: mg/L HighLimit			Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron		C	Samp Bato Analysis I Result ND	Type: LC th ID: C2 Date: 10 PQL 0.020	SLL 9574 0/15/2015 SPK value 0.01000	Tes F SPK Ref Val 0	tCode: EF RunNo: 29 GeqNo: 90 %REC 102	PA Method 9574 00087 LowLimit 50	200.7: Dissol Units: mg/L HighLimit 150			Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium		C	Samp Bato Analysis I Result ND ND	Type: LC th ID: C2 Date: 10 PQL 0.020 0.040	SLL 9574 0/15/2015 SPK value 0.01000 0.04000	Tes F S SPK Ref Val 0 0 0	tCode: EF RunNo: 29 SeqNo: 90 %REC 102 93.8	PA Method 9574 00087 LowLimit 50 50	200.7: Dissol Units: mg/L HighLimit 150 150			Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium	BatchG	C	Samp Bato Analysis I Result ND ND 0.0020 0.012	Type: LC th ID: C2 Date: 10 PQL 0.020 0.040 0.0020	SLL 9574 9/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000	Tes F SPK Ref Val 0 0 0 0 0	tCode: EF RunNo: 29 %REC 102 93.8 102 145	PA Method 9574 00087 LowLimit 50 50 50 50	200.7: Dissol Units: mg/L HighLimit 150 150 150	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID	BatchG	C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp	Type: LC th ID: C2 Date: 10 PQL 0.020 0.040 0.0020 0.0080	SLL 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 BLK	Tes F SPK Ref Val 0 0 0 0 0 Tes	tCode: EF RunNo: 29 %REC 102 93.8 102 145	PA Method 9574 00087 LowLimit 50 50 50 50 20 PA Method	200.7: Dissol Units: mg/L HighLimit 150 150 150 150	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID	BatchC MB-B)C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp	Type: LC th ID: C2 Date: 10 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2	SLL 9574 9/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 BLK 9618	Tes F SPK Ref Val 0 0 0 0 0 Tes F	tCode: EF RunNo: 29 SeqNo: 90 %REC 102 93.8 102 145 tCode: EF	PA Method 9574 00087 LowLimit 50 50 50 50 PA Method 9618	200.7: Dissol Units: mg/L HighLimit 150 150 150 150	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID:	BatchC MB-B)C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato	Type: LC th ID: C2 Date: 10 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2	SLL 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 BLK 9618 0/16/2015	Tes F SPK Ref Val 0 0 0 0 0 Tes F	tCode: Ef RunNo: 29 SeqNo: 90 %REC 102 93.8 102 145 tCode: Ef RunNo: 29 SeqNo: 90	PA Method 9574 00087 LowLimit 50 50 50 50 20 PA Method 9618 01616	200.7: Dissol Units: mg/L HighLimit 150 150 150 200.7: Dissol	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID: Prep Date:	BatchC MB-B)C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato Analysis I	Type: LC th ID: C2 Date: 10 PQL 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2 Date: 10	SLL 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 BLK 9618 0/16/2015	Tes F SPK Ref Val 0 0 0 0 Tes F S	tCode: Ef RunNo: 29 SeqNo: 90 %REC 102 93.8 102 145 tCode: Ef RunNo: 29 SeqNo: 90	PA Method 9574 00087 LowLimit 50 50 50 50 20 PA Method 9618 01616	200.7: Dissol Units: mg/L HighLimit 150 150 150 200.7: Dissol Units: mg/L	%RPD	RPDLimit	
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID: Prep Date: Analyte	BatchC MB-B PBW)C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato Analysis I Result ND	Type: LC Type: LC Date: 10 PQL 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2 Date: 10 PQL	SLL 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 3LK 9618 0/16/2015 SPK value	Tes F SPK Ref Val 0 0 0 0 Tes F SPK Ref Val	tCode: EF RunNo: 29 %REC 102 93.8 102 145 tCode: EF RunNo: 29 %REC	PA Method 9574 00087 LowLimit 50 50 50 0 PA Method 9618 01616 LowLimit	200.7: Dissol Units: mg/L HighLimit 150 150 150 200.7: Dissol Units: mg/L	%RPD ved Metal %RPD	RPDLimit s RPDLimit	
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID: Prep Date: Analyte Zinc Sample ID	BatchC MB-B PBW LCS-B)C	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato Analysis I Result ND	Type: LC Type: LC Date: 10 PQL 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2 Date: 10 PQL 0.010	SLL 9574 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 3LK 9618 9/16/2015 SPK value S	Tes SPK Ref Val 0 0 0 0 Tes SPK Ref Val Tes	tCode: EF RunNo: 29 %REC 102 93.8 102 145 tCode: EF RunNo: 29 %REC	PA Method 9574 00087 50 50 50 PA Method 9618 01616 LowLimit	200.7: Dissol Units: mg/L HighLimit 150 150 150 200.7: Dissol Units: mg/L HighLimit	%RPD ved Metal %RPD	RPDLimit s RPDLimit	
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID: Prep Date: Analyte Zinc	BatchC MB-B PBW LCS-B	DC	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato Analysis I Result ND	Type: LC Type: LC Date: 10 PQL 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2 Date: 10 PQL 0.010 Type: LC th ID: B2	SLL 9574 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 8LK 9618 0/16/2015 SPK value S 9618	Tes SPK Ref Val 0 0 0 0 Tes SPK Ref Val SPK Ref Val	tCode: Ef RunNo: 29 %REC 102 93.8 102 145 tCode: Ef %REC %REC	PA Method 9574 00087 LowLimit 50 50 50 50 7A Method 9618 PA Method 9618	200.7: Dissol Units: mg/L HighLimit 150 150 150 200.7: Dissol Units: mg/L HighLimit	%RPD ved Metal %RPD ved Metal	RPDLimit s RPDLimit	
Sample ID Client ID: Prep Date: Analyte Aluminum Boron Cadmium Molybdenum Sample ID Client ID: Prep Date: Analyte Zinc Sample ID Client ID:	BatchC MB-B PBW LCS-B	DC	Samp Bato Analysis I Result ND 0.0020 0.012 Samp Bato Analysis I Result ND Samp Bato	Type: LC Type: LC Date: 10 PQL 0.020 0.040 0.0020 0.0080 Type: ME th ID: B2 Date: 10 PQL 0.010 Type: LC th ID: B2	SLL 9574 9574 0/15/2015 SPK value 0.01000 0.04000 0.002000 0.008000 3LK 9618 0/16/2015 SPK value S 9618 0/16/2015	Tes SPK Ref Val 0 0 0 0 Tes SPK Ref Val SPK Ref Val	tCode: Ef RunNo: 29 SeqNo: 90 %REC 102 93.8 102 145 tCode: Ef RunNo: 29 KREC	PA Method 9574 00087 LowLimit 50 50 50 50 7A Method 9618 PA Method 9618	200.7: Dissol Units: mg/L HighLimit 150 150 200.7: Dissol Units: mg/L HighLimit 200.7: Dissol	%RPD ved Metal %RPD ved Metal	RPDLimit s RPDLimit	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank

E Value above quantitation range

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Project:	5	o Refining Co hly Temporary	1 2								
Sample ID	LLLCS-B SampType: LCSLL				TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	BatchQC Batch ID: B29618				F	RunNo: 2	9618				
Prep Date:		Analysis D	ate: 10	0/16/2015	S	eqNo: 9	01618	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc		ND	0.010	0.005000	0	60.6	50	150			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
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- 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

Navajo Refining Company **Project:** Monthly Temporary RO Reject

Client:

Sample ID	LCS	SampType: LCS			Tes	tCode: El					
Client ID:	LCSW	Batc	h ID: B2	9683	F	RunNo: 2					
Prep Date:		Analysis [Date: 10	0/20/2015	5	SeqNo: 9	03929	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.024	0.0010	0.02500	0	95.2	85	115			
Lead		0.012	0.00050	0.01250	0	98.6	85	115			
Selenium		0.023	0.0010	0.02500	0	90.5	85	115			
Uranium		0.012	0.00050	0.01250	0	96.7	85	115			
Sample ID	LLLCS	SampType: LCSLL			Tes	tCode: El	PA 200.8: D	Dissolved Met	als		
Client ID:	BatchQC	Batch ID: B29683			F	RunNo: 2	9683				
Prep Date:		Analysis [Date: 10	0/20/2015	5	SeqNo: 9	03932	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010	0.001000	0	96.3	50	150			
Lead		0.00051	0.00050	0.0005000	0	102	50	150			
Selenium		ND	0.0010	0.001000	0	88.7	50	150			
Uranium		ND	0.00050	0.0005000	0	99.8	50	150			
Sample ID	MB	Samp	Type: ME	3LK	Tes	TestCode: EPA 200.8: Dissolved Metals					
Client ID:	PBW	Batc	h ID: B2	9683	F	RunNo: 2	9683				
Prep Date:		Analysis [Date: 10	0/20/2015	S	SeqNo: 9	03934	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010								
		ND	0.00050								
Lead		ILD.									
Lead Selenium		ND	0.0010								

Qualifiers:

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

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Client: Project:		Refining Company y Temporary RO Reject							
Sample ID Client ID:	MB-21848 PBW	SampType: MBLK Batch ID: 21848	TestCode: EPA Method 245.1: Mercury RunNo: 29565						
Prep Date:	10/14/2015	Analysis Date: 10/15/2015	SeqNo: 899831	Units: mg/L					
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual			
Mercury		ND 0.00020							
Sample ID	LCS-21848	SampType: LCS	TestCode: EPA Method	245.1: Mercury					
Client ID:	LCSW	Batch ID: 21848	RunNo: 29565						
Prep Date:	10/14/2015	Analysis Date: 10/15/2015	SeqNo: 899832	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					

- * 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

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Client:		Navajo Refining Co									
Project:		Monthly Temporar	y RO R	eject							
Sample ID	MB	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID:	PBW	Batc	h ID: R2	9414	F	RunNo: 29	9414				
Prep Date:		Analysis [Date: 1	0/8/2015	S	eqNo: 8	94692	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride Chloride		ND ND	0.10 0.50								
Sample ID	LCS	Samp	SampType: LCS			tCode: EF	PA Method	300.0: Anions	;		
Client ID:	LCSW	Batc	h ID: R2	9414	F	RunNo: 29	9414				
Prep Date:		Analysis [Date: 1	0/8/2015	S	eqNo: 8	94693	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.53	0.10	0.5000	0	106	90	110			
Chloride		4.8	0.50	5.000	0	96.4	90	110			
Sample ID	MB	Samp	Type: ME	BLK	Tes	tCode: EF	PA Method	300.0: Anions	5		
Client ID:	PBW	Batc	h ID: R2	9666	F	RunNo: 29	9666				
Prep Date:		Analysis [Date: 1	0/19/2015	5	eqNo: 9	03381	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		ND	0.50								
Nitrate+Nitrite	as N	ND	0.20								
Sample ID	LCS	Samp [*]	Гуре: LC	s	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID:	LCSW	Batc	h ID: R2	9666	F	RunNo: 29	9666				
Prep Date:		Analysis [Date: 1	0/19/2015	5	eqNo: 9	03382	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		9.9	0.50	10.00	0	99.1	90	110			
Nitrate+Nitrite	as N	3.5	0.20	3.500	0	100	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

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#:	1510416
	30-Oct-15

Client: Project:	5	Refining Co Temporary									
Sample ID	MB-21803	SampT	Type: ME	BLK	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	PBW	Batch	h ID: 21	803	F	lunNo: 2	9577				
Prep Date:	10/12/2015	Analysis D	Date: 1	0/15/2015	S	eqNo: 9	00397	Units: µg/L			
Analyte 1.2-Dibromoeth	hana	Result ND	PQL 0.010	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeu	nane	ND	0.010								
Sample ID	LCS-21803 SampType: LCS				Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	LCSW Batch ID: 21803				F	RunNo: 2	9577				
Prep Date:	10/12/2015	Analysis D	Date: 10	0/15/2015	S	eqNo: 9	00399	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	hane	0.11	0.010	0.1000	0	112	70	130			
Sample ID	1510416-001DMS	SampT	Type: MS	8	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	Temporary R.O. F	Rej Batcl	h ID: 21	803	F	RunNo: 2	9577				
Prep Date:	10/12/2015	Analysis D	Date: 1	0/15/2015	5	eqNo: 9	00412	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	hane	0.12	0.010	0.1000	0	121	45.7	164			
Sample ID	1510416-001DMS	D SampT	Type: MS	SD	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	Temporary R.O. F	Rej Batcl	h ID: 21	803	F	RunNo: 2	9577				
			atas de	0/4 5/0045	c	eqNo: 9	00412	Units: ug/L			
Prep Date:	10/12/2015	Analysis D	Jale: 1	0/15/2015		equito. 3	00413	ormo. µg/L			
Prep Date: Analyte	10/12/2015	Analysis L Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit

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	ajo Refining Co nthly Temporar									
Sample ID MB-21793	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID: PBW	Batc	h ID: 21	793	F	RunNo: 2	9489				
Prep Date: 10/12/2015	Analysis [Date: 10	0/12/2015	S	SeqNo: 8	96837	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 (MR	0) ND	5.0								
Surr: DNOP	1.3		1.000		128	72	136			
Sample ID LCS-21793	Samp	Type: LC	s	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID: LCSW	Batc	h ID: 21	793	F	RunNo: 2	9489				
Prep Date: 10/12/2015	Analysis [Date: 10	0/12/2015	S	SeqNo: 8	96840	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	107	52.4	154			

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

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WO#:	1510416
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	Refining Co Temporary									
Sample ID 5ML RB	SampT	ype: MI	3LK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batch	D: R2	9422	F	RunNo: 2	9422				
Prep Date:	Analysis D	ate: 1	0/9/2015	S	SeqNo: 8	95544	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		88. <mark>1</mark>	57.8	137			
Sample ID 2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batch	D: R2	9422	F	RunNo: 2	9422				
Prep Date:	Analysis D	ate: 1	0/9/2015	S	SeqNo: 8	95545	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	93.6	80	120			
Surr: BFB	19		20.00		93.0	57.8	137			

Qualifiers:

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- 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

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Client: Navajo Refining Company **Project:** Monthly Temporary RO Reject

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Sample ID MB-21811	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: PBW	Batch	D: 21	811	F	RunNo: 2	9529				
Prep Date: 10/13/2015	Analysis D	ate: 10)/14/2015	S	eqNo: 8	99307	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	2.1		2.500		85.2	17.7	151			
Surr: Tetrachloro-m-xylene	2.1		2.500		82.8	20.6	151			
Sample ID LCS-21811	SampT	ype: LC	S	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: LCSW	Batch	D: 21	811	F	RunNo: 2	9529				
Prep Date: 10/13/2015	Analysis D	ate: 10)/14/2015	S	eqNo: 8	99308	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.9	1.0	5.000	0	58.9	9.01	142			
Aroclor 1260	4.2	1.0	5.000	0	83.5	25.6	164			
Surr: Decachlorobiphenyl	1.8		2.500		74.0	17.7	151			
Surr: Tetrachloro-m-xylene	1.8		2.500		74.0	20.6	151			

Qualifiers:

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

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Client:	Navajo Refining Company
Project:	Monthly Temporary RO Reject

Sample ID 100ng Ics	SampT	ype: LC	S	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	ID: R2	9397	F	RunNo: 2	9397				
Prep Date:	Analysis Da	ate: 10)/8/2015	S	eqNo: 8	94163	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	113	70	130			
Toluene	21	1.0	20.00	0	106	70	130			
Chlorobenzene	21	1.0	20.00	0	103	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	113	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.1	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R2	9397	F	RunNo: 2	9397				
Prep Date:	Analysis Da	ate: 10	0/8/2015	S	eqNo: 8	94164	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								

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

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WO#: 1510416 30-Oct-15

	o Refining Co									
Project: Mont	hly Temporary	y RO R	eject							
Sample ID rb	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	h ID: R2	9397	F	RunNo:	29397				
Prep Date:	Analysis D	Date: 1	0/8/2015	\$	SeqNo: 8	394164	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
xis-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								
	ND	1.0								
1,3-Dichloropropane										
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
sopropylbenzene	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								
Fetrachloroethene (PCE)	ND	1.0								
rans-1,2-DCE	ND	1.0								
rans-1,3-Dichloropropene	ND	1.0								
,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.

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

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WO#: 1510416 30-Oct-15

Client:Navajo Refining CompanyProject:Monthly Temporary RO Reject

Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R2	9397	F	RunNo: 2	9397				
Prep Date:	Analysis D	ate: 10	0/8/2015	S	SeqNo: 8	94164	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	9.5		10.00		95.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130			
Surr: Toluene-d8	9.9		10.00		99.3	70	130			

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

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WO#:	1510416
non.	1510410

30-Oct-15

and the second	Refining Co Temporary									
Sample ID MB-21812	SampT	Гуре: ME	BLK	Test	tCode: El	PA Method	8310: PAHs			
Client ID: PBW	Batch	h ID: 21	812	R	RunNo: 2	9527				
Prep Date: 10/13/2015	Analysis D)ate: 10)/14/2015	S	eqNo: 8	98372	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Na <mark>p</mark> hthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	21		20.00		103	37.2	136			
Sample ID LCS-21812	SampT	Type: LC	s	Test	tCode: El	PA Method	8310: PAHs			
	= =p .			1001						
Client ID: LCSW		h ID: 21			RunNo: 2	9527				
Client ID: LCSW Prep Date: 10/13/2015		h ID: 21	812	R	RunNo: 2 SeqNo: 8		Units: µg/L			
	Batch	h ID: 21	812)/14/2015	R				%RPD	RPDLimit	Qual
Prep Date: 10/13/2015	Batch Analysis D	h ID: 21 Date: 10	812)/14/2015	R	SeqNo: 8	98374	Units: µg/L	%RPD	RPDLimit	Qual
Prep Date: 10/13/2015 Analyte Naphthalene	Batch Analysis D Result	h ID: 21 Date: 10 PQL	812)/14/2015 SPK value	R S SPK Ref Val	eqNo: 8 %REC	98374 LowLimit	Units: µg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: 10/13/2015 Analyte Vaphthalene I-Methylnaphthalene	Batch Analysis D Result 65	h ID: 218 Date: 10 PQL 2.0	812 0/14/2015 SPK value 80.00	R S SPK Ref Val 0	SeqNo: 8 %REC 80.7	98374 LowLimit 57.8	Units: µg/L HighLimit 83.9	%RPD	RPDLimit	Qual
Prep Date: 10/13/2015 Analyte	Batch Analysis D Result 65 67	h ID: 21 Date: 10 PQL 2.0 2.0	812 0/14/2015 SPK value 80.00 80.20	R S SPK Ref Val 0 0	SeqNo: 8 %REC 80.7 83.1	98374 LowLimit 57.8 43.5	Units: µg/L HighLimit 83.9 88.5	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- **Reporting Detection Limit** RL

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WO#:	1510416
	30-Oct-15

Client: Project:	-	Refining Co y Temporary		eject							
Sample ID ME			ype: ME					ics by SW-84	6 9067		
Client ID: PB	w	Batch	ID: 21	920	F	RunNo: 2	9663				
Prep Date: 1	0/20/2015	Analysis D	ate: 10	0/20/2015	S	eqNo: 9	03297	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Re	ecoverable	ND	2.5								
Sample ID LC	S-21920	SampT	ype: LC	S	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID: LC	SW	Batch	ID: 21	920	F	RunNo: 2	9663				
Prep Date: 1	0/20/2015	Analysis D	ate: 10)/20/2015	S	eqNo: 9	03298	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Re	ecoverable	19	2.5	20.00	0	96.2	64.4	135			

Qualifiers:

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

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Client: Project:		Refining Con y Temporary									
Sample ID	MB-R29838	SampTy	pe: MBLK		Test	Code: E	PA 335.4: T	otal Cyanide	Subbed		
Client ID:	PBW	Batch	ID: R29838		R	unNo: 2	9838				
Prep Date:		Analysis Da	te: 10/20/2	015	S	eqNo: 9	08961	Units: mg/L			
Analyte		Result	PQL SPK	value S	PK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND 0	0.0100								
Sample ID	LCS-R29838	SampTy	pe: LCS		Test	Code: E	PA 335.4: T	otal Cyanide	Subbed		
Client ID:	LCSW	Batch	ID: R29838		R	unNo: 2	9838				
Prep Date:		Analysis Da	te: 10/20/2	015	S	eqNo: 9	08962	Units: mg/L			
Analyte		Result	PQL SPK	value S	PK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		0.451	0	.5000	0	90.2	90	110			

- * 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
- The second se
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WO#: 1510416 30-Oct-15

Client:	Navajo Refining Company
Project:	Monthly Temporary RO Reject

Sample ID MB-R29838	SampType: MBLK		TestCode: EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed							
Client ID: PBW	Batch	Batch ID: R29838		RunNo: 29838						
Prep Date:	Analysis Da	Analysis Date: 10/21/2015		SeqNo: 908965		Units: pCi/L				
Analyte	Result	PQL SP	value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.209	0.513								
Radium-226 ±	0.319	0.513								
Radium-228	0.221	0.666								
	0.221									
NUMBER OF STREET	0.31	0.666								
Radium-228 ± Sample ID MB-R29838	0.31	0.666 ype: MBLK		Tes	tCode:	PA 903.1: R	a 226 and EP	A 904.0: I	Ra 228-Subbe	ed
Radium-228 ±	0.31 SampTy	59.500			tCode: E		a 226 and EP	PA 904.0: I	Ra 228-Subbe	ed
Radium-228 ± Sample ID MB-R29838	0.31 SampTy Batch	ype: MBLK		F		29838	a 226 and EP Units: pCi/L		Ra 228-Subbe	ed
Radium-228 ± Sample ID MB-R29838 Client ID: PBW	0.31 SampTy Batch	ype: MBLK ID: R29838 ate: 10/21/2	2015	F	RunNo: : SeqNo: !	29838 908967			Ra 228-Subbe	ed Qual
Radium-228 ± Sample ID MB-R29838 Client ID: PBW Prep Date:	0.31 SampTy Batch Analysis Da	ype: MBLK ID: R29838 ate: 10/21/2	2015	F	RunNo: : SeqNo: !	29838 908967	Units: pCi/L			
Radium-228 ± Sample ID MB-R29838 Client ID: PBW Prep Date: Analyte	0.31 SampTy Batch Analysis Da Result	ype: MBLK ID: R29838 ate: 10/21/2 PQL SPł	2015	F	RunNo: : SeqNo: !	29838 908967	Units: pCi/L			
Radium-228 ± Sample ID MB-R29838 Client ID: PBW Prep Date: Analyte Radium-226	0.31 SampTy Batch Analysis Da Result 0.411	ype: MBLK ID: R29838 ate: 10/21/2 PQL SPF 0.965	2015	F	RunNo: : SeqNo: !	29838 908967	Units: pCi/L			

Qualifiers:

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- 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

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Maria D.C.

	Navajo Refining Company Monthly Temporary RO Reject			
Sample ID MB-21779 Client ID: PBW Prep Date: 10/11/20	Batch ID: 21779 RunNo: 29476	lved So	blids	
Analyte Total Dissolved Solids		%RPD	RPDLimit	Qual
Sample ID LCS-2177 Client ID: LCSW	79 SampType: LCS TestCode: SM2540C MOD: Total Disso Batch ID: 21779 RunNo: 29476	lved So	olids	
Prep Date: 10/11/20 Analyte		%RPD	RPDLimit	Qual
Total Dissolved Solids	999 20.0 1000 0 99.9 80 120			

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

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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 Websile: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Numbe	er. 1510416		RcptNo: 1	
Received by/date: 05 10 08 15				
Logged By: Lindsay Mangin 10/8/2015 9:07:00 AM	N	July Hligo		
Completed By: Lindsay Mangin 10/8/2015 12:52:31 F	PM	Andyther		
Reviewed By: 05 10 08 15		1.0		
Chain of Custody		1 vola 1		
1. Custody seals intact on sample bottles?	Yes 1	No 🗍	Not Present	
2. Is Chain of Custody complete?	Yes 🗸	No 🗌	Not Present	
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 🗆		
6. Sample(s) in proper container(s)?	Yes 🔽			
7. Sufficient sample volume for indicated test(s)?	Yes 🔽	No 🗆		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🔽	No 🗌		
9. Was preservative added to bottles?	Yes	No 🔽	NA 🗔	
10.VOA vials have zero headspace?	Yes 🗹	No 🗌	No VOA Vials	
11. Were any sample containers received broken?	Yes	No 🗹	# of preserved	
	Yes 🔽	No 🗆	for pH:	
 Does paperwork match bottle labels? (Note discrepancies on chain of custody) 	165		Calor 12 unless n	oted)
13. Are matrices correctly Identified on Chain of Custody?	Yes 🔽	No 🗆	Adjusted? // 0	-
14. Is it clear what analyses were requested?	Yes 🗹	No 🗌	0.0	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🔽	No 🗌	Checked by:	_
Special Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes 🗆	No	NA 🗹	
Person Notified Date	[5.0.4	
By Whom: Via:	🗌 eMail 📋	Phone 🗌 Fax	In Person	
Regarding				
Client Instructions:				
17. Additional remarks:				
18. Cooler Information				
Cooler No Temp ℃ Condition Seal Intact Seal No	Seal Date	Signed By		
1 1.0 Good Yes				

5		01-Cu	Chain-of-Custody Record					-	HALL ENVIRONMENTAL			Y	20	Σ	Z	4
Client	Navajo Refinery	Sefinery		X Standard	C Rush				ANALYSIS LABORATORY	7	SIS	4	B	2	Ĕ	RO
				Project Name:					www.hallenvironmental.com	nallen	/ironn	lental.	com			
Mailing A	vddress:	P.O. Box	Mailing Address: P.O. Box 159 Artesia.	Monthly Temp	orary R.O. H	Reject	4901	Hawk	4901 Hawkins NE - Albuquerque, NM 87109	- A	ondne	'enbu	NM 8	7109		
NM 88211-0159	1-0159			Project #_ P.O. # 167796	# 167796		Tel.	505-3	505-345-3975	S	Fax 6	505-345-4107	5-41	20		
Phone #	Phone #: 575-748-3311	3-3311							1991	Ana	ysis F	Analysis Request	st			August -
email or	Fax#: 57	email or Fax#: 575-746-5451		Project Manager:	jer.						(8)	-	_			
QA/QC Package: Y Standard	ackage: ard		T I evel 4 (Full Validation)	Robert Combs						0	52-вЯ-					
Chock C	5			Samular	Flizabeth Salsberry	alsberry	NS			HO.	+9Z				sbil	
	EDD (Tvpe)				X Yes	C No	tail			'0¥	Z-65	ə	_	_	os I	
				Sample Temperature:	erature: /,	2.0	200	-			-	orid	_	91) AGC	
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	8260B:WQ	335.4: Tota 6010B: WC	7470: Mero	8045: PCE	Radioactivi	Sulfate Chl	Phenols Phenols	Nitrate/Nitr	Deseid IstoT	604.1:EDB
10/7/15		8:55 liquid	Temporary R.O. Reject	2 - 500ml P	1-unpres H2SO4	100-		_		_		×	×	×	×	×
10/7/15		8:55 liquid	Temporary R.O. Reject	3-40ml VOA	HCL	100-	×	_		_		+	+	_		1
10/7/15		8:55 liquid	Temporary R.O. Reject	1-500ml P	HNO3	100-		_	×	-		+	-	_		
10/7/15		8.55 liquid	Temporary R.O. Reject	1-125ml P	HNO3	100-		×		-		+	-	_		1
10/7/15		8:55 liquid	Temporary R.O. Reject	1-500ml P	NaOH	100-		×		-		1	-	-		
10/7/15		8:55 liquid	Temporary R.O. Reject	2-1L P	HNO3	100-		-		-	×	-	-	_		
10/7/15		8:55 liquid	Temporary R.O. Reject	3-40ml VOA	Na2S203	100-		-		+			+	+		
10/7/15		8:55 liquid	Temporary R.O. Reject	2 - 1L Glass unpres	unpres	100	_	-		×			+	-		
10/7/15		8:55 liquid	Temporary R.O. Reject	1 - 1L Glass	unpres	10-	×	-		-			+	+		
10/7/15		8:55 liquid	Temporary R.O. Reject	3-40ml VOA	HCI	100-		-		×			+	-		
10/7/15		8:55 liquid	Temporary R.O. Reject	1-250miGlass unpres	unpres	100-	_	-		×	_		+	+		
10/7/15		8:55 liquid	Reject	1 - 1L Glass	H2S04	-001		+		-	_		×	+		
10/7/15	i	liquid	_	≤	HCL	Data Tima	Remarks	+		-						
Date:	1.00 (3,00	SIZANCUN	Fizabelh Salsbary	alline	Sur	- 0	Metals: As, AI, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn Wetals: As, AI, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zn VOCs: 11,1,1-Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene Trichloromethane; 1,1,2,2-Tetrachloroethane; 1,2,2,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,	Frichloro	As. A., Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, HG, Mo, Ni, Se, Ag, U, Zn As, M, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, HG, Mo, Ni, Se, Ag, U, Zn 1,1,1–Trichloroethane; 1,1,2,2–Tetrachhorechane; 1,1,2,2–Tetrachhorechylene; 1,1,2 20040000	, Cu, Fe 1,2,2-Te	Pb, Mn trachlor	, Hg, Mo jethane,	, Ni, Se 1,1,2,2	, Ag, U, Tetrad	Zn Iloroeth	ylene; 1
Date:	Time:	Relinquished by:	ed by:	Received by:		Date Time	Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform; Dichloromethane; Ethylbenzene; Toluene; Total Xylenes; Vinyl Chloride	e; 1,2-Di ine; Ethy	chloroeth	Toluen	zene, C	srbon Te	trachlo Vinyl Cl	ide, Ch londe	loroforn	F

HOLLYFRONTIER The HollyFrontier Comparies	Solid C Liquid Sludge	Type of Sampler Directly to sample jars			Analysis and/or Method Requested	pH, CI, F, S04, NO2/NO3, TDS	8015 GRO	6020 total metals, 7470 Hg	6020 Dissolved Metals	Cyande	Radium 226/228		OC/U See diacined list	BUIL DRO	Radium 226/228		Refrigerated	Other 🗆	Shipping Media	Ice C	Other
HOLLY					1 Other											10/7/2015 Tmp.60.8 °F. Humidity 94%, Wind Dir. North, Wind Speed 8.1 mph. Conditions Partly Cloudy					
			Reject Discarge	San Anna Anna	NaHSO4											mph, Cond					
be 2	000	One	R.C. Rejec	es	Na2S203											Speed 8.1					
Monthly nporary l ect Sam Details	Grab	e Intervals	South Field R.C.	Preservatives	NaOH					×						North, Wind					
Monthly Temporary RO Reject Sample Details	Grab Time Weighted Composite Flow Weighted Composite	Parts / Sample Intervals One	D		H2SO4	×										, Wind Dir.					
μщ	Time	Pa	lge	1000	HNO3			×	×		×					dity \$4%					
217			ect Disca	新聞と	HCL		×			_	-	×	_	+	×	F. Hum					
apary, l			C. Reje	A CONTRACTOR	Neat (None)	×						1	×	×	<	mp.60.8					
Navajo Kefining Company, LLC 501 E. Main Artesia, NM 88210 (Tel)575.748.3311 (Fax)575.746.5451		,	North Field R.O. Reject Discarge		# of Contairers	2	3	-	+	2	0	2	- (N	N (N	10/7/2015 T					
S01 E Main 501 E Main Artesia, NM (Tel) 575.745 (Fax) 575.745	Project Name Biannual RO Reject Samplers Name Elizabeth Salsberry Samplers Affiliation Navian Refinition Co. 11 C	Start Date and Time 10/7/2015 @ 8:55am Find Date and Time 10/7/2015 @ 9:11am			Material	Plastic	VOA	Plastic	Plastic	Plastic	Plastic	VOA	Glass	Glass	VOA	Field Data (Weather, Observations, Etc):		Field pH 22.7C			
C C C C C C C C C C C C C C C C C C C	rs Name Bit	and Time 10	Outfall / Sample Location:		Size	500ml	40ml	500ml	125ml	500ml	1L	40ml	Ļ	1	40mi	feather, Obs	ie:	8.13			
NAN.	Sample Sample	Start Date a Find Date a	Outfall / Se	1.1	Container	1	2	3	4	9	9	7	~	5 1	10	Field Data (M	Date and Time:	Field Temp.			



December 15, 2015

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 – November 2015 Reporting Period

Dear Sirs:

In accordance with Exhibit A, paragraph 5, to Agreed Compliance Order No. WQA-OCD-CO-2015-002 (the Order), the Navajo Refining Company, L.L.C. (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 December 2015 monthly report, for the period of November 1 - 30, under the Order.

Specifically, this report covers the November 2015 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.

Navajo Refining Company, L.L.C. 501 East Main • Artesia, NM 88210 (575) 748-3311 • <u>http://www.hollyfrontier.com</u> OCD December 15, 2015 Page 2 of 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 November 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 November 1 through November 30.
- \$500 per day for each daily RO reject fluid discharge volume that exceeds 15,000 barrels from November 1 through November 30.

Navajo has calculated a penalty of \$2,900 for November 2015. The daily discharge volume exceeded the 10,000 barrels/day (bbl/day) limit, but was under 15,000 barrels total, on 29 days in November. 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 November 3, 2015. 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.

> Navajo Refining Company, L.L.C. 501 East Main • Artesia, NM 88210 (575) 748-3311 • <u>http://www.hollyfrontier.com</u>

OCD December 15, 2015 Page 3 of 3

On November 12, 2015, Navajo notified OCD that Holly Energy Partners was conducting field work in the south discharge field, and that the temporary RO discharge location would need to be moved to the north field. OCD approved this request in an email on November 12, 2015. Per OCD's request, Navajo has documented the discharge locations and volumes.

On November, 2015, Navajo and OCD met to discuss conditions of the May 2015 permit modification request to increase the discharge volume, and the Background Groundwater Report.

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

		Permaner	nt RO Units		Tempo	rary Unit	Daily Discharge Volume
	Metere	ed Data		RO Reject (Calculated)	(Calculate	ect Discharge ed from Log ata)	
	GPM	GPM	GPM	BBL/DAY	GPM	BBL/DAY	BBL
	SOUTH	NORTH					
11/1/2015	141	144	285	9,771	61	2075	11,846
11/2/2015	155	148	303	10,389	63	2150	12,539
11/3/2015	146	149	295	10,114	63	2168	12,282
11/4/2015	147	144	291	9,977	65	2219	12,196
11/5/2015	144	143	287	9,840	67	2285	12,125
11/6/2015	151	141	292	10,011	68	2330	12,341
11/7/2015	146	145	291	9,977	69	2365	12,342
11/8/2015	149	140	289	9,909	70	2400	12,309
11/9/2015	147	148	295	10,114	70	2400	12,514
11/10/2015	0	145	145	4,971	51	1759	6,730
11/11/2015	149	147	296	10,149	55	1903	12,052
11/12/2015	147	143	290	9,943	70	2391	12,334
11/13/2015	149	144	293	10,046	71	2422	12,468
11/14/2015	149	140	289	9,909	71	2434	12,343
11/15/2015	149	144	293	10,046	72	2458	12,504
11/16/2015	152	140	292	10,011	56	1922	11,933
11/17/2015	148	152	300	10,286	57	1956	12,242
11/18/2015	152	143	295	10,114	58	1993	12,107
11/19/2015	149	141	290	9,943	59	2023	11,966
11/20/2015	146	144	290	9,943	60	2069	12,012
11/21/2015	146	146	292	10,011	60	2058	12,069
11/22/2015	149	142	291	9,977	64	2183	12,160
11/23/2015	154	153	307	10,526	66	2250	12,776
11/24/2015	127	150	277	9,497	91	3107	12,604
11/25/2015	139	148	287	9,840	66	2254	12,094
11/26/2015	137	148	285	9,771	67	2295	12,066
11/27/2015	143	151	294	10,080	66	2263	12,343
11/28/2015	141	148	289	9,909	66	2263	12,172
11/29/2015	138	150	288	9,874	57	1938	11,812
11/30/2015	142	153	295	10,114	67	2303	12,417

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

Attachment 2 Stipulated Penalty Calculation

Calculation of Stipulated Penalties - November 2015

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	29	\$2,900
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 A	mount:	\$2,900

Attachment 3 Analytical Lab Report



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

November 25, 2015

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

OrderNo.: 1511135

RE: Monthly RO Reject

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/4/2015 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 <u>www.hallenvironmental.com</u> 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1511135

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 11/25/2015

CLIENT: Navajo Refining Company Client Sample ID: R.O. Reject **Project:** Monthly RO Reject Collection Date: 11/3/2015 9:00:00 AM Lab ID: 1511135-001 Matrix: AQUEOUS Received Date: 11/4/2015 9:05:00 AM Analyses Result **RL** Oual Units **DF** Date Analyzed Batch EPA 200.8: DISSOLVED METALS Analyst: JLF Arsenic ND 0.0050 mg/L 5 11/18/2015 12:45:48 PM B30317 Lead ND 0.00050 mg/L 1 11/18/2015 12:14:52 PM B30317 Selenium 0.0061 0.0010 11/18/2015 12:14:52 PM B30317 mg/L 1 Uranium 0.0032 0.00050 mg/L 1 11/18/2015 12:14:52 PM B30317 EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED Analyst: SUB Radium-226 R30469 0.79 0.815 pCi/L 1 11/16/2015 Radium-226 ± 0.627 0.815 pCi/L 11/16/2015 R30469 1 0.401 pCi/L R30469 Radium-228 0.750 11/16/2015 1 Radium-228 ± 0.369 0.750 pCi/L 1 11/16/2015 R30469 **EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.4 0.10 mg/L 1 11/4/2015 6:51:42 PM R30015 Chloride 29 10 mg/L 20 11/4/2015 7:28:55 PM R30015 0.10 11/4/2015 6:51:42 PM R30015 Nitrogen, Nitrate (As N) 1.3 mg/L 1 Sulfate 1100 25 mg/L 50 11/19/2015 2:37:48 AM R30336 SM2540C MOD: TOTAL DISSOLVED SOLIDS Analyst: KS **Total Dissolved Solids** 2050 20.0 mg/L 11/7/2015 10:19:00 AM 22194 1 Analyst: SUB EPA 335.4: TOTAL CYANIDE SUBBED 0.0100 Cyanide ND mg/L 1 11/16/2015 R30469 SM4500-H+B: PH Analyst: JRR 11/5/2015 4:48:02 PM pH 7.87 1.68 pH units R30047 н 1 EPA METHOD 200.7: DISSOLVED METALS Analyst: MED 11/13/2015 4:20:04 PM B30225 ND 0.020 Aluminum mg/L 1 0.042 Barium 0.0020 mg/L 1 11/13/2015 4:20:04 PM B30225 0.077 11/13/2015 4:20:04 PM B30225 Boron 0.040 mg/L 1 Cadmium ND 0.0020 mg/L 11/13/2015 4:20:04 PM B30225 1 Chromium ND 0.0060 mg/L 1 11/13/2015 4:20:04 PM B30225 Cobalt ND 0.0060 1 11/13/2015 4:20:04 PM B30225 mg/L Copper ND 0.0060 mg/L 1 11/13/2015 4:20:04 PM B30225 ND 0.020 11/13/2015 4:20:04 PM B30225 Iron mg/L 1 Manganese ND 0.0020 mg/L 1 11/13/2015 4:20:04 PM B30225 Molybdenum ND 0.0080 11/13/2015 4:20:04 PM B30225 mg/L 1 Nickel ND 0.010 11/13/2015 4:20:04 PM B30225 mg/L 1 Silver ND 0.0050 mg/L 1 11/13/2015 4:20:04 PM B30225 Zinc 0.35 0.010 mg/L 11/13/2015 4:20:04 PM B30225 1 **EPA METHOD 245.1: MERCURY** Analyst: DBD Mercury ND 0.00020 mg/L 1 11/13/2015 6:15:32 PM 22341 Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information. **Qualifiers:**

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank B

E Value above quantitation range

Analyte detected below quantitation limits Page 1 of 23 J

Р Sample pH Not In Range

RL **Reporting Detection Limit**

Analytical Report Lab Order 1511135

Date Reported: 11/25/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Project:

Client Sample ID: R.O. Reject Collection Date: 11/3/2015 9:00:00 AM

Monthly RO Reject Lab ID: 1511135-001 Matrix: AQUEOUS Received Date: 11/4/2015 9:05:00 AM Analyses Result **RL** Oual Units **DF** Date Analyzed Batch EPA METHOD 8011/504.1: EDB Analyst: JME 11/6/2015 2:48:23 PM 1,2-Dibromoethane ND 0.010 µg/L 22172 1 EPA METHOD 8082: PCB'S Analyst: JDC ND Aroclor 1016 1.0 µg/L 1 11/6/2015 6:25:50 PM 22197 Aroclor 1221 ND 1.0 µg/L 1 11/6/2015 6:25:50 PM 22197 Aroclor 1232 ND 1.0 µg/L 1 11/6/2015 6:25:50 PM 22197 Aroclor 1242 ND 1.0 µg/L 1 11/6/2015 6:25:50 PM 22197 Aroclor 1248 ND 1.0 µg/L 11/6/2015 6:25:50 PM 22197 1 ND Aroclor 1254 1.0 µg/L 11/6/2015 6:25:50 PM 22197 1 Aroclor 1260 ND 1.0 µg/L 1 11/6/2015 6:25:50 PM 22197 73.2 %REC 22197 Surr: Decachlorobiphenyl 17.7-151 1 11/6/2015 6:25:50 PM Surr: Tetrachloro-m-xylene 63.6 20.6-151 %REC 1 11/6/2015 6:25:50 PM 22197 EPA METHOD 8015M/D: DIESEL RANGE Analyst: KJH **Diesel Range Organics (DRO)** ND 1 11/6/2015 3:31:45 PM 22175 1.0 mg/L Motor Oil Range Organics (MRO) ND 5.0 mg/L 1 11/6/2015 3:31:45 PM 22175 Surr: DNOP 134 72-136 %REC 1 11/6/2015 3:31:45 PM 22175 EPA METHOD 8015D: GASOLINE RANGE Analyst: NSB 11/5/2015 10:08:12 AM R30036 Gasoline Range Organics (GRO) ND 0.050 mg/L 1 Surr: BFB 79.0 57.8-137 %REC 11/5/2015 10:08:12 AM R30036 1 EPA METHOD 8310: PAHS Analyst: JDC Naphthalene ND 2.0 µg/L 1 11/6/2015 5:45:58 PM 22195 ND 2.0 22195 1-Methylnaphthalene µg/L 1 11/6/2015 5:45:58 PM 2-Methylnaphthalene 22195 ND 2.0 µg/L 1 11/6/2015 5:45:58 PM ND Benzo(a)pyrene 0.070 µg/L 11/6/2015 5:45:58 PM 22195 1 Surr: Benzo(e)pyrene 63.7 37.2-136 %REC 1 11/6/2015 5:45:58 PM 22195 EPA METHOD 8260B: VOLATILES Analyst: AG 11/6/2015 2:08:57 PM Benzene ND 1.0 1 R30086 µg/L Toluene ND 1.0 µg/L 1 11/6/2015 2:08:57 PM R30086 Ethylbenzene ND 11/6/2015 2:08:57 PM R30086 1.0 µg/L 1 1,2-Dichloroethane (EDC) ND 1.0 µg/L 1 11/6/2015 2:08:57 PM R30086 1,2-Dibromoethane (EDB) ND 1.0 µg/L 1 11/6/2015 2:08:57 PM R30086 Carbon Tetrachloride ND 1.0 R30086 µg/L 1 11/6/2015 2:08:57 PM Chloroform ND 1.0 µg/L 1 11/6/2015 2:08:57 PM R30086 1,1-Dichloroethane ND 1.0 µg/L 1 11/6/2015 2:08:57 PM R30086 1,1-Dichloroethene ND R30086 1.0 µg/L 1 11/6/2015 2:08:57 PM ND Methylene Chloride 3.0 µg/L 1 11/6/2015 2:08:57 PM R30086

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

2.0

1.0

µg/L

µg/L

ND

ND

Qualifiers: * Value exceeds Maximum Contaminant Level.

> D Sample Diluted Due to Matrix

1,1,2,2-Tetrachloroethane

Tetrachloroethene (PCE)

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank B

1

1

- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 23 J

11/6/2015 2:08:57 PM

11/6/2015 2:08:57 PM

R30086

R30086

- Р Sample pH Not In Range
- **Reporting Detection Limit** RL

Analytical Report Lab Order 1511135 Date Reported: 11/25/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly RO Reject

Client Sample ID: R.O. Reject Collection Date: 11/3/2015 9:00:00 AM

Lab ID: 1511135-001	Matrix:	AQUEOUS	Received I	Date: 11	/4/2015 9:05:00 AM	
Analyses	Result	RL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	AG
1,1,1-Trichloroethane	ND	1.0	µg/L	1	11/6/2015 2:08:57 PM	R30086
1,1,2-Trichloroethane	ND	1.0	µg/L	1	11/6/2015 2:08:57 PM	R30086
Trichloroethene (TCE)	ND	1.0	µg/L	1	11/6/2015 2:08:57 PM	R30086
Vinyl chloride	ND	1.0	µg/L	1	11/6/2015 2:08:57 PM	R30086
Xylenes, Total	ND	1.5	µg/L	1	11/6/2015 2:08:57 PM	R30086
Surr: 1,2-Dichloroethane-d4	96.3	70-130	%REC	1	11/6/2015 2:08:57 PM	R30086
Surr: 4-Bromofluorobenzene	98.0	70-130	%REC	1	11/6/2015 2:08:57 PM	R30086
Surr: Dibromofluoromethane	99.6	70-130	%REC	1	11/6/2015 2:08:57 PM	R30086
Surr: Toluene-d8	105	70-130	%REC	1	11/6/2015 2:08:57 PM	R30086
TOTAL PHENOLICS BY SW-846 9067					Analyst	SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	11/10/2015	22262

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 23
	ND	Not Detected at the Reporting Limit	Р	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		

Analytical Report Lab Order 1511135

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1511135-002

Monthly RO Reject

Project:

Lab ID:

Collection Date:

Matrix: TRIP BLANK Received Date: 11/4/2015 9:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst:	JME
1,2-Dibromoethane	ND	0.0 <mark>1</mark> 0		µg/L	1	11/6/2015 3:01:56 PM	22172
EPA METHOD 8260B: VOLATILES						Analyst	AG
Benzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R30086
Toluene	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R30086
Ethylbenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Naphthalene	ND	2.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
1-Methylnaphthalene	ND	4.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
2-Methylnaphthalene	ND	4.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Acetone	ND	10		µg/L	1	11/6/2015 3:35:06 PM	R3008
Bromobenzene	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
Bromodichloromethane	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Bromoform	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Bromomethane	ND	3.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
2-Butanone	ND	10		μg/L	1	11/6/2015 3:35:06 PM	R3008
Carbon disulfide	ND	10		μg/L	1	11/6/2015 3:35:06 PM	R3008
Carbon Tetrachloride	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Chlorobenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Chloroethane	ND	2.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Chloroform	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
Chloromethane	ND	3.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
2-Chlorotoluene	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
4-Chlorotoluene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
cis-1,2-DCE	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Dibromochloromethane	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
Dibromomethane	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2-Dichlorobenzene	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1-Dichloroethane	ND	1.0		μg/L	1	11/6/2015 3:35:06 PM	R3008
1,1-Dichloroethene	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2-Dichloropropane	ND	1.0		µg/L	1	11/6/2015 3:35:06 PM	R30086

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- 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 Page 4 of 23
- P Sample pH Not In Range
- RL Reporting Detection Limit

Date Reported: 11/25/2015
Client Sample ID: Trip Blank

Analytical Report Lab Order 1511135

Date Reported: 11/25/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1511135-002

Project: Monthly RO Reject

Lab ID:

Client Sample ID: Trip Blank Collection Date:

Matrix: TRIP BLANK Received Date: 11/4/2015 9:05:00 AM

Analyses	Result	RL (Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	AG
1,3-Dichloropropane	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
2,2-Dichloropropane	ND	2.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1-Dichloropropene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Hexachlorobutadiene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
2-Hexanone	ND	10	µg/L	1	11/6/2015 3:35:06 PM	R3008
Isopropylbenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
4-Isopropyltoluene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
4-Methyl-2-pentanone	ND	10	µg/L	1	11/6/2015 3:35:06 PM	R3008
Methylene Chloride	ND	3.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
n-Butylbenzene	ND	3.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
n-Propylbenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
sec-Butylbenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Styrene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
tert-Butylbenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
trans-1,2-DCE	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1,1-Trichloroethane	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,1,2-Trichloroethane	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Trichloroethene (TCE)	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Trichlorofluoromethane	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
1,2,3-Trichloropropane	ND	2.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Vinyl chloride	ND	1.0	µg/L	1	11/6/2015 3:35:06 PM	R3008
Xylenes, Total	ND	1.5	µg/L	1	11/6/2015 3:35:06 PM	R3008
Surr: 1,2-Dichloroethane-d4	94.8	70-130	%REC	1	11/6/2015 3:35:06 PM	R3008
Surr: 4-Bromofluorobenzene	97.6	70-130	%REC	1	11/6/2015 3:35:06 PM	R3008
Surr: Dibromofluoromethane	95.4	70-130	%REC	1	11/6/2015 3:35:06 PM	R3008
Surr: Toluene-d8	95.9	70-130	%REC	1	11/6/2015 3:35:06 PM	R3008

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 23
	ND	Not Detected at the Reporting Limit	Р	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		

WO#:	1511135
	25-Nov-15

	ajo Refining C thly RO Rejec	10 A								
Sample ID MB-B	a 8.	Type: ME	R K	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID: PBW	1	h ID: B3			RunNo: 3		200.7. 010001	veu meta	5	
Prep Date:	Analysis I	Date: 1	1/13/2015	5	SeqNo: 9	21063	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 LLLCS-B	Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID: BatchOC	Bato	h ID B3	0225	R	RunNo: 3	0225				
Client ID: BatchQC		h ID: B3			RunNo: 3					
Client ID: BatchQC Prep Date:	Bato Analysis I				RunNo: 3 SeqNo: 9		Units: mg/L			
	Analysis I Result	Date: 1' PQL	I/13/2015 SPK value			21064 LowLimit	Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum	Analysis I Result ND	Date: 1' PQL 0.020	I/13/2015 SPK value 0.01000	S	SeqNo: 9 %REC 90.0	21064 LowLimit 50	Units: mg/L HighLimit 150		RPDLimit	Qual
Prep Date:	Analysis I Result	Date: 1' PQL	I/13/2015 SPK value	SPK Ref Val	SeqNo: 9 %REC	21064 LowLimit	Units: mg/L HighLimit		RPDLimit	Qual
Prep Date: Analyte Aluminum	Analysis I Result ND 0.0021 0.041	Date: 1' PQL 0.020	I/13/2015 SPK value 0.01000	SPK Ref Val	SeqNo: 9 %REC 90.0	21064 LowLimit 50	Units: mg/L HighLimit 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium	Analysis I Result ND 0.0021	Date: 11 PQL 0.020 0.0020	I/13/2015 SPK value 0.01000 0.002000	SPK Ref Val 0 0	SeqNo: 9 %REC 90.0 105	21064 LowLimit 50 50	Units: mg/L HighLimit 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron	Analysis I Result ND 0.0021 0.041	Date: 1* PQL 0.020 0.0020 0.040	I/13/2015 SPK value 0.01000 0.002000 0.04000	SPK Ref Val 0 0 0	SeqNo: 9 %REC 90.0 105 102	21064 LowLimit 50 50 50	Units: mg/L HighLimit 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063	Date: 1' PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.002000 0.006000 0.006000	SPK Ref Val 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105	221064 LowLimit 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND	Date: 1' PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060 0.0060	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.002000 0.006000 0.006000 0.006000	SPK Ref Val 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2	221064 LowLimit 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025	Date: 1* PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060 0.0060 0.020	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.006000 0.02000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127	221064 LowLimit 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022	Date: 1* PQL 0.020 0.040 0.040 0.040 0.0060 0.0060 0.0060 0.020 0.020	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.02000 0.02000 0.002000	SPK Ref Val 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108	21064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089	Date: 1* PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060 0.0060 0.020	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.02000 0.002000 0.002000 0.008000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127	221064 LowLimit 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND	Date: 1* PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060 0.0060 0.020 0.0020 0.0020 0.0020 0.0080 0.010	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.02000 0.002000 0.002000 0.008000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 <u>%REC</u> 90.0 105 102 94.0 101 105 93.2 127 108 112 108	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053	Date: 1* PQL 0.020 0.040 0.040 0.0060 0.0060 0.0060 0.020 0.0020 0.0020 0.0080 0.010 0.0050	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.005000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND	Date: 1* PQL 0.020 0.040 0.040 0.0020 0.0060 0.0060 0.0060 0.020 0.0020 0.0020 0.0020 0.0080 0.010	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.02000 0.002000 0.002000 0.008000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 <u>%REC</u> 90.0 105 102 94.0 101 105 93.2 127 108 112 108	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150		RPDLimit	Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053 ND	Date: 1* PQL 0.020 0.040 0.040 0.0060 0.0060 0.0060 0.020 0.0020 0.0020 0.0080 0.010 0.0050	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.002000 0.005000 0.005000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106 102	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150	%RPD		Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver Zinc	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053 ND 0.0053 ND	Date: 1' PQL 0.020 0.040 0.040 0.0060 0.0060 0.0060 0.020 0.0020 0.0020 0.0080 0.010 0.0050 0.010	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.002000 0.005000 0.005000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106 102	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150	%RPD		Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver Zinc Sample ID LCS-B	Analysis I Result ND 0.0021 0.041 ND 0.0061 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053 ND 0.0053 ND	Date: 1' PQL 0.020 0.0020 0.040 0.0060 0.0060 0.0060 0.0060 0.0020 0.0080 0.010 0.0050 0.010 Type: LC th ID: B3	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.002000 0.005000 0.005000 0.005000 0.005000 0.005000 0.005000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7 Es: F	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106 102	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150	%RPD		Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver Zinc Sample ID LCS-B Client ID: LCSW	Analysis I Result ND 0.0021 0.041 ND 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053 ND 0.0053 ND 0.0053 ND	Date: 1' PQL 0.020 0.0020 0.040 0.0060 0.0060 0.0060 0.0060 0.0020 0.0080 0.010 0.0050 0.010 Type: LC th ID: B3	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.0050000000000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7 Es: F	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106 102 tCode: E RunNo: 3 SeqNo: 9	221064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150	%RPD		Qual
Prep Date: Analyte Aluminum Barium Boron Cadmium Chromium Cobalt Copper Iron Manganese Molybdenum Nickel Silver Zinc Sample ID LCS-B Client ID: LCSW Prep Date:	Analysis I <u>Result</u> ND 0.0021 0.041 ND 0.0063 ND 0.025 0.0022 0.0089 ND 0.0053 ND	Date: 1* PQL 0.020 0.0020 0.040 0.0020 0.0060 0.0060 0.0060 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0060 0.0060 0.0020 0.0060 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0060 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0060 0.0020 0.0050 0.0020 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0050 0.0010 0.0010 0.0050 0.0010 0	I/13/2015 SPK value 0.01000 0.002000 0.04000 0.006000 0.006000 0.006000 0.006000 0.002000 0.002000 0.002000 0.0050000000000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SeqNo: 9 %REC 90.0 105 102 94.0 101 105 93.2 127 108 112 108 106 102 tCode: E RunNo: 3 SeqNo: 9	21064 LowLimit 50 50 50 50 50 50 50 50 50 50	Units: mg/L HighLimit 150 150 150 150 150 150 150 150 150 150	%RPD	S	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank

E Value above quantitation range

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit

- Page 6 of 23

WO#: 1511135 25-Nov-15

Client: Navajo Refining Company

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Project:		Monthly RO Reject				
Sample I	D LCS-B	SampType:	LCS	TestCode:	EPA Method	d 200.7: Dissolved Metals
Client ID:	LCSW	Batch ID:	B30225	RunNo:	30225	
Prep Dat	e:	Analysis Date:	11/13/2015	SeqNo:	921065	Units: mg/L

Prep Date:	Analysis	Date: 1	1/13/2015	S	SeqNo: 9	21065	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.50	0.040	0.5000	0	100	85	115			
Cadmium	0.48	0.0020	0.5000	0	97.0	85	115			
Chromium	0.48	0.0060	0.5000	0	96.3	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.2	85	115			
Copper	0.47	0.0060	0.5000	0	94.8	85	115			
Iron	0.49	0.020	0.5000	0	97.5	85	115			
Manganese	0.47	0.0020	0.5000	0	93.8	85	115			
Molybdenum	0.50	0.0080	0.5000	0	101	85	115			
Nickel	0.46	0.010	0.5000	0	92.0	85	115			
Silver	0.099	0.0050	0.1000	0	99.2	85	115			
Zinc	0.48	0.010	0.5000	0	96.1	85	115			

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

WO#: 1511135

25-Nov-15	

Client:		Navajo Refining C	Compan	У							
Project:		Monthly RO Reject	ct								
Sample ID	LCS	Samp	Type: L	.CS	Tes	tCode: El	PA 200.8: [Dissolved Me	tals		
Client ID:	LCSW	Bat	ch ID: E	330317	F	RunNo: 3	0317				
Prep Date:		Analysis	Date:	11/18/2015	S	SeqNo: 9	25053	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.025	0.0010	0 0.02500	0	100	85	115			
_ead		0.012	0.00050	0 0.01250	0	96.6	85	115			
Selenium		0.026	0.0010	0 0.02500	0	102	85	115			
Uranium		0.012	0.00050	0 0.01250	0	96.9	85	115			
Sample ID	LLLCS	Samp	Type: L	CSLL	Tes	tCode: El	PA 200.8: [Dissolved Me	tals		
Client ID:	BatchQ	C Bat	ch ID: E	330317	F	RunNo: 3	0317				
Prep Date:		Analysis	Analysis Date: 11/18/2015			SeqNo: 9	25054	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	105	50	150			
ead		ND	0.00050	0 0.0005000	0	99.5	50	150			
Selenium		0.0010	0.0010	0.001000	0	101	50	150			
Jranium		ND	0.00050	0 0.0005000	0	97.4	50	150			
Sample ID	MB	Samp	Type: N	IBLK	Tes	tCode: El	PA 200.8: [Dissolved Me	tals		
Client ID:	PBW	Bat	ch ID: E	330317	F	RunNo: 3	0317				
Prep Date:		Analysis	Date:	11/18/2015	S	SeqNo: 9	25055	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010	0							
_ead		ND	0.00050	0							
_eau											
Selenium		ND	0.0010	0							

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

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0.0061 0.00020

0.005000

Client: Project:		e Refining Company ly RO Reject							
Sample ID	MB-22341	SampType: MBLK	TestCode: EPA Method 245.1: Mercury						
Client ID:	PBW	Batch ID: 22341	RunNo: 30233						
Prep Date:	11/13/2015	Analysis Date: 11/13/2015	SeqNo: 921328	Units: mg/L	s: mg/L				
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RP	D RPDLimit	Qual			
Mercury		ND 0.00020							
Sample ID	LCS-22341	SampType: LCS	TestCode: EPA Method	245.1: Mercury					
Client ID:	LCSW	Batch ID: 22341	RunNo: 30233						
Prep Date:	11/13/2015	Analysis Date: 11/13/2015	SeqNo: 921336	Units: mg/L					
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RP	D RPDLimit	Qual			

0

121

80

120

Qualifiers:

Mercury

- * 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

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S

Client:	Navajo Re	efining Co	mpany									
Project:	Monthly I	RO Reject										
100	<u></u>											
Sample ID	MB	SampT	ype: MI	BLK	Tes	Code: El	PA Method	300.0: Anions	5			
Client ID:	PBW	Batch	ID: R3	0015	F	unNo: 3	0015					
Prep Date:		Analysis Da	ate: 1	1/4/2015	S	eqNo: 9	14384	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, Nitrat	e (As N)	ND	0.10									
Sample ID	LCS	SampT	ype: LC	s	TestCode: EPA Method 300.0: Anions							
Client ID:	LCSW	Batch	ID: R3	0015	R	unNo: 3	0015					
Prep Date:		Analysis Da	ate: 1	1/4/2015	S	eqNo: 9	14385	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	96.1	90	110			0-4940095.05	
Chloride		4.8	0.50	5.000	0	96.8	90	110				
Nitrogen, Nitrat	e (As N)	2.6	0.10	2.500	0	103	90	110				
Sample ID 1511135-001EMS SampType: MS TestCode: EPA Method 300.0: Anions												
Client ID:	R.O. Reject	Batch	ID: R3	0015	RunNo: 30015							
Prep Date:		Analysis Da	ate: 1	1/4/2015	S	eqNo: 9	14409	Units: mg/L				
Analyte		Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride		3.0	0.10	0.5000	2.378	120	75.3	111			S	
Nitrogen, Nitrat	e (As N)	3.9	0.10	2.500	1.288	103	87.3	111			0	
Comple ID	4544495 0045105	ComoT		20	Tee			200.0.4	0			
	1511135-001EMSE R.O. Reject		ID: R3					300.0: Anions	,			
Prep Date:	R.O. Reject	Analysis Date				eqNo: 9		Units: mg/L				
Trop Date.		, and your D			-			onitor ingre			Qual	
Apolito		Popult	POI	SPK value	SDK Pof Val	% PEC	Low imit	Highl imit	% PPD			
Analyte		Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit 20	Qual	
Analyte Fluoride Nitrogen, Nitrat	e (As N)	Result 3.2 3.9	PQL 0.10 0.10	SPK value 0.5000 2.500	SPK Ref Val 2.378 1.288	%REC 165 103	LowLimit 75.3 87.3	HighLimit 111 111	%RPD 7.21 0.531	20 20	S	
Fluoride Nitrogen, Nitrat	. ,	3.2 3.9	0.10 0.10	0.5000 2.500	2.378 1.288	165 103	75.3 87.3	111 111	7.21 0.531	20		
Fluoride Nitrogen, Nitrat Sample ID	MB	3.2 3.9 SampTy	0.10 0.10 ype: MI	0.5000 2.500 BLK	2.378 1.288 Tes	165 103 Code: El	75.3 87.3 PA Method	111	7.21 0.531	20		
Fluoride Nitrogen, Nitrat	MB	3.2 3.9 SampTy Batch	0.10 0.10 ype: MI	0.5000 2.500 BLK 00336	2.378 1.288 Tes F	165 103	75.3 87.3 PA Method 0336	111 111	7.21 0.531	20		
Fluoride Nitrogen, Nitrat Sample ID Client ID:	MB	3.2 3.9 SampTy	0.10 0.10 ype: MI	0.5000 2.500 BLK 0336 1/18/2015	2.378 1.288 Tes F	165 103 Code: El	75.3 87.3 PA Method 0336	111 111 300.0: Anions	7.21 0.531	20		

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
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- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:	1511135
	25-Nov-15

Client: Project:	Navajo Refining Com Monthly RO Reject	pany								
Sample ID LCS	SampTyp	e: LC	s	Test	Code: E	PA Method	300.0: Anions	5		
Client ID: LCSW	Batch I): R3	0336	R	unNo: 3	0336				
Prep Date:	Analysis Date	e: 1	1/18/2015	S	eqNo: 9	25733	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.7	0.50	10.00	0	97.3	90	110			

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- P Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Project:	Navajo Refining Company Monthly RO Reject												
Sample ID MB-	22172	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8011/504.1: E	DB				
Client ID: PBV	/	Batch	n ID: 22	172	F								
Prep Date: 11/	5/2015	Analysis D	ate: 1	1/6/2015	5	SeqNo: 9	16394	Units: µg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
1,2-Dibromoethane													

Sample ID LCS-22172	SampType: LCS			TestCode: EPA Method 8011/504.1: EDB						
Client ID: LCSW	D: LCSW Batch ID: 22172				RunNo: 3	0082				
Prep Date: 11/5/2015	Analysis D	ate: 11	1/6/2015	S	eqNo: 9	16395	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.044	0.010	0.05000	0	88.0	70	130			

Qualifiers:

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

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Navajo Refining Company

Monthly RO Reject

nc.	25-Nov-15

Sample ID MB-22175	SampT	ype: ME	BLK	Tes	TestCode: EPA Method 8015M/D: Diesel Range						
Client ID: PBW	Batch	n ID: 22	175	F	RunNo: 3	0057					
Prep Date: 11/4/2015	Analysis D	ate: 11	1/6/2015	5	SeqNo: 915909			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	1.1		1.000		113	72	136				
Sample ID LCS-22175	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Die:	sel Range)		
Client ID: LCSW	Batch	D: 22	175	F	RunNo: 3	0057					
Prep Date: 11/4/2015	Analysis D	ate: 11	1/6/2015	5	SeqNo: 9	15910	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	5.3	1.0	5.000	0	106	52.4	154				

Qualifiers:

Client:

Project:

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- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
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- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Navajo Refining Company

Project: Monthly	RO Reject	ACCO 1 1 523								
Sample ID 5ML RB	SampTy	/pe: MI	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batch	ID: R3	0036	F	RunNo: 3	0036				
Prep Date:	Analysis Da	ate: 1	1/5/2015	5	SeqNo: 9	15111	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	16		20.00		79.4	57.8	137			
Sample ID 2.5UG GRO LCS	SampTy	/pe: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batch	ID: R3	80036	F	RunNo: 3	0036				
Prep Date:	Analysis Da	ate: 1	1/5/2015	5	SeqNo: 9	15112	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	88.0	80	120			
Surr: BFB	20		20.00		98.3	57.8	137			
Sample ID 1511135-001JMS	SampTy	/pe: Ms	8	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: R.O. Reject	Batch	ID: R3	80036	F	RunNo: 3	0036				
Prep Date:	Analysis Da	ate: 1	1/5/2015	5	SeqNo: 9	15114	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	87.9	70	130			
Surr: BFB	20		20.00		97.9	57.8	137			
Sample ID 1511135-001JMS	D SampTy	/pe: M	3D	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: R.O. Reject	Batch ID: R30036 RunNo: 30036									

Prep Date:	Analysis Date: 11/5/2015			SeqNo: 915115			Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.42	0.050	0.5000	0	83.8	70	130	4.80	20	
Surr: BFB	19		20.00		96.0	57.8	137	0	0	

Qualifiers:

Client:

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- RL Reporting Detection Limit

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Navajo Refining Company

Monthly RO Reject

Client:

Project:

S % Recovery outside of range due to dilution or matrix

Value exceeds Maximum Contaminant Level.

Holding times for preparation or analysis exceeded

Sample Diluted Due to Matrix

Not Detected at the Reporting Limit

RPD outside accepted recovery limits

Qualifiers:

*

D

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ND

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Sample ID MB-22197	SampType: MBLK Batch ID: 22197 Analysis Date: 11/6/2015			TestCode: EPA Method 8082: PCB's						
Client ID: PBW				RunNo: 30067						
Prep Date: 11/5/2015				S	eqNo: 9	16012	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	2.4		2.500		96.4	17.7	151			
Surr: Tetrachloro-m-xylene	2.0		2.500		82.0	20.6	151			
Sample ID LCS-22197	SampType: LCS			TestCode: EPA Method 8082: PCB's						
Client ID: LCSW	Batch ID: 22197			RunNo: 30067						
Prep Date: 11/5/2015	Analysis Date: 11/6/2015			SeqNo: 916013			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.3	1.0	5.000	0	45.2	9.01	142			
Aroclor 1260	4.3	1.0	5.000	0	86.6	25.6	164			
Surr: Decachlorobiphenyl	2.4		2.500		97.6	17.7	151			
Surr: Tetrachloro-m-xylene	2.0		2.500		80.8	20.6	151			

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

bove quantitation range

WO#: 1511135 25-Nov-15