Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, April 13, 2017 11:34 AM
To: 'Dade, Lewis (Randy)'
Subject: RE: Emailing: 2017-02-15 GW-028 Monthly Report

Randy:

Yes, this is it. Don't know why my Jan. 2017 version was missing the lab data?

Anyway, I have reviewed the RO Reject discharge data from 1/9/17, and it looks good with the exception of the usual exceedances, i.e., F, SO4, and TDS. It is interesting Chlorides are well below the 250 ppm. Will get it into the Admin. Record.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

-----Original Message-----
From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]
Sent: Thursday, April 13, 2017 10:57 AM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Dade, Lewis (Randy) <Lewis.Dade@HollyFrontier.com>
Subject: FW: Emailing: 2017-02-15 GW-028 Monthly Report

Carl,
Here is the GW-28 Report from 02-15-2017 with attached Analytical Data from 01/09/2017. If there is anything else you need, let me know. Have a great week and weekend. Thanks, Randy

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, April 13, 2017 9:44 AM
To: 'Dade, Lewis (Randy)'
Subject: RE: GW-28 March Report
Attachments: GW-28 March 2017 Report.pdf

Randy:

Good morning. I was reviewing the above subject report, the section with the following paragraph:

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the first quarter, samples were collected for the RO reject streams from the permanent units on January 9, 2017. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results were provided in the monthly report submitted on February 15, 2017, for the January 2017 reporting period.

OCD did not receive the environmental analytical laboratory data results in the submitted February 15, 2017 monthly report. HollyFrontier should have conducted sampling again around April 9, 2017?

Could you please submit the January 9, 2017 environmental analytical data results to OCD by COB on Friday, April 21, 2017. Also, OCD should be receiving the next quarterly sampling data results with the April 2017 submittal.

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD **and see "Publications")**

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]
Sent: Wednesday, April 12, 2017 11:33 AM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; McWatters, Denise <Denise.McWatters@HollyFrontier.com>; O'Brien, Robert (Bob) K. <Robert.OBrien@HollyFrontier.com>; Holder, Mike <Michael.Holder@hollyfrontier.com>; Marks, Allison, EMNRD <AllisonR.Marks@state.nm.us>; Brancard, Bill, EMNRD <bill.brancard@state.nm.us>
Cc: Dade, Lewis (Randy) <Lewis.Dade@HollyFrontier.com>
Subject: GW-28 March Report

Here is the monthly GW-28 Discharge Permit Report for March 2017. If there are any questions, please contact me. Thanks, Randy.

HOLLYFRONTIER

April 12, 2017

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: Discharge Permit GW-028
Monthly Report – March 2017 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's March 2017 monthly report, for the period of March 1-31, 2017, under the Permit.

Specifically, this report covers the March 2017 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1. Per Mr. Chavez' request, the total discharge for the month is also shown in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the first quarter, samples were collected for the RO reject streams from the permanent units on January 9, 2017. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results were provided in the monthly report submitted on February 15, 2017, for the January 2017 reporting period.

Navajo is committed to proactively meeting the requirements of the Permit 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 Flowrates and Volumes

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

Attachment 1
Daily Discharge Flowrates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)	
	GPM	GPM	GPM	GPM	BBL/DAY
	SOUTH	NORTH	MIDDLE		
3/1/2017	0.00	7.24	4.55	11.79	404.23
3/2/2017	0.00	0.13	0.03	0.16	5.49
3/3/2017	63.74	8.93	0.03	72.70	2,492.57
3/4/2017	13.12	0.06	18.37	31.55	1,081.71
3/5/2017	0.00	0.07	126.94	127.01	4,354.63
3/6/2017	0.00	0.08	106.72	106.80	3,661.71
3/7/2017	0.00	0.08	53.24	53.32	1,828.11
3/8/2017	0.00	0.08	0.04	0.12	4.11
3/9/2017	0.00	0.08	0.02	0.10	3.43
3/10/2017	0.00	0.08	0.02	0.10	3.43
3/11/2017	0.00	0.08	0.02	0.10	3.43
3/12/2017	0.00	0.08	0.02	0.10	3.43
3/13/2017	0.00	0.08	0.02	0.10	3.43
3/14/2017	0.00	0.08	0.02	0.10	3.43
3/15/2017	0.00	0.09	0.02	0.11	3.77
3/16/2017	0.00	0.08	0.02	0.10	3.43
3/17/2017	0.00	0.09	0.02	0.11	3.77
3/18/2017	85.92	4.81	0.02	90.75	3,111.43
3/19/2017	136.32	0.09	0.02	136.43	4,677.60
3/20/2017	138.28	0.09	0.02	138.39	4,744.80
3/21/2017	139.22	0.09	0.02	139.33	4,777.03
3/22/2017	138.66	30.51	0.02	169.19	5,800.80
3/23/2017	139.98	110.37	0.02	250.37	8,584.11
3/24/2017	140.95	110.13	0.02	251.10	8,609.14
3/25/2017	141.30	110.57	0.02	251.89	8,636.23
3/26/2017	140.80	111.31	0.02	252.13	8,644.46
3/27/2017	140.95	111.81	0.02	252.78	8,666.74
3/28/2017	140.32	110.36	0.02	250.70	8,595.43
3/29/2017	141.72	105.80	0.02	247.54	8,487.09
3/30/2017	132.85	109.43	0.02	242.30	8,307.43
3/31/2017	142.58	119.88	0.02	262.48	8,999.31
TOTAL (bbls/month)					**114,505.71**

Chavez, Carl J, EMNRD

From: Dade, Lewis (Randy) <Lewis.Dade@HollyFrontier.com>
Sent: Thursday, April 13, 2017 10:57 AM
To: Chavez, Carl J, EMNRD
Cc: Dade, Lewis (Randy)
Subject: FW: Emailing: 2017-02-15 GW-028 Monthly Report
Attachments: 2017-02-15 GW-028 Monthly Report.pdf

Carl,
Here is the GW-28 Report from 02-15-2017 with attached Analytical Data from 01/09/2017. If there is anything else you need, let me know. Have a great week and weekend. Thanks, Randy

HOLLYFRONTIER

February 15, 2017

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: Discharge Permit GW-028
Monthly Report – January 2017 Reporting Period

Dear Sirs:

In accordance with Condition 4.B.7 of Discharge Permit GW-028 (the Permit), the HollyFrontier Navajo Refining LLC (Navajo), Artesia, New Mexico, Refinery (the Refinery) hereby submits the required monthly report to the New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division (OCD). This letter and all attachments provided herein constitute Navajo's January 2016 monthly report, for the period of January 1-31, 2017, under the Permit.

Specifically, this report covers the January 2017 reporting period and includes the following data and information as required by Condition 4.B.7:

- Daily discharge flow measurements for each reverse osmosis (RO) unit, which were collected as required by Condition 4.B.4.

Flow rates, volumes, and discharge locations for the RO reject fluid is monitored from the three permanent RO units on a daily basis. Daily discharge rates and volumes are provided in Attachment 1. Per Mr. Chavez' request, the total discharge for the month is also shown in Attachment 1.

To satisfy the quarterly sampling requirement of Condition 4.B.1 of the Permit for the fourth quarter, samples were collected for the RO reject streams from the permanent units on January 5, 2017. The samples were analyzed for the constituents listed in sections 20.6.2.3103A, B, and C of the New Mexico Administrative Code (NMAC) and using the methods specified in Navajo's Facility Wide Groundwater Monitoring Program (FWGWMP). The corresponding analytical results are provided in Attachment 2.

On October 21, 2016, Navajo notified OCD of its selection of a Class 1 disposal well as an alternative disposal method for the RO reject. Navajo submitted a revised application to renew and modify Discharge Permit GW-028 on January 13, 2017, to reflect this selection.

Navajo is committed to proactively meeting the requirements of the Permit 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 Flowrates and Volumes
Attachment 2: Analytical Lab Report

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

Attachment 1
Daily Discharge Flowrates and Volumes

Daily RO Reject Discharge Flow Rate Measurements and Calculated Daily Discharge

	Permanent RO Units				Daily Discharge Volume
	Metered Data			Combined RO Reject Discharge (Calculated)	
	GPM SOUTH	GPM NORTH	GPM MIDDLE	GPM	BBL/DAY
1/1/2017	0.00	128.70	125.72	254.42	8,722.97
1/2/2017	0.00	128.90	125.67	254.57	8,728.11
1/3/2017	0.00	128.73	125.77	254.50	8,725.71
1/4/2017	0.00	128.72	125.61	254.33	8,719.89
1/5/2017	0.15	128.90	125.86	254.90	8,739.43
1/6/2017	0.00	126.99	125.41	252.40	8,653.71
1/7/2017	0.00	124.68	124.50	249.19	8,543.66
1/8/2017	0.00	124.60	124.03	248.63	8,524.46
1/9/2017	0.00	115.64	116.60	232.25	7,962.86
1/10/2017	0.00	121.95	125.59	247.54	8,487.09
1/11/2017	0.00	122.38	126.03	248.41	8,516.91
1/12/2017	0.00	122.27	127.79	250.06	8,573.49
1/13/2017	21.23	107.10	128.94	257.27	8,820.69
1/14/2017	134.75	38.19	129.63	302.57	10,373.83
1/15/2017	136.47	39.28	130.72	306.47	10,507.54
1/16/2017	135.08	38.13	130.27	303.48	10,405.03
1/17/2017	135.69	38.65	130.06	304.40	10,436.57
1/18/2017	138.87	10.23	132.21	281.31	9,644.91
1/19/2017	123.39	64.66	131.14	319.18	10,943.31
1/20/2017	100.50	123.69	129.28	353.46	12,118.63
1/21/2017	97.46	122.80	129.00	349.26	11,974.63
1/22/2017	110.04	72.43	130.03	312.49	10,713.94
1/23/2017	125.38	42.27	131.51	299.15	10,256.57
1/24/2017	126.09	44.09	131.21	301.39	10,333.37
1/25/2017	126.86	43.15	131.16	301.16	10,325.49
1/26/2017	127.32	42.46	131.19	300.98	10,319.31
1/27/2017	127.20	42.55	130.96	300.72	10,310.40
1/28/2017	127.16	40.74	130.99	298.89	10,247.66
1/29/2017	127.49	16.81	131.11	275.41	9,442.63
1/30/2017	127.90	0.10	131.11	259.11	8,883.77
1/31/2017	127.71	0.07	130.88	258.66	8,868.34
TOTAL (bbls/month)					**297,824.91**

Attachment 2
Analytical Lab Report

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

February 14, 2017

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

RE: Quarterly R.O. Reject

OrderNo.: 1701253

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/9/2017 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued February 06, 2017.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1701253**
Date Reported: **2/14/2017**

CLIENT: Navajo Refining Company
Project: Quarterly R.O. Reject
Lab ID: 1701253-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 1/5/2017 4:30:00 PM
Received Date: 1/9/2017 9:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst: **JLF**	
Arsenic	ND	0.0050		mg/L	5	1/13/2017 5:17:37 PM	C40026
Lead	ND	0.0025		mg/L	5	1/13/2017 5:17:37 PM	C40026
Selenium	0.010	0.0050		mg/L	5	1/13/2017 5:17:37 PM	C40026
Uranium	0.0052	0.0025		mg/L	5	1/13/2017 5:17:37 PM	C40026
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED						Analyst: **SUB**	
Radium-226	1.29	0.662		pCi/L	1	2/2/2017	R40526
Radium-226 ±	0.644	0.662		pCi/L	1	2/2/2017	R40526
Radium-228	0.624	1.02		pCi/L	1	2/2/2017	R40526
Radium-228 ±	0.507	1.02		pCi/L	1	2/2/2017	R40526
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	3.5	2.0		mg/L	20	1/9/2017 10:08:12 PM	R39919
Chloride	74	10		mg/L	20	1/9/2017 10:08:12 PM	R39919
Sulfate	1400	50		mg/L	100	1/11/2017 1:08:20 AM	R39952
Nitrate+Nitrite as N	2.3	1.0		mg/L	5	1/10/2017 12:12:18 AM	R39919
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3410	20.0	*	mg/L	1	1/11/2017 5:59:00 PM	29623
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: **LSB**	
Cyanide	ND	0.0100		mg/L	1	1/16/2017	R40523
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.87	1.68	H	pH units	1	1/9/2017 3:34:06 PM	R39934
EPA METHOD 200.7: DISSOLVED METALS						Analyst: **TES**	
Aluminum	ND	0.020		mg/L	1	1/22/2017 9:55:24 PM	A40181
Barium	0.066	0.0020		mg/L	1	1/24/2017 11:12:53 AM	A40223
Boron	0.10	0.040		mg/L	1	1/24/2017 11:12:53 AM	A40223
Cadmium	ND	0.0020		mg/L	1	1/24/2017 11:12:53 AM	A40223
Chromium	ND	0.0060		mg/L	1	1/24/2017 11:12:53 AM	A40223
Cobalt	ND	0.0060		mg/L	1	1/24/2017 11:12:53 AM	A40223
Copper	ND	0.0060		mg/L	1	1/26/2017 9:36:42 AM	A40288
Iron	ND	0.020		mg/L	1	1/24/2017 11:12:53 AM	A40223
Manganese	ND	0.0020		mg/L	1	1/24/2017 11:12:53 AM	A40223
Molybdenum	0.0088	0.0080		mg/L	1	1/24/2017 11:12:53 AM	A40223
Nickel	ND	0.010		mg/L	1	1/24/2017 11:12:53 AM	A40223
Silver	ND	0.0050		mg/L	1	1/24/2017 11:12:53 AM	A40223
Zinc	0.023	0.010		mg/L	1	1/24/2017 11:40:30 AM	A40223
EPA METHOD 245.1: MERCURY						Analyst: **MED**	
Mercury	ND	0.00020		mg/L	1	1/10/2017 12:14:44 PM	29608

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly R.O. Reject
Lab ID: 1701253-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 1/5/2017 4:30:00 PM
Received Date: 1/9/2017 9:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/12/2017 2:15:17 PM	G39990
Surr: BFB	87.6	70-130		%Rec	1	1/12/2017 2:15:17 PM	G39990
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/10/2017 10:10:43 AM	29609
EPA METHOD 8082: PCB'S						Analyst: **SCC**	
Aroclor 1016	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1221	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1232	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1242	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1248	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1254	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Aroclor 1260	ND	1.0		µg/L	1	1/11/2017 10:44:00 AM	29618
Surr: Decachlorobiphenyl	60.4	26.1-140		%Rec	1	1/11/2017 10:44:00 AM	29618
Surr: Tetrachloro-m-xylene	53.2	15-123		%Rec	1	1/11/2017 10:44:00 AM	29618
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	1/12/2017 4:33:48 PM	29657
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	1/12/2017 4:33:48 PM	29657
Surr: DNOP	115	77.1-144		%Rec	1	1/12/2017 4:33:48 PM	29657
EPA METHOD 8310: PAHS						Analyst: **SCC**	
Naphthalene	ND	2.0		µg/L	1	1/11/2017 12:16:05 PM	29615
1-Methylnaphthalene	ND	2.0		µg/L	1	1/11/2017 12:16:05 PM	29615
2-Methylnaphthalene	ND	2.0		µg/L	1	1/11/2017 12:16:05 PM	29615
Benzo(a)pyrene	ND	0.070		µg/L	1	1/11/2017 12:16:05 PM	29615
Surr: Benzo(e)pyrene	81.0	24.4-130		%Rec	1	1/11/2017 12:16:05 PM	29615
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Toluene	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Ethylbenzene	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Carbon Tetrachloride	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Chloroform	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,1-Dichloroethane	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,1-Dichloroethene	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Methylene Chloride	ND	3.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912

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
P	Sample pH Not In Range
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly R.O. Reject
Lab ID: 1701253-001 **Matrix:** AQUEOUS

Client Sample ID: R.O. Reject
Collection Date: 1/5/2017 4:30:00 PM
Received Date: 1/9/2017 9:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Vinyl chloride	ND	1.0		µg/L	1	1/9/2017 5:53:01 PM	W39912
Xylenes, Total	ND	1.5		µg/L	1	1/9/2017 5:53:01 PM	W39912
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	1/9/2017 5:53:01 PM	W39912
Surr: 4-Bromofluorobenzene	86.6	70-130		%Rec	1	1/9/2017 5:53:01 PM	W39912
Surr: Dibromofluoromethane	118	70-130		%Rec	1	1/9/2017 5:53:01 PM	W39912
Surr: Toluene-d8	87.9	70-130		%Rec	1	1/9/2017 5:53:01 PM	W39912
TOTAL PHENOLICS BY SW-846 9067						Analyst: **SCC**	
Phenolics, Total Recoverable	ND	2.5		µg/L	1	1/25/2017	29866

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly R.O. Reject
Lab ID: 1701253-002

Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK
Received Date: 1/9/2017 9:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	1/12/2017 3:43:50 PM	G39990
Surr: BFB	83.7	70-130		%Rec	1	1/12/2017 3:43:50 PM	G39990
EPA METHOD 8011/504.1: EDB						Analyst: **JME**	
1,2-Dibromoethane	ND	0.010		µg/L	1	1/10/2017 10:25:50 AM	29609
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Toluene	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Ethylbenzene	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Carbon Tetrachloride	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Chloroform	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,1-Dichloroethane	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,1-Dichloroethene	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Methylene Chloride	ND	3.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Vinyl chloride	ND	1.0		µg/L	1	1/9/2017 6:22:09 PM	W39912
Xylenes, Total	ND	1.5		µg/L	1	1/9/2017 6:22:09 PM	W39912
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	1/9/2017 6:22:09 PM	W39912
Surr: 4-Bromofluorobenzene	86.8	70-130		%Rec	1	1/9/2017 6:22:09 PM	W39912
Surr: Dibromofluoromethane	116	70-130		%Rec	1	1/9/2017 6:22:09 PM	W39912
Surr: Toluene-d8	88.9	70-130		%Rec	1	1/9/2017 6:22:09 PM	W39912

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company
Project: Quarterly R.O. Reject

Sample ID **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A40181**	RunNo: **40181**
Prep Date:	Analysis Date: **1/22/2017**	SeqNo: **1259966** Units: **mg/L**

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

Sample ID **LLLCS-A**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A40181**	RunNo: **40181**
Prep Date:	Analysis Date: **1/22/2017**	SeqNo: **1259967** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	104	50	150			

Sample ID **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A40181**	RunNo: **40181**
Prep Date:	Analysis Date: **1/22/2017**	SeqNo: **1259968** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.53	0.020	0.5000	0	106	85	115			

Sample ID **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A40223**	RunNo: **40223**
Prep Date:	Analysis Date: **1/24/2017**	SeqNo: **1261933** 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								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								

Sample ID **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A40223**	RunNo: **40223**
Prep Date:	Analysis Date: **1/24/2017**	SeqNo: **1261934** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.4	85	115			
Boron	0.50	0.040	0.5000	0	99.6	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A40223**	RunNo: **40223**
Prep Date:	Analysis Date: **1/24/2017**	SeqNo: **1261934** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.49	0.0020	0.5000	0	97.1	85	115			
Chromium	0.48	0.0060	0.5000	0	95.4	85	115			
Cobalt	0.46	0.0060	0.5000	0	91.8	85	115			
Iron	0.47	0.020	0.5000	0	93.5	85	115			
Manganese	0.47	0.0020	0.5000	0	94.2	85	115			
Molybdenum	0.50	0.0080	0.5000	0	101	85	115			
Nickel	0.45	0.010	0.5000	0	90.4	85	115			
Silver	0.098	0.0050	0.1000	0	97.9	85	115			
Zinc	0.47	0.010	0.5000	0	93.5	85	115			

Sample ID **LLLCS-A**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **A40223**	RunNo: **40223**
Prep Date:	Analysis Date: **1/24/2017**	SeqNo: **1261935** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0022	0.0020	0.002000	0	112	50	150			
Boron	0.040	0.040	0.04000	0	101	50	150			
Cadmium	ND	0.0020	0.002000	0	98.5	50	150			
Chromium	0.0060	0.0060	0.006000	0	101	50	150			
Cobalt	ND	0.0060	0.006000	0	98.5	50	150			
Iron	ND	0.020	0.02000	0	99.3	50	150			
Manganese	ND	0.0020	0.002000	0	92.5	50	150			
Molybdenum	0.0092	0.0080	0.008000	0	115	50	150			
Nickel	ND	0.010	0.005000	0	110	50	150			
Silver	0.0052	0.0050	0.005000	0	105	50	150			
Zinc	ND	0.010	0.005000	0	109	50	150			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company
Project: Quarterly R.O. Reject

Sample ID **1701253-001GMSDL** SampType: **MSD** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **R.O. Reject** Batch ID: **C40026** RunNo: **40026**
Prep Date: Analysis Date: **1/13/2017** SeqNo: **1254502** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.14	0.0050	0.1250	0.002183	108	70	130	0.715	20	
Lead	0.064	0.0025	0.06250	0	102	70	130	0.187	20	
Selenium	0.14	0.0050	0.1250	0.01048	106	70	130	1.86	20	
Uranium	0.071	0.0025	0.06250	0.005175	105	70	130	0.245	20	

Sample ID **1701253-001GMSLL** SampType: **MS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **R.O. Reject** Batch ID: **C40026** RunNo: **40026**
Prep Date: Analysis Date: **1/13/2017** SeqNo: **1254503** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.14	0.0050	0.1250	0.002183	107	70	130			
Lead	0.064	0.0025	0.06250	0	102	70	130			
Selenium	0.14	0.0050	0.1250	0.01048	104	70	130			
Uranium	0.071	0.0025	0.06250	0.005175	105	70	130			

Sample ID **LCS** SampType: **LCS** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **LCSW** Batch ID: **C40026** RunNo: **40026**
Prep Date: Analysis Date: **1/13/2017** SeqNo: **1254506** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.025	0.0010	0.02500	0	98.8	85	115			
Lead	0.013	0.00050	0.01250	0	100	85	115			
Selenium	0.026	0.0010	0.02500	0	103	85	115			
Uranium	0.012	0.00050	0.01250	0	98.4	85	115			

Sample ID **LLLCS** SampType: **LCSLL** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **C40026** RunNo: **40026**
Prep Date: Analysis Date: **1/13/2017** SeqNo: **1254507** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010	0.001000	0	98.2	50	150			
Lead	0.00052	0.00050	0.0005000	0	104	50	150			
Selenium	0.0010	0.0010	0.001000	0	102	50	150			
Uranium	0.00050	0.00050	0.0005000	0	100	50	150			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW** Batch ID: **C40026** RunNo: **40026**
Prep Date: Analysis Date: **1/13/2017** SeqNo: **1254508** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA 200.8: Dissolved Metals**
Client ID: **PBW**	Batch ID: **C40026**	RunNo: **40026**
Prep Date:	Analysis Date: **1/13/2017**	SeqNo: **1254508** Units: **mg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-29608**	SampType: **MBLK**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW**	Batch ID: **29608**	RunNo: **39928**
Prep Date: **1/9/2017**	Analysis Date: **1/10/2017**	SeqNo: **1251284** Units: **mg/L**

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

Sample ID **LCS-29608**	SampType: **LCS**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW**	Batch ID: **29608**	RunNo: **39928**
Prep Date: **1/9/2017**	Analysis Date: **1/10/2017**	SeqNo: **1251285** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.3	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R39919**	RunNo: **39919**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1251098** 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								
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R39919**	RunNo: **39919**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1251099** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.8	90	110			
Chloride	4.8	0.50	5.000	0	96.8	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	101	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R39952**	RunNo: **39952**
Prep Date:	Analysis Date: **1/10/2017**	SeqNo: **1251860** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R39952**	RunNo: **39952**
Prep Date:	Analysis Date: **1/10/2017**	SeqNo: **1251861** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.4	0.50	10.00	0	94.5	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-29609**	SampType: **MBLK**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **PBW**	Batch ID: **29609**	RunNo: **39918**
Prep Date: **1/10/2017**	Analysis Date: **1/10/2017**	SeqNo: **1251243** Units: **µg/L**

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

Sample ID **LCS-29609**	SampType: **LCS**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **LCSW**	Batch ID: **29609**	RunNo: **39918**
Prep Date: **1/10/2017**	Analysis Date: **1/10/2017**	SeqNo: **1251245** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.094	0.010	0.1000	0	93.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **LCS-29657**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **29657**	RunNo: **39973**
Prep Date: **1/12/2017**	Analysis Date: **1/12/2017**	SeqNo: **1252916** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	110	63.2	155			
Surr: DNOP	0.56		0.5000		111	77.1	144			

Sample ID **MB-29657**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **29657**	RunNo: **39973**
Prep Date: **1/12/2017**	Analysis Date: **1/12/2017**	SeqNo: **1252917** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		108	77.1	144			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company
Project: Quarterly R.O. Reject

Sample ID **MB-29618** SampType: **MBLK** TestCode: **EPA Method 8082: PCB's**
Client ID: **PBW** Batch ID: **29618** RunNo: **39949**
Prep Date: **1/10/2017** Analysis Date: **1/11/2017** SeqNo: **1251667** 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	1.6		2.500		63.2	26.1	140			
Surr: Tetrachloro-m-xylene	1.4		2.500		55.2	15	123			

Sample ID **LCS-29618(1221)** SampType: **LCS** TestCode: **EPA Method 8082: PCB's**
Client ID: **LCSW** Batch ID: **29618** RunNo: **39949**
Prep Date: **1/10/2017** Analysis Date: **1/11/2017** SeqNo: **1251690** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1221	3.1	1.0	5.000	0	61.8	15	200			
Surr: Decachlorobiphenyl	1.8		2.500		71.6	26.1	140			
Surr: Tetrachloro-m-xylene	1.2		2.500		48.0	15	123			

Sample ID **LCSD-29618(1221)** SampType: **LCSD** TestCode: **EPA Method 8082: PCB's**
Client ID: **LCSS02** Batch ID: **29618** RunNo: **39949**
Prep Date: **1/10/2017** Analysis Date: **1/11/2017** SeqNo: **1252020** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1221	3.4	1.0	5.000	0	68.4	15	200	10.1	0	
Surr: Decachlorobiphenyl	1.8		2.500		72.8	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	1.3		2.500		50.8	15	123	0	0	

Sample ID **LCS-29618(1232)** SampType: **LCS** TestCode: **EPA Method 8082: PCB's**
Client ID: **LCSW** Batch ID: **29618** RunNo: **39949**
Prep Date: **1/10/2017** Analysis Date: **1/11/2017** SeqNo: **1252021** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1232	3.6	1.0	5.000	0	73.0	15	200			
Surr: Decachlorobiphenyl	1.8		2.500		70.4	26.1	140			
Surr: Tetrachloro-m-xylene	1.6		2.500		62.4	15	123			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	**LCSD-29618(1232)**	SampType: **LCSD**		TestCode: **EPA Method 8082: PCB's**					
Client ID:	**LCSS02**	Batch ID: **29618**		RunNo: **39949**					
Prep Date:	**1/10/2017**	Analysis Date: **1/11/2017**		SeqNo: **1252022**		Units: **µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1232	3.6	1.0	5.000	0	72.0	15	200	1.38	0	
Surr: Decachlorobiphenyl	1.7		2.500		68.8	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	1.5		2.500		61.6	15	123	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W39912**	RunNo: **39912**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1250932** 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								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.4	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.2	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.5	70	130			
Surr: Toluene-d8	8.9		10.00		88.9	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W39912**	RunNo: **39912**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1250933** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	115	70	130			
Toluene	19	1.0	20.00	0	97.2	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	109	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		93.8	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		89.5	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.4	70	130			
Surr: Toluene-d8	9.1		10.00		91.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-29615**	SampType: **MBLK**	TestCode: **EPA Method 8310: PAHs**							
Client ID: **PBW**	Batch ID: **29615**	RunNo: **39968**							
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252566**	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								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	17		20.00		83.8	24.4	130			

Sample ID **LCS-29615**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**							
Client ID: **LCSW**	Batch ID: **29615**	RunNo: **39968**							
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252567**	Units: **µg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	47	2.0	80.00	0	59.0	33.3	141			
1-Methylnaphthalene	45	2.0	80.20	0	56.4	35.5	139			
2-Methylnaphthalene	43	2.0	80.00	0	54.1	30.7	139			
Acenaphthylene	53	2.5	80.20	0	65.8	60.2	119			
Acenaphthene	49	2.0	80.00	0	61.9	56	126			
Fluorene	5.0	0.80	8.020	0	61.7	51.6	129			
Phenanthrene	2.8	0.60	4.020	0	69.7	58.8	129			
Anthracene	2.7	0.60	4.020	0	66.9	59.9	121			
Fluoranthene	5.9	0.30	8.020	0	72.9	48	145			
Pyrene	6.3	0.30	8.020	0	78.7	56.2	130			
Benz(a)anthracene	0.58	0.070	0.8020	0	72.3	50.4	142			
Chrysene	3.0	0.20	4.020	0	73.9	54.7	134			
Benzo(b)fluoranthene	0.73	0.10	1.002	0	72.9	61.8	120			
Benzo(k)fluoranthene	0.37	0.070	0.5000	0	74.0	55.9	134			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company
Project: Quarterly R.O. Reject

Sample ID **LCS-29615**	SampType: **LCS**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSW**	Batch ID: **29615**	RunNo: **39968**
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252567** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.36	0.070	0.5020	0	71.7	49.1	142			
Dibenz(a,h)anthracene	0.76	0.12	1.002	0	75.8	57.8	134			
Benzo(g,h,i)perylene	0.77	0.12	1.000	0	77.0	57.2	134			
Indeno(1,2,3-cd)pyrene	1.4	0.25	2.004	0	68.9	58.2	137			
Surr: Benzo(e)pyrene	15		20.00		75.3	24.4	130			

Sample ID **LCSD-29615**	SampType: **LCSD**	TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS02**	Batch ID: **29615**	RunNo: **39968**
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252568** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	43	2.0	80.00	0	53.3	33.3	141	10.2	20.3	
1-Methylnaphthalene	41	2.0	80.20	0	51.0	35.5	139	10.0	22.7	
2-Methylnaphthalene	39	2.0	80.00	0	49.0	30.7	139	9.91	22.6	
Acenaphthylene	48	2.5	80.20	0	59.6	60.2	119	9.90	22.6	S
Acenaphthene	45	2.0	80.00	0	56.1	56	126	9.70	21.4	
Fluorene	4.6	0.80	8.020	0	57.1	51.6	129	7.76	23.6	
Phenanthrene	2.5	0.60	4.020	0	62.2	58.8	129	11.3	24.7	
Anthracene	2.4	0.60	4.020	0	59.5	59.9	121	11.8	23.9	S
Fluoranthene	5.3	0.30	8.020	0	65.6	48	145	10.6	25.1	
Pyrene	5.7	0.30	8.020	0	70.8	56.2	130	10.5	23.7	
Benz(a)anthracene	0.52	0.070	0.8020	0	64.8	50.4	142	10.9	19.2	
Chrysene	2.6	0.20	4.020	0	65.7	54.7	134	11.8	19.8	
Benzo(b)fluoranthene	0.66	0.10	1.002	0	65.9	61.8	120	10.1	22.1	
Benzo(k)fluoranthene	0.33	0.070	0.5000	0	66.0	55.9	134	11.4	27.2	
Benzo(a)pyrene	0.32	0.070	0.5020	0	63.7	49.1	142	11.8	30.2	
Dibenz(a,h)anthracene	0.69	0.12	1.002	0	68.9	57.8	134	9.66	23.8	
Benzo(g,h,i)perylene	0.69	0.12	1.000	0	69.0	57.2	134	11.0	19.1	
Indeno(1,2,3-cd)pyrene	1.2	0.25	2.004	0	61.4	58.2	137	11.5	19.6	
Surr: Benzo(e)pyrene	14		20.00		67.6	24.4	130	0		

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-29866**	SampType: **MBLK**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **PBW**	Batch ID: **29866**	RunNo: **40252**
Prep Date: **1/25/2017**	Analysis Date: **1/25/2017**	SeqNo: **1262095** Units: **µg/L**

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

Sample ID **LCS-29866**	SampType: **LCS**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSW**	Batch ID: **29866**	RunNo: **40252**
Prep Date: **1/25/2017**	Analysis Date: **1/25/2017**	SeqNo: **1262096** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	21	2.5	20.00	0	104	62.4	146			

Sample ID **LCSD-29866**	SampType: **LCSD**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSS02**	Batch ID: **29866**	RunNo: **40252**
Prep Date: **1/25/2017**	Analysis Date: **1/25/2017**	SeqNo: **1262097** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	23	2.5	20.00	0	113	62.4	146	8.32	21	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID	**MB-R40523**	SampType:	**MBLK**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**PBW**	Batch ID:	**R40523**	RunNo:	**40523**					
Prep Date:		Analysis Date:	**1/16/2017**	SeqNo:	**1269895**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	**LCS-R40523**	SampType:	**LCS**	TestCode:	**EPA 335.4: Total Cyanide Subbed**					
Client ID:	**LCSW**	Batch ID:	**R40523**	RunNo:	**40523**					
Prep Date:		Analysis Date:	**1/16/2017**	SeqNo:	**1269896**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.485		0.5000	0	97.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company
Project: Quarterly R.O. Reject

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G39990**	RunNo: **39990**
Prep Date:	Analysis Date: **1/12/2017**	SeqNo: **1253120** 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	8.8		10.00		87.5	70	130			

Sample ID **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G39990**	RunNo: **39990**
Prep Date:	Analysis Date: **1/12/2017**	SeqNo: **1253121** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.55	0.050	0.5000	0	110	75.4	118			
Surr: BFB	9.2		10.00		92.5	70	130			

Sample ID **1701253-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **R.O. Reject**	Batch ID: **G39990**	RunNo: **39990**
Prep Date:	Analysis Date: **1/12/2017**	SeqNo: **1253124** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0.01760	89.1	70	130	12.9	20	
Surr: BFB	9.0		10.00		89.7	70	130	0	0	

Sample ID **1701253-001a ms g**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **R.O. Reject**	Batch ID: **G39990**	RunNo: **40004**
Prep Date:	Analysis Date: **1/13/2017**	SeqNo: **1254101** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0.01760	102	70	130			
Surr: BFB	8.8		10.00		87.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-R40526**	SampType: **MBLK**	TestCode: **EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed**
Client ID: **PBW**	Batch ID: **R40526**	RunNo: **40526**
Prep Date:	Analysis Date: **2/2/2017**	SeqNo: **1269905** Units: **pCi/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0.127	0.468								
Radium-226 ±	0.291	0.468								
Radium-228	0.0949	0.653								
Radium-228 ±	0.29	0.653								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701253**

14-Feb-17

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID **MB-29623**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **29623**	RunNo: **39966**
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252489** 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-29623**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **29623**	RunNo: **39966**
Prep Date: **1/10/2017**	Analysis Date: **1/11/2017**	SeqNo: **1252490** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1060	20.0	1000	0	106	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1701253 RcptNo: 1

Received by/date: RE 01/09/17

Logged By: Ashley Gallegos 1/9/2017 9:20:00 AM

Completed By: Ashley Gallegos 1/9/2017 9:54:08 AM

Reviewed By: 01/09/17

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 6 (1) (<2 or >12 unless noted)

Adjusted? No

Checked by: Re

Special Handling (if applicable)

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

Person Notified: Date

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

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refinery

Mailing Address: P.O. Box 159 Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush _____

Project Name:

Quarterly ~~Monthly~~ R.O. Reject

Project #: P.O. # 167796

Project Manager:

Robert Combs

Sampler: Brady Hubbard

On Ice: X Yes ☐ No

Sample Temperature: 1.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1701253	8260B:WQCC List VOCs	8270C: WQCC list SVOCs	6010B: WQCC Metals	335.4: Total Cyanide	7470: Mercury	8015: GRO, DRO, ORO	8082: PCBs	Radioactivity (Ra-226+Ra-228)	Sulfate Chloride	Phenols	Fluoride	Nitrate/Nitrite	Total Dissolved Solids	PH	504.1:EDB	Air Bubbles (Y or N)
1/5/17	4:30	liquid	R.O. Reject	2 - 500ml P	1-unpres 1-H2SO4	-001									X		X	X	X	X		Y
1/5/17	4:30	liquid	R.O. Reject	3-40ml VOA	HCL		X															
1/5/17	4:30	liquid	R.O. Reject	1-500ml P	HNO3						X											
1/5/17	4:30	liquid	R.O. Reject	1-125ml P	HNO3				X													
1/5/17	4:30	liquid	R.O. Reject	1-500ml P	NaOH					X												
1/5/17	4:30	liquid	R.O. Reject	2- 1L P	HNO3									X								
1/5/17	4:30	liquid	R.O. Reject	3-40ml VOA	Na2S2O3																X	
1/5/17	4:30	liquid	R.O. Reject	2 - 1L Glass	unpres								X									
1/5/17	4:30	liquid	R.O. Reject	1 - 1L Glass	unpres			X														
1/5/17	4:30	liquid	R.O. Reject	3-40ml VOA	HCl							X										
1/5/17	4:30	liquid	R.O. Reject	1-250mlGlas	unpres							X										
1/5/17	4:30	liquid	R.O. Reject	1 - 1L Glass	H2SO4											X						
1/5/17	XXX	liquid	Trip Blank	2-40ml VOA	HCL	-002																

Date:	Time:	Relinquished by:	Received by:	Date	Time
1-6-17	1:30	Brady Hubbard		1/9/17	0920
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

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

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

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

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

Quarterly RO Reject Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Quarterly RO Reject
Samplers Name	Brady Hubbard
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	1/5/17 @ 4:23 pm
End Date and Time	1/5/17 @ 4:51 pm

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

Physical Property:	
Solid	☐
Liquid	☑
Sludge	☐

Parts / Sample Intervals	One

Type of Sampler	Directly to sample jars

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

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

Field Data (Weather Observations, Etc): 1/5/17 Tmp.42.8°F, Humidity 42% , Wind Dir. East, Wind Speed 10.4 mph, Conditions Clear
Date and Time:

Field Temp. 17.1C Field pH 7.69

Storage Method:	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media:	
Ice	☑
Other	☐