

**GW – 028**

**2015 Annual Discharge  
Permit Report**

**PART 5 OF 16**

**March 2016**



Method Blank (MB)

(MB) 04/16/15 23:56

Analyte	MB Result mg/l	MB Qual fier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.000316	0.00100
Acenaphthylene	U		0.000309	0.00100
Acetophenone	U		0.00271	0.0100
Anthracene	U		0.000291	0.00100
Atrazine	U		0.00153	0.0100
Benzaldehyde	U		0.00140	0.0100
Benzo(a)anthracene	U		0.000111	0.00100
Benzo(b)fluoranthene	U		0.0000896	0.00100
Benzo(k)fluoranthene	U		0.000355	0.00100
Benzo(g,h,i)perylene	U		0.000161	0.00100
Benzo(a)pyrene	U		0.000340	0.00100
Biphenyl	U		0.000206	0.0100
Bis(2-chlorethoxy)methane	U		0.000329	0.0100
Bis(2-chloroethyl)ether	U		0.00162	0.0100
Bis(2-chloroisopropyl)ether	U		0.000445	0.0100
4-Bromophenyl-phenylether	U		0.000335	0.0100
Caprolactam	U		0.000583	0.0100
Carbazole	U		0.000162	0.0100
4-Chloroaniline	U		0.000382	0.0100
2-Chloronaphthalene	U		0.000330	0.00100
4-Chlorophenyl-phenylether	U		0.000303	0.0100
Chrysene	U		0.000332	0.00100
Dibenz(a,h)anthracene	U		0.000279	0.00100
Dibenzofuran	U		0.000338	0.0100
3,3-Dichlorobenzidine	U		0.00202	0.0100
2,4-Dinitrotoluene	U		0.00165	0.0100
2,6-Dinitrotoluene	U		0.000279	0.0100
Fluoranthene	U		0.000310	0.00100
Fluorene	U		0.000323	0.00100
Hexachlorobenzene	U		0.000341	0.00100
Hexachloro-1,3-butadiene	U		0.000329	0.0100
Hexachlorocyclopentadiene	U		0.00233	0.0100
Hexachloroethane	U		0.000365	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000272	0.0100
1-Methylnaphthalene	U		0.000217	0.00100
2-Methylnaphthalene	U		0.000311	0.00100
Naphthalene	U		0.000372	0.00100
2-Nitroaniline	U		0.00190	0.0100

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) 04/16/15 23:56

Analyte	MB Result mg/l	MB Qual fier	MB MDL mg/l	MB RDL mg/l
3-Nitroaniline	U		0.000308	0.0100
4-Nitroaniline	U		0.000349	0.0100
Nitrobenzene	U		0.000367	0.0100
n-Nitrosodiphenylamine	U		0.000304	0.0100
n-Nitrosodi-n-propylamine	U		0.000403	0.0100
Phenanthrene	U		0.000366	0.00100
Benzylbutyl phthalate	U		0.000275	0.00300
Bis(2-ethylhexyl)phthalate	0.00173		0.000709	0.00300
Di-n-butyl phthalate	0.000410		0.000266	0.00300
Diethyl phthalate	U		0.000282	0.00300
Dimethyl phthalate	U		0.000283	0.00300
Di-n-octyl phthalate	0.000388		0.000278	0.00300
Pyrene	U		0.000330	0.00100
4-Chloro-3-methylphenol	U		0.000263	0.0100
2-Chlorophenol	U		0.000283	0.0100
2-Methylphenol	U		0.000312	0.0100
3&4-Methyl Phenol	U		0.000266	0.0100
2,4-Dichlorophenol	U		0.000284	0.0100
2,4-Dimethylphenol	U		0.000624	0.0100
4,6-Dinitro-2-methylphenol	U		0.00262	0.0100
2,4-Dinitrophenol	U		0.00325	0.0100
2-Nitrophenol	U		0.000320	0.0100
4-Nitrophenol	U		0.00201	0.0100
Pentachlorophenol	U		0.000313	0.00100
Phenol	U		0.000334	0.0100
2,4,5-Trichlorophenol	U		0.000236	0.0100
2,4,6-Trichlorophenol	U		0.000297	0.0100
(S) Nitrobenzene-d5	65.1			21.8-123
(S) 2-Fluorobiphenyl	77.9			29.5-131
(S) p-Terphenyl-d14	71.5			29.3-137
(S) Phenol-d5	29.8			5.00-70.1
(S) 2-Fluorophenol	42.8			10.0-77.9
(S) 2,4,6-Tribromophenol	67.2			11.2-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) 04/17/15 12:52

Analyte	MB Result	MB Qual fier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
1,3,5-Trinitrobenzene	U		0.00132	0.0100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 23:10 • (LCSD) 04/16/15 23:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Acenaphthene	0.0250	0.0209	0.0208	83.6	83.0	38.7-109			0.670	21.5
Acenaphthylene	0.0250	0.0206	0.0205	82.3	82.0	36.0-106			0.330	21
Acetophenone	0.0250	0.0173	0.0168	69.3	67.1	41.6-104			3.22	24.8
Anthracene	0.0250	0.0207	0.0208	82.7	83.1	43.6-113			0.520	18.8
Atrazine	0.0250	0.0218	0.0212	87.2	84.7	50.0-123			2.98	21.5
Benzaldehyde	0.0250	0.0258	0.0235	103	94.0	11.7-132			9.31	25.2
Benzo(a)anthracene	0.0250	0.0216	0.0213	86.5	85.3	51.2-112			1.33	20
Benzo(b)fluoranthene	0.0250	0.0217	0.0216	86.8	86.3	47.6-111			0.620	20
Benzo(k)fluoranthene	0.0250	0.0220	0.0201	88.1	80.4	49.4-114			9.18	20
Benzo(g,h,i)perylene	0.0250	0.0238	0.0234	95.1	93.6	45.2-117			1.61	20
Benzo(a)pyrene	0.0250	0.0216	0.0207	86.3	82.6	45.6-106			4.38	20
Biphenyl	0.0250	0.0210	0.0208	84.0	83.2	38.0-103			0.950	20.1
Bis(2-chlorethoxy)methane	0.0250	0.0194	0.0188	77.5	75.2	37.2-111			3.11	24.1
Bis(2-chloroethyl)ether	0.0250	0.0176	0.0179	70.3	71.7	22.6-108			2.07	27.9
Bis(2-chloroisopropyl)ether	0.0250	0.0207	0.0204	82.7	81.4	32.9-100			1.59	25.1
4-Bromophenyl-phenylether	0.0250	0.0206	0.0211	82.3	84.6	40.7-116			2.72	21
Caprolactam	0.0250	0.00570	0.00540	22.8	21.6	10.0-40.4			5.33	40
Carbazole	0.0250	0.0218	0.0213	87.2	85.1	49.0-110			2.48	20
4-Chloroaniline	0.0250	0.0166	0.0175	66.3	70.1	32.0-104			5.45	26.4
2-Chloronaphthalene	0.0250	0.0211	0.0208	84.3	83.1	33.6-105			1.45	23
4-Chlorophenyl-phenylether	0.0250	0.0215	0.0207	85.9	83.0	39.0-113			3.47	20.9
Chrysene	0.0250	0.0211	0.0203	84.3	81.3	54.6-120			3.67	20
Dibenz(a,h)anthracene	0.0250	0.0231	0.0228	92.4	91.1	42.8-118			1.36	20
Dibenzofuran	0.0250	0.0205	0.0206	81.9	82.3	42.4-105			0.480	20
3,3-Dichlorobenzidine	0.0250	0.0228	0.0225	91.3	90.0	27.2-142			1.48	22.3
2,4-Dinitrotoluene	0.0250	0.0210	0.0216	84.1	86.4	31.2-105			2.69	22
2,6-Dinitrotoluene	0.0250	0.0221	0.0208	88.4	83.3	30.6-106			5.84	23.1
Fluoranthene	0.0250	0.0208	0.0208	83.3	83.4	45.9-115			0.0500	20
Fluorene	0.0250	0.0206	0.0208	82.4	83.2	41.0-112			0.910	20.2
Hexachlorobenzene	0.0250	0.0207	0.0210	82.9	84.1	38.5-116			1.34	20.1
Hexachloro-1,3-butadiene	0.0250	0.0176	0.0176	70.3	70.3	16.1-104			0.0600	31.2

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 23:10 • (LCSD) 04/16/15 23:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hexachlorocyclopentadiene	0.0250	0.0124	0.0125	49.5	49.9	10.0-121			0.810	27.9
Hexachloroethane	0.0250	0.0176	0.0166	70.3	66.4	16.5-89.8			5.64	30.7
Indeno(1,2,3-cd)pyrene	0.0250	0.0232	0.0233	92.9	93.1	45.0-116			0.240	20
Isophorone	0.0250	0.0204	0.0200	81.6	79.9	35.4-112			2.15	21.5
1-Methylnaphthalene	0.0250	0.0216	0.0210	86.2	84.2	34.7-102			2.44	24.9
2-Methylnaphthalene	0.0250	0.0191	0.0187	76.4	75.0	33.8-98.6			1.86	24.2
Naphthalene	0.0250	0.0186	0.0181	74.4	72.6	32.2-101			2.44	23.8
2-Nitroaniline	0.0250	0.0198	0.0202	79.2	80.9	35.6-113			2.16	20.9
3-Nitroaniline	0.0250	0.0195	0.0206	78.1	82.6	33.6-103			5.58	21.8
4-Nitroaniline	0.0250	0.0233	0.0227	93.3	91.0	35.4-124			2.49	23.1
Nitrobenzene	0.0250	0.0186	0.0183	74.3	73.3	31.4-106			1.34	25.7
n-Nitrosodiphenylamine	0.0250	0.0211	0.0210	84.3	84.0	44.4-113			0.370	20
n-Nitrosodi-n-propylamine	0.0250	0.0191	0.0191	76.5	76.2	33.2-106			0.400	23.7
Phenanthrene	0.0250	0.0208	0.0210	83.4	84.0	46.4-113			0.720	20
Benzylbutyl phthalate	0.0250	0.0208	0.0210	83.1	83.9	31.8-123			0.980	20.7
Bis(2-ethylhexyl)phthalate	0.0250	0.0230	0.0220	92.2	88.1	36.9-134			4.45	23.6
Di-n-butyl phthalate	0.0250	0.0215	0.0215	86.0	85.9	41.8-120			0.200	20.2
Diethyl phthalate	0.0250	0.0221	0.0217	88.4	86.8	36.5-129			1.78	20
Dimethyl phthalate	0.0250	0.0219	0.0210	87.5	84.1	35.3-128			3.99	20.8
Di-n-octyl phthalate	0.0250	0.0213	0.0202	85.3	80.9	39.7-112			5.19	21.1
Pyrene	0.0250	0.0225	0.0219	89.9	87.5	46.3-117			2.75	20
4-Chloro-3-methylphenol	0.0250	0.0190	0.0194	76.0	77.5	35.7-100			2.02	22.9
2-Chlorophenol	0.0250	0.0161	0.0166	64.6	66.4	26.2-91.5			2.77	26.5
2-Methylphenol	0.0250	0.0158	0.0164	63.2	65.4	26.4-86.9			3.53	26.5
3&4-Methyl Phenol	0.0250	0.0162	0.0170	64.6	67.9	27.9-92.0			4.98	27
2,4-Dichlorophenol	0.0250	0.0193	0.0191	77.3	76.6	31.4-103			0.940	24.9
2,4-Dimethylphenol	0.0250	0.0193	0.0195	77.1	78.1	31.9-107			1.32	25.7
4,6-Dinitro-2-methylphenol	0.0250	0.0200	0.0194	80.1	77.8	18.4-148			2.87	24.4
2,4-Dinitrophenol	0.0250	0.0111	0.0107	44.6	42.8	24.2-128			4.14	20.5
2-Nitrophenol	0.0250	0.0181	0.0203	72.4	81.2	25.9-106			11.5	26.9
4-Nitrophenol	0.0250	0.00617	0.00872	24.7	34.9	10.0-52.7			34.2	40
Pentachlorophenol	0.0250	0.0117	0.0133	46.8	53.1	10.0-97.4			12.7	35.1
Phenol	0.0250	0.00847	0.0103	33.9	41.2	10.0-57.9			19.6	35
2,4,5-Trichlorophenol	0.0250	0.0210	0.0214	83.9	85.5	34.9-112			1.94	23.9
2,4,6-Trichlorophenol	0.0250	0.0196	0.0199	78.6	79.5	29.8-107			1.13	24.1
(S) Nitrobenzene-d5				68.4	70.2	21.8-123				
(S) 2-Fluorobiphenyl				81.5	82.0	29.5-131				
(S) p-Terphenyl-d14				73.6	76.6	29.3-137				
(S) Phenol-d5				30.2	36.2	5.00-70.1				

- 1 Cp
- 2 Tc
- 3 Ss
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- 9 Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 23:10 • (LCSD) 04/16/15 23:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
(S) 2-Fluorophenol				37.8	44.7	10.0-77.9				
(S) 2,4,6-Tribromophenol				75.3	78.1	11.2-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

## Qualifier                      Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.





ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>n/a</sup> Accreditation not applicable

## Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Company Name/Address:  
**Arcadis**  
 2920 Briarpark Drive Suite 300  
 Houston, TX 77043

Billing Information:

Report to:  
 Pamela Kruger

Email To:  
 pam.kruger@arcadis-us.com

Project Description:  
**Reject**

City/State Collected:  
**Actrisia, NM**

Phone: **713-953-4816**  
 Fax:

Client Project #

Lab Project #

Collected by (print):  
**Scott Ude**

Site/Facility ID #

P.O. #

Collected by (signature):  
**Scott Ude**  
 Immediately  
 Packed on Ice N  Y

**Rush?** (Lab MUST Be Notified)  
 Same Day .....200%  
 Next Day .....100%  
 Two Day .....50%  
 Three Day .....25%

Date Results Needed  
 Email?  No  Yes  
 FAX?  No  Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 (WQCCList)	GRO	DRO/ORO	SVOC8270 (WQCC List)	Diss. Metals-AI, As, Ba, Bo, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mn, Hg <i>Field Filtered by HMI (0.45-µm filter)</i>	Radium 226/228	Chloride, Fluoride, Sulfate	Nitrate/Nitrite	Cyanide	TDS
<b>South Field RO Reject</b>		GW	54													
<b>North Field RO Reject</b>		GW	54													
<i>Regular Unit</i> South Field RO Reject	Grab	GW/WW	1330 <sup>54</sup>	4/14/15	1330	1/16	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<i>Temporary Unit</i> South Field RO Reject	Grab	GW/WW	1315 <sup>54</sup>	4/14/15	1315	1/16	✓	✓	✓	✓	✓	✓	✓	✓	✓	cl
																cl

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

**ESC**  
 L.A.B. S.C.I.E.N.C.E.S.  
 YOUR LAB OF CHOICE

12065 Lebanon Rd  
 Mount Juliet, TN 37122  
 Phone: 615-758-5858  
 Phone: 800-767-5859  
 Fax: 615-758-5859

L# **1789281**

**B157**

Acctnum: ARCADEPTX  
 Template:  
 Prelogin:  
 TSR: **Mark Beasley**  
 Cooler:  
 Shipped Via:

Rem./Contaminant    Sample # (lab only)

\* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: **Regular Unit discharge pipe = 6" in white PVC**  
**Temporary Unit discharge pipe = 4" in black HDPE**

6194 4957 P111

pH \_\_\_\_\_ Temp \_\_\_\_\_  
 Flow \_\_\_\_\_ Other \_\_\_\_\_

Relinquished by: (Signature) <b>Scott Ude</b>	Date: 4/14/15	Time: 1400	Received by: (Signature)	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> _____	Hold #
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1 °C    Bottles Received: 36	Condition: (lab use only) <b>NIS</b>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/18/15    Time: 09:00	COC Seal Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
					pH Checked: 7.2 NCF:

Company Name/Address:  
**Arcadis**  
 2929 Briarpark Drive Suite 300  
 Houston, TX 77043

Billing Information:

Report to:  
 Pamela Kruger

Email To:  
 pam.kruger@arcadis-us.com

Project Description: **Reject**

City/State Collected: **Artesia, NM**

Phone: **713-953-4816**  
 Fax:

Client Project #

Lab Project #

Collected by (print):  
 Scott Ude

Site/Facility ID #

P.O. #

Collected by (signature):  
 Scott Ude  
 Immediately Packed on Ice N  Y

**Rush?** (Lab MUST Be Notified)  
 Same Day .....200%  
 Next Day .....100%  
 Two Day .....50%  
 Three Day .....25%

Date Results Needed  
 Email?  No  Yes  
 FAX?  No  Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PCBs	Field-measured pH	Analysis / Container / Preservative	Chain of Custody
South Field RO Reject		GW SW								L# 1754281 Table # Acctnum: ARCADEPTX Template: Prelogin: TSR: Mark Beasley Cooler: Shipped Via: Rem./Contaminant Sample # (lab only)
North Field RO Reject		GW SW								
Regular Unit South Field RO Reject	Grab	GW/WW		4/14/15	1330	2	✓	7.12		01
Temporary Unit South Field RO Reject	Grab	GW/WW		4/14/15	1315	2	✓	7.48		u

Chain of Custody Page 2 of 2



YOUR LAB OF CHOICE

12065 Lebanon Rd  
 Mount Juliet, TN 37122  
 Phone: 615-758-5858  
 Phone: 800-767-5859  
 Fax: 615-758-5859



\* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: Field-measured pH by HMI, per ARCADIS

Relinquished by: (Signature) Scott Ude	Date: 4/14/15	Time: 1400	Received by: (Signature)	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Hold #
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1 °C Bottles Received: 36	Condition: (lab use only) AUS
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/15/15 Time: 09:00	COC Seal Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA pH Checked: 42 7/2 NCF:

Attachment 3  
Stipulated Penalty Calculation

### Calculation of Stipulated Penalties - April 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:	--	--	--
	- <b>Prior</b> to Navajo submitting a discharge permit modification application	\$1,000	2	\$2,000
	- If the daily volume is between 10,000 and 15,000 barrels <b>after</b> Navajo submits discharge permit modification application	\$100		\$0
	- If the daily volume exceeds 15,000 barrels <b>after</b> Navajo submits discharge permit modification application	\$500		\$0
2.b.ii	Failure to timely 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
<b>Total Amount:</b>				<b>\$2,000</b>



HOLLYFRONTIER.

June 15, 2015

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

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

**RE: WQA-OCD-CO-2015-002  
Monthly Report – May 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 June 2015 monthly report under the Order.

Specifically, this report covers the May 2015 reporting period and includes the following data and information as required by Exhibit A, Paragraph 2, Paragraph 3, and Paragraph 5.a – c:

- Daily discharge flow measurements for each reverse osmosis (RO) unit and for all RO units together.
- Results of the monthly discharge sample results.
- Calculation of stipulated penalties, if any, required under Section III, Paragraph 2 of the Order.
- 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 and 2.

### **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.

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

## **Monthly Discharge Sample Results**

In accordance with Exhibit A, Paragraph 3 of the Order, Navajo collected a sample of the RO reject fluid discharge from the temporary RO unit on April 28, 2015, within 5 business days of the date of the Order (April 27, 2015). Navajo also collected a sample from the permanent RO units (combined discharge) on that same day. The analytical lab report for these samples was provided previously to OCD on May 15, 2015. It should be noted that, beginning with the July 2015 monthly report for the period of June 2015, and as required by Exhibit A Paragraph 3, Navajo's reports will reflect that a sample is collected on or around the first business day of the month, beginning with June 1, 2015.

## **Stipulated Penalties**

In accordance with Exhibit A, Paragraph 1 of the Order, Navajo submitted the GW-028 discharge permit modification request to OCD on May 22, 2015, within 30 days of the date of the Order. Paragraph III.2.b.i.1 of the Order governs the calculation of stipulated penalties for exceedances of GW-028's daily RO reject fluid discharge volume limit prior to submittal of the discharge permit modification application. Paragraph III.2.b.i.2 of the Order governs the calculation of stipulated penalties for exceedances of this limit after Navajo submits the discharge permit modification application (and prior to OCD's approval or denial of the application). Therefore, for the May 1 through 21 timeframe, Paragraph III.2.b.i.1 is applicable, and from May 22 onward, Paragraph III.2.b.i.2 of the Order is applicable. Stipulated penalties were calculated for each day prior to and following Navajo's submittal of the permit modification request, and prior to OCD action on that request, as follows:

- \$1,000 per day for each daily RO reject fluid discharge volume exceeding 10,000 barrels from May 1 to May 21.
- \$100 per day for each daily RO reject fluid discharge volume between 10,000 and 15,000 barrels from May 22 to May 31.
- \$500 per day for each daily RO reject fluid discharge volume that exceeds 15,000 barrels from May 22 to May 31.

Navajo has calculated a penalty of \$22,000 for May 2015. The daily discharge volume exceeded the 10,000 barrels/day (bbl/day) limit, but was under 15,000 barrels total, on 31 days in May. Calculations conducted in accordance with Paragraph III.2.b.i.1 and 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.

## **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.

Options under consideration include the installation of a third permanent 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. In addition, Navajo is conducting a study of background groundwater concentrations of key chemical constituents of the RO reject fluid discharged under its groundwater discharge permit to determine whether concentrations of these constituents exceed background levels.

In accordance with Exhibit A, Paragraph 1 of the Order, Navajo submitted a GW-028 discharge permit modification request on May 22, 2015. The requested modifications include operating a temporary RO unit at the Navajo Refinery and increasing the total maximum volume of RO reject fluids that can be applied to the surface of Navajo's discharge fields, from approximately 10,000 bbl/day to approximately 20,000 bbl/day calculated on a rolling 12-month average.

Navajo is also seeking OCD authorization of a new non-hazardous waste injection well for use in disposal of Refinery fluids, including RO reject water. OCD notified Navajo that the application for a Discharge Permit for the new injection well (WDW-4) is administratively complete by letter dated April 23, 2015. Accordingly, Navajo has completed its part of the public notice process as required by 20.6.2.3108B New Mexico Administrative Code (NMAC) and has provided the necessary documentation of the public notice completion to the OCD by submittal dated June 4, 2015.

Navajo has completed the application for the OCD Class II Order also required for the new WDW-4 injection well. Public notices of submittal of the application for the Class II Order were mailed by Navajo to persons within ½ mile of the proposed location pursuant to OCD regulations. Submittal of an amended application for authorization to inject, including the C-108 form with a revised affirmation, the affidavit of publication of the public notice, and proof of mailing of the notice and application to persons within ½ mile of the proposed location were submitted to OCD on May 21, 2015.

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

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

**Attachment 1**  
**Daily Discharge Flow Rates**

**Daily RO Reject Discharge Flow Rate Measurements  
and Calculated Daily Discharge**

	Permanent RO Units				Temporary Unit		Daily Discharge Volume
	Metered Data		Combined RO Reject Discharge (Calculated)		Total RO Reject Discharge (Calculated from Log Data)		
	GPM	GPM	GPM	BBL/DAY	GPM	BBL/DAY	BBL
	SOUTH	NORTH					
5/1/2015	117	105	222	7611	146	5001	12612
5/2/2015	121	106	227	7783	149	5104	12887
5/3/2015	117	104	221	7577	151	5171	12748
5/4/2015	122	107	229	7851	151	5182	13033
5/5/2015	121	100	221	7577	154	5270	12847
5/6/2015	120	97	217	7440	152	5212	12652
5/7/2015	121	100	221	7577	154	5267	12844
5/8/2015	132	109	241	8263	155	5322	13585
5/9/2015	133	103	236	8091	154	5280	13371
5/10/2015	131	104	235	8057	155	5314	13371
5/11/2015	131	106	237	8126	157	5417	13543
5/12/2015	132	107	239	8194	156	5349	13543
5/13/2015	131	103	234	8023	156	5361	13384
5/14/2015	133	111	244	8366	142	4854	13220
5/15/2015	139	111	250	8571	136	4669	13240
5/16/2015	134	105	239	8194	62	2117	10311
5/17/2015	136	111	247	8469	62	2115	10584
5/18/2015	135	111	246	8434	62	2130	10564
5/19/2015	134	112	246	8434	64	2187	10621
5/20/2015	136	105	241	8263	64	2194	10457
5/21/2015	136	110	246	8434	66	2270	10704
5/22/2015	135	112	247	8469	68	2331	10800
5/23/2015	138	114	252	8640	71	2448	11088
5/24/2015	133	106	239	8194	80	2739	10933
5/25/2015	135	102	237	8126	81	2765	10891
5/26/2015	131	111	242	8297	73	2501	10798
5/27/2015	138	108	246	8434	60	2054	10488
5/28/2015	131	100	231	7920	68	2330	10250
5/29/2015	130	99	229	7851	63	2160	10011
5/30/2015	132	110	242	8297	63	2160	10457
5/31/2015	140	107	247	8469	61	2084	10553

Attachment 2  
Stipulated Penalty Calculation

### Calculation of Stipulated Penalties - May 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:	--	--	--
	- <b>Prior</b> to Navajo submitting a discharge permit modification application	\$1,000	21	\$21,000
	- If the daily volume is between 10,000 and 15,000 barrels <b>after</b> Navajo submits discharge permit modification application	\$100	10	\$1,000
	- If the daily volume exceeds 15,000 barrels <b>after</b> 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
<b>Total Amount:</b>				<b>\$22,000</b>



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

May 13, 2015

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

RE: Monthly RO Reject

OrderNo.: 1504C23

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/29/2015 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 [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C23

Date Reported: 5/13/2015

**CLIENT:** Navajo Refining Company

**Client Sample ID:** Temporary R.O.

**Project:** Monthly RO Reject

**Collection Date:** 4/28/2015 8:30:00 AM

**Lab ID:** 1504C23-001

**Matrix:** AQUEOUS

**Received Date:** 4/29/2015 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8011/504.1: EDB</b>						Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.010		µg/L	1	4/30/2015 5:05:45 PM
<b>EPA METHOD 8082: PCB'S</b>						Analyst: <b>SCC</b>
Aroclor 1016	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1221	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1232	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1242	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1248	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1254	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Aroclor 1260	ND	1.0		µg/L	1	5/5/2015 3:05:44 PM
Surr: Decachlorobiphenyl	96.4	44.5-110		%REC	1	5/5/2015 3:05:44 PM
Surr: Tetrachloro-m-xylene	107	31.8-95.7	S	%REC	1	5/5/2015 3:05:44 PM
<b>EPA METHOD 8015D: DIESEL RANGE</b>						Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/29/2015 3:54:05 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/29/2015 3:54:05 PM
Surr: DNOP	106	76.5-150		%REC	1	4/29/2015 3:54:05 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	5/4/2015 3:32:42 PM
Surr: BFB	94.3	80-120		%REC	1	5/4/2015 3:32:42 PM
<b>EPA METHOD 8310: PAHS</b>						Analyst: <b>SCC</b>
Naphthalene	ND	2.0		µg/L	1	5/5/2015 11:03:03 AM
1-Methylnaphthalene	ND	2.0		µg/L	1	5/5/2015 11:03:03 AM
2-Methylnaphthalene	ND	2.0		µg/L	1	5/5/2015 11:03:03 AM
Benzo(a)pyrene	ND	0.070		µg/L	1	5/5/2015 11:03:03 AM
Surr: Benzo(e)pyrene	94.8	30.8-125		%REC	1	5/5/2015 11:03:03 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>LGT</b>
Fluoride	2.9	2.0		mg/L	20	4/29/2015 3:12:59 PM
Chloride	52	10		mg/L	20	4/29/2015 3:12:59 PM
Nitrogen, Nitrate (As N)	2.1	2.0		mg/L	20	4/29/2015 3:12:59 PM
Sulfate	1500	50		mg/L	100	5/6/2015 12:47:21 AM
<b>EPA METHOD 200.7: DISSOLVED METALS</b>						Analyst: <b>JLF</b>
Aluminum	ND	0.020		mg/L	1	4/29/2015 6:12:35 PM
Barium	0.062	0.0020		mg/L	1	4/29/2015 6:12:35 PM
Boron	0.10	0.040		mg/L	1	4/29/2015 6:12:35 PM
Cadmium	ND	0.0020		mg/L	1	4/30/2015 1:03:21 PM
Chromium	ND	0.0060		mg/L	1	4/29/2015 6:12:35 PM
Cobalt	ND	0.0060		mg/L	1	4/29/2015 6:12:35 PM

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C23

Date Reported: 5/13/2015

CLIENT: Navajo Refining Company

Client Sample ID: Temporary R.O.

Project: Monthly RO Reject

Collection Date: 4/28/2015 8:30:00 AM

Lab ID: 1504C23-001

Matrix: AQUEOUS

Received Date: 4/29/2015 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 200.7: DISSOLVED METALS</b>						Analyst: JLF
Copper	ND	0.0060		mg/L	1	4/29/2015 6:12:35 PM
Iron	ND	0.020		mg/L	1	4/29/2015 6:12:35 PM
Manganese	ND	0.0020		mg/L	1	4/29/2015 6:12:35 PM
Molybdenum	ND	0.0080		mg/L	1	4/30/2015 1:03:21 PM
Nickel	ND	0.010		mg/L	1	4/29/2015 6:12:35 PM
Silver	ND	0.0050		mg/L	1	4/30/2015 1:03:21 PM
Zinc	0.11	0.010		mg/L	1	4/29/2015 6:12:35 PM
<b>EPA 200.8: DISSOLVED METALS</b>						Analyst: DBD
Arsenic	ND	0.0050		mg/L	5	5/7/2015 2:26:28 PM
Lead	ND	0.0010		mg/L	1	5/5/2015 11:01:02 AM
Selenium	0.0088	0.0010		mg/L	1	5/5/2015 11:01:02 AM
Uranium	0.0066	0.0010		mg/L	1	5/5/2015 11:01:02 AM
<b>EPA METHOD 245.1: MERCURY</b>						Analyst: MED
Mercury	ND	0.00020		mg/L	1	5/4/2015 2:00:03 PM
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: cadg
Benzene	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Toluene	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Ethylbenzene	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Chloroform	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Methylene Chloride	ND	3.0		µg/L	1	4/29/2015 5:03:52 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/29/2015 5:03:52 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Vinyl chloride	ND	1.0		µg/L	1	4/29/2015 5:03:52 PM
Xylenes, Total	ND	1.5		µg/L	1	4/29/2015 5:03:52 PM
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%REC	1	4/29/2015 5:03:52 PM
Surr: 4-Bromofluorobenzene	91.6	70-130		%REC	1	4/29/2015 5:03:52 PM
Surr: Dibromofluoromethane	98.8	70-130		%REC	1	4/29/2015 5:03:52 PM
Surr: Toluene-d8	102	70-130		%REC	1	4/29/2015 5:03:52 PM

**TOTAL PHENOLICS BY SW-846 9067**

Analyst: SCC

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

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

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Navajo Refining Company**Client Sample ID:** Temporary R.O.**Project:** Monthly RO Reject**Collection Date:** 4/28/2015 8:30:00 AM**Lab ID:** 1504C23-001**Matrix:** AQUEOUS**Received Date:** 4/29/2015 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>TOTAL PHENOLICS BY SW-846 9067</b>						Analyst: <b>SCC</b>
Phenolics, Total Recoverable	ND	2.5		µg/L	1	4/30/2015
<b>EPA 335.4: TOTAL CYANIDE SUBBED</b>						Analyst: <b>SUB</b>
Cyanide	ND	0.0100		mg/L	1	5/5/2015
<b>SM4500-H+B: PH</b>						Analyst: <b>JRR</b>
pH	7.92	1.68	H	pH units	1	5/5/2015 5:53:07 PM
<b>SM2540C MOD: TOTAL DISSOLVED SOLIDS</b>						Analyst: <b>KS</b>
Total Dissolved Solids	3390	20.0	*	mg/L	1	5/1/2015 3:30:00 PM

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504C23

Date Reported: 5/13/2015

CLIENT: Navajo Refining Company

Client Sample ID: Trip Blank

Project: Monthly RO Reject

Collection Date:

Lab ID: 1504C23-002

Matrix: TRIP BLANK

Received Date: 4/29/2015 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8011/504.1: EDB</b>						Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	4/30/2015 5:19:35 PM
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: cadg
Benzene	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Toluene	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Ethylbenzene	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Chloroform	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Methylene Chloride	ND	3.0		µg/L	1	4/29/2015 5:32:34 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/29/2015 5:32:34 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Vinyl chloride	ND	1.0		µg/L	1	4/29/2015 5:32:34 PM
Xylenes, Total	ND	1.5		µg/L	1	4/29/2015 5:32:34 PM
Surr: 1,2-Dichloroethane-d4	96.6	70-130		%REC	1	4/29/2015 5:32:34 PM
Surr: 4-Bromofluorobenzene	103	70-130		%REC	1	4/29/2015 5:32:34 PM
Surr: Dibromofluoromethane	103	70-130		%REC	1	4/29/2015 5:32:34 PM
Surr: Toluene-d8	104	70-130		%REC	1	4/29/2015 5:32:34 PM

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

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

### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1504C23

Pace Project No.: 30147056

Sample: 1504C23-001H Temporary R.O. Lab ID: 30147056001 Collected: 04/28/15 08:30 Received: 05/01/15 09:35 Matrix: Water

PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.41 ± 0.654 (0.675) C:NA T:80%	pCi/L	05/13/15 10:06	13982-63-3	
Radium-228	EPA 904.0	0.441 ± 0.439 (0.877) C:75% T:74%	pCi/L	05/11/15 17:31	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	R25851	RunNo:	25851					
Prep Date:		Analysis Date:	4/29/2015	SeqNo:	766029	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Zinc	ND	0.010								

Sample ID	LCS	SampType:	LCS	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	LCSW	Batch ID:	R25851	RunNo:	25851					
Prep Date:		Analysis Date:	4/29/2015	SeqNo:	766030	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.51	0.020	0.5000	0	103	85	115			
Barium	0.47	0.0020	0.5000	0	93.0	85	115			
Boron	0.49	0.040	0.5000	0	97.9	85	115			
Chromium	0.48	0.0060	0.5000	0	95.5	85	115			
Cobalt	0.47	0.0060	0.5000	0	94.4	85	115			
Copper	0.47	0.0060	0.5000	0	94.3	85	115			
Iron	0.47	0.020	0.5000	0	94.6	85	115			
Manganese	0.44	0.0020	0.5000	0	88.9	85	115			
Nickel	0.48	0.010	0.5000	0	96.6	85	115			
Zinc	0.48	0.010	0.5000	0	95.6	85	115			

Sample ID	MB	SampType:	MBLK	TestCode:	EPA Method 200.7: Dissolved Metals					
Client ID:	PBW	Batch ID:	R25881	RunNo:	25881					
Prep Date:		Analysis Date:	4/30/2015	SeqNo:	767040	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								
Molybdenum	ND	0.0080								
Silver	ND	0.0050								

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	LCS		SampType:	LCS		TestCode:	EPA Method 200.7: Dissolved Metals				
Client ID:	LCSW		Batch ID:	R25881		RunNo:	25881				
Prep Date:			Analysis Date:	4/30/2015		SeqNo:	767041		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Cadmium	0.51	0.0020	0.5000	0	103	85	115				
Molybdenum	0.49	0.0080	0.5000	0	97.4	85	115				
Silver	0.088	0.0050	0.1000	0	87.9	85	115				

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	<b>LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA 200.8: Dissolved Metals</b>				
Client ID:	<b>LCSW</b>		Batch ID:	<b>R25950</b>		RunNo:	<b>25950</b>				
Prep Date:			Analysis Date:	<b>5/5/2015</b>		SeqNo:	<b>769414</b>		Units: <b>mg/L</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	0.024	0.0010	0.02500	0	96.4	85	115				
Selenium	0.024	0.0010	0.02500	0	94.9	85	115				
Uranium	0.025	0.0010	0.02500	0	98.7	85	115				

Sample ID	<b>MB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA 200.8: Dissolved Metals</b>				
Client ID:	<b>PBW</b>		Batch ID:	<b>R25950</b>		RunNo:	<b>25950</b>				
Prep Date:			Analysis Date:	<b>5/5/2015</b>		SeqNo:	<b>769415</b>		Units: <b>mg/L</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	0.0010									
Selenium	ND	0.0010									
Uranium	ND	0.0010									

Sample ID	<b>LCS</b>		SampType:	<b>LCS</b>		TestCode:	<b>EPA 200.8: Dissolved Metals</b>				
Client ID:	<b>LCSW</b>		Batch ID:	<b>R26042</b>		RunNo:	<b>26042</b>				
Prep Date:			Analysis Date:	<b>5/7/2015</b>		SeqNo:	<b>772040</b>		Units: <b>mg/L</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	0.024	0.0010	0.02500	0	97.4	85	115				

Sample ID	<b>MB</b>		SampType:	<b>MBLK</b>		TestCode:	<b>EPA 200.8: Dissolved Metals</b>				
Client ID:	<b>PBW</b>		Batch ID:	<b>R26042</b>		RunNo:	<b>26042</b>				
Prep Date:			Analysis Date:	<b>5/7/2015</b>		SeqNo:	<b>772041</b>		Units: <b>mg/L</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	0.0010									

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	<b>MB-18982</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 245.1: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>18982</b>	RunNo:	<b>25930</b>					
Prep Date:	<b>4/30/2015</b>	Analysis Date:	<b>5/4/2015</b>	SeqNo:	<b>768647</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-18982</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 245.1: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>18982</b>	RunNo:	<b>25930</b>					
Prep Date:	<b>4/30/2015</b>	Analysis Date:	<b>5/4/2015</b>	SeqNo:	<b>768648</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

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

Sample ID <b>MB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>PBW</b>	Batch ID: <b>R25872</b>		RunNo: <b>25872</b>							
Prep Date:	Analysis Date: <b>4/29/2015</b>		SeqNo: <b>766806</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID <b>LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>R25872</b>		RunNo: <b>25872</b>							
Prep Date:	Analysis Date: <b>4/29/2015</b>		SeqNo: <b>766807</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Fluoride	0.46	0.10	0.5000	0	92.4	90	110			
Chloride	4.5	0.50	5.000	0	91.0	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	96.2	90	110			

Sample ID <b>MB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>PBW</b>	Batch ID: <b>R25994</b>		RunNo: <b>25994</b>							
Prep Date:	Analysis Date: <b>5/5/2015</b>		SeqNo: <b>770620</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	ND	0.50								
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Sample ID <b>LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 300.0: Anions</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>R25994</b>		RunNo: <b>25994</b>							
Prep Date:	Analysis Date: <b>5/5/2015</b>		SeqNo: <b>770621</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	9.7	0.50	10.00	0	97.2	90	110			
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**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	<b>MB-18974</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>18974</b>	RunNo:	<b>25898</b>					
Prep Date:	<b>4/30/2015</b>	Analysis Date:	<b>4/30/2015</b>	SeqNo:	<b>767691</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-18974</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>18974</b>	RunNo:	<b>25898</b>					
Prep Date:	<b>4/30/2015</b>	Analysis Date:	<b>4/30/2015</b>	SeqNo:	<b>767692</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	114	70	130			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

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

Sample ID	<b>MB-18947</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D: Diesel Range</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>18947</b>	RunNo:	<b>25835</b>					
Prep Date:	<b>4/29/2015</b>	Analysis Date:	<b>4/29/2015</b>	SeqNo:	<b>766304</b>	Units:	<b>mg/L</b>			

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		109	76.5	150			

Sample ID	<b>LCS-18947</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D: Diesel Range</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>18947</b>	RunNo:	<b>25835</b>					
Prep Date:	<b>4/29/2015</b>	Analysis Date:	<b>4/29/2015</b>	SeqNo:	<b>766305</b>	Units:	<b>mg/L</b>			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1.0	5.000	0	104	60.1	156			
Surr: DNOP	0.57		0.5000		115	76.5	150			

Sample ID	<b>1504C23-001LMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8015D: Diesel Range</b>					
Client ID:	<b>Temporary R.O.</b>	Batch ID:	<b>18947</b>	RunNo:	<b>25835</b>					
Prep Date:	<b>4/29/2015</b>	Analysis Date:	<b>4/29/2015</b>	SeqNo:	<b>766307</b>	Units:	<b>mg/L</b>			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	114	75.9	164			
Surr: DNOP	0.61		0.5000		121	76.5	150			

Sample ID	<b>1504C23-001LMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8015D: Diesel Range</b>					
Client ID:	<b>Temporary R.O.</b>	Batch ID:	<b>18947</b>	RunNo:	<b>25835</b>					
Prep Date:	<b>4/29/2015</b>	Analysis Date:	<b>4/29/2015</b>	SeqNo:	<b>766308</b>	Units:	<b>mg/L</b>			

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	111	75.9	164	2.80	22.1	
Surr: DNOP	0.61		0.5000		122	76.5	150	0	0	

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID: <b>5ML RB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBW</b>	Batch ID: <b>R25939</b>		RunNo: <b>25939</b>							
Prep Date:	Analysis Date: <b>5/4/2015</b>		SeqNo: <b>768862</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		88.4	80	120			

Sample ID: <b>2.5UG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>R25939</b>		RunNo: <b>25939</b>							
Prep Date:	Analysis Date: <b>5/4/2015</b>		SeqNo: <b>768863</b>		Units: <b>mg/L</b>					
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	92.2	80	120			
Surr: BFB	18		20.00		91.1	80	120			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

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

Sample ID	MB-18997	SampType:	MBLK	TestCode:	EPA Method 8082: PCB's						
Client ID:	PBW	Batch ID:	18997	RunNo:	25944						
Prep Date:	5/1/2015	Analysis Date:	5/5/2015	SeqNo:	769049	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	2.2		2.500		87.2	44.5	110				
Surr: Tetrachloro-m-xylene	2.4		2.500		97.6	31.8	95.7			S	

Sample ID	LCS-18997	SampType:	LCS	TestCode:	EPA Method 8082: PCB's						
Client ID:	LCSW	Batch ID:	18997	RunNo:	25944						
Prep Date:	5/1/2015	Analysis Date:	5/5/2015	SeqNo:	769942	Units:	µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aroclor 1016	4.9	1.0	5.000	0	98.7	22.6	127				
Aroclor 1260	5.1	1.0	5.000	0	102	20.4	122				
Surr: Decachlorobiphenyl	2.9		2.500		114	44.5	110			S	
Surr: Tetrachloro-m-xylene	4.2		2.500		169	31.8	95.7			S	

Sample ID	LCSD-18997	SampType:	LCSD	TestCode:	EPA Method 8082: PCB's						
Client ID:	LCSS02	Batch ID:	18997	RunNo:	25944						
Prep Date:	5/1/2015	Analysis Date:	5/5/2015	SeqNo:	769944	Units:	µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aroclor 1016	4.6	1.0	5.000	0	93.0	22.6	127	6.03	26.9		
Aroclor 1260	5.3	1.0	5.000	0	107	20.4	122	4.45	29.1		
Surr: Decachlorobiphenyl	3.0		2.500		118	44.5	110	0	0	S	
Surr: Tetrachloro-m-xylene	3.8		2.500		150	31.8	95.7	0	0	S	

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID: <b>100ng lcs</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260B: VOLATILES</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>R25860</b>	RunNo: <b>25860</b>								
Prep Date:	Analysis Date: <b>4/29/2015</b>	SeqNo: <b>766354</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.6	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	108	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	98.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: <b>5mL rb</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: VOLATILES</b>								
Client ID: <b>PBW</b>	Batch ID: <b>R25860</b>	RunNo: <b>25860</b>								
Prep Date:	Analysis Date: <b>4/29/2015</b>	SeqNo: <b>766361</b>	Units: <b>µg/L</b>							
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	9.7		10.00		96.8	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	MB-18998	SampType:	MBLK	TestCode:	EPA Method 8310: PAHs					
Client ID:	PBW	Batch ID:	18998	RunNo:	25938					
Prep Date:	5/1/2015	Analysis Date:	5/5/2015	SeqNo:	769391	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	14		20.00		71.8	30.8	125			

Sample ID	LCS-18998	SampType:	LCS	TestCode:	EPA Method 8310: PAHs					
Client ID:	LCSW	Batch ID:	18998	RunNo:	25938					
Prep Date:	5/1/2015	Analysis Date:	5/5/2015	SeqNo:	769392	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	55	2.0	80.00	0	69.3	41	76.8			
1-Methylnaphthalene	57	2.0	80.20	0	71.0	24.7	81			
2-Methylnaphthalene	56	2.0	80.00	0	70.4	17.4	81.9			
Acenaphthylene	60	2.5	80.20	0	75.4	50.3	77.5			
Acenaphthene	57	2.0	80.00	0	71.8	27.7	81.1			
Fluorene	5.8	0.80	8.020	0	72.8	34.2	75.1			
Phenanthrene	2.9	0.60	4.020	0	72.4	44.6	88.3			
Anthracene	2.9	0.60	4.020	0	72.1	41.9	85.3			
Fluoranthene	6.1	0.30	8.020	0	76.2	40.6	88			
Pyrene	6.6	0.30	8.020	0	82.8	41	86.6			
Benz(a)anthracene	0.62	0.070	0.8020	0	77.3	43.8	86.7			
Chrysene	3.1	0.20	4.020	0	76.9	44.5	80.7			
Benzo(b)fluoranthene	0.81	0.10	1.002	0	80.8	44.3	87.1			
Benzo(k)fluoranthene	0.39	0.070	0.5000	0	78.0	39.9	94.3			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

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

Sample ID	LCS-18998		SampType:	LCS		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSW		Batch ID:	18998		RunNo:	25938				
Prep Date:	5/1/2015		Analysis Date:	5/5/2015		SeqNo:	769392		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzo(a)pyrene	0.39	0.070	0.5020	0	77.7	44	86.5				
Dibenz(a,h)anthracene	0.78	0.12	1.002	0	77.8	48.8	83.6				
Benzo(g,h,i)perylene	0.83	0.12	1.000	0	83.0	43.6	84.5				
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	77.3	49.2	91.1				
Surr: Benzo(e)pyrene	21		20.00		106	30.8	125				

Sample ID	LCSD-18998		SampType:	LCSD		TestCode:	EPA Method 8310: PAHs				
Client ID:	LCSS02		Batch ID:	18998		RunNo:	25938				
Prep Date:	5/1/2015		Analysis Date:	5/5/2015		SeqNo:	769393		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Naphthalene	58	2.0	80.00	0	72.7	41	76.8	4.75	20		
1-Methylnaphthalene	60	2.0	80.20	0	74.4	24.7	81	4.68	20		
2-Methylnaphthalene	59	2.0	80.00	0	73.8	17.4	81.9	4.70	20		
Acenaphthylene	63	2.5	80.20	0	78.7	50.3	77.5	4.29	20	S	
Acenaphthene	60	2.0	80.00	0	74.9	27.7	81.1	4.26	20		
Fluorene	6.1	0.80	8.020	0	75.7	34.2	75.1	3.86	20	S	
Phenanthrene	3.1	0.60	4.020	0	76.1	44.6	88.3	5.03	24		
Anthracene	3.0	0.60	4.020	0	75.9	41.9	85.3	5.04	20		
Fluoranthene	6.4	0.30	8.020	0	79.9	40.6	88	4.79	20.9		
Pyrene	7.0	0.30	8.020	0	86.8	41	86.6	4.71	20.8	S	
Benz(a)anthracene	0.65	0.070	0.8020	0	81.0	43.8	86.7	4.72	20		
Chrysene	3.3	0.20	4.020	0	80.8	44.5	80.7	5.05	20	S	
Benzo(b)fluoranthene	0.84	0.10	1.002	0	83.8	44.3	87.1	3.64	20.6		
Benzo(k)fluoranthene	0.41	0.070	0.5000	0	82.0	39.9	94.3	5.00	20.8		
Benzo(a)pyrene	0.41	0.070	0.5020	0	81.7	44	86.5	5.00	20		
Dibenz(a,h)anthracene	0.83	0.12	1.002	0	82.8	48.8	83.6	6.21	20		
Benzo(g,h,i)perylene	0.87	0.12	1.000	0	87.0	43.6	84.5	4.71	20	S	
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	81.3	49.2	91.1	5.03	20		
Surr: Benzo(e)pyrene	22		20.00		112	30.8	125	0			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID <b>MB-18972</b>	SampType: <b>MBLK</b>		TestCode: <b>Total Phenolics by SW-846 9067</b>							
Client ID: <b>PBW</b>	Batch ID: <b>18972</b>		RunNo: <b>25901</b>							
Prep Date: <b>4/30/2015</b>	Analysis Date: <b>4/30/2015</b>		SeqNo: <b>767792</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND	2.5								

Sample ID <b>LCS-18972</b>	SampType: <b>LCS</b>		TestCode: <b>Total Phenolics by SW-846 9067</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>18972</b>		RunNo: <b>25901</b>							
Prep Date: <b>4/30/2015</b>	Analysis Date: <b>4/30/2015</b>		SeqNo: <b>767793</b>		Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Recoverable	22	2.5	20.00	0	109	75.7	126			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID	<b>MB-R26153</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 335.4: Total Cyanide Subbed</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>R26153</b>	RunNo:	<b>26153</b>					
Prep Date:		Analysis Date:	<b>5/5/2015</b>	SeqNo:	<b>775896</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.0100								

Sample ID	<b>LCS-R26153</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 335.4: Total Cyanide Subbed</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>R26153</b>	RunNo:	<b>26153</b>					
Prep Date:		Analysis Date:	<b>5/5/2015</b>	SeqNo:	<b>775897</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	0.500		0.5000	0	100	90	110			

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504C23

13-May-15

**Client:** Navajo Refining Company

**Project:** Monthly RO Reject

Sample ID <b>MB-18979</b>	SampType: <b>MBLK</b>		TestCode: <b>SM2540C MOD: Total Dissolved Solids</b>							
Client ID: <b>PBW</b>	Batch ID: <b>18979</b>		RunNo: <b>25912</b>							
Prep Date: <b>4/30/2015</b>	Analysis Date: <b>5/1/2015</b>		SeqNo: <b>768004</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID <b>LCS-18979</b>	SampType: <b>LCS</b>		TestCode: <b>SM2540C MOD: Total Dissolved Solids</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>18979</b>		RunNo: <b>25912</b>							
Prep Date: <b>4/30/2015</b>	Analysis Date: <b>5/1/2015</b>		SeqNo: <b>768005</b>		Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

**Qualifiers:**

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



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

# Sample Log-In Check List

Client Name: NAVAJO REFINING CO

Work Order Number: 1504C23

RcptNo: 1

Received by/date: CS 04/29/15

Logged By: Lindsay Mangin 4/29/2015 9:15:00 AM *Judy Mangin*

Completed By: Lindsay Mangin 4/29/2015 9:48:07 AM *Judy Mangin*

Reviewed By: *JM* 04/29/15

### Chain of Custody

- Custody seals intact on sample bottles? Yes  No  Not Present
- Is Chain of Custody complete? Yes  No  Not Present
- How was the sample delivered? Courier

### Log In

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

*CS 04/29/15 Samples -002A + -002I  
 No VOA Vials have bubbles.*

# of preserved bottles checked for pH: 5/1  
 (<2 or >12 unless noted)

Adjusted? no

Checked by: CS

### Special Handling (if applicable)

- Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_

By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			



