GW – 028

Annual DP Report (Part 14 of 16)

2015

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

March 25, 2015

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

RE: Quarterly WDW-1, 2, &3 Inj Well OrderNo.: 1502959

Dear Dan Crawford:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/24/2015 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 or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

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Case Narrative

WO#: **1502959**
Date: **3/25/2015**

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

The following compounds were also scanned for by NIST library search and not detected. The detection level for these compounds would be ~10ppb:
Allyl alcohol
t-amyl ethyl ether
Bis(2-chloroethyl)sulfide
Bromoacetone
Chloral hydrate
1-chlorobutane
1-chlorohexane
2-chloroethanol
Crotonaldehyde
Cis-1,4-Dichloro-2butene
1,3-Dichloro-2-propanol
1,2,3,4-Depoxybutane
Ethanol
Ethylene oxide
Malonitrile
Methanol
Methyl acrylate
2-Nitropropane
Paraldehyde
Pentafluorobenzene
2-Pentanone
2-picoline
1-propanol
2-propanol
Propargyl alcohol
Beta-propiolactone
n-propylamine

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001
Matrix: AQUEOUS
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	11	5.0	*	mg/L	50	2/24/2015 11:37:59 PM	R24502
Chloride	300	25		mg/L	50	2/24/2015 11:37:59 PM	R24502
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	2/24/2015 11:25:35 PM	R24502
Bromide	1.1	0.50		mg/L	5	2/24/2015 11:25:35 PM	R24502
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	2/24/2015 11:25:35 PM	R24502
Phosphorus, Orthophosphate (As P	ND	2.5		mg/L	5	2/24/2015 11:25:35 PM	R24502
Sulfate	2100	25		mg/L	50	2/24/2015 11:37:59 PM	R24502
EPA METHOD 7470: MERCURY						Analyst: **MED**	
Mercury	ND	0.00020		mg/L	1	2/26/2015 9:31:31 AM	17887
MERCURY, TCLP						Analyst: **MED**	
Mercury	ND	0.020		mg/L	1	3/10/2015 8:26:24 AM	18037
EPA METHOD 6010B: TCLP METALS						Analyst: **ELS**	
Arsenic	ND	5.0		mg/L	1	3/7/2015 2:01:03 PM	18024
Barium	ND	100		mg/L	1	3/7/2015 2:01:03 PM	18024
Cadmium	ND	1.0		mg/L	1	3/7/2015 2:01:03 PM	18024
Chromium	ND	5.0		mg/L	1	3/7/2015 2:01:03 PM	18024
Lead	ND	5.0		mg/L	1	3/7/2015 2:01:03 PM	18024
Selenium	ND	1.0		mg/L	1	3/7/2015 2:01:03 PM	18024
Silver	ND	5.0		mg/L	1	3/7/2015 2:01:03 PM	18024
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Aluminum	2.0	0.020		mg/L	1	3/7/2015 1:56:58 PM	18024
Antimony	ND	0.050		mg/L	1	3/7/2015 1:56:58 PM	18024
Arsenic	0.029	0.020		mg/L	1	3/7/2015 1:56:58 PM	18024
Barium	ND	0.020		mg/L	1	3/7/2015 1:56:58 PM	18024
Beryllium	ND	0.0030		mg/L	1	3/7/2015 1:56:58 PM	18024
Cadmium	ND	0.0020		mg/L	1	3/7/2015 1:56:58 PM	18024
Calcium	85	1.0		mg/L	1	3/10/2015 12:46:11 PM	18050
Chromium	ND	0.0060		mg/L	1	3/7/2015 1:56:58 PM	18024
Cobalt	ND	0.0060		mg/L	1	3/7/2015 1:56:58 PM	18024
Copper	0.0068	0.0060		mg/L	1	3/7/2015 1:56:58 PM	18024
Iron	3.7	0.050		mg/L	1	3/7/2015 1:56:58 PM	18024
Lead	ND	0.0050		mg/L	1	3/7/2015 1:56:58 PM	18024
Magnesium	26	1.0		mg/L	1	3/10/2015 12:46:11 PM	18050
Manganese	0.25	0.0020		mg/L	1	3/7/2015 1:56:58 PM	18024
Nickel	0.035	0.010		mg/L	1	3/7/2015 1:56:58 PM	18024
Potassium	35	1.0		mg/L	1	3/10/2015 12:46:11 PM	18050
Selenium	ND	0.050		mg/L	1	3/7/2015 1:56:58 PM	18024

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
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: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst: **ELS**	
Silver	ND	0.0050		mg/L	1	3/7/2015 1:56:58 PM	18024
Sodium	1300	20		mg/L	20	3/10/2015 12:51:05 PM	18050
Thallium	ND	0.050		mg/L	1	3/7/2015 1:56:58 PM	18024
Vanadium	ND	0.050		mg/L	1	3/7/2015 1:56:58 PM	18024
Zinc	0.064	0.020		mg/L	1	3/7/2015 1:56:58 PM	18024
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Acetonitrile	ND	5.0		µg/L	1	3/3/2015	R24992
Allyl chloride	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroprene	ND	0.50		µg/L	1	3/3/2015	R24992
Cyclohexane	ND	0.50		µg/L	1	3/3/2015	R24992
Diethyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Diisopropyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Epichlorohydrin	ND	5.0		µg/L	1	3/3/2015	R24992
Ethyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Ethyl methacrylate	ND	2.5		µg/L	1	3/3/2015	R24992
Ethyl tert-butyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Freon-113	ND	0.50		µg/L	1	3/3/2015	R24992
Isobutanol	ND	50		µg/L	1	3/3/2015	R24992
Isopropyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Methacrylonitrile	ND	5.0		µg/L	1	3/3/2015	R24992
Methyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Methyl ethyl ketone	ND	2.5		µg/L	1	3/3/2015	R24992
Methyl isobutyl ketone	ND	2.5		µg/L	1	3/3/2015	R24992
Methyl methacrylate	ND	2.5		µg/L	1	3/3/2015	R24992
Methylcyclohexane	ND	1.0		µg/L	1	3/3/2015	R24992
n-Amyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
n-Hexane	ND	1.0		µg/L	1	3/3/2015	R24992
Nitrobenzene	ND	5.0		µg/L	1	3/3/2015	R24992
Pentachloroethane	ND	5.0		µg/L	1	3/3/2015	R24992
p-isopropyltoluene	1.4	0.50		µg/L	1	3/3/2015	R24992
Propionitrile	ND	5.0		µg/L	1	3/3/2015	R24992
Tetrahydrofuran	ND	0.50		µg/L	1	3/3/2015	R24992
Benzene	ND	0.50		µg/L	1	3/3/2015	R24992
Toluene	ND	0.50		µg/L	1	3/3/2015	R24992
Ethylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	3/3/2015	R24992
1,2,4-Trimethylbenzene	2.8	0.50		µg/L	1	3/3/2015	R24992
1,3,5-Trimethylbenzene	2.7	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	3/3/2015	R24992

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

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CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001
Matrix: AQUEOUS
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	3/3/2015	R24992
Naphthalene	ND	0.50		µg/L	1	3/3/2015	R24992
Acetone	57	2.5		µg/L	1	3/3/2015	R24992
Bromobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Bromodichloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
Bromoform	ND	0.50		µg/L	1	3/3/2015	R24992
Bromomethane	ND	0.50		µg/L	1	3/3/2015	R24992
Carbon disulfide	0.53	0.50		µg/L	1	3/3/2015	R24992
Carbon Tetrachloride	ND	0.50		µg/L	1	3/3/2015	R24992
Chlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroform	ND	0.50		µg/L	1	3/3/2015	R24992
Chloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
2-Chlorotoluene	ND	0.50		µg/L	1	3/3/2015	R24992
4-Chlorotoluene	ND	0.50		µg/L	1	3/3/2015	R24992
cis-1,2-DCE	ND	0.50		µg/L	1	3/3/2015	R24992
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
Dibromochloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
Dibromomethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,3-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Dichlorodifluoromethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloroethene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
1,3-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
2,2-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
Hexachlorobutadiene	ND	0.50		µg/L	1	3/3/2015	R24992
2-Hexanone	ND	0.50		µg/L	1	3/3/2015	R24992
Isopropylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Methylene Chloride	ND	2.5		µg/L	1	3/3/2015	R24992
n-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
n-Propylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
sec-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Styrene	ND	0.50		µg/L	1	3/3/2015	R24992
tert-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992

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CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,2-DCE	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Trichloroethene (TCE)	ND	0.50		µg/L	1	3/3/2015	R24992
Trichlorofluoromethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,2,3-Trichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
Vinyl chloride	ND	0.50		µg/L	1	3/3/2015	R24992
mp-Xylenes	2.4	1.0		µg/L	1	3/3/2015	R24992
o-Xylene	1.7	0.50		µg/L	1	3/3/2015	R24992
tert-Amyl methyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
tert-Butyl alcohol	21	10		µg/L	1	3/3/2015	R24992
Acrolein	ND	0.50		µg/L	1	3/3/2015	R24992
Acrylonitrile	ND	0.50		µg/L	1	3/3/2015	R24992
Bromochloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Iodomethane	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	3/3/2015	R24992
Vinyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
1,4-Dioxane	ND	20		µg/L	1	3/3/2015	R24992
Surr: 1,2-Dichlorobenzene-d4	110	70-130		%REC	1	3/3/2015	R24992
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	3/3/2015	R24992
Surr: Toluene-d8	99.6	70-130		%REC	1	3/3/2015	R24992
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
1,1-Biphenyl	ND	5.0		µg/L	1	3/2/2015	R24992
Atrazine	ND	5.0		µg/L	1	3/2/2015	R24992
Benzaldehyde	ND	5.0		µg/L	1	3/2/2015	R24992
Caprolactam	ND	5.0		µg/L	1	3/2/2015	R24992
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	3/2/2015	R24992
Acetophenone	ND	10		µg/L	1	3/2/2015	R24992
1-Methylnaphthalene	ND	10		µg/L	1	3/2/2015	R24992
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	3/2/2015	R24992
2,4,5-Trichlorophenol	ND	10		µg/L	1	3/2/2015	R24992
2,4,6-Trichlorophenol	ND	10		µg/L	1	3/2/2015	R24992

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Client Sample ID: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001
Matrix: AQUEOUS
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
2,4-Dichlorophenol	ND	10		µg/L	1	3/2/2015	R24992
2,4-Dimethylphenol	710	10		µg/L	1	3/2/2015	R24992
2,4-Dinitrophenol	ND	10		µg/L	1	3/2/2015	R24992
2,4-Dinitrotoluene	ND	10		µg/L	1	3/2/2015	R24992
2,6-Dinitrotoluene	ND	10		µg/L	1	3/2/2015	R24992
2-Chloronaphthalene	ND	10		µg/L	1	3/2/2015	R24992
2-Chlorophenol	ND	10		µg/L	1	3/2/2015	R24992
2-Methylnaphthalene	ND	10		µg/L	1	3/2/2015	R24992
2-Methylphenol	480	10		µg/L	1	3/2/2015	R24992
2-Nitroaniline	ND	10		µg/L	1	3/2/2015	R24992
2-Nitrophenol	ND	10		µg/L	1	3/2/2015	R24992
3,3´-Dichlorobenzidine	ND	10		µg/L	1	3/2/2015	R24992
3-Nitroaniline	ND	10		µg/L	1	3/2/2015	R24992
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	3/2/2015	R24992
4-Bromophenyl phenyl ether	ND	10		µg/L	1	3/2/2015	R24992
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	3/2/2015	R24992
4-Chloroaniline	ND	10		µg/L	1	3/2/2015	R24992
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	3/2/2015	R24992
4-Nitroaniline	ND	10		µg/L	1	3/2/2015	R24992
4-Nitrophenol	ND	10		µg/L	1	3/2/2015	R24992
Acenaphthene	ND	10		µg/L	1	3/2/2015	R24992
Acenaphthylene	ND	10		µg/L	1	3/2/2015	R24992
Anthracene	ND	10		µg/L	1	3/2/2015	R24992
Benzo(g,h,i)perylene	ND	10		µg/L	1	3/2/2015	R24992
Benz(a)anthracene	ND	0.10		µg/L	1	3/2/2015	R24992
Benzo(a)pyrene	ND	0.10		µg/L	1	3/2/2015	R24992
Benzo(b)fluoranthene	ND	0.10		µg/L	1	3/2/2015	R24992
Benzo(k)fluoranthene	ND	0.10		µg/L	1	3/2/2015	R24992
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	3/2/2015	R24992
Bis(2-chloroethyl)ether	ND	10		µg/L	1	3/2/2015	R24992
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	3/2/2015	R24992
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	3/2/2015	R24992
Butyl benzyl phthalate	ND	10		µg/L	1	3/2/2015	R24992
Carbazole	ND	10		µg/L	1	3/2/2015	R24992
Chrysene	ND	0.10		µg/L	1	3/2/2015	R24992
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	3/2/2015	R24992
Dibenzofuran	ND	10		µg/L	1	3/2/2015	R24992
Diethyl phthalate	ND	10		µg/L	1	3/2/2015	R24992
Dimethyl phthalate	ND	10		µg/L	1	3/2/2015	R24992

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
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: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001 **Matrix:** AQUEOUS **Received Date:** 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: **SUB**	
Di-n-butyl phthalate	ND	10		µg/L	1	3/2/2015	R24992
Di-n-octyl phthalate	ND	10		µg/L	1	3/2/2015	R24992
Fluoranthene	ND	10		µg/L	1	3/2/2015	R24992
Fluorene	ND	10		µg/L	1	3/2/2015	R24992
Hexachlorobenzene	ND	1.0		µg/L	1	3/2/2015	R24992
Hexachlorobutadiene	ND	10		µg/L	1	3/2/2015	R24992
Hexachlorocyclopentadiene	ND	10		µg/L	1	3/2/2015	R24992
Hexachloroethane	ND	10		µg/L	1	3/2/2015	R24992
Indeno(1,2,3-cd)pyrene	ND	5.0		µg/L	1	3/2/2015	R24992
Isophorone	ND	10		µg/L	1	3/2/2015	R24992
Naphthalene	ND	10		µg/L	1	3/2/2015	R24992
Nitrobenzene	ND	10		µg/L	1	3/2/2015	R24992
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	3/2/2015	R24992
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	3/2/2015	R24992
Pentachlorophenol	ND	10		µg/L	1	3/2/2015	R24992
Phenanthrene	ND	10		µg/L	1	3/2/2015	R24992
Phenol	8.1	5.0		µg/L	1	3/2/2015	R24992
Pyrene	ND	10		µg/L	1	3/2/2015	R24992
o-Toluidine	ND	5.0		µg/L	1	3/2/2015	R24992
Pyridine	ND	5.0		µg/L	1	3/2/2015	R24992
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	3/2/2015	R24992
Surr: 2,4,6-Tribromophenol	121	10-123		%REC	1	3/2/2015	R24992
Surr: 2-Fluorobiphenyl	80.8	19-130		%REC	1	3/2/2015	R24992
Surr: 2-Fluorophenol	83.8	21-110		%REC	1	3/2/2015	R24992
Surr: Nitrobenzene-d5	85.6	25-130		%REC	1	3/2/2015	R24992
Surr: Phenol-d5	86.4	10-125		%REC	1	3/2/2015	R24992
Surr: Terphenyl-d14	29.7	21-141		%REC	1	3/2/2015	R24992
CORROSIVITY						Analyst: **SUB**	
pH	7.01	0.100		pH Units	1	2/27/2015	R24992
IGNITABILITY METHOD 1010						Analyst: **SUB**	
Ignitability	>200	0		°F	1	3/6/2015	R24992
CYANIDE, REACTIVE						Analyst: **SUB**	
Cyanide, Reactive	ND	1.00		mg/L	1	3/5/2015	R24992
SULFIDE, REACTIVE						Analyst: **SUB**	
Reactive Sulfide	ND	1.0		mg/L	1	3/3/2015	R24992
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	4600	0.010		µmhos/cm	1	3/3/2015 3:37:29 PM	R24621

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

Qualifiers:

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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: WDW-1,2,&3 Effluent
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date: 2/23/2015 8:30:00 AM
Lab ID: 1502959-001
Matrix: AQUEOUS
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.13	1.68	H	pH units	1	3/3/2015 3:37:29 PM	R24621
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	240	20		mg/L CaCO3	1	3/3/2015 3:37:29 PM	R24621
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/3/2015 3:37:29 PM	R24621
Total Alkalinity (as CaCO3)	240	20		mg/L CaCO3	1	3/3/2015 3:37:29 PM	R24621
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	1.002	0			1	3/5/2015 12:07:00 PM	R24648
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3710	200	*	mg/L	1	2/27/2015 8:17:00 AM	17895

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

Qualifiers:

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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: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1502959-002
Matrix: TRIP BLANK
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Acetonitrile	ND	5.0		µg/L	1	3/3/2015	R24992
Allyl chloride	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroprene	ND	0.50		µg/L	1	3/3/2015	R24992
Cyclohexane	ND	0.50		µg/L	1	3/3/2015	R24992
Diethyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Diisopropyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Epichlorohydrin	ND	5.0		µg/L	1	3/3/2015	R24992
Ethyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Ethyl methacrylate	ND	2.5		µg/L	1	3/3/2015	R24992
Ethyl tert-butyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Freon-113	ND	0.50		µg/L	1	3/3/2015	R24992
Isobutanol	ND	0.50		µg/L	1	3/3/2015	R24992
Isopropyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Methacrylonitrile	ND	2.5		µg/L	1	3/3/2015	R24992
Methyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
Methyl ethyl ketone	ND	2.5		µg/L	1	3/3/2015	R24992
Methyl isobutyl ketone	ND	2.5		µg/L	1	3/3/2015	R24992
Methyl methacrylate	ND	2.5		µg/L	1	3/3/2015	R24992
Methylcyclohexane	ND	1.0		µg/L	1	3/3/2015	R24992
n-Amyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
n-Hexane	ND	1.0		µg/L	1	3/3/2015	R24992
Nitrobenzene	ND	5.0		µg/L	1	3/3/2015	R24992
Pentachloroethane	ND	5.0		µg/L	1	3/3/2015	R24992
p-isopropyltoluene	ND	0.50		µg/L	1	3/3/2015	R24992
Propionitrile	ND	5.0		µg/L	1	3/3/2015	R24992
Tetrahydrofuran	ND	0.50		µg/L	1	3/3/2015	R24992
Benzene	ND	0.50		µg/L	1	3/3/2015	R24992
Toluene	ND	0.50		µg/L	1	3/3/2015	R24992
Ethylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	3/3/2015	R24992
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	3/3/2015	R24992
Naphthalene	ND	0.50		µg/L	1	3/3/2015	R24992
Acetone	5.0	2.5		µg/L	1	3/3/2015	R24992
Bromobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Bromodichloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
Bromoform	ND	0.50		µg/L	1	3/3/2015	R24992

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Qualifiers:

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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: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1502959-002
Matrix: TRIP BLANK
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Bromomethane	ND	0.50		µg/L	1	3/3/2015	R24992
Carbon disulfide	ND	0.50		µg/L	1	3/3/2015	R24992
Carbon Tetrachloride	ND	0.50		µg/L	1	3/3/2015	R24992
Chlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Chloroform	ND	0.50		µg/L	1	3/3/2015	R24992
Chloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
2-Chlorotoluene	ND	0.50		µg/L	1	3/3/2015	R24992
4-Chlorotoluene	ND	0.50		µg/L	1	3/3/2015	R24992
cis-1,2-DCE	ND	0.50		µg/L	1	3/3/2015	R24992
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
Dibromochloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
Dibromomethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,3-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Dichlorodifluoromethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloroethene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
1,3-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
2,2-Dichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
Hexachlorobutadiene	ND	0.50		µg/L	1	3/3/2015	R24992
2-Hexanone	ND	0.50		µg/L	1	3/3/2015	R24992
Isopropylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Methylene Chloride	ND	2.5		µg/L	1	3/3/2015	R24992
n-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
n-Propylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
sec-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
Styrene	ND	0.50		µg/L	1	3/3/2015	R24992
tert-Butylbenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,2-DCE	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	3/3/2015	R24992
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992

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

Qualifiers:

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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: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well
Collection Date:
Lab ID: 1502959-002
Matrix: TRIP BLANK
Received Date: 2/24/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/3/2015	R24992
Trichloroethene (TCE)	ND	0.50		µg/L	1	3/3/2015	R24992
Trichlorofluoromethane	ND	0.50		µg/L	1	3/3/2015	R24992
1,2,3-Trichloropropane	ND	0.50		µg/L	1	3/3/2015	R24992
Vinyl chloride	ND	0.50		µg/L	1	3/3/2015	R24992
mp-Xylenes	ND	1.0		µg/L	1	3/3/2015	R24992
o-Xylene	ND	0.50		µg/L	1	3/3/2015	R24992
tert-Amyl methyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
tert-Butyl alcohol	ND	10		µg/L	1	3/3/2015	R24992
Acrolein	ND	1.0		µg/L	1	3/3/2015	R24992
Acrylonitrile	ND	0.50		µg/L	1	3/3/2015	R24992
Bromochloromethane	ND	0.50		µg/L	1	3/3/2015	R24992
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	3/3/2015	R24992
Iodomethane	ND	0.50		µg/L	1	3/3/2015	R24992
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	3/3/2015	R24992
Vinyl acetate	ND	0.50		µg/L	1	3/3/2015	R24992
1,4-Dioxane	ND	20		µg/L	1	3/3/2015	R24992
Surr: 1,2-Dichlorobenzene-d4	102	70-130		%REC	1	3/3/2015	R24992
Surr: 4-Bromofluorobenzene	98.4	70-130		%REC	1	3/3/2015	R24992
Surr: Toluene-d8	100	70-130		%REC	1	3/3/2015	R24992

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

Qualifiers:

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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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R24502**	RunNo: **24502**
Prep Date:	Analysis Date: **2/24/2015**	SeqNo: **721446** Units: **mg/L**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R24502**	RunNo: **24502**
Prep Date:	Analysis Date: **2/24/2015**	SeqNo: **721447** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Chloride	4.8	0.50	5.000	0	95.3	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.4	90	110			
Bromide	2.5	0.10	2.500	0	99.1	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	5.0	0.50	5.000	0	100	90	110			
Sulfate	9.8	0.50	10.00	0	97.6	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **736964** Units: **µg/L**

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

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **736964** Units: **µg/L**

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

Sample ID **LCS-R24992**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **736965** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.8		10.00	0	98.4	80	120			
Toluene	10		10.00	0	99.8	80	120			
Ethylbenzene	10		10.00	0	101	80	120			
Chlorobenzene	9.8		10.00	0	98.5	80	120			
1,1-Dichloroethene	9.2		10.00	0	91.7	80	120			
Tetrachloroethene (PCE)	9.8		10.00	0	98.4	80	120			
Trichloroethene (TCE)	9.6		10.00	0	96.1	80	120			
o-Xylene	10		10.00	0	104	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/2/2015**	SeqNo: **736968** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetophenone	ND	10								
1-Methylnaphthalene	ND	10								
2,3,4,6-Tetrachlorophenol	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2,4-Dichlorophenol	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	10								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
2 Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3,3´-Dichlorobenzidine	ND	10								
3-Nitroaniline	ND	10								
4,6-Dinitro-2-methylphenol	ND	10								
4-Bromophenyl phenyl ether	ND	10								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benz(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/2/2015**	SeqNo: **736968** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Isophorone	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	10								
1,2,4,5-Tetrachlorobenzene	ND	10								

Sample ID **LCS-R24992**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/2/2015**	SeqNo: **736969** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.6		5.000	0	112	49	134			
2-Chlorophenol	4.7		5.000	0	94.8	50	131			
4-Chloro-3-methylphenol	4.2		5.000	0	83.0	42	139			
4-Nitrophenol	2.8		5.000	0	56.8	19	137			
Acenaphthene	5.3		5.000	0	106	36	122			
Bis(2-ethylhexyl)phthalate	5.4		5.000	0	109	43	142			
N-Nitrosodi-n-propylamine	5.3		5.000	0	107	46	135			
Pentachlorophenol	4.0		5.000	0	79.4	22	138			
Phenol	4.1		5.000	0	81.2	45	134			
Pyrene	6.2		5.000	0	123	45	138			

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID	**MB-17887**	SampType:	**MBLK**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**17887**	RunNo:	**24523**					
Prep Date:	**2/25/2015**	Analysis Date:	**2/26/2015**	SeqNo:	**722178**	Units:	**mg/L**			

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

Sample ID	**LCS-17887**	SampType:	**LCS**	TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**17887**	RunNo:	**24523**					
Prep Date:	**2/25/2015**	Analysis Date:	**2/26/2015**	SeqNo:	**722179**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	80	120			

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID	**MB-18037**	SampType:	**MBLK**	TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**18037**	RunNo:	**24714**					
Prep Date:	**3/9/2015**	Analysis Date:	**3/10/2015**	SeqNo:	**728042**	Units:	**mg/L**			

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

Sample ID	**LCS-18037**	SampType:	**LCS**	TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**18037**	RunNo:	**24714**					
Prep Date:	**3/9/2015**	Analysis Date:	**3/10/2015**	SeqNo:	**728043**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	105	80	120			

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-18024**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **18024**	RunNo: **24683**
Prep Date: **3/6/2015**	Analysis Date: **3/7/2015**	SeqNo: **727309** Units: **mg/L**

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

Sample ID **LCS-18024**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **18024**	RunNo: **24683**
Prep Date: **3/6/2015**	Analysis Date: **3/7/2015**	SeqNo: **727310** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.48	0.020	0.5000	0	95.4	80	120			
Antimony	0.52	0.050	0.5000	0	104	80	120			
Arsenic	0.47	0.020	0.5000	0	93.5	80	120			
Barium	0.49	0.020	0.5000	0	97.1	80	120			
Beryllium	0.50	0.0030	0.5000	0	99.1	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.1	80	120			
Chromium	0.49	0.0060	0.5000	0	97.8	80	120			
Cobalt	0.49	0.0060	0.5000	0	97.4	80	120			
Copper	0.52	0.0060	0.5000	0	105	80	120			
Iron	0.51	0.050	0.5000	0	102	80	120			
Lead	0.48	0.0050	0.5000	0	97.0	80	120			
Manganese	0.49	0.0020	0.5000	0	98.6	80	120			
Nickel	0.49	0.010	0.5000	0	98.6	80	120			
Selenium	0.49	0.050	0.5000	0	98.0	80	120			
Silver	0.10	0.0050	0.1000	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID	**LCS-18024**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **18024**			RunNo: **24683**					
Prep Date:	**3/6/2015**	Analysis Date: **3/7/2015**			SeqNo: **727310**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.48	0.050	0.5000	0	97.0	80	120			
Vanadium	0.49	0.050	0.5000	0	98.2	80	120			
Zinc	0.48	0.020	0.5000	0	95.1	80	120			

Sample ID	**1502959-001BMS**	SampType: **MS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **18050**			RunNo: **24731**					
Prep Date:	**3/9/2015**	Analysis Date: **3/10/2015**			SeqNo: **728505**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	76	1.0	50.00	25.84	101	75	125			
Potassium	84	1.0	50.00	34.66	98.8	75	125			

Sample ID	**1502959-001BMSD**	SampType: **MSD**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID: **18050**			RunNo: **24731**					
Prep Date:	**3/9/2015**	Analysis Date: **3/10/2015**			SeqNo: **728506**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	75	1.0	50.00	25.84	98.6	75	125	1.52	20	
Potassium	86	1.0	50.00	34.66	102	75	125	1.89	20	

Sample ID	**MB-18050**	SampType: **MBLK**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**PBW**	Batch ID: **18050**			RunNo: **24731**					
Prep Date:	**3/9/2015**	Analysis Date: **3/10/2015**			SeqNo: **728508**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID	**LCS-18050**	SampType: **LCS**			TestCode: **EPA 6010B: Total Metals**					
Client ID:	**LCSW**	Batch ID: **18050**			RunNo: **24731**					
Prep Date:	**3/9/2015**	Analysis Date: **3/10/2015**			SeqNo: **728509**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	57	1.0	50.00	0	113	80	120			
Magnesium	56	1.0	50.00	0	113	80	120			
Potassium	53	1.0	50.00	0	105	80	120			
Sodium	58	1.0	50.00	0	116	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/5/2015**	SeqNo: **736973** Units: **mg/L**

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

Sample ID **LCS-R24992**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R24992**	RunNo: **24992**
Prep Date:	Analysis Date: **3/5/2015**	SeqNo: **736974** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.480		0.5000	0	96.0	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-R24992**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R24992**	RunNo: **24992**							
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **736976**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R24992**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R24992**	RunNo: **24992**							
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **736977**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.20		0.2000	0	100	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **mb-1**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R24621**	RunNo: **24621**							
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **725674**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R24621**	RunNo: **24621**							
Prep Date:	Analysis Date: **3/3/2015**	SeqNo: **725675**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79	20	80.00	0	99.2	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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID	**1502959-001ADUP**	SampType:	**DUP**	TestCode:	**Specific Gravity**					
Client ID:	**WDW-1,2,&3 Effluen**	Batch ID:	**R24648**	RunNo:	**24648**					
Prep Date:		Analysis Date:	**3/5/2015**	SeqNo:	**726439**	Units:				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9999	0						0.220	20	

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#: **1502959**

25-Mar-15

Client: Navajo Refining Company

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

Sample ID **MB-17895**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **17895**	RunNo: **24545**
Prep Date: **2/25/2015**	Analysis Date: **2/27/2015**	SeqNo: **722782** 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-17895**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **17895**	RunNo: **24545**
Prep Date: **2/25/2015**	Analysis Date: **2/27/2015**	SeqNo: **722783** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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

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: 1502959 RcptNo: 1

Received by/date: AG 02/24/15

Logged By: **Ashley Gallegos** 2/24/2015 8:00:00 AM AG

Completed By: **Ashley Gallegos** 2/24/2015 9:49:07 AM AG

Reviewed By: CS 02/24/15

Chain of Custody

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

Log In

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

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

Adjusted? NA

Checked by: JA

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

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

Chain-of-Custody Record

Client: Navajo Refining Co.	Turn-Around Time: ☐ Standar ☐ **Rush**
	Project Name: Quarterly WDW-1, 2, & 3 Inj Well
Mailing Address: P.O. Box 159 Artesia, NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager: Dan Crawford
QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation) ☐ Other ☐ EDD (Type)	Sampler: On Ice: ☒ Yes ☐ No Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1502959	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
2/23/15	0830	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
2/23/15	0830	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X	
2/23/15	0830	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X					
2/23/15	0830	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X				
2/23/15	0830	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X			
2/23/15	0830	Liquid	Trip Blank	2	Neat	-002		X					
2/23/15	0830	Liquid	Temperature Blank	1	Neat	-0							

Date	Time	Relinquished by	Received by	Date	Time
2/23/15	0930	Elizabeth Salsberry	Ann Gallegos	02/24/15	0800

Remarks: Report these results separately from all other Chain of Custody kits provided.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted date will be clearly notated on the analytical report.

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

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	WDW-1,2, & 3 Qrtly Inj Well
Samplers Name	Elizabeth Salsberry
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	2/23/2015 @ 08:25
End Date and Time	2/23/2015 @ 08:35

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

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

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

☐ P-849 sample point (first from east)
☑ P-854 sample point (second from east)
☐ P-856 sample point (third from east)
☐ P-857 sample point (fourth from east)

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

Field Data (Weather, Observations, Etc): 2/23/2015 08:35 Tmp. 19.4, Humidity 100%, Wind Dir. NNE, Wind Speed 11.5 mph, Conditions light snow
Date and Time:

Field Temp. 95.6°F Field pH 6.86

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

Classification	Analyte name[1]	Method	Units	RL
Inorganics	Mercury	SW-846 Method 7470		
Inorganics	Arsenic	SW-846 Method 6010		
Inorganics	Silver	SW-846 Method 6010		
Inorganics	Aluminum	SW-846 Method 6010		
Inorganics	Barium	SW-846 Method 6010		
Inorganics	Beryllium	SW-846 Method 6010		
Inorganics	Calcium	SW-846 Method 6010		
Inorganics	Cadmium	SW-846 Method 6010		
Inorganics	Cobalt	SW-846 Method 6010		
Inorganics	Chromium	SW-846 Method 6010		
Inorganics	Copper	SW-846 Method 6010		
Inorganics	Iron	SW-846 Method 6010		
Inorganics	Mercury	SW-846 Method 6010		
Inorganics	Potassium	SW-846 Method 6010		
Inorganics	Magnesium	SW-846 Method 6010		
Inorganics	Manganese	SW-846 Method 6010		
Inorganics	Sodium	SW-846 Method 6010		
Inorganics	Nickel	SW-846 Method 6010		
Inorganics	Lead	SW-846 Method 6010		
Inorganics	Antimony	SW-846 Method 6010		
Inorganics	Selenium	SW-846 Method 6010		
Inorganics	Thallium	SW-846 Method 6010		
Inorganics	Vanadium	SW-846 Method 6010		
Inorganics	Zinc	SW-846 Method 6010		

** dilute elements only if necessary

[1] 23 TAL Metals

C.2 April 16, 2015 – Tank 815 Water and Diesel Mixture Release

January 28, 2016

Mr. Scott Denton
Dr. Robert Combs
HollyFrontier Navajo Refining LLC
501 East Main Street
Artesia, New Mexico 88210

Tank 815 Release Response Report

Dear Scott and Robert:

Amec Foster Wheeler has prepared this release response report to describe activities that have occurred to address a reported release of diesel from the Tank 815 water draw sump at the Navajo Refining Company, LLC (NRC) refinery located in Artesia, New Mexico (Figure 1). This letter documents the release response and remedial actions associated with the April 16, 2015 release.

Release

On April 16, 2015, an overflow of a water and diesel mixture from the water draw sump at Tank 815 was observed. The water draw valve was immediately closed upon discovery of the overflow, and a vacuum truck was used to recover free liquids from the area. Approximately 30 barrels of free liquid was recovered from the release area and the sump and was returned to the crude process. The exact volume of liquids released from the sump is unknown, but was reported as greater than 25 barrels based on the volume of liquid recovered.

Notification

Sections 1.5.13, 3.2.3.a.g, and 4.7.4 of the Post-Closure Care Permit (PCC Permit) issued by the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) require notification of a release. Section 1.5.13 requires verbal notification within 24 hours in the event that a release may endanger public drinking water supplies or could threaten the environment or human health outside the refinery, and requires written notification within five calendar days. Section 3.2.3.a.g specifically requires notification within 24 hours of a release from Tank 815. Section 4.7.4 requires notification of a new release from an existing solid waste management unit (SWMU) be reported within 15 days. Tank 815 is located within the North Colony Landfarm (NCL) which is listed as SWMU 6 in the PCC Permit (Figure 2).

Section 2.D.1 of the Discharge Permit GW-028 issued by the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) for the refinery requires oral notification of a release within twenty-four hours. Section 2.D.2 of the Discharge Permit requires written notification within one week of the identification of a release.

NRC personnel verbally reported the release to the NMED HWB and the OCD on April 16, 2015. Written notification was provided to both agencies on April 21, 2015 using an initial C-141 report. A copy of the initial C-141 report is provided in Attachment A. Thus, the initial reporting requirements of both the PCC Permit and the Discharge Permit have been met.

Remedial Actions

In order to maintain appropriate cover for the NCL, the saturated soil in the vicinity of the release was excavated and was placed into three covered, lined rolloff containers. Soil was excavated to a depth of no more than 12 inches below the ground surface. Once the excavation was completed, the area was backfilled with clean soil from an off-site source and graded to match the surrounding area. Figure 3 shows the extent of the affected area and photographs from before and after the excavation was performed are provided in Attachment B.

Waste Characterization and Disposal

One representative composite sample of the excavated soil was collected from each of the rolloff containers and analyzed for constituents of concern. The analytical results from each of the three samples were compared to the concentrations used to define a waste as characteristically hazardous under the Toxicity Characteristic. The analytical results were also compared to the land disposal restriction treatment standards for the listed wastes that were historically treated within the NCL and to the alternative standards for soils containing those listed wastes. Table 1 provides the waste characterization analytical results and the standards used for these comparisons.

NRC requested an extension from NMED HWB for the 90-day storage period for the soils placed in the rolloffs on July 15, 2015. At that time, the characterization of the soils was still being evaluated and the soil was considered potentially a hazardous waste. NMED HWB granted a one-time 30-day extension, dated July 16, 2015, for the stored soils while the characterization was evaluated. Copies of the letters are provided in Attachment C.

On July 23, 2015, NRC submitted a letter to the NMED HWB stating that the excavated soil would be disposed of at an authorized Resource Conservation and Recovery Act (RCRA) Subtitle C treatment, storage, and disposal facility (TSDF) as a conservative measure. However, because the samples indicated that the soil is not characteristically hazardous and all of the sample concentrations were below the land disposal restrictions for soils, NRC requested that the soils in the rolloffs be designated as non-hazardous under a "no longer contained-in" determination. The NMED HWB denied the request in a response letter dated August 4, 2015. Copies of the letters are provided in Attachment C.

The three rolloffs of excavated soil were transported to U.S. Ecology, Inc. in Robstown, Texas on August 14, 2015. A copy of the completed hazardous waste manifests documenting the disposal of the excavated soils as hazardous waste are provided in Attachment D.

Amec Foster Wheeler Environment & Infrastructure, Inc.
585 N. Dairy Ashford Road
Houston, TX 77079
Phone: 713.570.8314
Fax: 713.570.8606

Conclusion

The remedial response to the April 16, 2015 release of a water and diesel mixture from the water draw sump for Tank 815 has been completed. Saturated soil was excavated from the release area and disposed of off-site at an approved TSDF. The excavated area was backfilled with clean soil and graded to match the surrounding areas of the NCL. No further remedial actions are recommended at this time. A final C-141 report has been prepared and included as Attachment E to this letter.

Should you have any questions or comments, please feel free to contact me at 713.929.5674.

Sincerely,

Pamela R. Krueger
Senior Associate

Enclosures:
Table
Figures
Attachment A: Initial C-141
Attachment B: Photographs
Attachment C: Correspondence
Attachment D: Waste Manifests
Attachment E: Final C-141

Amec Foster Wheeler Environment & Infrastructure, Inc.
585 N. Dairy Ashford Road
Houston, TX 77079
Phone: 713.570.8314
Fax: 713.570.8606

Tables

Table 1 - Waste Soil Characterization Analytical Results
Tank 815
Navajo Refining Company, Artesia, New Mexico

Analyte	Toxicity Characteristic Limit (mg/L)	Hazardous Waste Treatment Standards (mg/kg)				Alternative Treatment Standards for Soils (mg/kg)				Analytical Results		
		K048	K049	K051	K052	K048	K049	K051	K052	S. Bro 25	S. Bro 53	S. Bro 49
Semivolatile Organic Compounds (mg/kg)												
2,4-Dimethylphenol	--	--	NA	--	NA	--	NA	--	NA	<18.5	<3.81	<38.1
Acenaphthene	--	--	--	NA	--	--	--	NA	--	1.25 J	0.168 J	0.845 J
Anthracene	--	--	3.4	3.4	--	--	34	34	--	0.552 J	0.262 J	1.35 J
Benz(a)anthracene	--	--	--	3.4	3.4	--	--	34	34	0.246 J	0.634	2.63 J
Benzo(a)pyrene	--	3.4	3.4	3.4	--	34	34	34	--	<1.83	0.488 J	2.13 J
bis(2-Ethylhexyl) phthalate	--	28	28	28	--	280	280	280	--	<18.5	<3.81	<38.1
Carbon disulfide	--	--	NA	--	--	--	NA	--	--	not analyzed	not analyzed	not analyzed
Chrysene	--	3.4	3.4	3.4	--	34	34	34	--	0.395 J	0.662	6.86
Di-n-butyl phthalate	--	28	--	28	--	280	--	280	--	<18.5	<3.81	<38.1
Fluorene	--	NA	--	NA	--	NA	--	NA	--	2.2	0.290 J	0.994 J
m-Cresol (3-methylphenol)	--	--	--	--	5.6	--	--	--	56	<18.5	<3.81	<38.1
Naphthalene	--	5.6	5.6	5.6	5.6	56	56	56	56	2.03	0.160 J	<3.77
o-Cresol (2-methylphenol)	--	--	--	--	5.6	--	--	--	56	<18.5	<3.81	<38.1
p-Cresol (4-methylphenol)	--	--	--	--	5.6	--	--	--	56	<18.5	<3.81	<38.1
Phenanthrene	--	5.6	5.6	5.6	5.6	56	56	56	56	0.996 J	0.896	3.87
Phenol	--	6.2	6.2	6.2	6.2	62	62	62	62	<18.5	<3.81	<38.1
Pyrene	--	8.2	8.2	8.2	--	82	82	82	--	1.82 J	1.59	10.4
TCLP Volatile Organic Compounds (mg/L)												
1,1-Dichloroethene	0.7	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.5	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
2-Butanone	200	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50
Benzene	0.5	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
Carbon tetrachloride	0.5	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
Chlorobenzene	100	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
Chloroform	6	--	--	--	--	--	--	--	--	<0.25	<0.25	<0.25
Tetrachloroethene	0.7	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
Trichloroethene	0.5	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
Vinyl Chloride	0.2	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050
TCLP Semivolatile Organic Compounds (mg/L)												
1,4-Dichlorobenzene	7.5	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
2,4,5-Trichlorophenol	400	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
2,4,6-Trichlorophenol	2	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	0.13	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Cresols, Total	200	--	--	--	--	--	--	--	--	<0.20	<0.20	<0.20
Hexachlorobenzene	0.13	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Hexachlorobutadiene	0.5	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Hexachloroethane	3	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Nitrobenzene	2	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Pentachlorophenol	100	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10
Pyridine	5	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10

Table 1 - Waste Soil Characterization Analytical Results

Tank 815

Navajo Refining Company, Artesia, New Mexico

Analyte	Toxicity Characteristic Limit (mg/L)	Hazardous Waste Treatment Standards (mg/kg)				Alternative Treatment Standards for Soils (mg/kg)				Analytical Results		
		K048	K049	K051	K052	K048	K049	K051	K052	S. Bro 25	S. Bro 53	S. Bro 49
TCLP Metals (mg/L)												
Arsenic	5	--	--	--	--	--	--	--	--	<0.450	<0.450	<0.450
Barium	100	--	--	--	--	--	--	--	--	<1.40	<1.40	<1.40
Cadmium	1	--	--	--	--	--	--	--	--	<0.450	<0.450	<0.450
Chromium	5	0.6	0.6	0.6	0.6	6	6	6	6	<0.450	<0.450	<0.450
Lead	5	--	--	--	--	--	--	--	--	<0.450	<0.450	<0.450
Mercury	0.2	--	--	--	--	--	--	--	--	<0.0100	<0.0100	<0.0100
Nickel	--	11	11	11	11	110	110	110	110	<0.450	<0.450	<0.450
Selenium	1	--	--	--	--	--	--	--	--	<0.450	<0.450	<0.450
Silver	5	--	--	--	--	--	--	--	--	<0.450	<0.450	<0.450
Total Metals (mg/kg)												
Total Lead	--	NA	NA	NA	NA	NA	NA	NA	NA	20.9	13.1	40.2
Total Petroleum Hydrocarbons (mg/kg)												
Diesel Range Organics	--	--	--	--	--	--	--	--	--	30,000	5,260	9,610

Notes and Abbreviations:

-- Analyte is not listed as characteristically hazardous or as an analyte associated with the listed waste.

< x = Sample result was not detected with reporting limit value of x.

B = The indicated compound was found in the associated method blank as well as the laboratory samples.

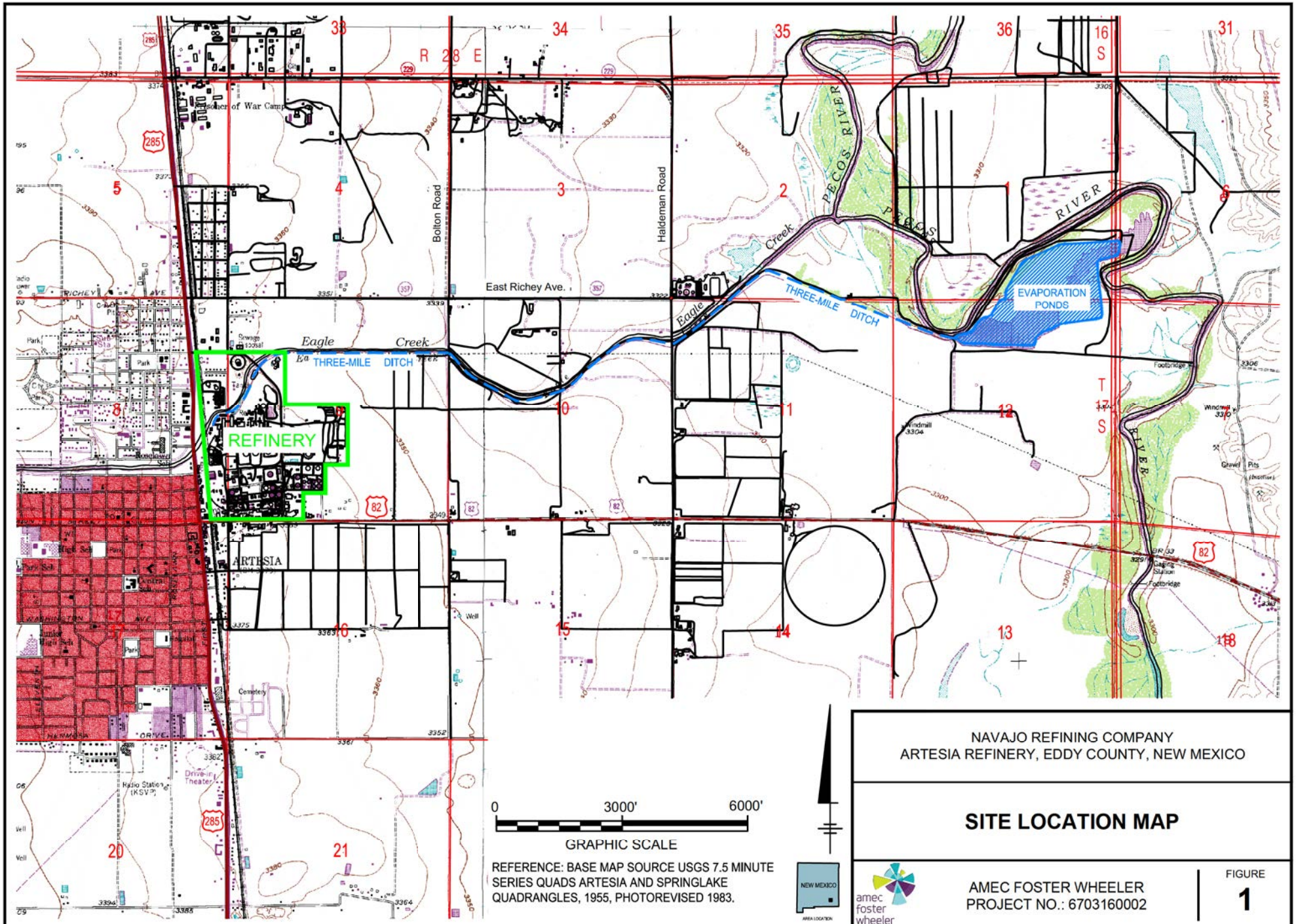
J = Estimated value below the lowest calibration point.

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

NA = Analyte .identified in 40 CFR 268.40 as associated with the waste code, but standard listed as "not applicable for non-wastewater forms"

Figures



REFERENCE: BASE MAP SOURCE USGS 7.5 MINUTE SERIES QUADS ARTESIA AND SPRINGLAKE QUADRANGLES, 1955, PHOTOREVISED 1983.

NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

SITE LOCATION MAP

AMEC FOSTER WHEELER
PROJECT NO.: 6703160002

FIGURE
1

Legend

- AOC OR SWMU ADDED IN 2010 PERMIT MODIFICATION
- AOC OR SWMU LISTED IN 2003 PERMIT

NOTES:
AOC - Area of Concern
SWMU - Solid Waste Management Unit
DAF - Dissolved Air Flotation
API - American Petroleum Institute
CBO - Carbon Black Oil
LPG - Liquefied Petroleum Gas
AOCs and SWMUs not shown in figure include:
- Three Mile Ditch, Evaporation Pond 1 (SWMU 7)
- Evaporation Ponds 2, 3, 5, 6 (SWMU 1)
- Wastewater Collection System (AOC 12)
- Above and Underground Piping (AOC 15)

0 250 500 750 1,000
SCALE IN FEET

NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

AOC AND SWMU LOCATIONS

AMEC FOSTER WHEELER
PROJECT NO.: 6703160002

FIGURE
2

LEGEND

NORTH COLONY LANDFARM (NCL) AREA

APRIL 2015 RELEASE EXTENT

0 25 50 100 150 200

SCALE IN FEET

N

NAVAJO REFINING COMPANY
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

TANK 815 RELEASE EXTENT

AMEC FOSTER WHEELER
PROJECT NO.: 6703160002

Figure 3

amec foster wheeler

Attachment A
Initial C-141 Form

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Navajo Refining Company, L.L.C.	Contact: Robert Combs
Address: 501 E. Main St., Artesia, NM 88210	Telephone No.: 575-746-5382
Facility Name: Navajo Refining Company, L.L.C.	Facility Type: Petroleum Refinery

Surface Owner: Navajo Refining Company, L.L.C.	Mineral Owner N/A	API No. N/A

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_Longitude_

NATURE OF RELEASE

Type of Release: finished diesel/water	Volume of Release: > 25 bbls	Volume Recovered: 30 bbls
Source of Release: water draw/sump at T-815	Date and Hour of Occurrence: 04/16/15, Unknown time	Date and Hour of Discovery: 04/16/15 6:30 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? NM Oil Conservation Division Santa Fe– Left message to Carl Chavez NMED Hazardous Waste Bureau – Left message to Leona Tsinnajinnie	
By Whom? R. Combs	Date and Hour 04/16/15 ~13:00 - 15:00	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*
The water collection sump from T-815 overflowed during routine dewatering of the tank. The water draw valve was immediately closed upon discovery and a vacuum truck was sent to recover any free liquids. The recovered liquids were returned to the crude process. The cause of the incident is under investigation.

Describe Area Affected and Cleanup Action Taken.*
Pooled liquids removed by vacuum truck and absorbent pads were used to remove remaining hydrocarbons. Removal of the impacted soil from the spill will be collected in roll-off bins and characterized for disposal. Any additional corrective actions will be presented in a Final C-141 report including analytical reports, map markups, photos, and waste characterization and disposal records.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Robert Combs	Approved by Environmental Specialist:	
Title: Environmental Specialist	Approval Date:	Expiration Date:
E-mail Address: robert.combs@hollyfrontier.com	Conditions of Approval:	Attached ☐
Date: 4/21/15 Phone: 575-746-5382		

* Attach Additional Sheets If Necessary

Attachment B
Photographs

Photo 1: View of extent of release to north of the water draw sump. View is to the northwest, April 17, 2015.

Photo 2: View of extent of release to south of the water draw sump. View is to the south, April 17, 2015.

Photo 3: View of piping south of water draw sump. View is to the west, April 17, 2015.

Photo 4: View of area surrounding water draw sump after excavation and backfill. View is to the northwest, June 24, 2015.

Photo 5: View of piping south of water draw sump after excavation and backfill. View is to the west, June 24, 2015.

Photo x: View of southeastern corner of NCL, south of the water draw sump, after excavation and backfill. View is to the south-southwest, June 24, 2015.

amec
foster
wheeler

Attachment C
Correspondence

HOLLYFRONTIER.

July 15, 2015

Mr. John Kieling
Chief, Hazardous Waste Bureau
New Mexico Environmental Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

Certified Mail/Return Receipt
7015 0640 0006 9944 5680

RE: Extension Request for 90-day Storage Period
Navajo Refining Company, L.L.C., Artesia Refinery
RCRA Permit No. NMD048918817

Dear Mr. Kieling:

Navajo Refining Company (NRC) reported an overflow of a water/diesel mixture from the sump located adjacent to Tank 815 within the North Colony Landfarm (NCL) to the New Mexico Environment Department (NMED) on April 16, 2015, as required by the Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit (Permit). The release was also reported to the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD), as required by NRC's discharge permit (GW-028). The release occurred during a routine water draw from the bottom of the tank, and affected a portion of the southeast quadrant of the Tank 815 containment area.

In order to maintain appropriate cover for the NCL, the stained and saturated soil in the vicinity of the release was excavated and was placed into three covered, lined roll-off containers. Representative samples of the soil were collected from each roll-off bin and analytical data will be used to characterize the soil, for which NRC intends to request a "no longer contained-in" determination from NMED. The excavation was backfilled with clean soil to maintain the cover of the NCL. The excavated soils were containerized beginning on April 17, 2015 and, thus, the 90-day maximum temporary storage period for potentially hazardous soils is imminent.

NRC respectfully requests NMED's immediate approval of a 90-day accumulation period extension, allowed by 40 CFR 262.34 (b), as incorporated by references at NMAC 20.4.1.300. We believe that this one-time extension will provide adequate time for NMED's review and action on our "no longer contained-in" determination for the excavated soils.

If you have any questions or comments regarding this request, please feel free to contact me at 575-746-5487 or Robert Combs at 575-746-5382.

Sincerely,

Scott M. Denton
Environmental Manager
Navajo Refining Company, L.L.C.

c: Robert Combs, NRC
Micki Schultz, NRC

NEW MEXICO
ENVIRONMENT DEPARTMENT

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.env.nm.gov

SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

July 16, 2015

Scott M. Denton
Environmental Manager
Navajo Refining Company, L.L.C.
P.O. Box 159
Artesia, New Mexico 88211-0159

RE: APPROVAL
EXTENSION REQUEST FOR 90-DAY STORAGE PERIOD
NAVAJO REFINING COMPANY, L.L.C. - ARTESIA REFINERY
EPA ID NO. NMD048918817
HWB-NRC-MISC

Dear Mr. Denton:

The New Mexico Environment Department (NMED) has received the Navajo Refining Company, L.L.C., Artesia Refinery's (the Permittee) *Extension Request for 90-Day Storage Period* (letter) dated July 15, 2015. On April 16, 2015, the Permittee reported an overflow of water/diesel mixture from the sump located adjacent to Tank 815 within the North Colony Landfarm (NCL), a hazardous waste management unit (HWMU). The release occurred during a routine water draw from the bottom of the tank, and affected a portion of the southeast quadrant of the Tank 815 containment area. Excavated soil from the site was placed in three lined roll-off containers on April 17, 2015 and samples were collected from each roll-off to characterize the soil. The Permittee is approaching the 90-day time limit and is requesting NMED's immediate approval of an extension to the 90-day period allowable by 40 CFR 262.34(b), as incorporated by reference at NMAC 20.4.1.300. This one-time extension will provide additional time to temporarily store the potentially hazardous excavated soils on site and allow the Permittee to prepare a request for a "no longer contained-in" determination. NMED hereby approves the Permittee's extension request for an additional 30 days and must submit the "no longer contained-in" request as soon as possible.

If you have any questions regarding this letter, please contact Leona Tsinnajinnie of my staff at (505) 476-6057.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
N. Dhawan, NMED HWB
K. VanHorn, NMED HWB
L. Tsinnajinnie, NMED HWB
M. Holder, Navajo Refining Company, L.L.C.
R. Combs, NRC, Artesia Refinery
P. Krueger, ARCADIS

File: Reading File and NRC 2015, HWB-NRC-MISC

HOLLYFRONTIER.

July 23, 2015

Mr. John Kieling
Chief, Hazardous Waste Bureau
New Mexico Environmental Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

RE: Characterization of Soil Excavated from Tank 815 Release
Navajo Refining Company, L.L.C., Artesia Refinery
RCRA Permit No. NMD048918817

Dear Mr. Kieling:

Navajo Refining Company (NRC) reported an overflow of a water/diesel mixture from the sump located adjacent to Tank 815 within the North Colony Landfarm (NCL) to the New Mexico Environment Department (NMED) on April 16, 2015, as required by the Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit (Permit). The release was also reported to the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD), as required by the refinery's discharge permit (GW-028). The release occurred during a routine water draw from the bottom of the tank, and affected a portion of the southeast quadrant of the Tank 815 containment area.

In order to maintain appropriate cover for the NCL, the saturated soil in the vicinity of the release was excavated and was placed into three covered, lined roll-off containers (currently containing approximately 12 cubic yards per container). One representative sample (composite) of the excavated soil was collected from each of the roll-off containers and analyzed for constituents of concern. Table 1 provides a summary of the analytical results from the samples and compares the results to the concentrations for defining a waste as characteristically hazardous under the Toxicity Characteristic. Table 1 also provides a comparison of the analytical results to the land disposal restriction treatment standards for the listed wastes that were historically treated within the NCL, and the alternative standards for soils containing those listed wastes. A copy of the laboratory report is included as an attachment to this letter.

As demonstrated in Table 1, none of the concentrations reported for the constituents of concern in the samples exceeded the characteristically hazardous (toxicity) concentrations or the land disposal restriction treatment standards for soils. The sample collected from roll-off bin S. Bro 49 contained two constituents—chrysene and pyrene—at concentrations of 6.86 mg/kg and 10.4 mg/kg, respectively, above the relevant hazardous waste treatment standards for K048, K049 and K051 wastes (40 CFR 268.40, Table "Treatment Standards for Hazardous Waste," non-wastewater form).

As a conservatively protective measure, NRC plans to dispose of the contents of all three roll-off bins at an authorized RCRA Subtitle C treatment, storage, and disposal facility (TSDF). Based