GW – 028

Annual DP Report (Part 10 of 16)

2015

	ANALYS				Ali 505-345-397 ebsite: www.h	buquerque, N 5 FAX: 503-	345-410	San	nple Log-In C	heck List
Clie	nt Name N	iavajo re	FINING CO	Work C	Order Numbe	r: 1509214	1		RoptNo	1
Rece	eived by/date:	L	Μ	09	104/15	5			52/	
Logg	ged By:	Celina Ses	sa	9/4/2015	10:20:00 AM	л		aline .	Sum	
Com	pleted By:	Celina Ses	sa	9/4/2015	12:54:16 PM	л		Colin	Suma	
Revi	iewed By	A	>	69/60	1,5			anne .		
Cha	in of Custo	dy		(00						
	Custody seals	V	mple bottles?			Yes]	No 🗌	Not Present V	
100000000	Is Chain of Cu					Yes 🔽	•	No 🗌	Not Present 🗌	
3. H	How was the s	ample delive	ored?			Courier				
Log	n In									
	Was an attem	ot made to o	cool the same	les?		Yes V	7	No 🗌	NA 🗌	
						1.51.01				
5. 1	Were all samp	les received	l at a tempera	ture of >0° C	to 6.0°C	Yes 🔽	1	No 🗌		
6.	Sample(s) in p	roper conta	iner(s)?			Yes 🔽		No 🗌		
7. 5	Sufficient sam	ple volume f	or indicated to	est(s)?		Yes 🖌	•	No 🗌		
8. 4	Are samples (e	except VOA	and ONG) pr	operly preserv	ed?	Yes 🗸		No 🗌		
9. \	Was preservat	ive added to	bottles?			Yes 🗌		No 🗹	NA 🗌	
10.1	VOA vials have	e zero head	space?			Yes 🖌		No 🗌	No VOA Vials	
11.	Were any sam	ple contain	ers received b	roken?		Yes []	No 🔽	# of preserved	
							2		bottles checked	10)
	Does paperwo (Note discrepa			n.		Yes 🗹		No	for pH:	or >(12)unless noted
	Are matrices o		12 10 10 10 10 10 10			Yes V	1	No 🗌	Adjusted	No
14.1	Is it clear what	analyses w	ere requested	17		Yes 🖌	2	No 🗆		
	Were all holdin (If no, notify cu					Yes 🔽	2	No 🗌	Checked by:	mg
Sno	cial Handli	na (if ann	licable							
	Was client not			with this order?		Yes 🗌]	No 🗌	NA 🔽	
	Person N				Date				·	
	By Whor				- Via:	eMail	Pho	one 🗌 Fax	In Person	
	Regardir									
	Client In:	structions:								
17.	Additional rem	narks:								
18.	Cooler Inform	nation								
	Cooler No	Temp °C	and the second se	Seal Intact	Seal No	Seal Date	S	igned By	-	
	h	3.3	Good	Yes					1	

5	hain-	of-Cu	Chain-of-Custody Record	I Urn-Arouna I Im	'au			I	HALL ENVIRONMENT			R 0	Z	1		-
Client:	Navajo Refinery	Refinery		X Standard	C Rush			A	ANALYSIS LABORATORY	YS	IS	M	00	S	5	RY
				Project Name:				>	www.hallenvironmental.com	llenvir	onme	ntal.c	шо			
Mailing	Address:	: P.O. Bo	Mailing Address: P.O. Box 159 Artesia,	Monthly Temporary R.O. Reject	porary R.O. R	eject	4901	4901 Hawkins NE - Albuquerque, NM 87109	s NE	- Albu	uduero	ue, N	M 87	109		
NM 882	NM 88211-0159			Project #: P.O. #). # 167796		Tel.	Tel. 505-345-3975	-3975		ax 50	Fax 505-345-4107	4107			
Phone #	Phone #: 575-748-3311	18-3311								Analysis Request	sis Re	sanb				
email or	Fax# 5	email or Fax# 575-746-5451	451	Project Manager.	ger.				-		(8				-	
QA/QC Package: X Standard	ackage: lard		Level 4 (Full Validation)	Robert Combs	ø		soo	-	05		22-6Я+					
□ Other	Ŀ.			Sampler:	Elizabeth Sal	Salsberry	٨S		10 .		526				spilo	_
	EDD (Tvpe)					ON D	tsil					2			DS F	_
				Sample Temperature:	berature:	22	SCC					nuo		əti	pavlo	-
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	82500: WQ	335.4: Tot	7470: Men	8082: PCE	ivitoscibsЯ	Phenols Sulfate Chi	Fluoride	Nitrate/Nitr	Total Disso	904:1:ED8
9/3/15 85D		liquid	Temporary R.O. Reject	2 - 500ml P	1-unpres 1- H2SO4	100-						×	×	×	×	×
9/3/15 BSD		liquid	Temporary R.O. Reject	3-40ml VOA HCL	HCL	-	×		-				_		-	-
9/3/15 A:SD		liquid	Temporary R.O. Reject	1-500ml P	HN03				×		-	_			-	_
9/3/15 8:50	1	liquid	Temporary R.O. Reject	1-125ml P	HNO3			×	-		-	_		1	+	+
9/3/15 PSD	1	liquid	Temporary R.O. Reject	1-500ml P	NaOH			×	-		-	_			-	-
9/3/15	1 10	liquid	Temporary R.O. Reject	2-1L P	HNO3			_	-		×	_		1	-	-
9/3/15		liquid	Temporary R.O. Reject	3-40ml VOA Na2S2O3	Na2S203				-		+	+			+	×
9/3/15	9/3/15 8'SD	liquid	Temporary R.O. Reject	2 - 1L Glass	unpres			_	-	×	+				+	-
9/3/15		liquid	Temporary R.O. Reject	1 - 1L Glass unpres	unpres		×		-		+	-			+	+
9/3/15	8:50	liquid	Temporary R.O. Reject	3-40ml VOA	HCI			_	×		+	+			+	+
9/3/15	8.50		Temporary R.O. Reject	1-250mlGlass unpres	unpres				×		+	+			+	+
9/3/15		liquid	Temporary R.O. Reject	1 - 1L Glass H2SO4	H2SO4	>	ł		_			×			-	+
9/3/15		liquid	Trip Blank	2-40mi/VOA HCI	HCL	200-			_		-	_			-	-
Date: 9-3-15	Time: 10.30	Relinquish	Relinquished by: Elizabeth Salsberry Bes abeth selborg	Received by	09/04	IN Date Time	Remarks: Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, N., Se, Ag, U, Zn VOCs: 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,0;Horoethane; 1,2,2;Horoethane; 1,2,2;	KS: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, N, Se, Ag, U, Zn 1,1,1.Trichforoethane, 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene; 1,1,2 and accessed 1,3,2,7;ichhoroethanev: 1,1,0;ichhoroethanev: 1,2,2	Cr, Co, C ane: 1,1,	u, Fe, P 2.2-Tetra	b, Mn, H chloroet	g, Mo, N hane; 1,	I, Se, A 1.2.2-Te	g, U, Z rhachlo	n roethyle thene: 1	ne; 1,1 2.
Date:	Time:	Relinquished by:	hed by:	Received by:		Date Time	Proceedance, 1.2. Dischooledance, Benzene, Carbon Tetrachlonder, Chloroform, Dichnordethaner, E.Dylchoroethane, Benzene, Carbon Tetrachlonder, Chloroform, Dichnoromethaner, Ethylbenzener, Toluener, Total Xylenes, Vinyl Chloride SVOCS, Benzolajbyrene, Dhenol, 1-methylinaphthaene, 2-methylinaphthalene, nachthalene	e; 1,2-Dichl ine; Ethylbe o(a)pyrene.	oroethan nzene; T nhand	x, Benze Nuene; 1 -methylr	ne; Carb otal Xyle	on Tetra nes; Vir	chloric yl Chlo	e, Chior ride	cform;	hthalen

HOLLYFRONTIER The HolyFronter Companies	Physical Property Solid C Liquid S Sludge Studge Type of Sampler Directly to sample jars			Analysis and/or Method Requested	pH, Cl, F, S04, NO2/NO3, TDS	8015 GRO	6020 total metals, 7470 Hg	6020 Dissolved Metals	Cyanide	Radium 226/228	8260 see attached list	8270 see attached list	8082 PCBs	8015 DRO	Racium 226/228	Storage Method	Ice 2	Refrigerated		Shipping Media	1
HOL		1 Discarge		NaHSO4 Other												uph, Conditions Clear					
Monthly Temporary RO Reject Sample Details	Sample Type Grab - Grab - cow Weighted Composite - cow Weighted Composite - Parts / Sample Intervals One	South Field R.O. Reject Discarge	Preservatives	NaOH Na2S203					×						_	9(3/2015 Tenn 27.0 °E Humidity 47% Wind Dir NNW Wind Speed 5.8 mph. Conditions Clear					
M Temp Rejec D	Sample Type Grab Time Weighted Composite Flow Weighted Composite Parts / Sample Intervals		A CONTRACTOR OF	CL HNO3 H2SO4	×		×	×		×						hidity 47% Wind Dir					
pany, LLC		D. Reject Disc		Neat (None) HCL	×	×					×	×	×	×	×	TUP P. 0.77					
Navajo Refining Company, 11.0 501 E. Main Artesia, NM 88210 (Tel)575.746.5451 (Fax) 575.746.5451	IIC	North Field R.O. Reject Discarge		# of Containers	2	3	-	1	2	e	2	1	2	2	2	0(3,2015 Tmb					
Are Are Class Fax	Project Name Biannual RO Reject Samplers Name Elizabeth Salsberry Samplers Affiliation Navajo Refining Co. LLC Start Date and Time 9/3/2015 @ 9:05 End Date and Time 8/3/2015 @ 9:05	ion:		Material	Plastic	VOA	Plastic	Plastic	Plastic	Plastic	VOA	Glass	Glass	VOA	VOA	Gold Oats Milasther Observations Froi-	deixanone, mol.	of the second second	Field pH / //0		
	ect Name Bi ers Name El Affiliation N. and Time 90	Outfall / Sample Location:		Size	500ml	40ml	500ml	125ml	500ml	11	40ml	11	11	40ml	40ml	Maather Oh	NGOUIGI, OL		20-2-C		
MAN.	Proj Sampk Sampkers Start Date	Outfall / S.		Container	Same Party of	2	3	4	5	6	7	80	6	10	11	Cield Date 0	Date and Time.		-reid I emp. 20.34C		



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

October 06, 2015

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

RE: Monthly R.O. Reject

OrderNo.: 1509219

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/4/2015 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

Hall Environmental Analysis Laboratory, Inc.

Lab Order **1509219** Date Reported: **10/6/2015**

CLIENT: Navajo Refining CompanyProject: Monthly R.O. RejectLab ID: 1509219-001	Matrix:	AQUEOU			Date: 9/3	D. Reject /2015 9:10:00 AM /2015 10:20:00 AM	
Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst	: DBD
Arsenic	ND	0.0050		mg/L	5	9/18/2015 5:45:40 PM	D28981
Lead	ND	0.00050		mg/L	1	9/18/2015 4:47:06 PM	D28981
Selenium	0.0079	0.0010		mg/L	1	9/18/2015 4:47:06 PM	D28981
Uranium	0.0060	0.00050		mg/L	1	9/18/2015 4:47:06 PM	D28981
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBE	D				Analyst	SUB
Radium-226	2.57	0.768		pCi/L	1	9/28/2015	R29271
Radium-226 ±	0.954	0.768		pCi/L	1	9/28/2015	R29271
Radium-228	0.751	0.621		pCi/L	1	9/28/2015	R29271
Radium-228 ±	0.362	0.621		pCi/L	1	9/28/2015	R29271
EPA METHOD 300.0: ANIONS						Analyst	LGT
Fluoride	2.9	2.0		mg/L	20	9/4/2015 11:24:48 PM	R28686
Chloride	260	10		mg/L	20	9/4/2015 11:24:48 PM	R28686
Nitrogen, Nitrate (As N)	1.7	0.10		mg/L	1	9/4/2015 11:12:24 PM	R28686
Sulfate	1800	25		mg/L	50	9/15/2015 12:20:17 AM	R28852
SM2540C MOD: TOTAL DISSOLVED SC	DLIDS					Analyst	KS
Total Dissolved Solids	3440	20.0	*	mg/L	1	9/10/2015 5:38:00 PM	21204
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst	SUB
Cyanide	ND	0.0100		mg/L	1	9/11/2015	R29271
SM4500-H+B: PH						Analyst	JRR
pH	7.91	1.68	н	pH units	1	9/8/2015 6:28:53 PM	R28726
EPA METHOD 200.7: DISSOLVED MET	ALS			•		Analyst	FLS
Aluminum	ND	0.020		mg/L	1	9/10/2015 3:13:49 PM	B28759
Barium	0.058	0.0020		mg/L	1	9/10/2015 3:13:49 PM	B28759
Boron	0.093	0.0020		mg/L	1	9/10/2015 3:13:49 PM	B28759
Cadmium	ND	0.0020		mg/L	1	9/10/2015 3:13:49 PM	B28759
Chromium	0.0070	0.0060		mg/L	1	9/11/2015 3:52:52 PM	A28781
Cobalt	ND	0.0060		mg/L	1	9/11/2015 3:52:52 PM	A28781
Copper	ND	0.0060		mg/L	1	9/10/2015 3:13:49 PM	B28759
Iron	ND	0.020		mg/L	1	9/10/2015 3:13:49 PM	B28759
Manganese	ND	0.0020		mg/L	1	9/11/2015 3:52:52 PM	A28781
Molybdenum	ND	0.0080		mg/L	1	9/11/2015 3:52:52 PM	A28781
Nickel	ND	0.010		mg/L	1	9/10/2015 3:13:49 PM	B28759
Silver	ND	0.0050		mg/L	1	9/10/2015 3:13:49 PM	B28759
Zinc	0.021	0.010		mg/L	1	9/11/2015 3:52:52 PM	A28781
EPA METHOD 245.1: MERCURY						Analyst	: JLF
Mercury	ND	0.00020		mg/L	1	9/15/2015 4:16:45 PM	21298

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company **Project:** Monthly R.O. Reject

Collection Date: 9/3/2015 9:10:00 AM Received Date: 9/4/2015 10:20:00 AM

Lab ID: 1509219-001	Matrix:	AQUEOUS	Received	Date: 9/4	4/2015 10:20:00 AM	
Analyses	Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB					Analys	t: JME
1,2-Dibromoethane	ND	0.010	µg/L	1	9/9/2015 3:02:31 PM	21198
EPA METHOD 8082: PCB'S					Analys	t: SCC
Aroclor 1016	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1221	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1232	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1242	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1248	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1254	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Aroclor 1260	ND	1.0	µg/L	1	9/11/2015 11:45:50 AM	1 21192
Surr: Decachlorobiphenyl	52.8	17.7-151	%REC	1	9/11/2015 11:45:50 AM	1 21192
Surr: Tetrachloro-m-xylene	41.2	20.6-151	%REC	1	9/11/2015 11:45:50 AN	1 21192
EPA METHOD 8015M/D: DIESEL RA	NGE				Analys	t: KJH
Diesel Range Organics (DRO)	ND	1.0	mg/L	1	9/9/2015 5:52:34 PM	21183
Motor Oil Range Organics (MRO)	ND	5.0	mg/L	1	9/9/2015 5:52:34 PM	21183
Surr: DNOP	115	72-136	%REC	1	9/9/2015 5:52:34 PM	21183
EPA METHOD 8015D: GASOLINE R	ANGE				Analys	t: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	9/10/2015 2:07:41 PM	R2876
Surr: BFB	91.3	57.8-137	%REC	1	9/10/2015 2:07:41 PM	R2876
EPA METHOD 8310: PAHS					Analys	t: SCC
Naphthalene	ND	2.0	µg/L	1	9/11/2015 8:39:09 AM	21193
1-Methylnaphthalene	ND	2.0	µg/L	1	9/11/2015 8:39:09 AM	21193
2-Methylnaphthalene	ND	2.0	µg/L	1	9/11/2015 8:39:09 AM	21193
Benzo(a)pyrene	ND	0.070	µg/L	1	9/11/2015 8:39:09 AM	21193
Surr: Benzo(e)pyrene	49.1	37.2-136	%REC	1	9/11/2015 8:39:09 AM	21193
EPA METHOD 8260B: VOLATILES					Analys	t: BCN
Benzene	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Toluene	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Ethylbenzene	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Carbon Tetrachloride	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28708
Chloroform	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,1-Dichloroethane	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,1-Dichloroethene	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Methylene Chloride	ND	3.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705

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
- 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
- Analyte detected below quantitation limits Page 2 of 23 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit

Client Sample ID: R.O. Reject

Date Reported: 10/6/2015

Date Reported: 10/6/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly R.O. Reject

Client Sample ID: R.O. Reject Collection Date: 9/3/2015 9:10:00 AM Pageived Date: 0/4/2015 10:20:00 AM

Lab ID: 1509219-001	Matrix:	AQUEOUS	8 Received	Date: 9/4	4/2015 10:20:00 AM	
Analyses	Result	RL	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analys	t: BCN
1,1,1-Trichloroethane	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
1,1,2-Trichloroethane	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Trichloroethene (TCE)	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Vinyl chloride	ND	1.0	µg/L	1	9/8/2015 8:43:58 PM	R28705
Xylenes, Total	ND	1.5	µg/L	1	9/8/2015 8:43:58 PM	R28705
Surr: 1,2-Dichloroethane-d4	98.1	70-130	%REC	1	9/8/2015 8:43:58 PM	R28705
Surr: 4-Bromofluorobenzene	99.2	70-130	%REC	1	9/8/2015 8:43:58 PM	R28705
Surr: Dibromofluoromethane	101	70-130	%REC	1	9/8/2015 8:43:58 PM	R28705
Surr: Toluene-d8	94.9	70-130	%REC	1	9/8/2015 8:43:58 PM	R28705
TOTAL PHENOLICS BY SW-846 9067					Analys	t: SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	9/30/2015	21585

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		

Date Reported: 10/6/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1509219-002

Monthly R.O. Reject

Project:

Lab ID:

Collection Date:

Matrix: TRIP BLANK Received Date: 9/4/2015 10:20:00 AM

Client Sample ID: Trip Blank

Analyses	Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RAI	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	9/10/2015 2:33:01 PM	R28761
Surr: BFB	90.7	57.8-137	%REC	1	9/10/2015 2:33:01 PM	R28761
EPA METHOD 8260B: VOLATILES					Analyst	BCN
Benzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Toluene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Ethylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Naphthalene	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1-Methylnaphthalene	ND	4.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
2-Methylnaphthalene	ND	4.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Acetone	ND	10	µg/L	1	9/8/2015 9:12:38 PM	R28705
Bromobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Bromodichloromethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Bromoform	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Bromomethane	ND	3.0	μg/L	1	9/8/2015 9:12:38 PM	R28705
2-Butanone	ND	10	µg/L	1	9/8/2015 9:12:38 PM	R28705
Carbon disulfide	ND	10	µg/L	1	9/8/2015 9:12:38 PM	R28705
Carbon Tetrachloride	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Chlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Chloroethane	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Chloroform	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Chloromethane	ND	3.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
2-Chlorotoluene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
4-Chlorotoluene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
cis-1,2-DCE	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Dibromochloromethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Dibromomethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,2-Dichlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,3-Dichlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,4-Dichlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
Dichlorodifluoromethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,1-Dichloroethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705
1,1-Dichloroethene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R28705

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: 10/6/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly R.O. Reject

1509219-002

Lab ID:

Collection Date:

Client Sample ID: Trip Blank

Matrix: TRIP BLANK Received Date: 9/4/2015 10:20:00 AM

Analyses	Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analys	BCN
1,2-Dichloropropane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,3-Dichloropropane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
2,2-Dichloropropane	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,1-Dichloropropene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Hexachlorobutadiene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
2-Hexanone	ND	10	µg/L	1	9/8/2015 9:12:38 PM	R2870
Isopropylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
4-Isopropyltoluene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
4-Methyl-2-pentanone	ND	10	µg/L	1	9/8/2015 9:12:38 PM	R2870
Methylene Chloride	ND	3.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
n-Butylbenzene	ND	3.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
n-Propylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
sec-Butylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Styrene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
tert-Butylbenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
trans-1,2-DCE	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,1,1-Trichloroethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,1,2-Trichloroethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Trichloroethene (TCE)	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Trichlorofluoromethane	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
1,2,3-Trichloropropane	ND	2.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Vinyl chloride	ND	1.0	µg/L	1	9/8/2015 9:12:38 PM	R2870
Xylenes, Total	ND	1.5	µg/L	1	9/8/2015 9:12:38 PM	R2870
Surr: 1,2-Dichloroethane-d4	93.5	70-130	%REC	1	9/8/2015 9:12:38 PM	R2870
Surr: 4-Bromofluorobenzene	96.2	70-130	%REC	1	9/8/2015 9:12:38 PM	R2870
Surr: Dibromofluoromethane	97.9	70-130	%REC	1	9/8/2015 9:12:38 PM	R2870
Surr: Toluene-d8	95.0	70-130	%REC	1	9/8/2015 9:12:38 PM	R2870

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#: 1509219

Qual

Qual

Qual

06-Oct-15

Client:		Refining C	· ·							
Project:	Monthly	R.O. Rej	ect							
Sample ID	LCS	Samp	Type: LC	s	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s
Client ID:	LCSW	Bate	h ID: B2	8759	R	unNo: 2	8759			
Prep Date:		Analysis	Date: 9/	10/2015	S	eqNo: 8	71972	Units: mg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit
Aluminum		0.50	0.020	0.5000	0	99.8	85	115		
Barium		0.49	0.0020	0.5000	0	98.9	85	115		
Boron		0.53	0.040	0.5000	0	105	85	115		
Cadmium		0.51	0.0020	0.5000	0	102	85	115		
Copper		0.47	0.0060	0.5000	0	94.2	85	115		
Iron		0.53	0.020	0.5000	0	107	85	115		
Nickel		0.48	0.010	0.5000	0	95.4	85	115		
Silver		0.089	0.0050	0.1000	0	88.8	85	115		
Sample ID	LLLCS	Samp	Type: LC	SLL	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s
Client ID:	BatchQC	Bate	h ID: B2	8759	R	lunNo: 2	8759			
Prep Date:		Analysis	Date: 9/	10/2015	S	eqNo: 8	71973	Units: mg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit
Aluminum		ND	0.020	0.01000	0	104	50	150		
Barium		ND	0.0020	0.002000	0	90.0	50	150		
Boron		ND	0.040	0.04000	0	95.7	50	150		
Cadmium		ND	0.0020	0.002000	0	93.5	50	150		
Copper		ND	0.0060	0.006000	0	98.2	50	150		
Iron		0.021	0.020	0.02000	0	105	50	150		
Nickel		ND	0.010	0.005000	0	119	50	150		
Silver		ND	0.0050	0.005000	0	86.0	50	150		
Sample ID	МВ	Samp	Type: MI	BLK	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s
Client ID:	PBW	Bate	ch ID: B2	8759	R	unNo: 2	8759			
Prep Date:		Analysis	Date: 9/	10/2015	S	eqNo: 8	71977	Units: mg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit

0.020

0.0020

0.040 0.0020

0.0060

0.020

0.010 0.0050

ND

ND

ND

ND

ND

ND

ND

ND

Qualifiers:

Aluminum

Cadmium

Copper

Iron Nickel

Silver

Barium Boron

- 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
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL

- Page 6 of 23

06-Oct-15

Client: Project:	And the second sec	Refining C R.O. Rej	100 A								
Sample ID	LCS	Samp	Type: LC	S	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Bate	h ID: A2	8781	R	unNo: 2	8781				
Prep Date:		Analysis	Date: 9/	11/2015	S	eqNo: 8	72822	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium		0.49	0.0060	0.5000	0	98.4	85	115			
Cobalt		0.47	0.0060	0.5000	0	94.7	85	115			
Manganese		0.46	0.0020	0.5000	0	92.4	85	115			
Molybdenum		0.50	0.0080	0.5000	0	99.3	85	115			
Zinc		0.49	0.010	0.5000	0	97.9	85	115			
Sample ID	LLLCS	Samp	Type: LC	SLL	Test	Code: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	BatchQC	Bato	ch ID: A2	8781	R	unNo: 2	8781				
Prep Date:		Analysis	Date: 9/	11/2015	S	eqNo: 8	72823	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium		ND	0.0060	0.006000	0	82.5	50	150			
Cobalt		ND	0.0060	0.006000	0	86.0	50	150			
Manganese		ND	0.0020	0.002000	0	93.0	50	150			
Molybdenum		ND	0.0080	0.008000	0	53.8	50	150			
Zinc		ND	0.010	0.005000	0	103	50	150			
Sample ID	МВ	Samp	Type: ME	BLK	Test	Code: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	PBW	Bato	ch ID: A2	8781	R	unNo: 2	8781				
Prep Date:		Analysis	Date: 9/	11/2015	S	eqNo: 8	72843	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Manganese		ND	0.0020								
Molybdenum		ND	0.0080								
		ND	0.0000								
Zinc		ND	0.010								
2 0 VA	1509219-001IMS	ND		6	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
	1509219-001IMS R.O. Reject	ND Samp	0.010			tCode: E			ved Meta	S	
Sample ID	R.O. Reject	ND Samp	0.010 Type: MS ch ID: A2	8781	R		8781	200.7: Dissol Units: mg/L	ved Meta	s	
Sample ID Client ID: Prep Date: Analyte	R.O. Reject	ND Samp Bato Analysis Result	0.010 Type: MS ch ID: A2 Date: 9/ PQL	8781 11/2015 SPK value	R S SPK Ref Val	aunNo: 2 SeqNo: 8 %REC	8781 73693 LowLimit	Units: mg/L HighLimit	ved Metal	s RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Chromium	R.O. Reject	ND Samp Bato Analysis Result 0.47	0.010 Type: MS ch ID: A2 Date: 9/ PQL 0.0060	8781 11/2015 SPK value 0.5000	R SPK Ref Val 0.006970	tunNo: 2 6eqNo: 8 %REC 93.0	8781 73693 LowLimit 70	Units: mg/L HighLimit 130			Qual
Sample ID Client ID: Prep Date: Analyte Chromium	R.O. Reject	ND Samp Bato Analysis Result 0.47 0.46	0.010 Type: MS ch ID: A2 Date: 9/ PQL 0.0060 0.0060	8781 11/2015 SPK value 0.5000 0.5000	R SPK Ref Val 0.006970 0.004610	tunNo: 2 6eqNo: 8 <u>%REC</u> 93.0 91.3	8781 73693 LowLimit 70 70	Units: mg/L HighLimit 130 130			Qual
Sample ID Client ID: Prep Date: Analyte Chromium Cobalt	R.O. Reject	ND Samp Bato Analysis Result 0.47	0.010 Type: MS ch ID: A2 Date: 9/ PQL 0.0060	8781 11/2015 SPK value 0.5000 0.5000	R SPK Ref Val 0.006970	tunNo: 2 6eqNo: 8 %REC 93.0	8781 73693 LowLimit 70	Units: mg/L HighLimit 130			Qual
Sample ID Client ID:	R.O. Reject	ND Samp Bato Analysis Result 0.47 0.46	0.010 Type: MS ch ID: A2 Date: 9/ PQL 0.0060 0.0060	8781 11/2015 SPK value 0.5000 0.5000	R SPK Ref Val 0.006970 0.004610	tunNo: 2 6eqNo: 8 <u>%REC</u> 93.0 91.3	8781 73693 LowLimit 70 70	Units: mg/L HighLimit 130 130			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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Client: Navajo Refining Company Project: Monthly R.O. Reject

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Sample ID 1509219-001IMS	Samp	Type: MS	SD .	TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: R.O. Reject	Bato	h ID: A2	8781	F	unNo: 2	8781					
Prep Date:	Analysis	Date: 9 /	11/2015	S	eqNo: 8	73697	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chromium	0.46	0.0060	0.5000	0.006970	90.9	70	130	2.26	20		
Cobalt	0.45	0.0060	0.5000	0.004610	88.4	70	130	3.15	20		
Manganese	0.45	0.0020	0.5000	0.0006400	89.8	70	130	2.77	20		
Molybdenum	0.43	0.0080	0.5000	0	86.5	70	130	3.20	20		
Zinc	0.47	0.010	0.5000	0.02073	89.6	70	130	2.86	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
- 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#: 1509219

06-Oct-15

WO#:	1509219
	06-Oct-15

Client: Project:		Navajo R Monthly										
Sample ID	LCS		Samp	Type: LC	s	Tes	Code: El	PA 200.8: [Dissolved Met	als		
Client ID:	LCSW		Bat	ch ID: D2	8981	F	unNo: 2	8981				
Prep Date:			Analysis	Date: 9/	18/2015	S	eqNo: 8	79547	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	94.7	85	115			
ead			0.012	0.00050	0.01250	0	94.8	85	115			
Selenium			0.023	0.0010	0.02500	0	91.9	85	115			
Jranium			0.012	0.00050	0.01250	0	94.9	85	115			
Sample ID	LLLCS		Samp	Type: LC	SLL	Tes	Code: El	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C	Bat	ch ID: D2	8981	F	unNo: 2	8981				
Prep Date:			Analysis	Date: 9/	18/2015	s	eqNo: 8	79551	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic			ND	0.0010	0.001000	0	92.1	50	150			
ead			0.00052	0.00050	0.0005000	0	104	50	150			
Selenium			ND	0.0010	0.001000	0	95.2	50	150			
Jranium			ND	0.00050	0.0005000	0	99.7	50	150			
Sample ID	MB		Samp	Type: ME	3LK	Tes	Code: El	PA 200.8: [Dissolved Met	als		
Client ID:	PBW		Bat	ch ID: D2	8981	R	unNo: 2	8981				
Prep Date:			Analysis	Date: 9/	18/2015	S	eqNo: 8	79555	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic			ND	0.0010								
ead			ND	0.00050								
Selenium			ND	0.0010								
Jranium			ND	0.00050								

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:	Navajo R	efining Compa	any								
Project:	Monthly	R.O. Reject	2.8								
Sample ID	MB-21298	SampType:	MBLK	Test	Code: EPA Met	thod 245.1: Mercu	ry				
Client ID:	PBW	Batch ID:	21298	RunNo: 28872							
Prep Date:	9/15/2015	Analysis Date:	9/15/2015	S	eqNo: 875782	Units: mg/L					
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowL	imit HighLimit	%RPD	RPDLimit	Qual		
Mercury		ND 0.000	020								
Sample ID	LCS-21298	SampType:	LCS	Test	Code: EPA Met	thod 245.1: Mercu	ry				
Client ID:	LCSW	Batch ID:	21298	R	unNo: 28872						
Prep Date:	9/15/2015	Analysis Date:	9/15/2015	S	eqNo: 875785	Units: mg/L					
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowL	imit HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0048 0.000	020 0.005000	0	95.4	80 120					
Sample ID	1509219-001HMS	SampType:	MS	Test	Code: EPA Met	thod 245.1: Mercu	ry				
Client ID:	R.O. Reject	Batch ID:	21298	R	unNo: 28872						
Prep Date:	9/15/2015	Analysis Date:	9/15/2015	S	eqNo: 875801	Units: mg/L					
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowL	imit HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0046 0.000	0.005000	0	91.4	75 125					
Sample ID	1509219-001HMS	SampType:	MSD	TestCode: EPA Method 245.1: Mercury							
Client ID:	R.O. Reject	Batch ID:	21298	RunNo: 28872							
Prep Date:	9/15/2015	Analysis Date:	9/15/2015	S	eqNo: 875802	Units: mg/L					

- 1											
	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ī	Mercury	0.0047	0.00020	0.005000	0	93.5	75	125	2.30	20	

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#: 1509219

Client:			Refining Co										
Project:		Monthly	R.O. Reje	ct									
Sample ID	MB		SampT	ype: MI	3LK	TestCode: EPA Method 300.0: Anions							
Client ID:	PBW		Batch	ID: R2	8686	F	RunNo: 2	8686					
Prep Date:			Analysis D	ate: 9/	4/2015	SeqNo: 869229			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, Nitra	te (As N)		ND	0.10									
Sample ID	LCS		SampT	ype: LC	s	Tes	tCode: E	PA Method	300.0: Anions	5			
Client ID:	LCSW		Batch	ID: R2	8686	F	8686						
Prep Date:			Analysis D	ate: 9/	4/2015	SeqNo: 869230			Units: mg/L				
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride			0.49	0.10	0.5000	0	97.5	90	110				
Chloride			4.9	0.50	5.000	0	98.5	90	110				
Nitrogen, Nitra	te (As N)		2.6	0.10	2.500	0	104	<mark>9</mark> 0	110				
Sample ID	МВ		SampT	ype: ME	BLK	Tes	tCode: E	PA Method	300.0: Anions	5			
Client ID:	PBW		Batch	ID: R2	8852	F	RunNo: 2	8852					
Prep Date:			Analysis D	ate: 9/	14/2015	S	SeqNo: 8	75093	Units: mg/L				
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Sulfate			ND	0.50									
Sample ID	LCS		SampT	ype: LC	s	Tes	tCode: E	PA Method	300.0: Anions	5			
Client ID:	LCSW		Batch	D: R2	8852	RunNo: 28852							
Prep Date:			Analysis D	ate: 9/	14/2015	SeqNo: 875094			Units: mg/L				
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Sulfate			9.8	0.50	10.00	0	98.4	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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Client: Project:	000000	jo Refining Co thly R.O. Reje	- ·								
Sample ID	MB-21198	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8011/504.1: E	DB		
Client ID:	PBW	Batch	ID: 21	198	F	RunNo: 2	28723				
Prep Date:	9/9/2015	Analysis D	ate: 9/	9/2015	5	SeqNo: 8	370483	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	ane	ND	0.010								
Sample ID	LCS-21198	SampT	ype: LC	s	Tes	tCode: E	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch	ID: 21	198	F	RunNo: 2	28723				
Prep Date:	9/9/2015	Analysis D	ate: 9/	9/2015	5	SeqNo: 8	370484	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	ane	0.078	0.010	0.1000	0	78.0	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

WO#: 1509219

0.52

0.5000

	Refining Co y R.O. Reje										
Sample ID MB-21183	SampT	ype: ME	BLK	TestCode: EPA Method 8015M/D: Diesel Range							
Client ID: PBW	Batch	D: 21	183	RunNo: 28717							
Prep Date: 9/8/2015	Analysis D	ate: 9/	9/2015	S	SeqNo: 8	70900	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	1.0									
Motor Oil Range Organics (MRO)	ND	5.0									
Surr: DNOP	1.0		1.000		102	72	136				
Sample ID LCS-21183	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015M/D: Die	sel Range	e		
Client ID: LCSW	Batch	D: 21	183	F	RunNo: 2	8717					
Prep Date: 9/8/2015	Analysis D	ate: 9/	9/2015	5	SeqNo: 8	70912	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	5.1	1.0	5.000	0	102	52.4	154				

104

72

136

Qualifiers:

Surr: DNOP

- * 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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an a constant from the	Refining C R.O. Rej		,							
Sample ID 5ML RB	Samp	Type: M	BLK	Tes	tCode: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID: PBW	Batc	h ID: R	28761	F	RunNo: 2	28761				
Prep Date:	Analysis I	Date: 9	/10/2015	S	SeqNo: 8	372128	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		90.2	57.8	137			
Sample ID 2.5UG GRO LCS	Samp	Type: LC	cs	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID: LCSW	Bato	h ID: R	28761	F	RunNo: 2	28761				
Prep Date:	Analysis I	Date: 9	/10/2015	S	SeqNo: 8	372129	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.9	80	120			
Surr: BFB	19		20.00		94.5	57.8	137			

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#:

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

Navajo Refining Company

Monthly R.O. Reject

Client:

Project:

RPD outside accepted recovery limits	

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

Qualifiers:

D

Н

ND

R

- 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

Sample ID MB-21192	SampTyp	e: MBLK		Test	Code: El	PA Method	8082: PCB's			
Client ID: PBW	Batch ID): 21192	:	R	unNo: 28	3758				
Prep Date: 9/9/2015	Analysis Date	e: 9/11/2	2015	S	eqNo: 8	72597	Units: µg/L			
Analyte	Result F	PQL SF	PK 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	1.6		2.500		62.8	17.7	151			
Surr: Tetrachloro-m-xylene	<mark>1.3</mark>		2.500		50.4	20.6	151			
Sample ID LCS-21192	SampTyp	SampType: LCS TestCode: EPA Method 8082: PCB's								
Client ID: LCSW	Batch ID): 21192	2	RunNo: 28758						
Prep Date: 9/9/2015	Analysis Date	e: 9/11/2	2015	SeqNo: 873603 Units: µ						
Analyte	Result F	PQL SF	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.2	1.0	5.000	0	44.8	9.01	142			
Aroclor 1260	3.3	1.0	5.000	0	65.3	25.6	164			
Surr: Decachlorobiphenyl	1.4		2.500		58.0	17.7	151			
Surr: Tetrachloro-m-xylene	1.3		2.500		52.0	20.6	151			
Sample ID LCSD-21192	SampTyp	e: LCSD		Test	Code: EF	PA Method	8082: PCB's			
Client ID: LCSS02	Batch ID): 21192	2	R	unNo: 28	3758				
Prep Date: 9/9/2015	Analysis Date	e: 9/11/2	2015	S	eqNo: 8	73604	Units: µg/L			
Analyte	Result F	PQL SF	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	2.0	1.0	5.000	0	39.0	9.01	142	13.7	26.9	
Aroclor 1260	3.0	1.0	5.000	0	59.2	25.6	164	9.84	29.1	
Surr: Decachlorobiphenyl	1.3		2.500		53.2	17.7	151	0	0	
Surr: Tetrachloro-m-xylene	1.1		2.500		42.8	20.6	151	0	0	

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Qual

Qual

	Refining Co y R.O. Reje											
Sample ID 100ng Ics	ID 100ng Ics SampType: LCS TestCode: EPA Method 8260B: VOLATILES											
Client ID: LCSW	Batch	n ID: R2	8705	F	RunNo: 2	8705						
Prep Date:	Analysis D)ate: 9/	8/2015	S	eqNo: 8	70016	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit			
Benzene	24	1.0	20.00	0	120	70	130					
Toluene	23	1.0	20.00	0	115	70	130					
Chlorobenzene	22	1.0	20.00	0	109	70	130					
1,1-Dichloroethene	26	1.0	20.00	0	129	70	130					
Trichloroethene (TCE)	22	1.0	20.00	0	110	70	130					
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.8	70	130					
Surr: 4-Bromofluorobenzene	9.5		10.00		95.1	70	130					
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130					
Surr: Toluene-d8	9.2		10.00		92.1	70	130					
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES				
Client ID: PBW	Batch	D: R2	8705	F	RunNo: 2	8705						
Prep Date:	Analysis D)ate: 9/	8/2015	S	eqNo: 8	70017	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit			
Benzene	ND	1.0										

	1154 24123 224 24.0017	AND SUEPLANK 1
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
Methyl tert-butyl ether (MTBE)	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0
1,2-Dichloroethane (EDC)	ND	1.0
1,2-Dibromoethane (EDB)	ND	1.0
Naphthalene	ND	2.0
1-Methylnaphthalene	ND	4.0
2-Methylnaphthalene	ND	4.0
Acetone	ND	10
Bromobenzene	ND	1.0
Bromodichloromethane	ND	1.0
Bromoform	ND	1.0
Bromomethane	ND	3.0
2-Butanone	ND	10
Carbon disulfide	ND	10
Carbon Tetrachloride	ND	1.0
Chlorobenzene	ND	1.0
Chloroethane	ND	2.0
Chloroform	ND	1.0
Chloromethane	ND	3.0
2-Chlorotoluene	ND	1.0

Qualifiers:

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- В Analyte detected in the associated Method Blank
- E Value above quantitation range
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- Р Sample pH Not In Range
- **Reporting Detection Limit** RL

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N. D.C.

WO#:	1509219
	06-Oct-15

	jo Refining Co	· ·								
	thly R.O. Reject									
Sample ID rb		ype: MBLK	TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch	ID: R28705		RunNo: 2	8705					
Prep Date:	Analysis Da	ate: 9/8/2015		SeqNo: 8	370017	Units: µg/L				
Analyte	Result		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:

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D Sample Diluted Due to Matrix

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

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	06-Oct-15

	vajo Refining Co onthly R.O. Reje										
Sample ID rb	SampT	ype: ME	BLK	Tes	TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	PBW Batch ID: R28705			F	RunNo: 28705						
Prep Date: Analysis Date: 9/8/2015				SeqNo: 870017 U			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	9.0		10.00		90.0	70	130				
Surr: 4-Bromofluorobenzene	e 9.6		10.00		95.8	70	130				
Surr: Dibromofluoromethan	e 9.4		10.00		93.7	70	130				
Surr: Toluene-d8	9.5		10.00		94.9	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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Maria D.C.

Client: Navajo F	Refining Co	ompany								
Project: Monthly	R.O. Reje	ect								
Sample ID MB-21193	Sama	Type: MI		Too		DA Mathad	8310: PAHs			
	14						0310: PARS			
Client ID: PBW	Batc	h ID: 21	193	F	RunNo: 2	8760				
Prep Date: 9/9/2015	Analysis [Date: 9/	11/2015	S	eqNo: 8	72124	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Benzo(a)pyrene	ND	0.070								
Surr: Benzo(e)pyrene	7.7		20.00		38.7	37.2	136			
Sample ID LCS-21193	Samp	Type: LC	s	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSW	Batch ID: 21193			F	RunNo: 2	8760				
Prep Date: 9/9/2015	Analysis [Date: 9/	11/2015	SeqNo: 872224 Ur			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	60	2.0	80.00	0	74.8	57.8	83.9			
1-Methylnaphthalene	60	2.0	80.20	0	75.2	43.5	88.5			
2-Methylnaphthalene	60	2.0	80.00	0	74.6	34.2	94.5			
Benzo(a)pyrene	0.38	0.070	0.5020	0	75.7	56.3	98.6			
Surr: Benzo(e)pyrene	9.9		20.00		49.3	37.2	136			
Sample ID LCSD-21193	Samp	Type: LC	SD	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSS02	Batc	h ID: 21	193	F	RunNo: 2	8760				
Prep Date: 9/9/2015	Analysis [Date: 9/	11/2015	S	eqNo: 8	72225	Units: µg/L			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte						10.0000000000				
Analyte Naphthalene	59	2.0	80.00	0	73.6	57.8	83.9	1.55	20	
	59 59	2.0 2.0	80.00 80.20	0	73.6 73.8	57.8 43.5	83.9 88.5	1.55 1.94	20 20	
Naphthalene										
Naphthalene 1-Methylnaphthalene	59	2.0	80.20	0	73.8	43.5	88.5	1.94	20	

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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WO#:

Client: Project:		Refining Co R.O. Reje	- ·										
Sample ID MB	ample ID MB-21585 SampType: MBLK						TestCode: Total Phenolics by SW-846 9067						
Client ID: PB	N	Batch	h ID: 21	585	F	RunNo: 2	9183						
Prep Date: 9/3	30/2015	Analysis D)ate: 9/	30/2015	5	SeqNo: 8	86370	Units: µg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Phenolics, Total Rec	overable	ND	2.5										
Sample ID LCS	6-21585	SampT	ype: LC	s	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067				
Client ID: LCS	SW	Batch	h ID: 21	585	F	RunNo: 2	9183						
Prep Date: 9/3	30/2015	Analysis D)ate: 9/	30/2015	S	SeqNo: 8	86371	Units: µg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Phenolics, Total Rec	overable	17	2.5	20.00	0	83.6	64.4	135					

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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0.462

Client: Project:		efining Com R.O. Reject	- · · ·								
Sample ID	MB-R29271	SampTyp	e: MBL	ĸ	TestCode: EPA 335.4: Total Cyanide Subbed						
Client ID:	PBW	Batch ID: R29271				unNo: 2	29271				
Prep Date:		Analysis Date: 9/11/2015			SeqNo: 889329			Units: mg/L			
Analyte		Result	PQL S	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND 0	0100								2
Sample ID	LCS-R29271	SampTyp	e: LCS		Test	Code: E	PA 335.4: T	otal Cyanide S	Subbed		
Client ID:	LCSW	Batch I): R292	71	R	unNo: 2	29271				
Prep Date:		Analysis Dat	e: 9/11/	/2015	S	eqNo: 8	389330	Units: mg/L			
Analyte		Result	PQL S	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

0

92.4

90

110

0.5000

Cyanide

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

06-Oct-15

1509219

WO#:

WO#:	1509219
	06-Oct-15

	· ·	t							
271 Samp	Type: MI	BLK	Test	Code: El	PA 903.1: R	a 226 and EP	A 904.0: F	Ra 228-Subbe	ed
Bate	h ID: R2	29271	R	unNo: 29	9271				
Analysis	Date: 9	/28/2015	S	eqNo: 8	89332	Units: pCi/L			
Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
0.461	0.612								
0.431	0.612								
0.202	0.549								
0.259	0.549								
	Monthly R.O. Rej 271 Samp Bate Analysis Result 0.461 0.431 0.202	Monthly R.O. Reject 271 SampType: M Batch ID: R: Analysis Date: 9 <u>Result PQL</u> 0.461 0.612 0.431 0.612 0.202 0.549	Z71 SampType: MBLK Batch ID: R29271 Analysis Date: 9/28/2015 Result PQL SPK value 0.461 0.612 0.431 0.612 0.202 0.549	Monthly R.O. Reject 271 SampType: MBLK Test Batch ID: R29271 R Analysis Date: 9/28/2015 S Result PQL SPK value SPK Ref Val 0.461 0.612 0.431 0.612 0.202 0.549	Monthly R.O. Reject 271 SampType: MBLK TestCode: Eff Batch ID: R29271 RunNo: 24 Analysis Date: 9/28/2015 SeqNo: 84 Result PQL SPK value SPK Ref Val %REC 0.461 0.612 0.431 0.612 0.202 0.549	Monthly R.O. Reject 271 SampType: MBLK TestCode: EPA 903.1: R Batch ID: R29271 RunNo: 29271 Analysis Date: 9/28/2015 SeqNo: 889332 Result PQL SPK value SPK Ref Val %REC LowLimit 0.461 0.612 0.431 0.612 0.202 0.549	Monthly R.O. Reject 271 SampType: MBLK TestCode: EPA 903.1: Ra 226 and EP Batch ID: R29271 RunNo: 29271 Analysis Date: 9/28/2015 SeqNo: 889332 Units: pCi/L Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit 0.461 0.612 0.202 0.549	Monthly R.O. Reject TestCode: EPA 903.1: Ra 226 and EPA 904.0: I 271 SampType: MBLK TestCode: EPA 903.1: Ra 226 and EPA 904.0: I Batch ID: R29271 RunNo: 29271 Analysis Date: 9/28/2015 SeqNo: 889332 Units: pCi/L Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD 0.461 0.612 0.202 0.549 0.202 0.549	Monthly R.O. Reject SampType: MBLK TestCode: EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbe Batch ID: R29271 RunNo: 29271 Analysis Date: 9/28/2015 SeqNo: 889332 Units: pCi/L Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit 0.461 0.612 0.202 0.549 0.202 0.549

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 22 of 23

1020

20.0

1000

	Refining Company ly R.O. Reject					
Sample ID MB-21204	SampType: MBLK	TestCode: SM2540C MC	OD: Total Disso	lved Sol	ids	
Client ID: PBW	Batch ID: 21204	RunNo: 28757				
Prep Date: 9/9/2015	Analysis Date: 9/10/2015	SeqNo: 871932	Units: mg/L			
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND 20.0					
Sample ID LCS-21204	SampType: LCS	TestCode: SM2540C MC	OD: Total Disso	lved Sol	ids	
Client ID: LCSW	Batch ID: 21204	RunNo: 28757				
Prep Date: 9/9/2015	Analysis Date: 9/10/2015	SeqNo: 871933	Units: mg/L			
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit	%RPD	RPDLimit	Qual

102

0

120

80

Analyte Total Dissolved Solids

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

- Page 23 of 23

6.97	HALL
	ENVIRONMENTAL
	ANALYSIS
	LABORATORY

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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 REFIN	ING CO	Work Order Number:	15092	219			RcptNo:	1
Received by/d	ate: LM		09/04/15						
Logged By:	Celina Sessa		9/4/2015 10:20:00 AM			Celina Celina	-5	ma	
Completed By	Celina Sessa		9/4/2015 1:36:01 PM			Celin	- 5	m	
Reviewed By:	A		oglaulis				-		
Chain of Cu	istody		- (x-(x))						
and the second second	eals intact on samp	le bottles?		Yes		No [Not Present 🗹	
2. Is Chain o	f Custody complete	?		Yes	~	No [Not Present	
3. How was t	the sample delivere	d?		Cour	ier				
Log In									
20	ttempt made to coo	I the samp	es?	Yes	✓	No			
5. Were all s	amples received at	a tempera	ture of >0° C to 6.0°C	Yes	~	No [
6. Sample(s) in proper containe	r(s)?		Yes	✓	No			
7 Sufficient	sample volume for i	indicated te	est(s)?	Yes	V	No			
10.11	les (except VOA an			Yes	-	No			
	ervative added to be			Yes		No	~	NA 🗌	
10. VOA vials	have zero headspa	ice?		Yes	•	No		No VOA Vials	
11. Were any	sample containers	received b	roken?	Yes		No	~	# of preserved	
						1000		bottles checked	1
	erwork match bottle prepancies on chain)	Yes	~	No		for pH:	or 12 unless noted)
	ces correctly identifi			Yes	~	No		Adjusted	No
	what analyses were			Yes		No			
15. Were all i	holding times able to	be met?		Yes	\checkmark	No		Checked by:	mg
(if no, not	ify customer for aut	horization.)							0
Special Ha	ndling (if applic	cable)							
16. Was clier	nt notified of all discr	repancies v	vith this order?	Yes		No		NA 🗹	
Per	son Notified:		Date						
By	Whom:		, Via:	eM	ail 🗌	Phone	Fax	In Person	
	garding:								
	ant Instructions:								
17. Additiona									
18. Cooler I	Contraction of the Contraction o	Condition	Seal Intact Seal No	Seal D	ata	Signed B	tu	Ì	
Coole		Condition Good	Yes	SearD	ate	Signed B	y	-	

AIO AIO AIO AIO AIO AIO AIO AIO	C	hain-	-of-CL	Chain-of-Custody Record	Turm-Around Time	Time					I	AL	L		BO	NN		E	-
Project Name: Project Name: 9 Address: P.O. Box 159 Artesta. Monthy R.O. Reject 2211-0159 Diport #: P.O. # 167/96 2211-0159 Project Manager: Project Manager: Project Manager: Project Intro Project Manager: Project Intro Project Manager: Project Intro Project Manager: Project Intro Project Manager: Sample Temperature: Project Manager: Project Intro Project Intro Service Project Intro Serico Iquid R.O. Rej	12161	Navajo I	Refinery		X Standard	C Rush			Л		4	AN	ι S	IS	A	i õ	3	0	R
g Address: P.O. Box 159 Artesia, Monthly R.O. Reject 2211-0159 Ext 575-746-5451 Project #: P.O. # 167/96 2211-0159 Ext 575-746-5451 Project Manager: 2. Fackage: Clevel 4 (Full Validation) Robert Combs Adard Level 4 (Full Validation) Robert Combs Adard Clevel 4 (Full Validation) Robert Combs Adard Container Type HEAL No. Time Matrix Sample Request ID Type and # Type 6 4:to Iquid R.O. Reject 2-500ml P HNO3 HEAL No. 6 4:to Iquid R.O. Reject 1-126ml P HNO3 FCO 93/19 6 4:to Iquid R.O. Reject 1-126ml P HNO3 FCO 93/19 6 4:to Iquid R.O. Reject 1-126ml P HNO3 FCO 93/19 6 4:to Iquid R.O. Reject 1-126ml P HNO3 FCO 93/19 6 4:to Iquid R.O. Reject 2-11 P HNO3<					Project Name						>	h.ww	allenvi	ronme	intal.co	E			
271-0159 Project #: P.O. # 157796 # 575-746-5451 Project #: P.O. # 157796 or Fax# 575-746-5451 Project Manager. of Fax# 575-746-5451 Project Manager. of Fax# 575-746-5451 Project Manager. of Fax# 575-746-5451 Project Manager. ndard Implementation of Fax# 575-746-5451 Project Manager. ndard Implementation of Type Implementation Stample Request ID Sampler: Elizabeth Salsberry 0 (Type) Sample Request ID 5 q1:0 Iiquid 6 q1:0 Iiquid 6 q1:0 Iiquid 7 ype and # Type 6 q1:0 Iiquid 8 q1:0 Iiquid 9 q1:0 Iiquid 8 q1:0 Iiquid 9 q1:0 Iiquid 8 q1:0 Iiquid 9 q1:0 Iiquid <td>Mailing</td> <td>Address</td> <td>: P.O. Bo</td> <td>ix 159 Artesia,</td> <td>Monthly R.O.</td> <td>Reject</td> <td></td> <td></td> <td></td> <td>4901 1</td> <td>ławkir</td> <td>Is NE</td> <td>- Alb</td> <td>nquer</td> <td>que, N</td> <td>M 87</td> <td>109</td> <td></td> <td></td>	Mailing	Address	: P.O. Bo	ix 159 Artesia,	Monthly R.O.	Reject				4901 1	ławkir	Is NE	- Alb	nquer	que, N	M 87	109		
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or Fax#. 575-746-5451 Project Managet: C Pax#. 575-746-5451 Project Managet: Indard Level 4 (Full Validation) Indard Robert Cormbs Indard Sampler: D (Type) Sampler: D (Type) Sampler: D (Type) Sampler: D (Type) Sampler: Frage Sampler: D (Type) Sampler: D (Type) Sampler: Secondary Project Secondary <	Phone #	: 575-74	48-3311							11			Analy	sis R	sanbe				
Package: I Level 4 (Full Validation) Robert Combs Indard Image Elizabeth Salsberry D (Type) Sample: Elizabeth Salsberry D (Type) Sample Request ID Sample: Time Matrix Sample Request ID Sample: D (Type) Sample Request ID Sample Temperature: Arrestruative Sample R.O. Reject 2 - 500ml P Hzscus Social R.O. Reject 2 - 500ml P Hzscus S Q1:0 Iquid R.O. Reject 1-500ml P HNO3 S Q1:0 Iquid R.O. Reject 1-125ml P HNO3 S Q1:0 Iquid R.O. Reject 1-125ml P HNO3 S Q1:0 Iquid R.O. Reject 1-126ml P HNO3 S Q1:0 Iquid R.O. Reject 2-1L P HNO3 S Q1:0 Iquid R.O. Reject 2-1L Class unpres -001 S Q1:0 Iquid R.O. Reject 2-1L P HNO3 -001 S Q1:0 Iquid R.O. Reject 2-1L Class unpres -001 S Q1:0 Iquid R.O. Reject 2-1L P HNO3 S Q1:0 Iquid R.O. Reject 2-1L Class unpres -001 <td>email or</td> <td>Fax#: 5</td> <td>575-746-5</td> <td>3451</td> <td>Project Mana,</td> <td>ger.</td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td>-</td> <td></td> <td>(8</td> <td>_</td> <td></td> <td></td> <td></td> <td></td>	email or	Fax#: 5	575-746-5	3451	Project Mana,	ger.				_		-		(8	_				
Ber Sampler: Eitzebeth Salsberry D (Type) Time Matrix Sample Request ID Time Matrix Sample Request ID Type and # Final Matrix Sample Request ID Type and # 5 Q1:0 Iquid R.O. Reject 2-500ml P 6 Q1:0 Iquid R.O. Reject 2-500ml P 6 Q1:0 Iquid R.O. Reject 2-500ml P 6 Q1:0 Iquid R.O. Reject 1-126ml VA 6 Q1:0 Iquid R.O. Reject 1-126ml VA 6 Q1:0 Iquid R.O. Reject 1-1003 6 Q1:0 Iquid R.O. Reject 1-1003 6 Q1:0 Iquid R.O. Reject 1-1003 6 Q1:0 Iquid R.O. Reject 1-100A <	QA/QC F	ackage: lard		Level 4 (Full Validation)	Robert Comb	s					_	08		22-вЯ					
D (Type) D (Type) Fine Matrix Sample Request ID Type and # Time Matrix Sample Request ID Type and # Solution R.O. Reject Solution R.O. Reject <	□ Othe			•	Sampler:	Elizabeth Salt	sberry				əp	01		+973				spij	
Time Matrix Sample Temperature: 3.3 Time Matrix Sample Request ID Type and # 5 Q1:0 Iiquid R.O. Reject 2 - 500ml P 5 Q1:0 Iiquid R.O. Reject 2 - 500ml P 5 Q1:0 Iiquid R.O. Reject 2 - 500ml P 5 Q1:0 Iiquid R.O. Reject 2 - 400ml VOA 5 Q1:0 Iiquid R.O. Reject 1 - 125ml P 6 Q1:0 Iiquid R.O. Reject 1 - 125ml P 6 Q1:0 Iiquid R.O. Reject 1 - 1003 6 Q1:0 Iiquid R.O. Reject 2 - 11 P 6 Q1:0 Iiquid R.O. Reject 2 - 11 Class unpres 6 Q1:0 Iiquid R.O. Reject 2 - 11 Class unpres 6 Q1:0 Iiquid R.O. Reject 2 - 11 Class unpres 6 Q1:0 Iiquid R.O. Reject 1 - 11 Class unpres 6 Q1:0 Iiquid R.O. Reject 1 - 11 Class unpres 6 Iiquid R.O. Reject 1 - 11 Class unpres 6 Iiquid R.O. Reject 1 - 11 Class H2O4 7 Iiquid R.O. Reject<	EDD	(Tvpe)				X Yes	ON D	The second			ue/	-			6			05	
Time Metrix Sample Request ID Container Preservative HEAL No. 5 41:0 Iquid R.O. Reject 2 - 500ml P H2003 H2003 5 91:0 Iquid R.O. Reject 3 40ml VOA HCL - 0.01 5 91:0 Iquid R.O. Reject 3 40ml VOA HCL - 0.01 5 91:0 Iquid R.O. Reject 1-125ml P HNO3 - 0.01 5 91:0 Iquid R.O. Reject 1-125ml P HNO3 - 0.01 5 91:0 Iquid R.O. Reject 1-125ml P HNO3 - 0.01 5 91:0 Iquid R.O. Reject 1-125ml P HNO3 - 0.01 5 91:0 Iquid R.O. Reject 1-125ml P HNO3 - 0.01 5 91:0 Iquid R.O. Reject 2-1L Glass unpres - 0.03 5 91:0 Iquid R.O. Reject 2-1L Glass unpres - 0.01 6 91:0 Iquid R.O. Reject 2-1L Glass unpres - 0.03 6 91:0 Iquid R.O. Reject 2-1L Glass unpres - 0.01 6 91:0					Sample Temp	perature: 3.	2		_	-	() 16				oud			pən	
6 0:10 liquid R.O. Reject 2 - 500ml P H:so4 - 001 5 0:10 liquid R.O. Reject 3 - 40ml VOA HCL - 001 5 9:10 liquid R.O. Reject 1 - 500ml P HNO3 - 001 6 9:10 liquid R.O. Reject 1 - 125ml P HNO3 - 001 6 9:10 liquid R.O. Reject 1 - 125ml P HNO3 - 001 5 9:10 liquid R.O. Reject 1 - 1250ml P NaOH - 001 5 9:10 liquid R.O. Reject 2 - 1L P HNO3 - 001 5 9:10 liquid R.O. Reject 2 - 1L Glass unpres - 001 5 9:10 liquid R.O. Reject 2 - 1L Glass unpres - 001 5 9:10 liquid R.O. Reject 2 - 1L Glass unpres - 003 6 10 liquid R.O. Reject 1 - 1L Glass unpres - 003 6 9:10 liquid R.O. Reject 1 - 1L Glass - 003 - 003 6 9:10 liquid R.O. Reject 1 - 1L Glass - 0100 VOA - 0100	Date	Time	Matrix		Container Type and #	Preservative Type	HEAL 1509	No.			335.4: Tota					ebnoul 7			803:1.408
6 q:10 Iiquid R.O. Reject 3-40ml VOA HCL 5 q:10 Iiquid R.O. Reject 1-500ml P HNO3 6 q:10 Iiquid R.O. Reject 1-125ml P HNO3 5 q:10 Iiquid R.O. Reject 2-1L P HNO3 6 q:10 Iiquid R.O. Reject 2-1L Glass unpres 6 q:10 Iiquid R.O. Reject 2-1L Glass unpres 6 q:10 Iiquid R.O. Reject 1-1L Glass Inpres 6 q:10 Iiquid R.O. Reject 1-1L Glass Inpres 6 q:10 Iiquid R.O. Reject 1-1L	9/3/15	9:10	liquid	R.O. Reject	1	1-unpres 1- H2SO4	-0-	10							~	×	-		
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6 Pt-IcoliquidR.O. Reject1-125ml PHNO3HNO35 Pt-IcoliquidR.O. Reject1-500ml PNaOHNaOH5 Pt-IcoliquidR.O. Reject2-1L PHNO3P5 Pt-IcoliquidR.O. Reject2-1L GlassunpresP6 Pt-IcoliquidR.O. Reject2-1L GlassunpresP6 Pt-IcoliquidR.O. Reject2-1L GlassunpresP6 Pt-IcoliquidR.O. Reject2-1L GlassunpresP6 Pt-IcoliquidR.O. Reject1-1L GlassunpresP6 Pt-IcoliquidR.O. Reject1-1L GlassunpresP6 Pt-IcoliquidR.O. Reject1-1L GlassUnpresP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP7liquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP7liquidR.O. Reject1-1L GlassHCIP6 Pt-IcoliquidR.O. Reject1-1L GlassHCIP7liquidR.O. Reject1-1L GlassHCIP	9/3/15	016	liquid	R.O. Reject		HNO3						×			_			-	-
6 Q:10-liquidR.O. Reject1-500ml PNaOH 5 Q:10-liquidR.O. Reject $2-1L$ PHNO3 5 Q:10-liquidR.O. Reject $2-1L$ Classunpres 5 Q:10-liquidR.O. Reject $2-1L$ Classunpres 5 Q:10-liquidR.O. Reject $2-1L$ Classunpres 6 Q:10-liquidR.O. Reject $2-1L$ Classunpres 6 Q:10-liquidR.O. Reject $1-1L$ Classunpres 6 Q:10-liquidR.O. Reject $1-250mlGlas06 Q:10-liquidR.O. Reject1-1L ClassHCl6 Q:10-liquidR.O. Reject1-1L ClassHCl6 Q:10-liquidR.O. Reject1-1L ClassHCl6 DiquidR.O. Reject1-1L ClassHCl-0.026 DiquidR.O. Reject1-1L ClassHCL-0.026 DiquidR.O. Reject1-1L ClassHCL-0.026 DiquidTrip BlankParented Dy-0.0210.12Reinquished Dy:TimeReceived Dy10.12Reinquished Dy:HCL-0.0210.12Reinquished Dy:Received Dy-0.0210.12Reinquished Dy:Received Dy9/3/159:10liquidR.O. Reject1-125ml PHN03×_-_$	9/3/15	9:10	liquid	R.O. Reject	1-125ml P	HN03				×					_			-	_
5 9:10 liquid R.O. Reject 2-1L P HNO3 HNO3 5 9:10 liquid R.O. Reject 3-40ml VOA Na2S2O3 P 5 9:10 liquid R.O. Reject 3-40ml VOA Na2S2O3 P 5 9:10 liquid R.O. Reject 2-1L Glass unpres P 5 9:10 liquid R.O. Reject 1-1L Glass unpres P 5 9:10 liquid R.O. Reject 1-1L Glass unpres P 5 9:10 liquid R.O. Reject 1-1L Glass unpres P 5 9:10 liquid R.O. Reject 1-250mlGlass unpres P P 5 91.10 liquid R.O. Reject 1-250mlGlass unpres P P 6 110 liquid R.O. Reject 1-250mlGlass unpres P P P 6 110 liquid R.O. Reject 1-250mlGlass unpres P P P 7 liquid R.O. Reject 1-1L Glass H2O P P P 1 liquid Trip Blank 2-40ml VOA	9/3/15	9:10	liquid	R.O. Reject		NaOH					×		_	3	-			-	_
5 9:10 Iquid R.O. Reject 3-40ml VOA Na2S2O3 5 9:10 Iquid R.O. Reject 2 - 1L Glass unpres 5 9:10 Iquid R.O. Reject 2 - 1L Glass unpres 5 9:10 Iquid R.O. Reject 1 - 1L Glass unpres 5 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 6 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 5 9:10 Iiquid R.O. Reject 1 - 1L Glass HCI 6 9:10 Iiquid R.O. Reject 1 - 1L Glass HCI 6 9:10 Iiquid R.O. Reject 1 - 1L Glass HCI 6 10 Iiquid R.O. Reject 1 - 1L Glass HCI 6 10 Iiquid R.O. Reject 1 - 1L Glass HCI 6 10 Iiquid Trip Blank 2-40ml VOA HCI -002 10: 32 8 6 1 - 1L Glass HOA MCL -002 10: 32 8 10: 3 0 MCH -002 10: 32 8 1 0 MCH -002 <t< td=""><td>9/3/15</td><td>9:10</td><td>liquid</td><td>R.O. Reject</td><td></td><td>HN03</td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td><td>×</td><td>_</td><td></td><td></td><td>-</td><td>-</td></t<>	9/3/15	9:10	liquid	R.O. Reject		HN03				_				×	_			-	-
5 9:10 Iiquid R.O. Reject 2 - 1L Glass unpres 5 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 5 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 6 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 6 9:10 Iiquid R.O. Reject 3-40ml VOA HCI 5 9:10 Iiquid R.O. Reject 1 - 250mlGlass unpres P 5 9:10 Iiquid R.O. Reject 1 - 250mlGlass unpres P 6 9:10 Iiquid R.O. Reject 1 - 1L Glass H2SO4 7 10:10 Time: Relinquished by: Eli rabeth 2 - 40ml VOA HCL 10:12 Solution Received by: P -002 10:12 Solution Received by: P -002 10:15 Relinquished by: Received by: P -002 10:15 Received by: Received by: P -002	9/3/15	9:10	liquid	R.O. Reject	3-40ml VOA	Na2S203				_					-			+	×
5 9:10 Iiquid R.O. Reject 1 - 1L Glass unpres 5 9:10 Iiquid R.O. Reject 3-40ml VOA HCl 5 9:10 Iiquid R.O. Reject 1-250mlGlass unpres 5 9:10 Iiquid R.O. Reject 1-250mlGlass unpres 6 9:10 Iiquid R.O. Reject 1-250mlGlass unpres 7 10 16uid R.O. Reject 1-1L Glass 6 1.0 Iiquid Trip Blank 2-40ml VOA 7 10:23 8204 0 10:32 80-000 HCL -000 10:32 80-000 No HCL -000 10:33 10:00 No HCL -000 10:01 10:00 No HCL -000	9/3/15	9:10	liquid	R.O. Reject	2 - 1L Glass	unpres				-			×		_		1	+	+
5 9:10 liquid R.O. Reject 3-40ml VOA HCl 5 9'.10 liquid R.O. Reject 1-250mlGlastunpres 5 9'.10 liquid R.O. Reject 1-250mlGlastunpres 5 9'.10 liquid R.O. Reject 1-250mlGlastunpres 6 9'.10 liquid R.O. Reject 1-1L Glass 7 10 2-40ml VOA HCL -002 10 2 2-40ml VOA HCL -002 10 2 2 N/M Date 10 2 8ccived by M/H 1/TO 10 2 8ccived by M/H Date 10 8ccived by M/H Date	9/3/15	0.0	liquid	R.O. Reject	1 - 1L Glass	unpres	-			×					_			+	-
5 91:10 liquid R.O. Reject 1-250mlGlass unpres 5 91:10 liquid R.O. Reject 1-1L Glass 5 11 11 1 1 5 11 1 1 1 6 11 1 1 1 7 10 2 1 1 10 2 2 0 10 2 0 0 10 2 0 0 1 10 10	9/3/15	9:10	liquid	R.O. Reject	3-40ml VOA	HCI									_			-	-
5 91, 10 IIquid R.O. Reject 1 - 1L Glass H2SO4 5 IIquid Trip Blank 2-40ml VOA HCL -003 7 Time: Relinquished by: Eli tabeth Received by Date Time 1o: 32 8000 Point Point Point Point Date Time Time: Relinquished by: Received by Received by Point Date Time Time: Relinquished by: Received by Point Point Point Point	9/3/15	61:10	liquid	R.O. Reject	1-250mlGlast	unpres				-					-		1	+	-
5 Iliquid Trip Blank 2-40ml VOA HCL -002 Time: Relinquished by: Eli tabeth Salsbury Received by Date Time Io: 32 850 Jan Soldary Received by: 01/L4/15 1/720 Time: Relinquished by: Received by: Received by: 01/L4/15 1/720	9/3/15	9:10	liauid		1 - 1L Glass	H2SO4	<i>></i>			_					×			-	_
Time: Relinquished by: Elitabeth Salsbary Received by Received by Of Rul 15 1/720 Io: 32 850 per Soldwy Received by: Of Rul 15 1/720 Time: Relinquished by: Received by: Date Time	9/3/15		liquid		2-40ml VOA	HCL	1	COC		_		-			_			-	_
Time: Relinquished by: Received by: Date Time	Date: 9.315	Time: to: 35	Relinquist	100	Received by	1	C Date	Time	Remar Metals: VOCs:	ks: As, Al, B 1.1.1-Tri	a, B, Cd,	Cr, Co, ane: 1,1	Cu, Fe, F 2,2-Tetri	b, Mn, H	g, Mo, N hare: 1.1	, Se. Ag	I, U, Zn rachlor	cethyler	e: 1,1,
Dichloromethane, Ethylbenzene, Toluene;	Date:	Time:	Relinquist	hed by:	Received by:		Date Date	Time	Trichlon Dibromc Dichloro	bethane; bethane; methane	1,1,2-Tri 1,2-Dichi c Ethylbe	chloroeft oroethar nzene; 1	c; Benze oluene;	1-Dichlo rne; Carl Fotal Xyl	oethane on Tetra anes; Vin	chicride yl Chior	hlorcet Chlorc de	form; 1,	ri,

HOLLYFRONTIER The HollyFrontier Companies	Physical Property Solid 0	Liquid 2	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	Cvanide	Racium 226/228	8260 see attached list	8270 see attached list	8082 PCBs		F8010111 220/220	Storage Method	Dotinorated	Other	Shipping Media Ice	Other
HOLLY							Other											ons Clear				
					Discarge		NaHSO4											iph, Conditio				
t ple	5			One	South Field R.O. Reject Discarge	88 8	Na2S203											Humidity 44%, , Wind Dir, North, Wind Speed 8.1 mph, Conditions Clear				
Monthly RC eject Sampl Details Attachment	Sample Type Grab	omposite	omposite	e intervals (South Field	Preservatives	NaOH				×							orth, Wind				
Monthly RO Reject Sample Details Attachment	Sam	Time Weighted Composite	Flow Weighted Composite	Parts / Sample Intervals One	2	the star	H2SO4	×										Wind Dir. N				
Ľ		Time	Flow	P	arge	Constants.	CL HNO3		-	×	<	×						idity 44%				
o, LLC					Reject Disc	Libro State	Neat None) HCL	×	×	-		-	×	×	×	×	×					
<pre>Nave.jo Refining Company. 501 E. Main Arteeia, NM 88210 (Teh) 575.746.5451 (Fax) 575.746.5451</pre>	Γ				North Field R.O. Reject Discarge	1	ers		e			10	2				2	9/3/2015 Tmp. 78.8 °F				
Navejo Refining C 501 E. Main Artesia, NM 88210 (Tel) 575.748.3311 (Fax) 575.746.5451			ILC		D North		# of Contain										_	9/3/20				
A SEE	Project Name Biannual RO Reject	Samplers Name Elizabeth Salsberry	Samplers Affiliation Navajo Refining Co. LLC	9/3/2015 @ 9.06 8/3/2015 @ 9.20			Material	Plastic	VOA	Plastic	Plastic	Plastic	VOA	Glass	Glass	VOA	VOA	ions, Etc):		Field pH 7.72		
S.	el Biannua	e Efzabel	In Navajo	Start Date and Time 9/3/2015 @ 9.06 End Date and Time 8/3/2015 @ 9.20	ocation:		TEL										_	Field Data (Weather, Observations, Etc);		u.		
) B C	oiect Nam	plers Nam	ins Affiliatio	Start Date and Time End Date and Time	Outfall / Sample Location:		r Size	500ml	40ml	500ml	500ml	11	40ml	11	11	40ml	40ml	(Weather,	Time:	Field Temp. 25.5°C		
VAN	d	Sam	sample	nd Dat	Dutfall /		Container	1	2		t u	9	7	8	0	10	11	ld Data	Date and Time:	d Tem		



November 13, 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 – October 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 November 2015 monthly report, for the period of October 1-31, under the Order.

Specifically, this report covers the October 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.

OCD November 13, 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 October 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 October 1 through October 31.
- \$500 per day for each daily RO reject fluid discharge volume that exceeds 15,000 barrels from October 1 through October 31.

Navajo has calculated a penalty of \$2,800 for October 2015. The daily discharge volume exceeded the 10,000 barrels/day (bbl/day) limit, but was under 15,000 barrels total, on 28 days in October. 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 October 7, 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 permit modification request to Discharge Permit GW-028 for 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 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 November 13, 2015 Page 3 of 3

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		Tempor	ary Unit	Daily Discharge Volume
	Metere	ed Data		RO Reject Calculated)	(Calculate	ect Discharge d from Log ta)	
	GPM	GPM	GPM	BBL/DAY	GPM	BBL/DAY	BBL
	SOUTH	NORTH					
10/1/2015	125	102	227	7,783	75	2570	10,353
10/2/2015	114	103	217	7,440	118	4060	11,500
10/3/2015	112	59	171	5,863	89	3041	8,904
10/4/2015	146	136	282	9,669	67	2287	11,956
10/5/2015	151	136	287	9,840	0	0	9,840
10/6/2015	154	126	280	9,600	72	2484	12,084
10/7/2015	157	121	278	9,531	46	1589	11,120
10/8/2015	158	131	289	9,909	0	7	9,916
10/9/2015	159	133	292	10,011	8	290	10,301
10/10/2015	155	128	283	9,703	10	353	10,056
10/11/2015	149	122	271	9,291	21	722	10,013
10/12/2015	153	114	267	9,154	55	1881	11,035
10/13/2015	154	125	279	9,566	53	1800	11,366
10/14/2015	153	108	261	8,949	53	1810	10,759
10/15/2015	159	128	287	9,840	57	1971	11,811
10/16/2015	162	136	298	10,217	58	1989	12,206
10/17/2015	153	124	277	9,497	56	1930	11,427
10/18/2015	158	128	286	9,806	48	1646	11,452
10/19/2015	157	122	279	9,566	60	2064	11,630
10/20/2015	158	124	282	9,669	61	2081	11,750
10/21/2015	156	123	279	9,566	63	2149	11,715
10/22/2015	155	115	270	9,257	56	1919	11,176
10/23/2015	156	117	273	9,360	57	1951	11,311
10/24/2015	155	117	272	9,326	58	2004	11,330
10/25/2015	156	122	278	9,531	60	2045	11,576
10/26/2015	160	127	287	9,840	61	2081	11,921
10/27/2015	158	138	296	10,149	62	2111	12,260
10/28/2015	160	126	286	9,806	48	1646	11,452
10/29/2015	141	148	289	9,909	49	1680	11,589
10/30/2015	147	146	293	10,046	51	1745	11,791
10/31/2015	148	141	289	9,909	51	1759	11,668

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	28	\$2,800
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	Amount:	\$2,800

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 02, 2015

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

OrderNo.: 1510410

RE: Monthly RO Reject

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 1510410 Date Reported: 11/2/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly RO Reject Client Sample ID: R.O. Reject Collection Date: 10/7/2015 9:35:00 AM Received Date: 10/8/2015 9:07:00 AM

Lab ID: 1510410-001	Matrix:	AQUEOU	S	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 6:34:09 PM	B2968		
Lead	ND	0.00050		mg/L	1	10/20/2015 3:59:03 PM	B2968		
Selenium	0.0066	0.0010		mg/L	1	10/20/2015 3:59:03 PM	B2968		
Uranium	0.0050	0.00050		mg/L	1	10/20/2015 3:59:03 PM	B2968		
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBE	D				Analyst	SUB		
Radium-226	0.991	0.658		pCi/L	1	10/21/2015	R2983		
Radium-226 ±	0.6	0.658		pCi/L	1	10/21/2015	R2983		
Radium-228	0.579	0.666		pCi/L	1	10/21/2015	R2983		
Radium-228 ±	0.357	0.666		pCi/L	1	10/21/2015	R2983		
EPA METHOD 300.0: ANIONS						Analyst	LGT		
Fluoride	3.3	2.0		mg/L	20	10/8/2015 9:28:28 PM	R2941		
Chloride	270	10		mg/L	20	10/8/2015 9:28:28 PM	R2941		
Sulfate	1600	25		mg/L	50	10/20/2015 1:03:49 AM	R2966		
Nitrate+Nitrite as N	1.4	1.0		mg/L	5	10/20/2015 1:28:39 AM	R2966		
SM2540C MOD: TOTAL DISSOLVED S	OLIDS					Analyst	KS		
Total Dissolved Solids	3290	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	7.79	1.68	Н	pH units	1	10/9/2015 2:16:27 PM	R2945		
EPA METHOD 200.7: DISSOLVED MET	ALS					Analyst	ELS		
Aluminum	ND	0.020		mg/L	1	10/15/2015 5:30:04 PM	C2957		
Barium	0.054	0.0020		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Boron	0.10	0.040		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Cadmium	ND	0.0020		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Chromium	ND	0.0060		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Cobalt	ND	0.0060		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Copper	ND	0.0060		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Iron	ND	0.020		mg/L	1	10/14/2015 8:21:34 PM	C2954		
Manganese	ND	0.0020		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Molybdenum	ND	0.0080		mg/L	1	10/13/2015 9:14:53 PM			
Nickel	ND	0.010		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Silver	ND	0.0050		mg/L	1	10/13/2015 9:14:53 PM	B2951		
Zinc	0.020	0.010		mg/L	1	10/30/2015 2:13:20 PM	A2991		
EPA METHOD 245.1: MERCURY						Analyst	JLF		
Mercury	ND	0.00020		mg/L	1	10/15/2015 12:43:15 PM	A 21848		
Refer to the QC Summary report a	nd sample log	gin checklis	t for fl	agged QC da	ta and p	reservation information	n.		

* 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 1510410

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Project: Monthly RO Reject

Collection Date: 10/7/2015 9:35:00 AM

Lab ID: 1510410-001	Matrix:	AQUEOU	S	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 3:18:03 PM	21803		
EPA METHOD 8082: PCB'S						Analyst	SCC		
Aroclor 1016	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1221	ND	1.0		μg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1232	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1242	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1248	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1254	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Aroclor 1260	ND	1.0		µg/L	1	10/15/2015 1:42:00 AM	21811		
Surr: Decachlorobiphenyl	78.0	17.7-151		%REC	1	10/15/2015 1:42:00 AM	21811		
Surr: Tetrachloro-m-xylene	74.4	20.6-151		%REC	1	10/15/2015 1:42:00 AM	21811		
EPA METHOD 8015M/D: DIESEL RA	ANGE					Analyst:	TOM		
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	10/12/2015 4:51:13 PM	21793		
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/12/2015 4:51:13 PM	21793		
Surr: DNOP	127	72-136		%REC	1	10/12/2015 4:51:13 PM	21793		
EPA METHOD 8015D: GASOLINE R	ANGE					Analyst	NSB		
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	10/9/2015 3:46:02 PM	R29422		
Surr: BFB	89.3	57.8-137		%REC	1	10/9/2015 3:46:02 PM	R29422		
EPA METHOD 8310: PAHS						Analyst	SCC		
Naphthalene	ND	2.0		µg/L	1	10/14/2015 4:04:15 PM	21812		
1-Methylnaphthalene	ND	2.0		μg/L	1	10/14/2015 4:04:15 PM	21812		
2-Methylnaphthalene	ND	2.0		µg/L	1	10/14/2015 4:04:15 PM	21812		
Benzo(a)pyrene	ND	0.070		µg/L	1	10/14/2015 4:04:15 PM	21812		
Surr: Benzo(e)pyrene	88.6	37.2-136		%REC	1	10/14/2015 4:04:15 PM	21812		
EPA METHOD 8260B: VOLATILES						Analyst:	AG		
Benzene	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
Toluene	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
Ethylbenzene	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,2-Dibromoethane (EDB)	ND	1.0		μg/L	1	10/8/2015 6:03:57 PM	R29397		
Carbon Tetrachloride	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
Chloroform	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,1-Dichloroethane	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,1-Dichloroethene	ND	1.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
Methylene Chloride	ND	3.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/8/2015 6:03:57 PM	R29397		
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/8/2015 6:03:57 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.

- 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

Date Reported: 11/2/2015
Client Sample ID: R.O. Reject

Analytical Report Lab Order 1510410 Date Reported: 11/2/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly RO Reject

Client Sample ID: R.O. Reject Collection Date: 10/7/2015 9:35:00 AM D. ... I D. ... 10/0/2015 0.07.00 AM

Lab ID: 1510410-001	Matrix:	Received Date: 10/8/2015 9:07:00 AM						
Analyses	Result	RL Qua	Units	DF	Date Analyzed	Batch		
EPA METHOD 8260B: VOLATILES					Analyst:	AG		
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 6:03:57 PM	R29397		
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 6:03:57 PM	R29397		
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/8/2015 6:03:57 PM	R29397		
Vinyl chloride	ND	1.0	µg/L	1	10/8/2015 6:03:57 PM	R29397		
Xylenes, Total	ND	1.5	µg/L	1	10/8/2015 6:03:57 PM	R29397		
Surr: 1,2-Dichloroethane-d4	88.5	70-130	%REC	1	10/8/2015 6:03:57 PM	R29397		
Surr: 4-Bromofluorobenzene	106	70-130	%REC	1	10/8/2015 6:03:57 PM	R29397		
Surr: Dibromofluoromethane	96.9	70-130	%REC	1	10/8/2015 6:03:57 PM	R29397		
Surr: Toluene-d8	103	70-130	%REC	1	10/8/2015 6:03:57 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	Е	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 1510410

Hall Environmental Analysis Laboratory, Inc.

Lab Order **1510410** Date Reported: **11/2/2015**

CLIENT: Navajo Refining Company

Project: Monthly RO Reject Lab ID: 1510410-002 **Collection Date:**

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

Client Sample ID: Trip Blank

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 3:32:00 PM	21803	
EPA METHOD 8260B: VOLATILES					Analyst	AG	
Benzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Toluene	ND	1.0	μg/L	1	10/8/2015 6:32:41 PM	R2939	
Ethylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Naphthalene	ND	2.0	μg/L	1	10/8/2015 6:32:41 PM	R2939	
1-Methylnaphthalene	ND	4.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
2-Methylnaphthalene	ND	4.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Acetone	ND	10	µg/L	1	10/8/2015 6:32:41 PM	R293	
Bromobenzene	ND	1.0	μg/L	1	10/8/2015 6:32:41 PM	R2939	
Bromodichloromethane	ND	1.0	μg/L	1	10/8/2015 6:32:41 PM	R293	
Bromoform	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Bromomethane	ND	3.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
2-Butanone	ND	10	μg/L	1	10/8/2015 6:32:41 PM	R293	
Carbon disulfide	ND	10	µg/L	1	10/8/2015 6:32:41 PM	R293	
Carbon Tetrachloride	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Chlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Chloroethane	ND	2.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Chloroform	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Chloromethane	ND	3.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
2-Chlorotoluene	ND	1.0	μg/L	1	10/8/2015 6:32:41 PM	R2939	
4-Chlorotoluene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
cis-1,2-DCE	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Dibromochloromethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Dibromomethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2-Dichlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,3-Dichlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,4-Dichlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Dichlorodifluoromethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,1-Dichloroethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,1-Dichloroethene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,2-Dichloropropane	ND	1.0	µg/L	1	10/8/2015 6:32:41 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

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

Analytical Report Lab Order 1510410 Date Reported: 11/2/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1510410-002

Project: Monthly RO Reject

Lab ID:

Collection Date:

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

Client Sample ID: Trip Blank

nalyses	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 6:32:41 PM	R2939	
2,2-Dichloropropane	ND	2.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
1,1-Dichloropropene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Hexachlorobutadiene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
2-Hexanone	ND	10	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Isopropylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
4-Isopropyltoluene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
4-Methyl-2-pentanone	ND	10	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Methylene Chloride	ND	3.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
n-Butylbenzene	ND	3.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
n-Propylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
sec-Butylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R2939	
Styrene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
tert-Butylbenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
trans-1,2-DCE	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Trichlorofluoromethane	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
1,2,3-Trichloropropane	ND	2.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Vinyl chloride	ND	1.0	µg/L	1	10/8/2015 6:32:41 PM	R293	
Xylenes, Total	ND	1.5	µg/L	1	10/8/2015 6:32:41 PM	R293	
Surr: 1,2-Dichloroethane-d4	93.5	70-130	%REC	1	10/8/2015 6:32:41 PM	R293	
Surr: 4-Bromofluorobenzene	105	70-130	%REC	1	10/8/2015 6:32:41 PM	R293	
Surr: Dibromofluoromethane	96.7	70-130	%REC	1	10/8/2015 6:32:41 PM	R293	
Surr: Toluene-d8	102	70-130	%REC	1	10/8/2015 6:32:41 PM	R293	

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		

Client: Project:		Navajo Refining C Monthly RO Reject									
Sample ID	МВ	Samp	Type: ME	BLK	Tes	tCode: E	PA Method	200.7: Dissolv	ved Metal	s	
Client ID:	PBW	Bat	ch ID: B2	9512	F	RunNo: 2	9512				
Prep Date:		Analysis	Date: 10	0/13/2015	5	SeqNo: 8	97649	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020								
Boron		ND	0.040								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Copper		ND	0.0060								
Manganese		ND	0.0020								
Molybdenum		ND	0.0080								
Nickel		ND	0.010								
Silver		ND	0.0050								
		110	0.0000								
Sample ID	LCS	Samp	Type: LC	S	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	LCSW	Bat	Batch ID: B29512			RunNo: 29512					
Prep Date:		Analysis	Date: 10	0/13/2015	5	SeqNo: 8	97650	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			
Boron		0.51	0.040	0.5000	0	103	85	115			
Cadmium		0.49	0.0020	0.5000	0	98.7	85	115			
Chromium		0.51	0.0060	0.5000	0	101	85	115			
Cobalt		0.48	0.0060	0.5000	0	96.3	85	115			
Copper		0.48	0.0060	0.5000	0	95.9	85	115			
Manganese		0.47	0.0020	0.5000	0	94.9	85	115			
Molybdenum		0.51	0.0080	0.5000	0	102	85	115			
Nickel		0.48	0.010	0.5000	0	95.9	85	115			
Silver		0.10	0.0050	0.1000	0	103	85	115			
Sample ID	LLLCS	s Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	Batch	C Bat	ch ID: B2	9512	F	RunNo: 2	9512				
Prep Date:			Date: 10			SeqNo: 8		Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020	0.002000	0	91.0	50	150			
Boron		ND	0.040	0.04000	0	98.5	50	150			
Cadmium		0.0026	0.0020	0.002000	0	128	50	150			
Chromium		0.0077	0.0060	0.006000	0	128	50	150			
Cobalt		0.0061	0.0060	0.006000	0	102	50	150			
Copper		0.0087	0.0060	0.006000	0	144	50	150			
Manganese		0.0023	0.0020	0.002000	0	116	50	150			
Molybdenum		0.014	0.0080	0.008000	0	178	50	150			S
		0.071									

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

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

Р

Page 6 of 23

Client:	Navajo R	Refining Co	ompany								
Project:	Monthly	RO Reject									
Comple ID		Comet			Tee			000 7. Dissel		-	
Sample ID			ype: LC					200.7: Dissol	ved Meta	S	
Client ID:	BatchQC		h ID: B2			RunNo: 2		11-1-1-1			
Prep Date:		Analysis D		0/13/2015	c	SeqNo: 8	9/651	Units: mg/L			
Analyte		Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel Silver		ND ND	0.010	0.005000	0	100 87.6	50 50	150 150			
		ND	0.0000	0.000000	0	07.0	50	150			
Sample ID	MB-C	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	PBW	Batch	h ID: C2	9542	F	RunNo: 2	9542				
Prep Date:		Analysis D	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
Iron		ND	0.020								
Sample ID	LCS-C	SampT	ype: LC	S	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:		Batch	h ID: C2	9542	F	RunNo: 2	9542				
Prep Date:		Analysis D	Date: 10)/14/2015	5	eqNo: 8	98766	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron		0.49	0.020	0.5000	0	98.8	85	115			
Sample ID	11105-0	SamnT	ype: LC	SII	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	e	
Client ID:	BatchQC		h ID: C2			RunNo: 2		200.7. 015501	veu meta	5	
Prep Date:	Batchige	Analysis D				SeqNo: 8		Units: mg/L			
											-
Analyte		Result ND	PQL 0.020	SPK value 0.02000	SPK Ref Val	%REC 97.4	LowLimit 50	HighLimit 150	%RPD	RPDLimit	Qual
Iron		ND	0.020	0.02000	0	97.4	50	150			
Sample ID	MB-C	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	PBW	Batch	h ID: C2	9574	F	RunNo: 2	9574				
Prep Date:		Analysis D	Date: 10)/15/2015	S	SeqNo: 9	00085	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0.020								
Sample ID	LCS-C	SampT	ype: LC	S	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Batch	h ID: C2	9574	F	RunNo: 2	9574				
Prep Date:		Analysis D	Date: 10	0/15/2015	5	SeqNo: 9	00086	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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

0.49

Result

ND

0.010

SampType: LCSLL

Batch ID: A29914

Analysis Date: 10/30/2015

PQL

0.010

0.5000

SPK value

0.005000

Client: Project:		avajo Refining Compa onthly RO Reject	ny							
Sample ID	LLLCS-C	SampType:	LCSLL	Tes	tCode: EF	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	BatchQC	Batch ID:	C29574	RunNo: 29574						
Prep Date:		Analysis Date:	10/15/2015	SeqNo: 900087			Units: mg/L			
Analyte		Result PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND 0.0	20 0.01000	0	102	50	150			
Sample ID	MB-A	SampType:	MBLK	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	PBW	Batch ID:	A29914	F	RunNo: 2	9914				
Prep Date:		Analysis Date:	10/30/2015	S	SeqNo: 9	11188	Units: mg/L			
Analyte		Result PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc		ND 0.0	10							
Sample ID	LCS-A	SampType:	LCS	Tes	tCode: EF	A Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Batch ID:	A29914	F	RunNo: 29	9914				
Prep Date:		Analysis Date:	10/30/2015	15 SeqNo: 911189 Units: mg/L						
Analyte		Result PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

98.0

RunNo: 29914

SeqNo: 911190

%REC

70.2

0

SPK Ref Val

0

85

LowLimit

50

TestCode: EPA Method 200.7: Dissolved Metals

115

Units: mg/L

HighLimit

150

%RPD

RPDLimit

Qualifiers:

Client ID:

Prep Date:

Analyte

Zinc

Sample ID LLLCS-A

BatchQC

Zinc

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
- Analyte detected in the associated Method Blank В
- 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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Qual

WO#: 1510410 02-Nov-15

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#:	1510410
	02 Nov 15

02-No	v-15
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Client: Project:		Navajo Refining O Monthly RO Reje	10 A	lo.							
Sample ID	LCS	Samp	Type: LC	cs	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	LCSW	Bat	ch ID: B	29683	F	RunNo: 2	9683				
Prep Date:		Analysis	Date: 1	0/20/2015	S	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	Samp	Type: LO	CSLL	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	BatchG	C Bat	29683	F	RunNo: 2						
Prep Date:		Analysis	Date: 1	0/20/2015	s	SeqNo: 9	03932				
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: M	BLK	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	PBW	Bat	ch ID: B2	29683	F	RunNo: 2	9683				
Prep Date:		Analysis	Date: 1	0/20/2015	S	SeqNo: 9	03934	Units: mg/L			
Analyte		Result	PQL	Start of the second second second second	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010								
Lead		ND	0.00050								
Selenium		ND	0.0010								
Uranium		ND	0.00050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

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

- Page 9 of 23

Client: Project:		Refining Company ly RO Reject				
Sample ID	MB-21848	SampType: MBLK	TestCode: EPA Method	245.1: Mercury		
Client ID:	PBW	Batch ID: 21848	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		

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#: 1510410

02-Nov-15

Page 10 of 23

Client: Project:		Navajo Refining C Monthly RO Rejec	· ·	0							
Sample ID	MB	Samp	Type: MI	BLK	Tes	tCode: El	PA Method	300.0: Anion	5		
Client ID:	PBW	Bate	ch ID: R2	29414	F	RunNo: 2	9414				
Prep Date:		Analysis	Date: 1	0/8/2015	S	SeqNo: 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	Type: LC	s	Tes	tCode: El	PA Method	300.0: Anion	6		
Client ID:	LCSW	Bate	h ID: R2	29414	F	RunNo: 2	9414				
Prep Date:		Analysis	Date: 1	0/8/2015	5	SeqNo: 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: MI	BLK	Tes	tCode: El	PA Method	300.0: Anion:	5		
Client ID:	PBW	Bate	ch ID: R2	29666	F	RunNo: 2	9666				
Prep Date:		Analysis	Date: 1	0/19/2015	5	SeqNo: 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	Type: LC	s	Tes	tCode: El	PA Method	300.0: Anion	5		
Client ID:	LCSW	Bate	ch ID: R2	29666	F	RunNo: 2	9666				
Prep Date:		Analysis	Date: 1	0/19/2015	5	SeqNo: 9	03382	Units: mg/L			
Analyte		Result	PQL	Sand Street Street Street	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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Client: Project:		o Refining Co ly RO Reject									
Sample ID	MB-21803	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	PBW	Batch	ID: 21	803	F	RunNo: 2	9577				
Prep Date:	10/12/2015	Analysis D	ate: 10	0/15/2015	S	SeqNo: 9	00397	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	nane	ND	0.010								
Sample ID	LCS-21803	SampT	ype: LC	S	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch	ID: 21	803	F	RunNo: 2	9577				
Prep Date:	10/12/2015	Analysis D	ate: 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	nane	0.11	0.010	0.1000	0	112	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

SampType: MBLK

Navajo Refining Company

Monthly RO Reject

Client ID: PBW	Batch	ID: 21	793	R	RunNo: 29	9489				
Prep Date: 10/12/2015	Analysis Da	ite: 10)/12/2015	S	eqNo: 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 (MRO)	ND	5.0								
Surr: DNOP	1.3		1.000		128	72	136			
Sample ID LCS-21793	SampTy	pe: LC	s	Tes	Code: El	A Method	8015M/D: Die	sel Rang	e	
Client ID: LCSW	Batch	ID: 21	793	R	RunNo: 29	9489				
Prep Date: 10/12/2015	Analysis Da	ite: 10)/12/2015	S	eqNo: 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			
Surr: DNOP	0.55		0.5000		110	72	136			
Sample ID 1510410-001BMS	SampTy	pe: MS	3	Tes	Code: El	PA Method	8015M/D: Die	sel Rang	e	
Sample ID 1510410-001BMS Client ID: R.O. Reject		/pe: MS			tCode: Ef		8015M/D: Die	sel Rang	e	
		ID: 21	793	R		9489	8015M/D: Die Units: mg/L	sel Rang	e	
Client ID: R.O. Reject	Batch	ID: 21	793 D/12/2015	R	RunNo: 29	9489		sel Rang %RPD	e RPDLimit	Qual
Client ID: R.O. Reject Prep Date: 10/12/2015	Batch Analysis Da	ID: 213 ate: 10	793 D/12/2015	R	anNo: 29 SeqNo: 89	9489 96858	Units: mg/L			Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte	Batch Analysis Da Result	ID: 21 ate: 10 PQL	793 0/12/2015 SPK value	R S SPK Ref Val	RunNo: 29 SeqNo: 89 %REC	9489 96858 LowLimit	Units: mg/L HighLimit			Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO)	Batch Analysis Da Result 5.5 0.57	ID: 217 ate: 10 PQL 1.0	793 0/12/2015 SPK value 5.000 0.5000	R S SPK Ref Val 0	RunNo: 29 BeqNo: 89 %REC 109 113	9489 96858 LowLimit 41.3 72	Units: mg/L HighLimit 177	%RPD	RPDLimit	Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO) Surr: DNOP	Batch Analysis Da Result 5.5 0.57 SD SampTy	ID: 217 ate: 10 PQL 1.0	793 0/12/2015 SPK value 5.000 0.5000	R SPK Ref Val 0 Test	RunNo: 29 BeqNo: 89 %REC 109 113	9489 96858 LowLimit 41.3 72 PA Method	Units: mg/L HighLimit 177 136	%RPD	RPDLimit	Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO) Surr: DNOP Sample ID 1510410-001BMS	Batch Analysis Da Result 5.5 0.57 SD SampTy	ID: 213 ate: 10 PQL 1.0 rpe: MS ID: 213	793 0/12/2015 SPK value 5.000 0.5000 SD 793	R S SPK Ref Val 0 Test R	RunNo: 29 SeqNo: 89 %REC 109 113 tCode: EF	9489 96858 LowLimit 41.3 72 PA Method 9489	Units: mg/L HighLimit 177 136	%RPD	RPDLimit	Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO) Surr: DNOP Sample ID 1510410-001BMS Client ID: R.O. Reject	Batch Analysis Da Result 5.5 0.57 CD SampTy Batch	ID: 213 ate: 10 PQL 1.0 rpe: MS ID: 213	793 0/12/2015 SPK value 5.000 0.5000 SD 793 0/12/2015	R S SPK Ref Val 0 Test R	RunNo: 29 SeqNo: 89 %REC 109 113 tCode: EF	9489 96858 LowLimit 41.3 72 PA Method 9489	Units: mg/L HighLimit 177 136 8015M/D: Die	%RPD	RPDLimit	Qual
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO) Surr: DNOP Sample ID 1510410-001BMS Client ID: R.O. Reject Prep Date: 10/12/2015	Batch Analysis Da Result 5.5 0.57 5D SampTy Batch Analysis Da	ID: 213 ate: 10 PQL 1.0 ype: MS ID: 213 ate: 10	793 0/12/2015 SPK value 5.000 0.5000 SD 793 0/12/2015	R SPK Ref Val 0 Test S	RunNo: 29 SeqNo: 89 %REC 109 113 tCode: EF RunNo: 29 SeqNo: 89	9489 96858 LowLimit 41.3 72 PA Method 9489 96861	Units: mg/L HighLimit 177 136 8015M/D: Die Units: mg/L	%RPD	RPDLimit e	
Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte Diesel Range Organics (DRO) Surr: DNOP Sample ID 1510410-001BMS Client ID: R.O. Reject Prep Date: 10/12/2015 Analyte	Batch Analysis Da Result 5.5 0.57 SD SampTy Batch Analysis Da Result	ID: 217 ate: 10 PQL 1.0 rpe: MS ID: 217 ate: 10 PQL	793 0/12/2015 SPK value 5.000 0.5000 6D 793 0/12/2015 SPK value	R SPK Ref Val 0 Tesi R SPK Ref Val	RunNo: 29 SeqNo: 89 %REC 109 113 tCode: EF RunNo: 29 SeqNo: 89 %REC	9489 96858 LowLimit 41.3 72 PA Method 9489 96861 LowLimit	Units: mg/L HighLimit 177 136 8015M/D: Die Units: mg/L HighLimit	%RPD sel Rang	RPDLimit e RPDLimit	

TestCode: EPA Method 8015M/D: Diesel Range

Qualifiers:

Client:

Project:

Sample ID MB-21793

- 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- 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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SampType: MBLK

Navajo Refining Company

Monthly RO Reject

Client ID: PBW		Batch ID:	R29422		R	unNo: 29	9422				
Prep Date:	Anal	ysis Date:	10/9/201	5	S	eqNo: 89	95544	Units: mg/L			
Analyte	Res	sult P	QL SPK	value S	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organ	cs (GRO)	ND 0.0	050								
Surr: BFB	32 22	18	2	20.00		88. <mark>1</mark>	57.8	137			
Sample ID 2.5UG	GRO LCS S	ampType	LCS		Test	Code: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID: LCSW		Batch ID:	R29422		R	unNo: 29	422				
Prep Date:	Anal	ysis Date:	10/9/201	5	S	eqNo: 89	95545	Units: mg/L			
Analyte	Res	sult P	QL SPK	value S	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organ	cs (GRO) 0	.47 0.0	050 0.	5000	0	93.6	80	120			
Surr: BFB		19	2	20.00		93.0	57.8	137			
Sample ID 15104	10-001AMS S	ampType	MS		Test	Code: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID: R.O. F	Reject	Batch ID:	R29422		R	unNo: 29	422				
Prep Date:	Anal	ysis Date:	10/9/201	5	S	eqNo: 89	95547	Units: mg/L			
Analyte	Res	sult P	QL SPK	value S	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organ	cs (GRO) 0	.46 0.0	050 0.	5000	0	92.2	70	130			
Surr: BFB		19	2	20.00		95.6	57.8	137			
Sample ID 15104	10-001AMSD S	ampType:	MSD		Test	Code: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID: R.O. F	Reject	Batch ID:	R29422		R	unNo: 29	9422				
Prep Date:	Anal	ysis Date:	10/9/201	5	S	eqNo: 89	95548	Units: mg/L			
Analyte	Res	sult P	QL SPK	value S	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
								100	0 100		
Gasoline Range Organ	cs (GRO) 0	.46 0.0	050 0.	5000	0	92.6	70	130	0.433	20	
Gasoline Range Organ Surr: BFB	cs (GRO) 0	.46 0.0 19		5000 20.00	0	92.6 96.6	70 57.8	130 137	0.433 0	20 0	

Qualifiers:

Client:

Project:

Sample ID 5ML RB

- 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
- 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
- **Reporting Detection Limit** RL

TestCode: EPA Method 8015D: Gasoline Range

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and the second	Refining Cor RO Reject	npany								
Sample ID MB-21811	SampTy	pe: ME	BLK	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: PBW	Batch ID: 21811			F	RunNo: 2	9529				
Prep Date: 10/13/2015	Analysis Date: 10/14/2015			S	SeqNo: 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	SampTy	pe: LC	S	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: LCSW	Batch	ID: 21	811	F	RunNo: 2	9529				
Prep Date: 10/13/2015	Analysis Da	ite: 10	0/14/2015	5	SeqNo: 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:

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- * 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
	02 Nov 15

Client:	Navajo Refining Company
Project:	Monthly RO Reject

Sample ID 100ng Ics	SampT	ype: LC	S	TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch	ID: R2	9397	R	9397					
Prep Date:	Analysis D	ate: 10)/8/2015	SeqNo: 894163 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	Test	Code: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R2	9397	R	unNo: 2	9397				
Prep Date:	Analysis D)/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	<mark>4</mark> .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								
	ND	1.0								
Carbon Tetrachloride		1.0								
Carbon Tetrachioride Chlorobenzene	ND	1.0								
	ND ND	2.0								
Chlorobenzene										
Chlorobenzene Chloroethane	ND	2.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
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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

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