GW – 028

2015 Annual Discharge Permit Report

PART 2 OF 16

March 2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1505504-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 5/11/2015 8:20:00 AM
Received Date: 5/12/2015 8:56:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**	
Di-n-butyl phthalate	ND	10	10		µg/L	1	5/21/2015	R26752
Di-n-octyl phthalate	ND	10	10		µg/L	1	5/21/2015	R26752
Fluoranthene	ND	10	10		µg/L	1	5/21/2015	R26752
Fluorene	ND	10	10		µg/L	1	5/21/2015	R26752
Hexachlorobenzene	ND	1.0	1.0		µg/L	1	5/21/2015	R26752
Hexachlorobutadiene	ND	10	10		µg/L	1	5/21/2015	R26752
Hexachlorocyclopentadiene	ND	10	10		µg/L	1	5/21/2015	R26752
Hexachloroethane	ND	10	10		µg/L	1	5/21/2015	R26752
Indeno(1,2,3-cd)pyrene	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Isophorone	ND	10	10		µg/L	1	5/21/2015	R26752
Naphthalene	ND	10	10		µg/L	1	5/21/2015	R26752
Nitrobenzene	ND	10	10		µg/L	1	5/21/2015	R26752
N-Nitrosodi-n-propylamine	ND	10	10		µg/L	1	5/21/2015	R26752
N-Nitrosodiphenylamine	ND	2.0	2.0		µg/L	1	5/21/2015	R26752
Pentachlorophenol	ND	10	10		µg/L	1	5/21/2015	R26752
Phenanthrene	ND	10	10		µg/L	1	5/21/2015	R26752
Phenol	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Pyrene	ND	10	10		µg/L	1	5/21/2015	R26752
o-Toluidine	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Pyridine	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
1,2,4,5-Tetrachlorobenzene	ND	10	10		µg/L	1	5/21/2015	R26752
Surr: 2,4,6-Tribromophenol	111	0	10-123		%REC	1	5/21/2015	R26752
Surr: 2-Fluorobiphenyl	90.0	0	19-130		%REC	1	5/21/2015	R26752
Surr: 2-Fluorophenol	74.4	0	21-120		%REC	1	5/21/2015	R26752
Surr: Nitrobenzene-d5	80.4	0	25-130		%REC	1	5/21/2015	R26752
Surr: Phenol-d5	64.0	0	10-130		%REC	1	5/21/2015	R26752
Surr: Terphenyl-d14	74.8	0	21-141		%REC	1	5/21/2015	R26752
CORROSIVITY							Analyst: **SUB**	
pH	7.99				pH Units	1	5/19/2015	R26752
IGNITABILITY METHOD 1010							Analyst: **SUB**	
Ignitability	>200	0	0		°F	1	5/22/2015	R26752
CYANIDE, REACTIVE							Analyst: **SUB**	
Cyanide, Reactive	ND	1.00	1.00		mg/L	1	5/22/2015	R26752
SULFIDE, REACTIVE							Analyst: **SUB**	
Reactive Sulfide	ND	1.0	1.0		mg/L	1	5/21/2015	R26752
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**	
Conductivity	6600	0.010	0.010		µmhos/c	1	5/12/2015 4:15:42 PM	R26154

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
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1505504-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 5/11/2015 8:20:00 AM
Received Date: 5/12/2015 8:56:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM4500-H+B: PH							Analyst: **JRR**	
pH	7.95	0.100	1.68	H	pH units	1	5/12/2015 4:15:42 PM	R26154
SM2320B: ALKALINITY							Analyst: **JRR**	
Bicarbonate (As CaCO3)	313.4	0.9399	20.00		mg/L CaC	1	5/12/2015 4:15:42 PM	R26154
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L CaC	1	5/12/2015 4:15:42 PM	R26154
Total Alkalinity (as CaCO3)	313.4	0.9399	20.00		mg/L CaC	1	5/12/2015 4:15:42 PM	R26154
SPECIFIC GRAVITY							Analyst: **JRR**	
Specific Gravity	0.9990	0	0			1	5/18/2015 11:44:00 AM	R26252
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JML**	
Total Dissolved Solids	4260	145	200	*	mg/L	1	5/15/2015 5:40:00 PM	19225

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Qualifiers:

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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: 1505504-002
Matrix: TRIP BLANK
Received Date: 5/12/2015 8:56:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**	
Acetonitrile	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Allyl chloride	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chloroprene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Cyclohexane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Diethyl ether	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Diisopropyl ether	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Epichlorohydrin	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Ethyl acetate	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Ethyl methacrylate	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Ethyl tert-butyl ether	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Freon-113	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Isobutanol	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Isopropyl acetate	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Methacrylonitrile	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Methyl acetate	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Methyl ethyl ketone	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
Methyl isobutyl ketone	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
Methyl methacrylate	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Methylcyclohexane	ND	1.0	1.0		µg/L	1	5/21/2015	R26752
n-Amyl acetate	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
n-Hexane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Nitrobenzene	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Pentachloroethane	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
p-isopropyltoluene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Propionitrile	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Tetrahydrofuran	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Benzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Toluene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Ethylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Methyl tert-butyl ether (MTBE)	ND	10	0.50		µg/L	1	5/21/2015	R26752
1,2,4-Trimethylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,3,5-Trimethylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2-Dichloroethane (EDC)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2-Dibromoethane (EDB)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Naphthalene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Acetone	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
Bromobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Bromodichloromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Bromoform	ND	0.50	0.50		µg/L	1	5/21/2015	R26752

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

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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: 1505504-002
Matrix: TRIP BLANK
Received Date: 5/12/2015 8:56:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**	
Bromomethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Carbon disulfide	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Carbon Tetrachloride	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chloroform	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chloromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
2-Chlorotoluene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
4-Chlorotoluene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
cis-1,2-DCE	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
cis-1,3-Dichloropropene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2-Dibromo-3-chloropropane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Dibromochloromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Dibromomethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2-Dichlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,3-Dichlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,4-Dichlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Dichlorodifluoromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1-Dichloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1-Dichloroethene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2-Dichloropropane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,3-Dichloropropane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
2,2-Dichloropropane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1-Dichloropropene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Hexachlorobutadiene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
2-Hexanone	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Isopropylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Methylene Chloride	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
n-Butylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
n-Propylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
sec-Butylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Styrene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
tert-Butylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1,1,2-Tetrachloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1,2,2-Tetrachloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Tetrachloroethene (PCE)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
trans-1,2-DCE	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
trans-1,3-Dichloropropene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2,3-Trichlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752

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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: 1505504-002
Matrix: TRIP BLANK
Received Date: 5/12/2015 8:56:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**	
1,2,4-Trichlorobenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1,1-Trichloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,1,2-Trichloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Trichloroethene (TCE)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Trichlorofluoromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,2,3-Trichloropropane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Vinyl chloride	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
mp-Xylenes	ND	1.0	0.50		µg/L	1	5/21/2015	R26752
o-Xylene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
tert-Amyl methyl ether	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
tert-Butyl alcohol	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
Acrolein	ND	2.5	10		µg/L	1	5/21/2015	R26752
Acrylonitrile	ND	2.5	10		µg/L	1	5/21/2015	R26752
Bromochloromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
2-Chloroethyl vinyl ether	ND	0.50	1.0		µg/L	1	5/21/2015	R26752
Iodomethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
trans-1,4-Dichloro-2-butene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Vinyl acetate	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
1,4-Dioxane	ND	20	20		µg/L	1	5/21/2015	R26752
Surr: 1,2-Dichlorobenzene-d4	105		70-130		%REC	1	5/21/2015	R26752
Surr: 4-Bromofluorobenzene	101	0	70-130		%REC	1	5/21/2015	R26752
Surr: Toluene-d8	102	0	70-130		%REC	1	5/21/2015	R26752

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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		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1505504**

16-Jun-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: **R26148**	RunNo: **26148**
Prep Date:	Analysis Date: **5/12/2015**	SeqNo: **775809** 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: **R26148**	RunNo: **26148**
Prep Date:	Analysis Date: **5/12/2015**	SeqNo: **775815** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	110	90	110			
Chloride	4.8	0.50	5.000	0	96.6	90	110			
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	102	90	110			
Bromide	2.5	0.10	2.500	0	99.3	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	102	90	110			
Phosphorus, Orthophosphate (As P	5.1	0.50	5.000	0	102	90	110			
Sulfate	10	0.50	10.00	0	99.9	90	110			

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/22/2015**	SeqNo: **797217** 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								
1,3-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								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
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- B Analyte detected in the associated Method Blank
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- 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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/22/2015**	SeqNo: **797217** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.50								
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-R26752**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/22/2015**	SeqNo: **797218** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.4		10.00	0	93.8	80	120			
Toluene	9.9		10.00	0	99.0	80	120			
Ethylbenzene	10		10.00	0	99.9	80	120			
Chlorobenzene	9.8		10.00	0	97.9	80	120			
1,1-Dichloroethene	9.7		10.00	0	96.9	80	120			
Tetrachloroethene (PCE)	11		10.00	0	106	80	120			
Trichloroethene (TCE)	10		10.00	0	101	80	120			
o-Xylene	10		10.00	0	100	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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/21/2015**	SeqNo: **797222** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitroso-di-n-butylamine	ND	0.50								
1-Methylnaphthalene	ND	0.50								
2,3,4,6-Tetrachlorophenol	ND	0.50								
2,4,5-Trichlorophenol	ND	0.50								
2,4,6-Trichlorophenol	ND	0.50								
2,4-Dichlorophenol	ND	0.50								
2,4-Dimethylphenol	ND	0.50								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
2-Chloronaphthalene	ND	0.50								
2-Chlorophenol	ND	0.50								
2-Methylnaphthalene	ND	0.50								
2-Methylphenol	ND	0.50								
2-Nitroaniline	ND	0.50								
2-Nitrophenol	ND	0.50								
3,3'-Dichlorobenzidine	ND	0.50								
3-Nitroaniline	ND	0.50								
4,6-Dinitro-2-methylphenol	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.50								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
4-Chlorophenyl phenyl ether	ND	0.50								
4-Nitroaniline	ND	0.50								
4-Nitrophenol	ND	0.50								
Acenaphthene	ND	0.50								
Acenaphthylene	ND	0.50								
Anthracene	ND	0.50								
Benzo(g,h,i)perylene	ND	0.50								
Benz(a)anthracene	ND	0.50								
Benzo(a)pyrene	ND	0.50								
Benzo(b)fluoranthene	ND	0.50								
Benzo(k)fluoranthene	ND	0.50								
Bis(2-chloroethoxy)methane	ND	0.50								
Bis(2-chloroethyl)ether	ND	0.50								
Bis(2-chloroisopropyl)ether	ND	0.50								
Bis(2-ethylhexyl)phthalate	ND	0.50								
Butyl benzyl phthalate	ND	0.50								
Carbazole	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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/21/2015**	SeqNo: **797222** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.50								
Dibenz(a,h)anthracene	ND	0.50								
Dibenzofuran	ND	0.50								
Diethyl phthalate	ND	0.50								
Dimethyl phthalate	ND	0.50								
Di-n-butyl phthalate	ND	0.50								
Di-n-octyl phthalate	ND	0.50								
Fluoranthene	ND	0.50								
Fluorene	ND	0.50								
Hexachlorobenzene	ND	0.50								
Hexachlorobutadiene	ND	0.50								
Hexachlorocyclopentadiene	ND	0.50								
Hexachloroethane	ND	0.50								
Indeno(1,2,3-cd)pyrene	ND	0.50								
Isophorone	ND	0.50								
Naphthalene	ND	0.50								
Nitrobenzene	ND	0.50								
N-Nitrosodi-n-propylamine	ND	0.50								
N-Nitrosodiphenylamine	ND	0.50								
Pentachlorophenol	ND	0.50								
Phenanthrene	ND	0.50								
Phenol	ND	0.50								
Pyrene	ND	0.50								
Pyridine	ND	0.50								

Sample ID **LCS-R26752**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/21/2015**	SeqNo: **797223** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	4.6		5.000	0	93.0	49	145			
2-Chlorophenol	4.8		5.000	0	96.2	50	131			
4-Chloro-3-methylphenol	5.4		5.000	0	108	42	139			
4-Nitrophenol	5.3		5.000	0	106	19	137			
Acenaphthene	4.8		5.000	0	96.6	36	131			
Bis(2-ethylhexyl)phthalate	5.6		5.000	0	113	43	148			
N-Nitrosodi-n-propylamine	6.1		5.000	0	122	46	135			
Pentachlorophenol	5.1		5.000	0	101	22	138			
Phenol	4.4		5.000	0	88.8	45	134			

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **LCS-R26752**	SampType: **LCS**			TestCode: **EPA 8270C: Semivolatiles/Mod**						
Client ID: **LCSW**	Batch ID: **R26752**			RunNo: **26752**						
Prep Date:	Analysis Date: **5/21/2015**			SeqNo: **797223**		Units: **µg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pyrene	5.4		5.000	0	109	45	139			

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-19224**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **19224**	RunNo: **26197**
Prep Date: **5/14/2015**	Analysis Date: **5/14/2015**	SeqNo: **777328** Units: **mg/L**

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

Sample ID **LCS-19224**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **19224**	RunNo: **26197**
Prep Date: **5/14/2015**	Analysis Date: **5/14/2015**	SeqNo: **777329** 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			

Sample ID **LCSD-19224**	SampType: **LCSD**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSS02**	Batch ID: **19224**	RunNo: **26197**
Prep Date: **5/14/2015**	Analysis Date: **5/14/2015**	SeqNo: **777330** 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	101	80	120	0.438	20	

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

WO#: **1505504**

Hall Environmental Analysis Laboratory, Inc.

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-19406**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**							
Client ID: **PBW**	Batch ID: **19406**	RunNo: **26436**							
Prep Date: **5/27/2015**	Analysis Date: **5/27/2015**	SeqNo: **785575**	Units: **mg/L**						

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

Sample ID **LCS-19406**	SampType: **LCS**	TestCode: **MERCURY, TCLP**							
Client ID: **LCSW**	Batch ID: **19406**	RunNo: **26436**							
Prep Date: **5/27/2015**	Analysis Date: **5/27/2015**	SeqNo: **785576**	Units: **mg/L**						

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.020	0.005000	0	95.3	80	120			J

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-19377**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785370** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-19377**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785371** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	5.0	0.5000	0	98.7	80	120			J
Barium	0.47	100	0.5000	0	94.3	80	120			J
Cadmium	0.48	1.0	0.5000	0	96.3	80	120			J
Chromium	0.47	5.0	0.5000	0	94.2	80	120			J
Lead	0.46	5.0	0.5000	0	92.7	80	120			J
Selenium	0.48	1.0	0.5000	0	95.9	80	120			J
Silver	0.099	5.0	0.1000	0	98.7	80	120			J

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

WO#: **1505504**

Hall Environmental Analysis Laboratory, Inc.

16-Jun-15

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

Sample ID **MB-19377**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785351** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	0.031	0.050								J
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	0.0083	0.050								J
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-19377**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785352** 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	101	80	120			
Antimony	0.49	0.050	0.5000	0	97.9	80	120			
Arsenic	0.49	0.020	0.5000	0	98.7	80	120			
Barium	0.47	0.020	0.5000	0	94.3	80	120			
Beryllium	0.49	0.0030	0.5000	0	97.9	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.3	80	120			
Calcium	48	1.0	50.00	0	96.6	80	120			
Chromium	0.47	0.0060	0.5000	0	94.2	80	120			
Cobalt	0.46	0.0060	0.5000	0	92.4	80	120			
Copper	0.48	0.0060	0.5000	0	95.6	80	120			
Iron	0.47	0.050	0.5000	0	94.1	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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **LCS-19377**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785352** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.46	0.0050	0.5000	0	92.7	80	120			
Magnesium	48	1.0	50.00	0	96.9	80	120			
Manganese	0.47	0.0020	0.5000	0	93.6	80	120			
Nickel	0.47	0.010	0.5000	0	93.1	80	120			
Potassium	46	1.0	50.00	0	93.0	80	120			
Selenium	0.48	0.050	0.5000	0	95.9	80	120			
Silver	0.099	0.0050	0.1000	0	98.7	80	120			
Sodium	48	1.0	50.00	0	96.1	80	120			
Thallium	0.49	0.050	0.5000	0	97.0	80	120			
Vanadium	0.49	0.050	0.5000	0	98.0	80	120			
Zinc	0.47	0.020	0.5000	0	93.5	80	120			

Sample ID **1505504-001BMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **19377**	RunNo: **26426**
Prep Date: **5/26/2015**	Analysis Date: **5/27/2015**	SeqNo: **785354** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	1.1	0.020	0.5000	0.4834	114	75	125			
Antimony	0.51	0.050	0.5000	0	103	75	125			
Arsenic	0.57	0.020	0.5000	0.04239	105	75	125			
Barium	0.50	0.020	0.5000	0.01049	97.1	75	125			
Beryllium	0.49	0.0030	0.5000	0	98.5	75	125			
Cadmium	0.51	0.0020	0.5000	0	102	75	125			
Calcium	100	1.0	50.00	51.14	97.3	75	125			
Chromium	0.48	0.0060	0.5000	0	95.4	75	125			
Cobalt	0.48	0.0060	0.5000	0.002620	96.1	75	125			
Copper	0.55	0.0060	0.5000	0.005100	110	75	125			
Iron	0.80	0.050	0.5000	0.3329	92.5	75	125			
Lead	0.48	0.0050	0.5000	0	95.9	75	125			
Magnesium	70	1.0	50.00	19.14	101	75	125			
Manganese	0.58	0.0020	0.5000	0.1030	96.0	75	125			
Nickel	0.49	0.010	0.5000	0.01120	95.5	75	125			
Selenium	0.66	0.050	0.5000	0.1334	105	75	125			
Silver	0.10	0.0050	0.1000	0	104	75	125			
Thallium	0.51	0.050	0.5000	0	101	75	125			
Vanadium	0.51	0.050	0.5000	0.007830	101	75	125			
Zinc	0.52	0.020	0.5000	0.03044	98.1	75	125			

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **1505504-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **19377** RunNo: **26426**

Prep Date: **5/26/2015** Analysis Date: **5/27/2015** SeqNo: **785355** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	1.1	0.020	0.5000	0.4834	123	75	125	4.31	20	
Antimony	0.53	0.050	0.5000	0	106	75	125	3.03	20	
Arsenic	0.58	0.020	0.5000	0.04239	108	75	125	2.76	20	
Barium	0.51	0.020	0.5000	0.01049	100	75	125	3.03	20	
Beryllium	0.50	0.0030	0.5000	0	101	75	125	2.04	20	
Cadmium	0.52	0.0020	0.5000	0	105	75	125	2.76	20	
Chromium	0.49	0.0060	0.5000	0	97.8	75	125	2.49	20	
Cobalt	0.50	0.0060	0.5000	0.002620	98.6	75	125	2.48	20	
Copper	0.57	0.0060	0.5000	0.005100	113	75	125	3.29	20	
Iron	0.83	0.050	0.5000	0.3329	99.1	75	125	4.06	20	
Lead	0.49	0.0050	0.5000	0	98.1	75	125	2.26	20	
Magnesium	71	1.0	50.00	19.14	104	75	125	1.82	20	
Manganese	0.60	0.0020	0.5000	0.1030	99.9	75	125	3.33	20	
Nickel	0.50	0.010	0.5000	0.01120	98.0	75	125	2.50	20	
Selenium	0.67	0.050	0.5000	0.1334	106	75	125	1.30	20	
Silver	0.11	0.0050	0.1000	0	108	75	125	3.31	20	
Thallium	0.53	0.050	0.5000	0	107	75	125	4.89	20	
Vanadium	0.53	0.050	0.5000	0.007830	104	75	125	3.13	20	
Zinc	0.53	0.020	0.5000	0.03044	101	75	125	2.60	20	

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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/22/2015**	SeqNo: **797254** 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-R26752**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/22/2015**	SeqNo: **797255** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.486		0.5000	0	97.2	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#: **1505504**

16-Jun-15

Client: Navajo Refining Company

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

Sample ID **MB-R26752**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**
Client ID: **PBW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/21/2015**	SeqNo: **797257** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	0.10								

Sample ID **LCS-R26752**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R26752**	RunNo: **26752**
Prep Date:	Analysis Date: **5/21/2015**	SeqNo: **797258** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.18		0.2000	0	90.0	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#: **1505504**

16-Jun-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: **R26154**	RunNo: **26154**							
Prep Date:	Analysis Date: **5/12/2015**	SeqNo: **775904**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	4.120	20.00								J

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R26154**	RunNo: **26154**							
Prep Date:	Analysis Date: **5/12/2015**	SeqNo: **775905**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	87.40	20.00	80.00	0	109	90	110			

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

WO#: **1505504**

Hall Environmental Analysis Laboratory, Inc.

16-Jun-15

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

Sample ID **MB-19225**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **19225**	RunNo: **26231**
Prep Date: **5/14/2015**	Analysis Date: **5/15/2015**	SeqNo: **778508** 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-19225**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **19225**	RunNo: **26231**
Prep Date: **5/14/2015**	Analysis Date: **5/15/2015**	SeqNo: **778509** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	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: 1505504 RcptNo: 1

Received by/date: CS 05/12/15

Logged By: Ashley Gallegos 5/12/2015 8:56:00 AM

Completed By: Ashley Gallegos 5/12/2015 12:36:44 PM

Reviewed By: 05/12/15

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 ☐
	Approved by client.		
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 ☑ CS 05/12/15	
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? CS 05/12/15	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 ☐	

For metals analysis, added 1ml HNO3 to -001B for acceptable pH. Held in Login for 24 hours. CS 05/12

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

Adjusted? yes

Checked by: CS

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: Sample -001D (all 3 vials) and -002A (2 of 2) have bubbles. CS 05/12

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.9	Good	Not Present			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standar ☐ Rush

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

Project #: P.O. # 167796

Project Manager:
Micki Schultz / Scott Denton / Mike Holder

Sampler: Elizabeth Salsberry

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.9°C

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. 1505504	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
5-11-15	0820	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
5-11-15	0820	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X	
5-11-15	0820	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X					
5-11-15	0820	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X				
5-11-15	0820	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X			
5-11-15	0820	Liquid	Trip Blank	2	Neat	-002		X					
5-11-15	0820	Liquid	Temperature Blank	1	Neat								

Date	Time	Relinquished by	Received by	Date	Time
5-11-15	1000	Elizabeth Salsberry	Celine Sasse	05/12/15	0856
			Received by	Date	Time

Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Combs and Andrew Contreras
Client approved temp. Spoke with Micki. CS 05/12/15

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data 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	7/9/2015 @ 08:57am
End Date and Time	7/9/2015 @ 09:08am

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): Temp:78.8 °F Humidity: 47% Wind Direction: NNE Wind Speed: 10.4 mph Overall Condition: clear

Date and Time:

Field Temp. 45.3 Field pH : 7.62

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HOLLYFRONTIER.

October 29, 2015

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7015 0640 0006 6577 5100

RE: 2015 3rd Quarter Injection Report for Wells WDW-1, WDW-2 and WDW-3, Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the third quarter 2015 sampling results for fluids injected into WDW-1, WDW-2 and WDW-3 and a spread sheet showing various volumes and pressures as required under Permit Condition 2.I.1, Quarterly Reports.

Over the third quarter, the average injection pressure for all three wells was 1381 psig and the average flows were 125 gpm for WDW-1, 158 gpm for WDW-2 and 133 gpm for WDW-3. There were no significant losses from the glycol expansion tanks Well Annulus Monitoring System (WAMS). The quarterly effluent analyses indicated parameters are within permit limits.

This report covers the period from July 1, 2015 to September 30, 2015. We have disposed a total of 1,317,417 barrels of fluid into the three wells during the third quarter of 2015. The volume per well is:

- 396,103 barrels into WDW-1
- 501,110 barrels into WDW-2
- 420,204 barrels into WDW-3

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please call me at 575-748-3311.

Respectfully,

Robert O'Brien
Vice-President & Refinery Manager
Navajo Refining Company, L.L.C.

Enc.

Electronic cc (w/enc.): R Combs, M Schultz, S Denton
Environmental File: Injection Wells/Reports C-115 & Quarterly/2015/3rd quarter/2015-10-29 3rd QTR Inj. Rpt. for Wells WDW-1,2,3

Navajo Refining Company, L.L.C.

2015 THIRD QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	36,750,997
Jul-15	1,392	1,400	1,267	128	131	114	622	866	331	4,389	4,491	3,909	136,059	36,887,056
Aug-15	1,389	1,400	1,152	126	128	97	495	858	134	4,320	4,389	3,326	133,695	37,020,751
Sep-15	1,381	1,400	1,100	123	127	84	598	762	59	4,217	4,354	2,880	126,349	37,147,100
WDW-2													**Previous Quarter**	23,766,527
Jul-15	1,391	1,400	1,269	149	278	79	252	314	208	5,109	9,531	2,709	158,379	23,924,906
Aug-15	1,392	1,400	1,156	202	293	146	250	379	217	6,926	10,046	5,006	214,764	24,139,670
Sep-15	1,369	1,400	1,110	124	260	59	263	387	226	4,251	8,914	2,023	127,967	24,267,637
WDW-3													**Previous Quarter**	13,909,125
Jul-15	1,373	1,390	1,265	124	134	75	680	881	500	4,251	4,594	2,571	131,781	14,040,906
Aug-15	1,382	1,390	1,157	119	132	24	849	970	527	4,080	4,526	823	126,544	14,167,450
Sep-15	1,362	1,390	1,113	157	297	86	780	909	539	5,383	10,183	2,949	161,879	14,329,329
													Total Injected fluids:	75,744,066

Navajo Refining Company, L.L.C.

2015 THIRD QUARTER WEEKLY WAMS LEVEL TABLE

	7/6/15	7/13/15	7/20/15	7/27/15	8/3/15	8/10/15	8/14/15	8/24/15	9/1/15	9/8/15	9/14/15	9/21/15	9/30/15
WDW -1[1]	100	100	100	100	100	100	100	100	100	100	100	100	100
WDW-2[1]	100	100	100	100	100	100	100	100	100	100	100	100	100
WDW-3[1]	150	155	235	150*	170	220	253	130**	230	240	254	170***	240

Comments: * Removed 145 gal. ** Removed 180 gal. *** Removed 100 gal.

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

WDW-1 is Mewbourne
WDW-2 is Chukka
WDW-3 is Gaines

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

September 10, 2015

Micki Schultz
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 746-5281
FAX

RE: Quarterly WDW-1, 2, & 3 Inj Well OrderNo.: 1507D99

Dear Micki Schultz:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/31/2015 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

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

Case Narrative

WO#: **1507D99**
Date: **9/10/2015**

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
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst: **SUB**	
Ignitability	>200	0		°F	1	8/11/2015	R28710
SULFIDE, REACTIVE						Analyst: **SUB**	
Reactive Sulfide	1.4	1.0		mg/L	1	8/7/2015	R28710
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	0.9967	0			1	8/5/2015 3:14:00 PM	R27979
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	42	5.0	*	mg/L	50	7/31/2015 2:33:11 PM	R27901
Chloride	330	25		mg/L	50	7/31/2015 2:33:11 PM	R27901
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	7/31/2015 2:20:46 PM	R27901
Bromide	1.2	0.50		mg/L	5	7/31/2015 2:20:46 PM	R27901
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	7/31/2015 2:20:46 PM	R27901
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	7/31/2015 2:20:46 PM	R27901
Sulfate	2200	25		mg/L	50	7/31/2015 2:33:11 PM	R27901
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	5900	0.010		µmhos/cm	1	8/6/2015 4:51:43 PM	R28029
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	392.7	20.00		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R28029
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R28029
Total Alkalinity (as CaCO3)	392.7	20.00		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R28029
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3580	20.0	*	mg/L	1	8/5/2015 7:28:00 PM	20581
CORROSIVITY						Analyst: **SUB**	
pH	8.31	0.100		pH Units	1	8/5/2015	R28710
CYANIDE, REACTIVE						Analyst: **SUB**	
Cyanide, Reactive	ND	1.00		mg/L	1	8/13/2015	R28710
SM4500-H+B: PH						Analyst: **JRR**	
pH	8.17	1.68	H	pH units	1	8/6/2015 4:51:43 PM	R28029
EPA METHOD 7470: MERCURY						Analyst: **JLF**	
Mercury	ND	0.00020		mg/L	1	8/4/2015 2:15:41 PM	20588
MERCURY, TCLP						Analyst: **JLF**	
Mercury	0.078	0.020		mg/L	20	8/6/2015 1:58:10 PM	20636
EPA METHOD 6010B: TCLP METALS						Analyst: **MED**	
Arsenic	ND	5.0		mg/L	1	8/6/2015 9:36:29 AM	20620

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS						Analyst: **MED**	
Barium	ND	100		mg/L	1	8/6/2015 9:36:29 AM	20620
Cadmium	ND	1.0		mg/L	1	8/6/2015 9:36:29 AM	20620
Chromium	ND	5.0		mg/L	1	8/6/2015 9:36:29 AM	20620
Lead	ND	5.0		mg/L	1	8/6/2015 9:36:29 AM	20620
Selenium	ND	1.0		mg/L	1	8/6/2015 9:36:29 AM	20620
Silver	ND	5.0		mg/L	1	8/6/2015 9:36:29 AM	20620
EPA 6010B: TOTAL METALS						Analyst: **MED**	
Aluminum	1.2	0.020		mg/L	1	8/6/2015 9:44:36 AM	20620
Antimony	ND	0.050		mg/L	1	8/6/2015 9:44:36 AM	20620
Arsenic	0.029	0.020		mg/L	1	8/6/2015 9:44:36 AM	20620
Barium	ND	0.020		mg/L	1	8/6/2015 9:44:36 AM	20620
Beryllium	ND	0.0030		mg/L	1	8/6/2015 9:44:36 AM	20620
Cadmium	ND	0.0020		mg/L	1	8/6/2015 9:44:36 AM	20620
Calcium	52	1.0		mg/L	1	8/10/2015 1:25:11 PM	20675
Chromium	ND	0.0060		mg/L	1	8/6/2015 9:44:36 AM	20620
Cobalt	0.0085	0.0060		mg/L	1	8/6/2015 9:44:36 AM	20620
Copper	0.017	0.0060		mg/L	1	8/6/2015 9:44:36 AM	20620
Iron	0.89	0.050		mg/L	1	8/6/2015 9:44:36 AM	20620
Lead	ND	0.0050		mg/L	1	8/6/2015 9:44:36 AM	20620
Magnesium	17	1.0		mg/L	1	8/10/2015 1:25:11 PM	20675
Manganese	0.10	0.0020		mg/L	1	8/6/2015 9:44:36 AM	20620
Nickel	0.021	0.010		mg/L	1	8/6/2015 9:44:36 AM	20620
Potassium	77	1.0		mg/L	1	8/10/2015 1:25:11 PM	20675
Selenium	0.19	0.050		mg/L	1	8/6/2015 9:44:36 AM	20620
Silver	ND	0.0050		mg/L	1	8/6/2015 9:44:36 AM	20620
Sodium	980	10		mg/L	10	8/10/2015 1:27:17 PM	20675
Thallium	ND	0.050		mg/L	1	8/6/2015 9:44:36 AM	20620
Vanadium	ND	0.050		mg/L	1	8/6/2015 9:44:36 AM	20620
Zinc	0.31	0.020		mg/L	1	8/6/2015 9:44:36 AM	20620
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Acetonitrile	ND	2.5		µg/L	1	8/11/2015	R28710
Allyl chloride	ND	2.5		µg/L	1	8/11/2015	R28710
Chloroprene	ND	2.5		µg/L	1	8/11/2015	R28710
Cyclohexane	ND	2.5		µg/L	1	8/11/2015	R28710
Diethyl ether	ND	2.5		µg/L	1	8/11/2015	R28710
Diisopropyl ether	ND	2.5		µg/L	1	8/11/2015	R28710
Epichlorohydrin	ND	25		µg/L	1	8/11/2015	R28710
Ethyl acetate	ND	2.5		µg/L	1	8/11/2015	R28710

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Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **SUB**	
Ethyl methacrylate	ND	2.5		µg/L	1	8/11/2015	R28710
Ethyl tert-butyl ether	ND	2.5		µg/L	1	8/11/2015	R28710
Freon-113	ND	2.5		µg/L	1	8/11/2015	R28710
Isobutanol	ND	2.5		µg/L	1	8/11/2015	R28710
Isopropyl acetate	ND	2.5		µg/L	1	8/11/2015	R28710
Methacrylonitrile	ND	2.5		µg/L	1	8/11/2015	R28710
Methyl acetate	ND	2.5		µg/L	1	8/11/2015	R28710
Methyl ethyl ketone	24	12		µg/L	1	8/11/2015	R28710
Methyl isobutyl ketone	ND	12		µg/L	1	8/11/2015	R28710
Methyl methacrylate	ND	2.5		µg/L	1	8/11/2015	R28710
Methylcyclohexane	ND	5.0		µg/L	1	8/11/2015	R28710
n-Amyl acetate	ND	2.5		µg/L	1	8/11/2015	R28710
n-Hexane	ND	2.5		µg/L	1	8/11/2015	R28710
Nitrobenzene	ND	25		µg/L	1	8/11/2015	R28710
Pentachloroethane	ND	25		µg/L	1	8/11/2015	R28710
p-isopropyltoluene	ND	2.5		µg/L	1	8/11/2015	R28710
Propionitrile	ND	2.5		µg/L	1	8/11/2015	R28710
Tetrahydrofuran	ND	2.5		µg/L	1	8/11/2015	R28710
Benzene	ND	2.5		µg/L	1	8/11/2015	R28710
Toluene	ND	2.5		µg/L	1	8/11/2015	R28710
Ethylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	1	8/11/2015	R28710
1,2,4-Trimethylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,3,5-Trimethylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,2-Dichloroethane (EDC)	ND	2.5		µg/L	1	8/11/2015	R28710
1,2-Dibromoethane (EDB)	ND	2.5		µg/L	1	8/11/2015	R28710
Naphthalene	3.4	2.5		µg/L	1	8/11/2015	R28710
Acetone	890	12		µg/L	1	8/11/2015	R28710
Bromobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Bromodichloromethane	ND	2.5		µg/L	1	8/11/2015	R28710
Bromoform	ND	2.5		µg/L	1	8/11/2015	R28710
Bromomethane	ND	2.5		µg/L	1	8/11/2015	R28710
Carbon disulfide	ND	2.5		µg/L	1	8/11/2015	R28710
Carbon Tetrachloride	ND	2.5		µg/L	1	8/11/2015	R28710
Chlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Chloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
Chloroform	ND	2.5		µg/L	1	8/11/2015	R28710
Chloromethane	ND	2.5		µg/L	1	8/11/2015	R28710
2-Chlorotoluene	ND	2.5		µg/L	1	8/11/2015	R28710

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
4-Chlorotoluene	ND	2.5		µg/L	1	8/11/2015	R28710
cis-1,2-DCE	ND	2.5		µg/L	1	8/11/2015	R28710
cis-1,3-Dichloropropene	ND	2.5		µg/L	1	8/11/2015	R28710
1,2-Dibromo-3-chloropropane	ND	2.5		µg/L	1	8/11/2015	R28710
Dibromochloromethane	ND	2.5		µg/L	1	8/11/2015	R28710
Dibromomethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,2-Dichlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,3-Dichlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,4-Dichlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Dichlorodifluoromethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,1-Dichloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,1-Dichloroethene	ND	2.5		µg/L	1	8/11/2015	R28710
1,2-Dichloropropane	ND	2.5		µg/L	1	8/11/2015	R28710
1,3-Dichloropropane	ND	2.5		µg/L	1	8/11/2015	R28710
2,2-Dichloropropane	ND	2.5		µg/L	1	8/11/2015	R28710
1,1-Dichloropropene	ND	2.5		µg/L	1	8/11/2015	R28710
Hexachlorobutadiene	ND	2.5		µg/L	1	8/11/2015	R28710
2-Hexanone	ND	2.5		µg/L	1	8/11/2015	R28710
Isopropylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Methylene Chloride	ND	12		µg/L	1	8/11/2015	R28710
n-Butylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
n-Propylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
sec-Butylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
Styrene	ND	2.5		µg/L	1	8/11/2015	R28710
tert-Butylbenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,1,1,2-Tetrachloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,1,2,2-Tetrachloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
Tetrachloroethene (PCE)	ND	2.5		µg/L	1	8/11/2015	R28710
trans-1,2-DCE	ND	2.5		µg/L	1	8/11/2015	R28710
trans-1,3-Dichloropropene	ND	2.5		µg/L	1	8/11/2015	R28710
1,2,3-Trichlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,2,4-Trichlorobenzene	ND	2.5		µg/L	1	8/11/2015	R28710
1,1,1-Trichloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,1,2-Trichloroethane	ND	2.5		µg/L	1	8/11/2015	R28710
Trichloroethene (TCE)	ND	2.5		µg/L	1	8/11/2015	R28710
Trichlorofluoromethane	ND	2.5		µg/L	1	8/11/2015	R28710
1,2,3-Trichloropropane	ND	2.5		µg/L	1	8/11/2015	R28710
Vinyl chloride	ND	2.5		µg/L	1	8/11/2015	R28710
mp-Xylenes	ND	5.0		µg/L	1	8/11/2015	R28710

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
o-Xylene	ND	2.5		µg/L	1	8/11/2015	R28710
tert-Amyl methyl ether	ND	2.5		µg/L	1	8/11/2015	R28710
tert-Butyl alcohol	ND	2.5		µg/L	1	8/11/2015	R28710
Acrolein	ND	2.5		µg/L	1	8/11/2015	R28710
Acrylonitrile	ND	2.5		µg/L	1	8/11/2015	R28710
Bromochloromethane	ND	2.5		µg/L	1	8/11/2015	R28710
2-Chloroethyl vinyl ether	ND	2.5		µg/L	1	8/11/2015	R28710
Iodomethane	ND	2.5		µg/L	1	8/11/2015	R28710
trans-1,4-Dichloro-2-butene	ND	2.5		µg/L	1	8/11/2015	R28710
Vinyl acetate	ND	2.5		µg/L	1	8/11/2015	R28710
1,4-Dioxane	ND	100		µg/L	1	8/11/2015	R28710
Surr: 1,2-Dichlorobenzene-d4	94.0	70-130		%REC	1	8/11/2015	R28710
Surr: 4-Bromofluorobenzene	96.0	70-130		%REC	1	8/11/2015	R28710
Surr: Toluene-d8	100	70-130		%REC	1	8/11/2015	R28710
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
1,1-Biphenyl	ND	5.0		µg/L	1	8/12/2015	R28710
Atrazine	ND	5.0		µg/L	1	8/12/2015	R28710
Benzaldehyde	ND	5.0		µg/L	1	8/12/2015	R28710
Caprolactam	ND	5.0		µg/L	1	8/12/2015	R28710
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	8/12/2015	R28710
Acetophenone	ND	5.0		µg/L	1	8/12/2015	R28710
1-Methylnaphthalene	7.1	5.0		µg/L	1	8/12/2015	R28710
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2,4,5-Trichlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2,4-Dichlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2,4-Dimethylphenol	6.7	5.0		µg/L	1	8/12/2015	R28710
2,4-Dinitrophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2,4-Dinitrotoluene	ND	5.0		µg/L	1	8/12/2015	R28710
2,6-Dinitrotoluene	ND	5.0		µg/L	1	8/12/2015	R28710
2-Chloronaphthalene	ND	5.0		µg/L	1	8/12/2015	R28710
2-Chlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
2-Methylnaphthalene	ND	5.0		µg/L	1	8/12/2015	R28710
2-Methylphenol	ND	5.0		µg/L	1	8/12/2015	R28710
2-Nitroaniline	ND	5.0		µg/L	1	8/12/2015	R28710
2-Nitrophenol	ND	5.0		µg/L	1	8/12/2015	R28710
3,3´-Dichlorobenzidine	ND	5.0		µg/L	1	8/12/2015	R28710
3-Nitroaniline	ND	5.0		µg/L	1	8/12/2015	R28710
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	8/12/2015	R28710

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Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, & 3 Inj Well
Lab ID: 1507D99-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 7/30/2015 8:55:00 AM
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	8/12/2015	R28710
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	8/12/2015	R28710
4-Chloroaniline	ND	5.0		µg/L	1	8/12/2015	R28710
4-Chlorophenyl phenyl ether	ND	5.0		µg/L	1	8/12/2015	R28710
4-Nitroaniline	ND	5.0		µg/L	1	8/12/2015	R28710
4-Nitrophenol	ND	5.0		µg/L	1	8/12/2015	R28710
Acenaphthene	ND	5.0		µg/L	1	8/12/2015	R28710
Acenaphthylene	ND	5.0		µg/L	1	8/12/2015	R28710
Anthracene	ND	5.0		µg/L	1	8/12/2015	R28710
Benzo(g,h,i)perylene	ND	5.0		µg/L	1	8/12/2015	R28710
Benz(a)anthracene	ND	1.0		µg/L	1	8/12/2015	R28710
Benzo(a)pyrene	ND	1.0		µg/L	1	8/12/2015	R28710
Benzo(b)fluoranthene	ND	1.0		µg/L	1	8/12/2015	R28710
Benzo(k)fluoranthene	ND	1.0		µg/L	1	8/12/2015	R28710
Bis(2-chloroethoxy)methane	ND	5.0		µg/L	1	8/12/2015	R28710
Bis(2-chloroethyl)ether	ND	5.0		µg/L	1	8/12/2015	R28710
Bis(2-chloroisopropyl)ether	ND	5.0		µg/L	1	8/12/2015	R28710
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Butyl benzyl phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Carbazole	ND	5.0		µg/L	1	8/12/2015	R28710
Chrysene	ND	1.0		µg/L	1	8/12/2015	R28710
Dibenz(a,h)anthracene	ND	1.0		µg/L	1	8/12/2015	R28710
Dibenzofuran	5.7	5.0		µg/L	1	8/12/2015	R28710
Diethyl phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Dimethyl phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Di-n-butyl phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Di-n-octyl phthalate	ND	5.0		µg/L	1	8/12/2015	R28710
Fluoranthene	ND	5.0		µg/L	1	8/12/2015	R28710
Fluorene	ND	5.0		µg/L	1	8/12/2015	R28710
Hexachlorobenzene	ND	5.0		µg/L	1	8/12/2015	R28710
Hexachlorobutadiene	ND	5.0		µg/L	1	8/12/2015	R28710
Hexachlorocyclopentadiene	ND	5.0		µg/L	1	8/12/2015	R28710
Hexachloroethane	ND	5.0		µg/L	1	8/12/2015	R28710
Indeno(1,2,3-cd)pyrene	ND	1.0		µg/L	1	8/12/2015	R28710
Isophorone	ND	5.0		µg/L	1	8/12/2015	R28710
Naphthalene	ND	5.0		µg/L	1	8/12/2015	R28710
Nitrobenzene	ND	5.0		µg/L	1	8/12/2015	R28710
N-Nitrosodi-n-propylamine	ND	5.0		µg/L	1	8/12/2015	R28710
N-Nitrosodiphenylamine	ND	5.0		µg/L	1	8/12/2015	R28710

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Qualifiers:

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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: 7/30/2015 8:55:00 AM
Lab ID: 1507D99-001 **Matrix:** AQUEOUS **Received Date:** 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
Pentachlorophenol	ND	5.0		µg/L	1	8/12/2015	R28710
Phenanthrene	ND	5.0		µg/L	1	8/12/2015	R28710
Phenol	5.0	5.0		µg/L	1	8/12/2015	R28710
Pyrene	ND	5.0		µg/L	1	8/12/2015	R28710
o-Toluidine	ND	5.0		µg/L	1	8/12/2015	R28710
Pyridine	ND	5.0		µg/L	1	8/12/2015	R28710
1,2,4,5-Tetrachlorobenzene	ND	0		µg/L	1	8/12/2015	R28710
Surr: 2,4,6-Tribromophenol	111	10-123		%REC	1	8/12/2015	R28710
Surr: 2-Fluorobiphenyl	84.4	19-130		%REC	1	8/12/2015	R28710
Surr: 2-Fluorophenol	85.2	21-120		%REC	1	8/12/2015	R28710
Surr: Nitrobenzene-d5	84.0	25-130		%REC	1	8/12/2015	R28710
Surr: Phenol-d5	66.4	10-130		%REC	1	8/12/2015	R28710
Surr: Terphenyl-d14	51.6	21-141		%REC	1	8/12/2015	R28710

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

Qualifiers:

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

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: 1507D99-002
Matrix: TRIP BLANK
Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Acetonitrile	ND	0.50		µg/L	1	8/11/2015	R28710
Allyl chloride	ND	0.50		µg/L	1	8/11/2015	R28710
Chloroprene	ND	0.50		µg/L	1	8/11/2015	R28710
Cyclohexane	ND	0.50		µg/L	1	8/11/2015	R28710
Diethyl ether	ND	0.50		µg/L	1	8/11/2015	R28710
Diisopropyl ether	ND	0.50		µg/L	1	8/11/2015	R28710
Epichlorohydrin	ND	5.0		µg/L	1	8/11/2015	R28710
Ethyl acetate	ND	0.50		µg/L	1	8/11/2015	R28710
Ethyl methacrylate	ND	0.50		µg/L	1	8/11/2015	R28710
Ethyl tert-butyl ether	ND	0.50		µg/L	1	8/11/2015	R28710
Freon-113	ND	0.50		µg/L	1	8/11/2015	R28710
Isobutanol	ND	0.50		µg/L	1	8/11/2015	R28710
Isopropyl acetate	ND	0.50		µg/L	1	8/11/2015	R28710
Methacrylonitrile	ND	0.50		µg/L	1	8/11/2015	R28710
Methyl acetate	ND	0.50		µg/L	1	8/11/2015	R28710
Methyl ethyl ketone	ND	2.5		µg/L	1	8/11/2015	R28710
Methyl isobutyl ketone	ND	2.5		µg/L	1	8/11/2015	R28710
Methyl methacrylate	ND	0.50		µg/L	1	8/11/2015	R28710
Methylcyclohexane	ND	1.0		µg/L	1	8/11/2015	R28710
n-Amyl acetate	ND	0.50		µg/L	1	8/11/2015	R28710
n-Hexane	ND	0.50		µg/L	1	8/11/2015	R28710
Nitrobenzene	ND	5.0		µg/L	1	8/11/2015	R28710
Pentachloroethane	ND	5.0		µg/L	1	8/11/2015	R28710
p-isopropyltoluene	ND	0.50		µg/L	1	8/11/2015	R28710
Propionitrile	ND	0.50		µg/L	1	8/11/2015	R28710
Tetrahydrofuran	ND	0.50		µg/L	1	8/11/2015	R28710
Benzene	ND	0.50		µg/L	1	8/11/2015	R28710
Toluene	ND	0.50		µg/L	1	8/11/2015	R28710
Ethylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	8/11/2015	R28710
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	8/11/2015	R28710
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	8/11/2015	R28710
Naphthalene	ND	0.50		µg/L	1	8/11/2015	R28710
Acetone	ND	2.5		µg/L	1	8/11/2015	R28710
Bromobenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Bromodichloromethane	ND	0.50		µg/L	1	8/11/2015	R28710
Bromoform	ND	0.50		µg/L	1	8/11/2015	R28710

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

Qualifiers:

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

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: 1507D99-002
Matrix: TRIP BLANK
Received Date: 7/31/2015 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	8/11/2015	R28710
Carbon disulfide	ND	0.50		µg/L	1	8/11/2015	R28710
Carbon Tetrachloride	ND	0.50		µg/L	1	8/11/2015	R28710
Chlorobenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Chloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
Chloroform	ND	0.50		µg/L	1	8/11/2015	R28710
Chloromethane	ND	0.50		µg/L	1	8/11/2015	R28710
2-Chlorotoluene	ND	0.50		µg/L	1	8/11/2015	R28710
4-Chlorotoluene	ND	0.50		µg/L	1	8/11/2015	R28710
cis-1,2-DCE	ND	0.50		µg/L	1	8/11/2015	R28710
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	8/11/2015	R28710
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	8/11/2015	R28710
Dibromochloromethane	ND	0.50		µg/L	1	8/11/2015	R28710
Dibromomethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,2-Dichlorobenzene	ND	0.50		µg/L	1	8/11/2015	R28710
1,3-Dichlorobenzene	ND	0.50		µg/L	1	8/11/2015	R28710
1,4-Dichlorobenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Dichlorodifluoromethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,1-Dichloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,1-Dichloroethene	ND	0.50		µg/L	1	8/11/2015	R28710
1,2-Dichloropropane	ND	0.50		µg/L	1	8/11/2015	R28710
1,3-Dichloropropane	ND	0.50		µg/L	1	8/11/2015	R28710
2,2-Dichloropropane	ND	0.50		µg/L	1	8/11/2015	R28710
1,1-Dichloropropene	ND	0.50		µg/L	1	8/11/2015	R28710
Hexachlorobutadiene	ND	0.50		µg/L	1	8/11/2015	R28710
2-Hexanone	ND	0.50		µg/L	1	8/11/2015	R28710
Isopropylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Methylene Chloride	ND	2.5		µg/L	1	8/11/2015	R28710
n-Butylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
n-Propylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
sec-Butylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
Styrene	ND	0.50		µg/L	1	8/11/2015	R28710
tert-Butylbenzene	ND	0.50		µg/L	1	8/11/2015	R28710
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	8/11/2015	R28710
trans-1,2-DCE	ND	0.50		µg/L	1	8/11/2015	R28710
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	8/11/2015	R28710
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	8/11/2015	R28710

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
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S	% Recovery outside of range due to dilution or matrix		

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: 1507D99-002
Matrix: TRIP BLANK
Received Date: 7/31/2015 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	8/11/2015	R28710
1,1,1-Trichloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,1,2-Trichloroethane	ND	0.50		µg/L	1	8/11/2015	R28710
Trichloroethene (TCE)	ND	0.50		µg/L	1	8/11/2015	R28710
Trichlorofluoromethane	ND	0.50		µg/L	1	8/11/2015	R28710
1,2,3-Trichloropropane	ND	0.50		µg/L	1	8/11/2015	R28710
Vinyl chloride	ND	0.50		µg/L	1	8/11/2015	R28710
mp-Xylenes	ND	1.0		µg/L	1	8/11/2015	R28710
o-Xylene	ND	0.50		µg/L	1	8/11/2015	R28710
tert-Amyl methyl ether	ND	0.50		µg/L	1	8/11/2015	R28710
tert-Butyl alcohol	ND	0.50		µg/L	1	8/11/2015	R28710
Acrolein	ND	0.50		µg/L	1	8/11/2015	R28710
Acrylonitrile	ND	0.50		µg/L	1	8/11/2015	R28710
Bromochloromethane	ND	0.50		µg/L	1	8/11/2015	R28710
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	8/11/2015	R28710
Iodomethane	ND	0.50		µg/L	1	8/11/2015	R28710
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	8/11/2015	R28710
Vinyl acetate	ND	0.50		µg/L	1	8/11/2015	R28710
1,4-Dioxane	ND	20		µg/L	1	8/11/2015	R28710
Surr: 1,2-Dichlorobenzene-d4	95.6	70-130		%REC	1	8/11/2015	R28710
Surr: 4-Bromofluorobenzene	95.2	70-130		%REC	1	8/11/2015	R28710
Surr: Toluene-d8	93.6	70-130		%REC	1	8/11/2015	R28710

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Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-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: **R27901**	RunNo: **27901**
Prep Date:	Analysis Date: **7/31/2015**	SeqNo: **839136** 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: **R27901**	RunNo: **27901**
Prep Date:	Analysis Date: **7/31/2015**	SeqNo: **839137** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.8	0.50	5.000	0	95.8	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.9	90	110			
Bromide	2.5	0.10	2.500	0	98.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.3	90	110			
Sulfate	9.8	0.50	10.00	0	97.8	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **870221** 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								
Cyclohexane	ND	0.50								
Diethyl ether	ND	0.50								
Diisopropyl ether	ND	0.50								
Epichlorohydrin	ND	0.50								
Ethyl acetate	ND	0.50								
Ethyl methacrylate	ND	0.50								
Ethyl tert-butyl ether	ND	0.50								
Freon-113	ND	0.50								
Isobutanol	ND	5.0								
Isopropyl acetate	ND	0.50								
Methacrylonitrile	ND	0.50								
Methyl acetate	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	0.50								
Methylcyclohexane	ND	0.50								
n-Amyl acetate	ND	0.50								
n-Hexane	ND	0.50								
Nitrobenzene	ND	0.50								
Pentachloroethane	ND	0.50								
p-isopropyltoluene	ND	0.50								
Propionitrile	ND	0.50								
Tetrahydrofuran	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
Methyl tert-butyl ether (MTBE)	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Naphthalene	ND	0.50								
Acetone	ND	2.5								
Bromobenzene	ND	0.50								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **870221** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
2-Chlorotoluene	ND	0.50								
4-Chlorotoluene	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								
1,3-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								
Hexachlorobutadiene	ND	0.50								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.50								
Methylene Chloride	ND	2.5								
n-Butylbenzene	ND	0.50								
n-Propylbenzene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Styrene	ND	0.50								
tert-Butylbenzene	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								
1,2,3-Trichlorobenzene	ND	0.50								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **870221** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	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								
tert-Amyl methyl ether	ND	0.50								
tert-Butyl alcohol	ND	0.50								
Acrolein	ND	0.50								
Acrylonitrile	ND	0.50								
Bromochloromethane	ND	0.50								
2-Chloroethyl vinyl ether	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
1,4-Dioxane	ND	0.50								

Sample ID **LCS-R28710**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/11/2015**	SeqNo: **870222** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.6	0	10.00	0	96.3	80	120			
Toluene	9.7	0	10.00	0	97.3	80	120			
Ethylbenzene	9.7	0	10.00	0	97.3	80	120			
Chlorobenzene	9.5	0	10.00	0	95.2	80	120			
1,1-Dichloroethene	9.6	0	10.00	0	95.5	80	120			
Tetrachloroethene (PCE)	9.0	0	10.00	0	89.9	80	120			
Trichloroethene (TCE)	9.4	0	10.00	0	93.6	80	120			
o-Xylene	10	0	10.00	0	101	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **870225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitroso-di-n-butylamine	ND	0.50								
Acetophenone	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,3,4,6-Tetrachlorophenol	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dichlorophenol	ND	5.0								
2,4-Dimethylphenol	ND	5.0								
2,4-Dinitrophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2,6-Dinitrotoluene	ND	5.0								
2-Chloronaphthalene	ND	5.0								
2-Chlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3,3'-Dichlorobenzidine	ND	5.0								
3-Nitroaniline	ND	5.0								
4,6-Dinitro-2-methylphenol	ND	5.0								
4-Bromophenyl phenyl ether	ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl ether	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
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	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ether	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	5.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **870225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbazole	ND	5.0								
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	2.0								
o-Toluidine	ND	5.0								
Pyridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID **LCS-R28710**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **870226** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.0	0	5.000	0	99.8	49	134			
2-Chlorophenol	4.8	0	5.000	0	95.4	50	131			
4-Chloro-3-methylphenol	5.4	0	5.000	0	109	42	139			
4-Nitrophenol	5.6	0	5.000	0	111	19	137			
Acenaphthene	5.2	0	5.000	0	103	36	122			
Bis(2-ethylhexyl)phthalate	5.6	0	5.000	0	112	43	142			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **LCS-R28710**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/12/2015**	SeqNo: **870226** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitrosodi-n-propylamine	5.3	0	5.000	0	106	46	140			
Pentachlorophenol	5.9	0	5.000	0	118	22	138			
Phenol	4.7	0	5.000	0	94.6	45	134			
Pyrene	4.9	0	5.000	0	98.0	45	138			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **1507d99-001adup**	SampType: **DUP**			TestCode: **SM2510B: Specific Conductance**					
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **R28029**			RunNo: **28029**					
Prep Date:	Analysis Date: **8/6/2015**			SeqNo: **843890**		Units: **µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	5900	0.010						0.354	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-20588**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW**	Batch ID: **20588**	RunNo: **27941**
Prep Date: **8/4/2015**	Analysis Date: **8/4/2015**	SeqNo: **840615** Units: **mg/L**

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

Sample ID **LCS-20588**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW**	Batch ID: **20588**	RunNo: **27941**
Prep Date: **8/4/2015**	Analysis Date: **8/4/2015**	SeqNo: **840616** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.8	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-20636**	SampType: **MBLK**	TestCode: **MERCURY, TCLP**
Client ID: **PBW**	Batch ID: **20636**	RunNo: **28011**
Prep Date: **8/6/2015**	Analysis Date: **8/6/2015**	SeqNo: **843195** Units: **mg/L**

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

Sample ID **LCS-20636**	SampType: **LCS**	TestCode: **MERCURY, TCLP**
Client ID: **LCSW**	Batch ID: **20636**	RunNo: **28011**
Prep Date: **8/6/2015**	Analysis Date: **8/6/2015**	SeqNo: **843196** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	111	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-20620**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842847** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-20620**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842848** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	95.8	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	96.2	80	120			
Chromium	ND	5.0	0.5000	0	98.4	80	120			
Lead	ND	5.0	0.5000	0	97.5	80	120			
Selenium	ND	1.0	0.5000	0	97.8	80	120			
Silver	ND	5.0	0.1000	0	97.0	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-20620**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842849** 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								
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-20620**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842850** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.47	0.020	0.5000	0	94.7	80	120			
Antimony	0.49	0.050	0.5000	0	98.3	80	120			
Arsenic	0.49	0.020	0.5000	0	98.5	80	120			
Barium	0.50	0.020	0.5000	0	100	80	120			
Beryllium	0.50	0.0030	0.5000	0	101	80	120			
Cadmium	0.49	0.0020	0.5000	0	97.7	80	120			
Chromium	0.50	0.0060	0.5000	0	100	80	120			
Copper	0.51	0.0060	0.5000	0	103	80	120			
Iron	0.51	0.050	0.5000	0	102	80	120			
Lead	0.50	0.0050	0.5000	0	99.7	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			
Nickel	0.51	0.010	0.5000	0	101	80	120			
Selenium	0.49	0.050	0.5000	0	97.5	80	120			
Silver	0.098	0.0050	0.1000	0	98.2	80	120			
Thallium	0.50	0.050	0.5000	0	99.1	80	120			
Vanadium	0.50	0.050	0.5000	0	100	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **LCS-20620**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842850** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Zinc	0.49	0.020	0.5000	0	97.2	80	120			

Sample ID **1507D99-001BMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Metals**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842864** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	1.7	0.020	0.5000	1.205	107	75	125			
Antimony	0.44	0.050	0.5000	0	88.8	75	125			
Arsenic	0.49	0.020	0.5000	0.02853	92.4	75	125			
Barium	0.43	0.020	0.5000	0.006150	85.7	75	125			
Beryllium	0.44	0.0030	0.5000	0	87.6	75	125			
Cadmium	0.44	0.0020	0.5000	0	87.4	75	125			
Chromium	0.42	0.0060	0.5000	0.003330	84.3	75	125			
Cobalt	0.43	0.0060	0.5000	0.008460	84.7	75	125			
Copper	0.49	0.0060	0.5000	0.01740	93.8	75	125			
Iron	1.3	0.050	0.5000	0.8854	92.2	75	125			
Lead	0.43	0.0050	0.5000	0	85.8	75	125			
Manganese	0.53	0.0020	0.5000	0.1014	84.8	75	125			
Nickel	0.45	0.010	0.5000	0.02121	85.8	75	125			
Selenium	0.66	0.050	0.5000	0.1944	92.2	75	125			
Silver	0.086	0.0050	0.1000	0	85.9	75	125			
Thallium	0.44	0.050	0.5000	0	88.4	75	125			
Vanadium	0.46	0.050	0.5000	0.01240	89.4	75	125			
Zinc	0.77	0.020	0.5000	0.3098	92.1	75	125			

Sample ID **1507D99-001BMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Metals**
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **20620**	RunNo: **27997**
Prep Date: **8/5/2015**	Analysis Date: **8/6/2015**	SeqNo: **842865** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	1.7	0.020	0.5000	1.205	96.2	75	125	3.27	20	
Antimony	0.42	0.050	0.5000	0	84.7	75	125	4.66	20	
Arsenic	0.47	0.020	0.5000	0.02853	88.6	75	125	4.01	20	
Barium	0.42	0.020	0.5000	0.006150	82.9	75	125	3.32	20	
Beryllium	0.43	0.0030	0.5000	0	85.0	75	125	3.04	20	
Cadmium	0.43	0.0020	0.5000	0	85.0	75	125	2.73	20	
Chromium	0.41	0.0060	0.5000	0.003330	82.1	75	125	2.67	20	
Cobalt	0.42	0.0060	0.5000	0.008460	82.7	75	125	2.33	20	
Copper	0.47	0.0060	0.5000	0.01740	90.7	75	125	3.26	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **1507D99-001BMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Metals**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **20620** RunNo: **27997**

Prep Date: **8/5/2015** Analysis Date: **8/6/2015** SeqNo: **842865** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	1.3	0.050	0.5000	0.8854	83.8	75	125	3.16	20	
Lead	0.42	0.0050	0.5000	0	83.6	75	125	2.58	20	
Manganese	0.51	0.0020	0.5000	0.1014	81.7	75	125	2.98	20	
Nickel	0.44	0.010	0.5000	0.02121	82.8	75	125	3.38	20	
Selenium	0.64	0.050	0.5000	0.1944	88.6	75	125	2.79	20	
Silver	0.083	0.0050	0.1000	0	83.2	75	125	3.16	20	
Thallium	0.44	0.050	0.5000	0	88.0	75	125	0.497	20	
Vanadium	0.44	0.050	0.5000	0.01240	86.5	75	125	3.22	20	
Zinc	0.74	0.020	0.5000	0.3098	87.0	75	125	3.34	20	

Sample ID **MB-20675** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **20675** RunNo: **28076**

Prep Date: **8/10/2015** Analysis Date: **8/10/2015** SeqNo: **845664** 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-20675** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **20675** RunNo: **28076**

Prep Date: **8/10/2015** Analysis Date: **8/10/2015** SeqNo: **845665** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	50	1.0	50.00	0	100	80	120			
Potassium	48	1.0	50.00	0	95.7	80	120			
Sodium	49	1.0	50.00	0	98.7	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **1507d99-001adup**	SampType: **DUP**			TestCode: **SM4500-H+B: pH**					
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **R28029**			RunNo: **28029**					
Prep Date:	Analysis Date: **8/6/2015**			SeqNo: **843901**		Units: **pH units**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.15	1.68								H

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/13/2015**	SeqNo: **870230** 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-R28710**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**
Client ID: **LCSW**	Batch ID: **R28710**	RunNo: **28710**
Prep Date:	Analysis Date: **8/13/2015**	SeqNo: **870231** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.478		0.5000	0	95.6	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-R28710**	SampType: **MBLK**	TestCode: **SULFIDE, Reactive**							
Client ID: **PBW**	Batch ID: **R28710**	RunNo: **28710**							
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **870233**	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-R28710**	SampType: **LCS**	TestCode: **SULFIDE, Reactive**							
Client ID: **LCSW**	Batch ID: **R28710**	RunNo: **28710**							
Prep Date:	Analysis Date: **8/7/2015**	SeqNo: **870234**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.22		0.2000	0	110	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-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: **R28029**	RunNo: **28029**							
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843850**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R28029**	RunNo: **28029**							
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843851**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.64	20.00	80.00	0	98.3	90	110			

Sample ID **mb-2**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R28029**	RunNo: **28029**							
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843874**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-2**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R28029**	RunNo: **28029**							
Prep Date:	Analysis Date: **8/6/2015**	SeqNo: **843875**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79.72	20.00	80.00	0	99.7	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **1507D99-001ADUP**	SampType: **DUP**			TestCode: **Specific Gravity**					
Client ID: **WDW-1,2,&3 Effluen**	Batch ID: **R27979**			RunNo: **27979**					
Prep Date:	Analysis Date: **8/5/2015**			SeqNo: **841885**		Units:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9985	0						0.180	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507D99**

10-Sep-15

Client: Navajo Refining Company

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

Sample ID **MB-20581**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **20581**	RunNo: **27984**
Prep Date: **8/4/2015**	Analysis Date: **8/5/2015**	SeqNo: **842184** 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-20581**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **20581**	RunNo: **27984**
Prep Date: **8/4/2015**	Analysis Date: **8/5/2015**	SeqNo: **842185** 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
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

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: 1507D99 RcptNo: 1

Received by/date: JA 07/31/15

Logged By: Lindsay Mangin 7/31/2015 8:00:00 AM

Completed By: Lindsay Mangin 7/31/2015 9:56:04 AM

Reviewed By: IO 07/31/15

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 ☐	# of preserved bottles checked for pH: 2, 2 (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? no
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: CS

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	1.8	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standar ☐ Rush

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

Project #: P.O. # 167796

Project Manager:
Micki Schultz / Scott Denton / Mike Holder

Sampler: Elizabeth Salsberry

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.8

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. 1507D99	Analysis Request: Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Methcd 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-845 Method 1311
7/30/15	0855	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
7/30/15	0855	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	-001					X	X	
7/30/15	0855	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	-001		X					
7/30/15	0855	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001			X				
7/30/15	0855	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001				X			
7/30/15	0855	Liquid	Trip Blank	2	Neat	-002		X					
7/30/15	0855	Liquid	Temperature Blank	1	Neat	—							

Date	Time	Relinquished by	Received by	Date	Time
7/30/2015	1030	Elizabeth Salsberry			
		Elizabeth Salsberry		07/31/15	0800
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Comb and Andrew Contreras.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data 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	7/30/2015 @ 8:50 am
End Date and Time	7/30/2015 @ 9:01 am

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): Temp:75.2 °F Humidity: 69% Wind Direction: North Wind Speed: 10.0 mi Over all Condition:Partly Cloudy

Date and Time:

Field Temp. 111.4 F Field pH 7.90

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HOLLYFRONTIER.

February 4, 2016

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7015 3010 0000 3143 3111

RE: 2015 4th Quarter Injection Report for Wells WDW-1, WDW-2 and WDW-3, Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the third quarter 2015 sampling results for fluids injected into WDW-1, WDW-2 and WDW-3 and a spread sheet showing various volumes and pressures as required under Permit Condition 2.I.1, Quarterly Reports.

Over the third quarter, the average injection pressure for all three wells was 1361 psig and the average flows were 123 gpm for WDW-1, 91 gpm for WDW-2 and 140 gpm for WDW-3. There were no significant losses from the glycol expansion tanks Well Annulus Monitoring System (WAMS). The quarterly effluent analyses indicated parameters are within permit limits.

This report covers the period from October 1, 2015 to December 31, 2015. We have disposed a total of 1,115,486 barrels of fluid into the three wells during the fourth quarter of 2015. The volume per well is:

- 388,046 barrels into WDW-1
- 287,006 barrels into WDW-2
- 440,434 barrels into WDW-3

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please call me at 575-748-3311.

Respectfully,

Robert O'Brien
Vice-President & Refinery Manager
HollyFrontier Navajo Refining LLC

Enc.

Electronic cc (w/enc.): R Orosco, R Combs, S Denton
Environmental File: Injection Wells/Reports C-115 & Quarterly/2015/4th quarter/2016-02-05 4th QTR Inj. Rpt. for Wells WDW-1,2,3