GW – 028

2015 Annual Discharge Permit Report

PART 2 OF 16

March 2016

Analytical Report

Lab Order **1505504** Date Reported: **6/16/2015**

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: WDW-1,2,&3 Effluent **CLIENT:** Navajo Refining Company Collection Date: 5/11/2015 8:20:00 AM Quarterly WDW-1, 2, &3 Inj Well **Project:** Lab ID: 1505504-001 Matrix: AQUEOUS Received Date: 5/12/2015 8:56:00 AM **Batch ID** Result RL Qual Units DF **Date Analyzed** Analyses MDL Analyst: SUB EPA 8270C: SEMIVOLATILES/MOD 5/21/2015 R26752 Di-n-butyl phthalate ND 10 10 μg/L 1 5/21/2015 R26752 Di-n-octyl phthalate ND 10 10 µg/L 1 R26752 5/21/2015 Fluoranthene ND 10 10 µg/L 1 R26752 5/21/2015 Fluorene ND 10 10 µg/L 1 Hexachlorobenzene ND 1.0 1.0 µg/L 1 5/21/2015 R26752 5/21/2015 R26752 Hexachlorobutadiene ND 10 10 µg/L 1 5/21/2015 R26752 Hexachlorocyclopentadiene ND 10 10 µg/L 1 R26752 Hexachloroethane ND 10 10 µg/L 1 5/21/2015 ND 5.0 5.0 µg/L 1 5/21/2015 R26752 Indeno(1,2,3-cd)pyrene ND 10 1 5/21/2015 R26752 10 µg/L Isophorone 5/21/2015 R26752 Naphthalene ND 10 10 µg/L 1 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 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 1 5/21/2015 R26752 ND 10 10 µg/L Phenanthrene 5/21/2015 R26752 Phenol ND 5.0 5.0 µg/L 1 Pyrene 5/21/2015 R26752 ND 10 10 µg/L 1 5/21/2015 R26752 5.0 ND 5.0 µg/L 1 o-Toluidine 5/21/2015 R26752 1 Pyridine ND 5.0 5.0 µg/L R26752 10 µg/L 1 5/21/2015 1,2,4,5-Tetrachlorobenzene ND 10 5/21/2015 R26752 0 10-123 %REC 1 Surr: 2,4,6-Tribromophenol 111 5/21/2015 R26752 1 0 %REC Surr: 2-Fluorobiphenyl 90.0 19-130 R26752 0 21-120 %REC 1 5/21/2015 Surr: 2-Fluorophenol 74.4 R26752 0 %REC 1 5/21/2015 Surr: Nitrobenzene-d5 80.4 25-130 5/21/2015 R26752 %REC Surr: Phenol-d5 64.0 0 10-130 1 0 %REC 1 5/21/2015 R26752 Surr: Terphenyl-d14 74.8 21-141 Analyst: SUB CORROSIVITY 1 5/19/2015 R26752 pH Units pН 7.99 Analyst: SUB **IGNITABILITY METHOD 1010** °F 5/22/2015 R26752 Ignitability 0 0 1 >200 CYANIDE, REACTIVE Analyst: SUB 5/22/2015 R26752 Cyanide, Reactive ND 1.00 1.00 mg/L 1 Analyst: SUB SULFIDE, REACTIVE **Reactive Sulfide** mg/L 1 5/21/2015 R26752 ND 1.0 1.0 SM2510B: SPECIFIC CONDUCTANCE Analyst: JRR 5/12/2015 4:15:42 PM R26154 Conductivity 6600 0.010 0.010 µmhos/c 1 Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	F
	E	Value above quantitation range	H
	J	Analyte detected below quantitation limits	N
	0	RSD is greater than RSDlimit	I
	R	RPD outside accepted recovery limits	R
	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

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Analytical Report Lab Order 1505504 Date Reported: 6/16/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Quarterly WDW-1, 2, &3 Lab ID: 1505504-001	Inj Well	Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 5/11/2015 8:20:00 AM Atrix: AQUEQUS Received Date: 5/12/2015 8:56:00 AM									
		AQUEOUS									
Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID			
SM4500-H+B: PH							Analyst: JRR				
рН	7.95	0.100	1.68	н	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			

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

- * 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

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Analytical Report Lab Order 1505504

Date Reported: 6/16/2015

Hall Environmental Analysis Laboratory, Inc.

	Navajo Refining Company				-	le ID: TRI	P BLA	NK	
Project:	Quarterly WDW-1, 2, &3 Inj	Well		Co	llection	Date:			
Lab ID:	1505504-002	Matrix:	TRIP BLAN	VK R	eceived	Date: 5/12	2/2015	8:56:00 AM	-
Analyses		Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA MET	HOD 8260B: VOLATILES							Analyst: SUB	
Acetonitri	ile	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Allyl chlor	ride	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Chloropre	ene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Cyclohex	ane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Diethyl et	her	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Diisoprop	•	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Epichloro	•	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
Ethyl ace		ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	thacrylate	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
	-butyl ether	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Freon-11	3	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Isobutand		ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Isopropyl		ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Methacry		ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Methyl ac		ND	0.50	0.50		µg/L	1	5/21/2015	R26752
•	hyl ketone	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
	obutyl ketone	ND	2.5	2.5		µg/L	1	5/21/2015	R26752
	ethacrylate	ND	2.5	0.50		µg/L	1	5/21/2015	R26752
	clohexane	ND	1.0	1.0		µg/L	1	5/21/2015	R26752
n-Amyl a		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
Nitrobenz		ND	5.0	5.0		µg/L	1	5/21/2015	R26752
	proethane	ND	5.0	5.0		µg/L	1	5/21/2015	R26752
p-isoprop	•	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Propionit		ND	2.5	0.50		µg/L	1	5/21/2015	R26752
Tetrahydi	roturan	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
Ethylben:		ND	0.50	0.50		µg/L	1	5/21/2015	R26752
•	rt-butyl ether (MTBE)	ND	10	0.50		µg/L	1	5/21/2015	R26752
	nethylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	nethylbenzene	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	oroethane (EDC)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	moethane (EDB)	ND	0.50	0.50		µg/L	1	5/21/2015	R26752 R26752
Naphthal	ene	ND	0.50	0.50		µg/L	1.	5/21/2015	
Acetone		ND	2.5	2.5		µg/L	1	5/21/2015	R26752
Bromobe		ND	0.50	0.50		µg/L ≂/l	1	5/21/2015	R26752
	chloromethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Bromofor	m	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.

Qualifiers: * Value exceeds Maximum Contaminant Level. В Е Value above quantitation range Н J ND Analyte detected below quantitation limits 0 RSD is greater than RSDlimit Р R RPD outside accepted recovery limits RL Reporting Detection Limit S Spike Recovery outside accepted recovery limits

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

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Analytical Report Lab Order 1505504 Date Reported: 6/16/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company			Clier	nt Sampl	le ID: TR	IP BLA	NK	
Project: Quarterly WDW-1, 2, &3 In	ni Well			llection]				
Lab ID: 1505504-002		TRIP BLAI				2/2015	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 1,1,2,2-Tetrachloroethane	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
Tetrachloroethene (PCE) trans-1,2-DCE	ND	0.50	0.50		µg/L	1	5/21/2015	R26752
	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

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	Е	Value above quantitation range	н	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	0	RSD is greater than RSDlimit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

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Analytical Report

Lab Order **1505504** Date Reported: **6/16/2015**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company			Clier	nt Sample	e ID: TRI	P BLA	NK	
Project: Quarterly WDW-1, 2, &3 Inj	Well		Co	llection D	Date:			
Lab ID: 1505504-002	Matrix:	TRIP BLA	NK R	eceived D	Date: 5/12	2/2015	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
lodomethane	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

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte det
	Е	Value above quantitation range	Н	Holding tim
	J	Analyte detected below quantitation limits	ND	Not Detecte
	0	RSD is greater than RSDlimit	Р	Sample pH

- 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

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WO#: 1505504

16-Jun-15

Navaio Refining Co Client

Chent:	Navajo Kenning Company
Project:	Quarterly WDW-1, 2, &3 Inj Well

Sample ID MB	Samp	Type: ME			Cada, F		200 0. Anim			
•							300.0: Anions	5		
Client ID: PBW	Batc	h ID: R2	6148	F	RunNo: 2	6148				
Prep Date:	Analysis E	Date: 5/	12/2015	S	SeqNo: 7	75809	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	Sampl	Type: LC	s	Tes	tCode: E	PA Method	300.0: Anions	;		
Sample ID LCS Client ID: LCSW	•	Type: LC h ID: R2			tCode: E RunNo: 2		300.0: Anions	5		
•	•	h ID: R2	6148	F		6148	300.0: Anions Units: mg/L	j	· -	· · · · ·
Client ID: LCSW	Batcl	h ID: R2	6148 12/2015	F	lunNo: 2	6148		%RPD	RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte	Batcl Analysis E	h ID: R2 Date: 5/	6148 12/2015	F	RunNo: 2 SeqNo: 7	6148 75815	Units: mg/L		RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Fluoride	Batcl Analysis E Result	h ID: R2 Date: 5 / PQL	6148 12/2015 SPK value	F S SPK Ref Val	RunNo: 2 SeqNo: 7 %REC	6148 75815 LowLimit	Units: mg/L HighLimit		RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Fluoride Chloride	Batcl Analysis E Result 0.55	h ID: R2 Date: 5/ PQL 0.10	6148 12/2015 SPK value 0.5000	F S SPK Ref Val 0	RunNo: 2 SeqNo: 7 %REC 110	6148 75815 LowLimit 90	Units: mg/L HighLimit 110		RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Fluoride Chloride Nitrogen, Nitrite (As N)	Batcl Analysis E Result 0.55 4.8	h ID: R2 Date: 5/ PQL 0.10 0.50	6148 12/2015 SPK value 0.5000 5.000	F S SPK Ref Val 0 0	RunNo: 2 SeqNo: 7 %REC 110 96.6	6148 75815 LowLimit 90 90	Units: mg/L HighLimit 110 110		RPDLimit	Qual
Client ID: LCSW Prep Date:	Batcl Analysis E Result 0.55 4.8 1.0	Date: 5/ PQL 0.10 0.50 0.10	6148 12/2015 SPK value 0.5000 5.000 1.000	F S SPK Ref Val 0 0 0	RunNo: 2 GeqNo: 7 <u>%REC</u> 110 96.6 102	6148 75815 LowLimit 90 90 90	Units: mg/L HighLimit 110 110 110		RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Fluoride Chloride Nitrogen, Nitrite (As N) Bromide	Batch Analysis E Result 0.55 4.8 1.0 2.5	h ID: R2 Date: 5/ <u>PQL</u> 0.10 0.50 0.10 0.10	6148 12/2015 SPK value 0.5000 5.000 1.000 2.500	F S SPK Ref Val 0 0 0 0	RunNo: 2 SeqNo: 7 %REC 110 96.6 102 99.3	6148 75815 LowLimit 90 90 90 90	Units: mg/L HighLimit 110 110 110 110		RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Е Value above quantitation range

- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit

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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, &3 Inj Well

Sample ID MB-R26752	SampT	ype: M	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R	26752	F	RunNo: 2	6752				
Prep Date:	Analysis D	ate: 5	/22/2015	S	SeqNo: 7	97217	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	NĐ	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.
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank в
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- Reporting Detection Limit RL

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Client: Navajo Refining Company

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

Sample ID MB-R26752	SampT	ype: MBL	к	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	n ID: R267	'52	F	RunNo: 2	6752				
Prep Date:	Analysis Date: 5/22/2015			5	SeqNo: 7	97217	Units: µg/L			
Analyte	Result	PQL S	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								
lodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
Sample ID LCS-R26752	SampT	ype: LCS		Tes	tCode: EF	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: R267	'52	F	RunNo: 26	6752				
Prep Date:	Analysis D	ate: 5/22	/2015	, S	SegNo: 79	7218	Units: µg/L			

Client ID: LCSW	Batch	ID: R2	26752	F	RunNo: 2	6752				
Prep Date:	Analysis D	ate: 5/	22/2015	S	SeqNo: 7	97218	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

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Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, &3 Inj Well

Sample ID MB-R26752	SampT	ype: M	BLK	Tes	tCode: E	PA 8270C:	Semivolatiles	/Mod		
Client ID: PBW	Batch	n ID: R	26752	F	RunNo: 2	6752				
Prep Date:	Analysis D	ate: 5	/21/2015	S	SeqNo: 7	97222	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-Bromophenyi 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								
		0.00								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank в
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- P Sample pH Not In Range
- RL **Reporting Detection Limit**

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WO#:

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Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, &3 Inj Well

Sample ID MB-R26752	Samp ⁻	Type: ME	BLK	Tes	tCode: El	PA 8270C:	Semivolatiles	/Mod		
Client ID: PBW	Batc	h ID: R2	6752	F	RunNo: 2	6752				
Prep Date:	Analysis [Date: 5 /	21/2015	S	SeqNo: 7	97222	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	SampT	Гуре: LC	s	Tes	tCode: El	PA 8270C:	Semivolatiles	/Mod		
Client ID: LCSW		h ID: R2			RunNo: 20					
/										

Sample ID LCS-R26752	SampT	ype: LC	s	Tes	tCode: El	PA 8270C:	Semivolatiles	/Mod		
Client ID: LCSW	Batch	n ID: R2	26752	F	RunNo: 2	6752				
Prep Date:	Analysis D)ate: 5,	/21/2015	S	SeqNo: 7	97223	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.

Е Value above quantitation range

J Analyte detected below quantitation limits

0 RSD is greater than RSDlimit

RPD outside accepted recovery limits R

S Spike Recovery outside accepted recovery limits в Analyte detected in the associated Method Blank

Η Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

Р Sample pH Not In Range

RL **Reporting Detection Limit** 1505504

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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

Sample ID LCS-R26752	SampT	SampType: LCS			TestCode: EPA 8270C: Semivolatiles/Mod					
Client ID: LCSW	Batch	ID: R2	6752	F	lunNo: 2	6752				
Prep Date:	Analysis D	ate: 5 /	21/2015	S	eqNo: 7	97223	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
yrene	5.4		5.000	0	109	45	139			

Qualifiers:

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

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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 RPDLimit HighLimit %RPD 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

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enorting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

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

Sample ID MB-19406	SampType: MBLK	TestCode: MERCURY, TC	CLP			
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, TC	CLP			
Sample ID LCS-19406 Client ID: LCSW	SampType: LCS Batch ID: 19406	TestCode: MERCURY, TC RunNo: 26436	CLP			
•	1 31	RunNo: 26436	CLP Units: mg/L			
Client ID: LCSW	Batch ID: 19406 Analysis Date: 5/27/2015	RunNo: 26436 SeqNo: 785576		%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- RSD is greater than RSDlimit 0
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank в
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Sample pH Not In Range Ρ
- RL Reporting Detection Limit

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WO#: 1505504

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Client: Project:		o Refining Company erly WDW-1, 2, &3 Inj Well		
Sample ID	1B-19377	SampType: MBLK	TestCode: EPA Metho	od 6010B: TCLP Metals
Client ID: P	BW	Batch ID: 19377	RunNo: 26426	
Prep Date:	5/26/2015	Analysis Date: 5/27/2015	SeqNo: 785370	Units: mg/L
Analida				

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	SampT	ype: LC	S	Tes	tCode: El	PA Method	6010B: TCL	P Metals		
Client ID: LCSW	Batch	n ID: 19	377	F	lunNo: 2	6426				
Prep Date: 5/26/2015				-						
Fiep Date. 5/20/2015	Analysis D	ate: 5/	27/2015	2	eqNo: 7	85371	Units: mg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte	-				•		•		RPDLimit	Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit		RPDLimit	
Analyte Arsenic Barium	Result 0.49	PQL 5.0	SPK value 0.5000	SPK Ref Val 0	%REC 98.7	LowLimit 80	HighLimit 120		RPDLimit	J ·
Analyte Arsenic Barium Cadmium	Result 0.49 0.47	PQL 5.0 100	SPK value 0.5000 0.5000	SPK Ref Val 0 0	%REC 98.7 94.3	LowLimit 80 80	HighLimit 120 120		RPDLimit	J ·
•	Result 0.49 0.47 0.48	PQL 5.0 100 1.0	SPK value 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0	%REC 98.7 94.3 96.3	LowLimit 80 80 80	HighLimit 120 120 120		RPDLimit	J ·
Analyte Arsenic Barium Cadmium Chromium	Result 0.49 0.47 0.48 0.47	PQL 5.0 100 1.0 5.0	SPK value 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0	%REC 98.7 94.3 96.3 94.2	LowLimit 80 80 80 80	HighLimit 120 120 120 120		RPDLimit	J ·

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Ε Value above quantitation range

- J Analyte detected below quantitation limits
- RSD is greater than RSDlimit 0
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- в Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range

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RL Reporting Detection Limit

Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, &3 Inj Well

Sample ID N	/B-19377	Samp	Туре: МЕ	LK	Tes	tCode: El	PA 6010B: 1	Fotal Metals			
Client ID: P	РВW	Bato	h ID: 193	77	F	RunNo: 2	6426				
Prep Date:	5/26/2015	Analysis I	Date: 5/ 2	27/2015	S	SeqNo: 7	85351	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 L	_CS-19377	Samp	Type: LC	s	Tes	tCode: El	PA 6010B: 1	Fotal Metals			
Client ID: L	LCSW	Bato	h ID: 19	377	F	RunNo: 2	6426				
	_CSW 5/26/2015	Bato Analysis	ch ID: 19 : Date: 5 /			RunNo: 2 SeqNo: 7		Units: mg/L			
				27/2015				Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte		Analysis	Date: 5/	27/2015	S	SeqNo: 7	85352	-	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum		Analysis Result	Date: 5/	27/2015 SPK value	SPK Ref Val	SeqNo: 7 %REC	85352 LowLimit	HighLimit	%RPD	RPDLimit	Qual
Prep Date:		Analysis Result 0.51	Date: 5/ PQL 0.020	27/2015 SPK value 0.5000	SPK Ref Val	SeqNo: 7 %REC 101	85352 LowLimit 80	HighLimit 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony Arsenic		Analysis Result 0.51 0.49	Date: 5 / PQL 0.020 0.050	27/2015 SPK value 0.5000 0.5000	SPK Ref Val 0 0	SeqNo: 7 %REC 101 97.9	85352 LowLimit 80 80	HighLimit 120 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony Arsenic Barium		Analysis Result 0.51 0.49 0.49	Date: 5 / PQL 0.020 0.050 0.020	27/2015 SPK value 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0	SeqNo: 7 %REC 101 97.9 98.7	85352 LowLimit 80 80 80	HighLimit 120 120 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony		Analysis Result 0.51 0.49 0.49 0.47	Date: 5/ PQL 0.020 0.050 0.020 0.020	27/2015 SPK value 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0	SeqNo: 7 %REC 101 97.9 98.7 94.3	85352 LowLimit 80 80 80 80 80	HighLimit 120 120 120 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony Arsenic Barium Beryllium Cadmium		Analysis Result 0.51 0.49 0.49 0.47 0.49	Date: 5/ PQL 0.020 0.050 0.020 0.020 0.020 0.0030	27/2015 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0	SeqNo: 7 %REC 101 97.9 98.7 94.3 97.9	85352 LowLimit 80 80 80 80 80 80	HighLimit 120 120 120 120 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium		Analysis Result 0.51 0.49 0.49 0.47 0.49 0.49 0.48	Date: 5/ PQL 0.020 0.050 0.020 0.020 0.0030 0.0020	27/2015 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0	SeqNo: 7 %REC 101 97.9 98.7 94.3 97.9 96.3	85352 LowLimit 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Prep Date: Analyte Aluminum Antimony Arsenic Barium Beryllium		Analysis Result 0.51 0.49 0.49 0.47 0.49 0.48 48	Date: 5/ PQL 0.020 0.050 0.020 0.020 0.0030 0.0030 0.0020 1.0	27/2015 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00	SPK Ref Val 0 0 0 0 0 0 0 0 0 0	SeqNo: 7 %REC 101 97.9 98.7 94.3 97.9 96.3 96.6	85352 LowLimit 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Prep Date: Anatyte Aluminum Antimony Arsenic Barium Baryllium Cadmium Cadmium Calcium Chromium		Analysis Result 0.51 0.49 0.49 0.47 0.49 0.48 48 0.47	Date: 5/ PQL 0.020 0.050 0.020 0.020 0.0030 0.0020 1.0 0.0060	27/2015 SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0	SeqNo: 7 %REC 101 97.9 98.7 94.3 97.9 96.3 96.6 94.2	85352 LowLimit 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual

Qualifiers:

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

Analyte detected in the associated Method Blank В

- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Navajo Refining Company

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

Sample ID	LCS-19377	Samp	Type: L C	s	Tes	tCode: EF	PA 6010B: "	Fotal Metals			
Client ID:	LCSW	Bate	h ID: 19:	377	F	RunNo: 20	6426				
Prep Date:	5/26/2015	Analysis	Date: 5/2	27/2015	s	SeqNo: 78	85352	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
ead		0.46	0.0050	0.5000	0	92.7	80	120			
Magnesium		48	1.0	50.00	0	96.9	80	120			
Nanganese		0.47	0.0020	0.5000	0	93.6	80	120			
lickel		0.47	0.010	0.5000	0	93.1	80	120			
otassium		46	1.0	50.00	0	93.0	80	120			
Selenium		0.48	0.050	0.5000	0	95.9	80	120			
lver		0.099	0.0050	0.1000	0	98.7	80	120			
odium		48	1.0	50.00	0	96.1	80	120			
hallium		0.49	0.050	0.5000	0	97.0	80	120			
/anadium		0.49	0.050	0.5000	0	98.0	80	120			
inc		0.47	0.020	0.5000	0	93.5	80	120			
Sample ID	1505504-001BMS	Samp	Type: MS		Tes	tCode: EF	PA 6010B: "	Fotal Metals			
Client ID:	WDW-1,2,&3 Effi	•		377		RunNo: 26					
Prep Date:	5/26/2015		Date: 5/2	27/2015	s	eqNo: 78	85354	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
luminum		1.1	0.020	0.5000	0.4834	114	75	125			
ntimony		0.51	0.050	0.5000	0	103	75	125			
rsenic		0.57	0.020	0.5000	0.04000						
		0.57	0.020	0.5000	0.04239	105	75	125			
larium		0.50	0.020	0.5000	0.04239 0.01049	105 97.1	75 75	125 125			
larium leryllium											
		0.50	0.020	0.5000	0.01049	97.1	75	125			
eryllium admium		0.50 0.49	0.020 0.0030	0.5000 0.5000	0.01049 0	97.1 98.5	75 75	125 125			
eryllium		0.50 0.49 0.51	0.020 0.0030 0.0020	0.5000 0.5000 0.5000	0.01049 0 0	97.1 98.5 102	75 75 75	125 125 125			
eryllium admium alcium hromium		0.50 0.49 0.51 100	0.020 0.0030 0.0020 1.0	0.5000 0.5000 0.5000 50.00	0.01049 0 0 51.14	97.1 98.5 102 97.3	75 75 75 75	125 125 125 125			
eryllium admium alcium hromium obalt		0.50 0.49 0.51 100 0.48	0.020 0.0030 0.0020 1.0 0.0060	0.5000 0.5000 0.5000 50.00 0.5000	0.01049 0 0 51.14 0	97.1 98.5 102 97.3 95.4	75 75 75 75 75	125 125 125 125 125			
eryllium admium alcium chromium cobalt copper		0.50 0.49 0.51 100 0.48 0.48	0.020 0.0030 0.0020 1.0 0.0060 0.0060	0.5000 0.5000 0.5000 50.00 0.5000 0.5000	0.01049 0 51.14 0 0.002620	97.1 98.5 102 97.3 95.4 96.1	75 75 75 75 75 75	125 125 125 125 125 125			
eryllium admium alcium hromium obalt opper on		0.50 0.49 0.51 100 0.48 0.48 0.55	0.020 0.0030 0.0020 1.0 0.0060 0.0060 0.0060	0.5000 0.5000 50.00 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100	97.1 98.5 102 97.3 95.4 96.1 110	75 75 75 75 75 75 75	125 125 125 125 125 125 125 125			
eryllium admium alcium hromium obalt opper on ead		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80	0.020 0.0030 0.0020 1.0 0.0060 0.0060 0.0060 0.050	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329	97.1 98.5 102 97.3 95.4 96.1 110 92.5	75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125			
eryllium admium alcium hromium obalt opper on ead lagnesium		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48	0.020 0.0030 0.0020 1.0 0.0060 0.0060 0.0060 0.050 0.0050	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9	75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			
eryllium admium alcium chromium cobalt copper on ead lagnesium langanese		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48 70	0.020 0.0030 1.0 0.0060 0.0060 0.0060 0.0050 0.0050 1.0	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 50.00	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0 19.14	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9 101 96.0	75 75 75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			
eryllium admium alcium chromium cobalt copper on ead lagnesium langanese ickel		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48 70 0.58	0.020 0.0030 1.0 0.0060 0.0060 0.0060 0.050 0.0050 1.0 0.0020	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 50.00 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0 19.14 0.1030	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9 101	75 75 75 75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			
eryllium admium alcium obalt opper on ead lagnesium langanese ickel elenium		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48 70 0.58 0.49	0.020 0.0030 1.0 0.0060 0.0060 0.0050 0.0050 1.0 0.0020 0.010	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 50.00 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0 19.14 0.1030 0.01120 0.1334	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9 101 96.0 95.5 105	75 75 75 75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			
eryllium admium alcium hromium obalt opper on ead lagnesium langanese ickel elenium ilver		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48 70 0.58 0.49 0.66	0.020 0.0030 1.0 0.0060 0.0060 0.050 0.050 1.0 0.0020 0.010 0.050 0.0050	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0 19.14 0.1030 0.01120 0.1334 0	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9 101 96.0 95.5 105 104	75 75 75 75 75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			
eryllium Cadmium Calcium		0.50 0.49 0.51 100 0.48 0.48 0.55 0.80 0.48 70 0.58 0.49 0.66 0.10	0.020 0.0030 1.0 0.0060 0.0060 0.050 0.050 1.0 0.0020 0.010 0.050	0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000 50.00 0.5000 0.5000 0.5000 0.5000	0.01049 0 51.14 0 0.002620 0.005100 0.3329 0 19.14 0.1030 0.01120 0.1334	97.1 98.5 102 97.3 95.4 96.1 110 92.5 95.9 101 96.0 95.5 105	75 75 75 75 75 75 75 75 75 75 75 75	125 125 125 125 125 125 125 125 125 125			

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

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1505504 16-Jun-15

Client: Project:

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

Sample ID	1505504-001BMS	Samp	Туре: М	SD .	Tes	tCode: E	PA 6010B: "	Total Metals			
Client ID:	WDW-1,2,&3 Efflu	en Bato	h ID: 19	377	F	RunNo: 2	6426				
Prep Date:	5/26/2015	Analysis (Date: 5/	27/2015	S	SeqNo: 7	85355	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Numinum		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	
ron		0.83	0.050	0.5000	0.3329	99.1	75	125	4.06	20	
ead		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	
/anadium		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

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1505504

WO#:

Page

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

Sample ID MB-R26752	SampType: MBLK	TestCode: CYANIDE, R	eactive			
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, R	eactive	<u>, , , , , , , , , , , , , , , , , , , </u>		
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. *
- Value above quantitation range Е
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- В Analyte detected in the associated Method Blank
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- RL **Reporting Detection Limit**

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1505504

QC SUMMARY REPORT

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Hall Environmental Analysis Laboratory, Inc.

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

Sample ID MB-R26752	SampType: MBLK	TestCode: SULFIDE, Re	eactive			
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, Re	active			
Sample ID LCS-R26752 Client ID: LCSW	SampType: LCS Batch ID: R26752	TestCode: SULFIDE, Re RunNo: 26752	eactive			
		· · · · · · · · · · · · · · · · · · ·	eactive Units: mg/L			
Client ID: LCSW	Batch ID: R26752 Analysis Date: 5/21/2015	RunNo: 26752	Units: mg/L	%RPD	RPDLimit	Qual

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

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WO#:

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Client: Navajo Refining Company

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

Sample ID mb-1	SampType: MBLK	TestCode: SM2320B: A	lkalinity		
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 valu	e SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Q	ual
Fotal Alkalinity (as CaCO3)	4.120 20.00				J
Sample ID Ics-1	SampType: LCS	TestCode: SM2320B: A	Ikalinity		
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 valu	e SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Q	ual

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

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 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
Fotal Dissolved Solids	ND 20.0	· · · · · · · · · · · · · · · · · · ·
Sample ID LCS-19225	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids
•	SampType: LCS Batch ID: 19225	TestCode: SM2540C MOD: Total Dissolved Solids RunNo: 26231
Client ID: LCSW		
Sample ID LCS-19225 Client ID: LCSW Prep Date: 5/14/2015 Analyte	Batch ID: 19225 Analysis Date: 5/15/2015	RunNo: 26231

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

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WO#:

16-Jun-15

HALL Environmental Analysis Laboratory	Hall Environmental A Albuq TEL: 305-345-3975 F Website: www.halk	4901 Hawkins NE uerque, NM 87109 AX: 503-345-4107	Sam	ple Log-in C	heck List
Client Name: NAVAJO REFINING CO	Work Order Number:	1505504		RcpiNo:	
Received by/date; CS (*)	5/12/15				
	12/2015 8:56:00 AM	9	(F)		
이 있는 것같이 있는 것이 있는 것이 가지 않는 것이 가지 않는 것이 있다. 것이 있는 것이 없는 것이 없 것이 없는 것이 없다. 것이 없는 것이 없다. 것이 없는 것이 없다. 것이 없는 것이 없 않이 없다. 것이 없는 것이 없다. 것이 않은 것이 없는 것이 없는 것이 않은 것이 않은 것이 않은 것이 않은 것이 않은 것이 않은 것이 않이	12/2015 12:36:44 PM		k=z		
Reviewed By: Pal Ma	-ns/iz/15		-0		
hain of Custody	-0111-11)	n to bit sid of the pay one and an above a standard and			
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)?		Approved by cli Yes 🔽	ent. No 🗌		
7. Sufficient sample volume for indicated test(s)?		Yes 🕅	No □ ,	a. dale	
8. Are samples (except VOA and ONG) properly (preserved?	Yes M	No 🗹	US OSPIANS	2
9. Was preservative added to bottles? Metals analysis, added 1m 10. VOA vials have zero headspace?	1 HANOS to -	Yes I OUIB for a Yes I	No 2 No 2	NA DE PH. Held No VOA Viais D	'in Login t
11. Were any sample containers received broken?	ťs.,	Yes 🗆	No 🗹		yours. C
	05/12/15			# of preserved bottles checked 2	
12. Does paperwork match bottle labels?		Yes 🗹	No 🗆	for pH:	
(Note discrepancies on chain of custody)	Andre a charlonne	Yes 🔽	No 🗌	Adjusted?	or (12 uhless noted)
13. Are matrices correctly identified on Chain of Cu 14. Is it clear what analyses were requested?	istody?	Yes 🗹			Υ с ->
15. Were all holding times able to be met?		Yes 🗹	No 🗍	Checked by:	CS
(If no, notify customer for authorization.)					
pecial Handling (if applicable)					
16. Was client notified of all discrepancies with this	i order?	Yes 🗌	No 🗆	na 🗹	
Person Notified:	Date				
By Whom:	Via:] eMail 🔲 Phon	e 🔲 Fax	🗌 In Person	
Regarding:					
Client Instructions: 17. Additional remarks: Saturple - 001D	1 11 2	a	as In	2 A 10	1. I Live AS
18. <u>Cooler Information</u>	en en geste sont internet.	elekultet och s itte Skalite	an a	or a) have	CUDDICS. 00
	Intacl Seal No Si resent	eal Date Sig	ned By		

Client: Navajo Reaning Co. Mailing Address: P.O. Box 158 Artesia	Renning	S							1		1		The second of th		
Mailing Addrei				A Slandar	C Rush				ANALYSIS LABORATORY	S S	20		A N	Õ	2
Mailing Addres				Project Name	ġı			e Ass	www	hallenvi	www.haltenvironmental.com	1.com			
	s: P.O. B	30X 15I		Juarterly WI	JW-1, 2, & 3 Ir	ij Well		901 Hew	4901 Hawkins NE - Albuquerque, NM 87109	Albuque	Induc, Nu	87109			
NM 88211-0159	6			Project #: P.	Project #; P.O. # 167796			Tel 505-	505-345-3975	Fax (Fax 505-345-4107	107			
Phone #: 575-748-3311	748-3311									Analys	Analysis Request	st			
email or Fax#, 575-746-5451	575-746-	-5451		Project Manager:	iger.		,		['a _i		heq				
QMQC Package.	.		CI Level 4 (Full Validation)	MICKI Schutz	c/ Scott Dento	/ Scott Denton / Mike Holder	0 ⊳ /чΞ ⊟í	(,sc	0109						
				Sampler: F	li zolorth	innerth Salsberry	, ið Br, i		149 58						
				On Ice:	XYes /	D No.	γ γ γ	12 19 1	194 N 194			-			
				Sample Lemperature:	perature: (817 Car	lq ,20 anion	8-MS/	SW-8						
E Date	Time	Matrix	Sample Request ID	Container Type and #	Preservauve Type	HEAL No ISTIGATION	Specific SO4, T Cation/ Cation/	(see at) SOOCS (see at)	R,C,I/4 Netals/	Ca, K,	S61/SI				
5-11-15 0	CRAD Liquid		WDW-1, 2, & 3 Effluent	m	Neat/H2SO4	100-	×				×				
	DPBAD Liquid		WDW-1, 2, & 3 Effluent		HN03				×	×					
100	d'Eso Liquid		WDW-1, 2, & 3 Effluent	e	НСL		×								-
5-11-15 CESO Liquid	3 20 Liq		WDW-1, 2, & 3 Effluent	~	Neat			×							_
8-11-15	rach Liquid		WDW-1, 2, & 3 Effuent	R	Neat				×						
1	Ser Lie		Trp Blank	7	Neat	60-	×							_	
5-11-15 r Scoliquid	R R		Temperature Blank	1 1 1	Neat										
													+		_
															+
								+							
	T the	(mainshe	W FITALANT COLOR	Received by:		Date Time	Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Combs	Send res	Its to Scol	t Dentor	, Mike H	Jider, Mic	ki Schu	Itz, Robi	ert Com
<u>ا-ای</u>	0	0 पर	en Soldarra	aller	Same	7580 Streits	T	w Contre	norued	tems	Se	الحو م	ボト	んにん	
Date	Time: Ro	Reinquished by.	A	Received by:		Catte	\$ 5	}-	and the solution of the solution			ŝ	25/12	10	

HOLLYFRONTIER The HollyFrontier Companies	Physical Property Solid Liquid Sludge Type of Sampler	t from east)		NaHSO4 Other Analysis and/or Method Requested	Spe	VOCs/SW-846 Method 8260C (see attached list VOCs)	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R, C, 1/40 CFR part 261	Metals/SWY-840 Mind oo 10, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW- 846 Method 1311		n Overall Condition: clear Lear Lea Condition: clear Lea Condition: clear Lea Condition: clear Lea Condition:	Shipping Media
Injection Well Quarterly Sample Details Attachment	Sample Type Sample Type Grab Time Weighted Composite Flow Weighted Composite Parts / Sample Intervals One	□ P-849 sample point (first from east) [2] P-854 sample point (second from east)	Preservatives	HNO3 H2SO4	×	X							Temp: 78.8 °F Humidity: 47% Wind Direction: NNE Wind Speed: 10.4 mph Overall Condition: clear	
pauy, LLC		injection wells.		Neat HCI			×	×	×	×	×		 Humidity: 479	
Navajo Refining Company, LLC 501 E. Main Artesia, NM 88210 (Tel) 575 748.3311 (Fax) 575,746.5451	ij Well LC	Waste water effluent pumps to injection wells	1	# of Containers		-	e	2	2	2				
Neral Solicional Artes (Tab)	Project Name WDW-1,2, & 3 Orthy Inj Well Samplers Name Elizabeth Salsberry Samplers Affiliation Navajo Refining Co. LLC Start Date and Time 779/2015 @ 08:57am End Date and Time 779/2015 @ 09:08am	Outfall / Sample Location Waste water ef		Contrainer Size		2	£	· · ·	60	9		8	Field Data (Weather: Observations, Etc) Date and Time	

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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,

Su Robert O'Brien

Vice-President & Refinery Manager Navajo Refining Company, L.L.C.

Enc.

Electronic cc (w/enc.): Environmental File: R Combs, M Schultz, S Denton 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. 501 East Main • Artesia, NM 88210 (575) 748-3311 • <u>http://www.hollyfronticr.com</u>

Navajo Refining Company, L.L.C.

2015 THIRD QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average	Maximum	Minimum	Average	Maximum	Minimum	Average Annular	Maximum Annular	Minimum Annular	Average	Maximum	Minimum		TOTAL CUMULATIVE
	Pressure	Pressure (nein)	Pressure	Flow	Flow (anm)	Flow (anm)	Pressure Av /nsia)	Pressure Mv /nein/	Pressure Mn (neid)	Volume	Volume	Volume	Volume (harrele)	Volume (harrels)
WDW-1	(Rind)	(fired)	(fied)		((inde)	(Reed) av	(find) you	(Red)	Indal	Indat	Previc	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												Previ	Previous Quarter	23,766,527
Jul-15	1,391	1,400	1,269	149	278	62	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										-		Previ	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	606	539	5,383	10,183	2,949	161,879	14,329,329
												Total Inje	ected fluids:	Total Injected fluids: 75,744,066

T:\Injection Wells\Reports C-115 and Quarterly\2015\3rd quarter\ 3rd 2015 qtrly rpt data Injection fluids

10/15/20152:19 PM

Navajo Refining Company, L.L.C.

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	7/6/15	<u>'</u>	7/13/15	7/6/15 7/13/15 7/20/15 7/27/15	7/27/15	8/3/15	8/3/15 8/10/15 8/14/15 8/24/15	8/14/15	8/24/15	9/1/15		9/8/15	9/14/15	9/8/15 9/14/15 9/21/15 9/30/15	9/30/15	
WDW -11	100		100	100	100	100	100	100	100	100		100	100	100	100	
WDW-21	100		100	100	100	100	100	100	100	100	-	100	100	100	100	
WDW-31	150	_	155	235	150*	170	220	253	130**	230		240	254	170***	240	
	ŏ	amm	ents: * R	temoved 14	Comments: * Removed 145 gal. ** Remo	moved 180	oved 180 gal. *** Removed 100 gal.	moved 100	gal.							
And a second sec													the second			

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

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

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

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109



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

Case Narrative

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

CLIENT:Navajo Refining CompanyProject: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

Analytical Report Lab Order 1507D99 Date Reported: 9/10/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1507D99-001Matrix: 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						Analys	st: SUB
lgnitability	>200	0		°F	1	8/11/2015	R2871
SULFIDE, REACTIVE						Analys	st: SUB
Reactive Sulfide	1.4	1.0		mg/L	1	8/7/2015	R2871
SPECIFIC GRAVITY						Analys	st: JRR
Specific Gravity	0.9967	0			1	8/5/2015 3:14:00 PM	R2797
EPA METHOD 300.0: ANIONS						Analys	st: LGT
Fluoride	42	5.0	*	mg/L	50	7/31/2015 2:33:11 PM	
Chloride	330	25		mg/L	50	7/31/2015 2:33:11 PM	
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	7/31/2015 2:20:46 PM	R2790
Bromide	1.2	0.50		mg/L	5	7/31/2015 2:20:46 PM	R2790
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	7/31/2015 2:20:46 PM	R2790
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	7/31/2015 2:20:46 PM	R2790
Sulfate	2200	25		mg/L	50	7/31/2015 2:33:11 PM	R2790
SM2510B: SPECIFIC CONDUCTANCE						Analys	st: JRR
Conductivity	5900	0.010		µmhos/cm	1	8/6/2015 4:51:43 PM	R2802
SM2320B: ALKALINITY						Analys	st: JRR
Bicarbonate (As CaCO3)	392.7	20.00		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R2802
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R2802
Total Alkalinity (as CaCO3)	392.7	20.00		mg/L CaCO3	1	8/6/2015 4:51:43 PM	R2802
SM2540C MOD: TOTAL DISSOLVED SC	DLIDS					Analys	st: KS
Total Dissolved Solids	3580	20.0	*	mg/L	1	8/5/2015 7:28:00 PM	20581
CORROSIVITY						Analys	st: SUB
pН	8.31	0.100		pH Units	1	8/5/2015	R2871
CYANIDE, REACTIVE						Analys	st: SUB
Cyanide, Reactive	ND	1.00		mg/L	1	8/13/2015	R2871
SM4500-H+B: PH						Analys	st: JRR
рН	8.17	1.68	н	pH units	1	8/6/2015 4:51:43 PM	R2802
EPA METHOD 7470: MERCURY						Analys	st: JI F
Mercury	ND	0.00020		mg/L	1	8/4/2015 2:15:41 PM	20588
MERCURY, TCLP				<u>a</u> r =			st: JLF
Mercury	0.078	0.020		mg/L	20	8/6/2015 1:58:10 PM	20636
EPA METHOD 6010B: TCLP METALS	0.010	0.020			20		st: MED
Arsenic	ND	E 0		mall	1	8/6/2015 9:36:29 AM	20620
	ND	5.0		mg/L	1	0/0/2015 9:30:29 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.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

CLIENT: Navajo Refining Company Project: Quarterly WDW-1, 2, & 3 Lab ID: 1507D99-001	5	(AQUEOUS	Collection	Date: 7/3	DW-1,2,&3 Effluent 0/2015 8:55:00 AM 1/2015 8:00:00 AM	
Analyses	Result	RL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METAL	S				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	R2871
Allyl chloride	ND	2.5	µg/L	1	8/11/2015	R2871
Chloroprene	ND	2.5	μg/L	1	8/11/2015	R2871
Cyclohexane	ND	2.5	µg/L	1	8/11/2015	R2871
Diethyl ether	ND	2.5	μg/L	1	8/11/2015	R2871
Diisopropyl ether	ND	2.5	μg/L	1	8/11/2015	R2871
Epichlorohydrin	ND	25	µg/L	1	8/11/2015	R2871
Ethyl acetate	ND	2.5	µg/L	1	8/11/2015	R2871

Hall Environmental Analysis Laboratory, Inc.

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

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

Analyte detected below quantitation limits Page 3 of 31

Analytical Report Lab Order 1507D99

Date Reported: 9/10/2015

Analytical Report Lab Order 1507D99

Date Reported: 9/10/2015

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 R28710 µg/L 1 8/11/2015 Ethyl tert-butyl ether ND 8/11/2015 R28710 2.5 μg/L 1 Freon-113 ND 2.5 8/11/2015 R28710 1 µg/L Isobutanol ND 2.5 μg/L 1 8/11/2015 R28710 Isopropyl acetate ND 2.5 µg/L 1 8/11/2015 R28710 Methacrylonitrile R28710 ND 2.5 1 8/11/2015 µg/L Methyl acetate ND 2.5 8/11/2015 µg/L 1 R28710 Methyl ethyl ketone 24 12 8/11/2015 R28710 µg/L 1 Methyl isobutyl ketone ND 8/11/2015 R28710 12 1 μg/L Methyl methacrylate ND 2.5 µg/L 1 8/11/2015 R28710 Methylcyclohexane ND 5.0 1 8/11/2015 R28710 μg/L n-Amyl acetate 8/11/2015 ND 2.5 1 R28710 µg/L 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 1 8/11/2015 R28710 µg/L Benzene ND 2.5 8/11/2015 R28710 µg/L 1 Toluene ND 2.5 8/11/2015 R28710 µg/L 1 Ethylbenzene R28710 ND 2.5 1 8/11/2015 µg/L Methyl tert-butyl ether (MTBE) ND 50 1 8/11/2015 R28710 µg/L 1,2,4-Trimethylbenzene ND 2.5 8/11/2015 R28710 µg/L 1 1,3,5-Trimethylbenzene 2.5 R28710 ND µg/L 1 8/11/2015 1,2-Dichloroethane (EDC) 8/11/2015 R28710 ND 2.5 μg/L 1 2.5 1,2-Dibromoethane (EDB) ND 8/11/2015 R28710 µg/L 1 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 8/11/2015 R28710 µg/L 1 Bromodichloromethane ND 2.5 μg/L 1 8/11/2015 R28710 Bromoform ND 2.5 µg/L 1 8/11/2015 R28710 Bromomethane R28710 ND 2.5 1 8/11/2015 μg/L Carbon disulfide ND 2.5 1 8/11/2015 R28710 µg/L Carbon Tetrachloride ND 2.5 1 8/11/2015 R28710 µg/L Chlorobenzene ND 2.5 8/11/2015 R28710 1 µg/L 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

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 1507D99

Date Reported: 9/10/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1507D99-001Matrix: 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 R28710 ND 2.5 8/11/2015 µg/L 1 cis-1,2-DCE ND 2.5 1 8/11/2015 R28710 µg/L cis-1,3-Dichloropropene ND 2.5 8/11/2015 R28710 µg/L 1 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 1 8/11/2015 R28710 µg/L 1 8/11/2015 R28710 Dichlorodifluoromethane ND 2.5 µg/L 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 2.5 1 8/11/2015 R28710 ND µg/L 1,3-Dichloropropane 2.5 8/11/2015 R28710 ND µg/L 1 2,2-Dichloropropane 2.5 1 8/11/2015 R28710 ND μg/L 1 8/11/2015 R28710 1,1-Dichloropropene ND 2.5 µg/L Hexachlorobutadiene 8/11/2015 R28710 ND 2.5 µg/L 1 8/11/2015 R28710 2-Hexanone ND 2.5 1 µg/L R28710 Isopropylbenzene ND 2.5 µg/L 1 8/11/2015 Methylene Chloride 8/11/2015 R28710 ND 12 µg/L 1 n-Butylbenzene ND 2.5 8/11/2015 R28710 µg/L 1 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 8/11/2015 R28710 µg/L 1 Tetrachloroethene (PCE) ND 2.5 μg/L 1 8/11/2015 R28710 trans-1,2-DCE 8/11/2015 R28710 ND 2.5 µg/L 1 trans-1,3-Dichloropropene 8/11/2015 R28710 ND 2.5 µg/L 1 1,2,3-Trichlorobenzene ND 2.5 µg/L 1 8/11/2015 R28710 8/11/2015 R28710 1,2,4-Trichlorobenzene ND 2.5 µg/L 1 1,1,1-Trichloroethane 8/11/2015 R28710 ND 2.5 1 µg/L 1,1,2-Trichloroethane ND 2.5 μg/L 1 8/11/2015 R28710 Trichloroethene (TCE) 8/11/2015 R28710 ND 2.5 µg/L 1 8/11/2015 R28710 Trichlorofluoromethane ND 2.5 µg/L 1 1,2,3-Trichloropropane ND 2.5 μg/L 1 8/11/2015 R28710 8/11/2015 R28710 Vinyl chloride ND 2.5 µg/L 1 8/11/2015 R28710 mp-Xylenes ND 5.0 µg/L 1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, & 3 Inj Well

CLIENT: Navajo Refining Company

1507D99-001

Project:

Lab ID:

Analytical Report Lab Order 1507D99

Date Reported: 9/10/2015

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 Batch **DF** Date Analyzed EPA METHOD 8260B: VOLATILES Analyst: SUB o-Xylene ND R28710 2.5 μg/L 1 8/11/2015 tert-Amyl methyl ether ND 2.5 μg/L 1 8/11/2015 R28710 tert-Butyl alcohol ND 2.5 1 8/11/2015 R28710 µg/L 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 1 8/11/2015 R28710 µg/L 2-Chloroethyl vinyl ether ND 2.5 8/11/2015 µg/L 1 R28710 Iodomethane ND 2.5 8/11/2015 R28710 µg/L 1 trans-1,4-Dichloro-2-butene ND 2.5 8/11/2015 R28710 μg/L 1 Vinyl acetate ND 2.5 µg/L 1 8/11/2015 R28710 1,4-Dioxane ND 100 8/11/2015 µg/L 1 R28710 Surr: 1,2-Dichlorobenzene-d4 94.0 70-130 %REC 8/11/2015 R28710 1 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-Biphenvl R28710 ND 5.0 µg/L 1 8/12/2015 Atrazine ND 5.0 µg/L 1 8/12/2015 R28710 Benzaldehyde ND 5.0 1 8/12/2015 R28710 µg/L Caprolactam ND 5.0 1 8/12/2015 R28710 µg/L 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 8/12/2015 µg/L 1 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 8/12/2015 R28710 µg/L 1 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 8/12/2015 R28710 1 2-Methylnaphthalene ND 5.0 1 8/12/2015 R28710 µg/L 2-Methylphenol ND 5.0 μg/L 1 8/12/2015 R28710 2-Nitroaniline ND 5.0 8/12/2015 µg/L 1 R28710 2-Nitrophenol ND 5.0 8/12/2015 R28710 µg/L 1 3.3'-Dichlorobenzidine ND 5.0 μg/L 1 8/12/2015 R28710 3-Nitroaniline ND 8/12/2015 R28710 5.0 µg/L 1 4,6-Dinitro-2-methylphenol ND µg/L R28710 5.0 1 8/12/2015

Matrix: AQUEOUS

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

Qualifiers:

*

Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank B

E Value above quantitation range

Analyte detected below quantitation limits Page 6 of 31 J

Р Sample pH Not In Range

Reporting Detection Limit RL

Analytical	Report
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Lab Order 1507D99

Date Reported: 9/10/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1507D99-001Matrix: 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 Qu	al Units	DF	Date Analyze	d Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: SUB
4-Bromophenyl phenyl ether	ND	5.0	µg/L	1	8/12/2015	R2871
4-Chloro-3-methylphenol	ND	5.0	µg/L	1	8/12/2015	R2871
4-Chloroaniline	ND	5.0	µg/L	1	8/12/2015	R2871
4-Chlorophenyl phenyl ether	ND	5.0	µg/L	1	8/12/2015	R2871
4-Nitroaniline	ND	5.0	µg/L	1	8/12/2015	R2871
4-Nitrophenol	ND	5.0	µg/L	1	8/12/2015	R2871
Acenaphthene	ND	5.0	µg/L	1	8/12/2015	R287
Acenaphthylene	ND	5.0	µg/L	1	8/12/2015	R2871
Anthracene	ND	5.0	µg/L	1	8/12/2015	R287
Benzo(g,h,i)perylene	ND	5.0	μg/L	1	8/12/2015	R2871
Benz(a)anthracene	ND	1.0	µg/L	1	8/12/2015	R287
Benzo(a)pyrene	ND	1.0	µg/L	1	8/12/2015	R287 ⁻
Benzo(b)fluoranthene	ND	1.0	µg/L	1	8/12/2015	R287
Benzo(k)fluoranthene	ND	1.0	µg/L	1	8/12/2015	R287
Bis(2-chloroethoxy)methane	ND	5.0	μg/L	1	8/12/2015	R287
Bis(2-chloroethyl)ether	ND	5.0	µg/L	1	8/12/2015	R287
Bis(2-chloroisopropyl)ether	ND	5.0	µg/L	1	8/12/2015	R287
Bis(2-ethylhexyl)phthalate	ND	5.0	µg/L	1	8/12/2015	R287
Butyl benzyl phthalate	ND	5.0	µg/L	1	8/12/2015	R287
Carbazole	ND	5.0	µg/L	1	8/12/2015	R287
Chrysene	ND	1.0	µg/L	1	8/12/2015	R287
Dibenz(a,h)anthracene	ND	1.0	µg/L	1	8/12/2015	R287
Dibenzofuran	5.7	5.0	µg/L	1	8/12/2015	R287
Diethyl phthalate	ND	5.0	µg/L	1	8/12/2015	R287
Dimethyl phthalate	ND	5.0	µg/L	1	8/12/2015	R287
Di-n-butyl phthalate	ND	5.0	µg/L	1	8/12/2015	R287
Di-n-octyl phthalate	ND	5.0	µg/L	· 1	8/12/2015	R287
Fluoranthene	ND	5.0	µg/L	1	8/12/2015	R287
Fluorene	ND	5.0	µg/L	1	8/12/2015	R287
Hexachlorobenzene	ND	5.0	µg/L	1	8/12/2015	R287
Hexachlorobutadiene	ND	5.0	µg/L	1	8/12/2015	R287
Hexachlorocyclopentadiene	ND	5.0	µg/L	1	8/12/2015	R287
Hexachloroethane	ND	5.0	µg/L	1	8/12/2015	R287
Indeno(1,2,3-cd)pyrene	ND	1.0	µg/L	1	8/12/2015	R287
Isophorone	ND	5.0	µg/L	1	8/12/2015	R287
Naphthalene	ND	5.0	µg/L	1	8/12/2015	R287
Nitrobenzene	ND	5.0	µg/L	1	8/12/2015	R287
N-Nitrosodi-n-propylamine	ND	5.0	µg/L	1	8/12/2015	R287
N-Nitrosodiphenylamine	ND	5.0	μg/L	1	8/12/2015	R2871

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

 Qualifiers:
 *
 Value exceeds Maximum Contaminant Level.

 D
 Sample Diluted Due to Matrix

 H
 Holding times for preparation or analysis exceeded

 ND
 Not Detected at the Reporting Limit

- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

- J Analyte detected below quantitation limits Page 7 of 31
- P Sample pH Not In Range

RL Reporting Detection Limit

Analytical Report Lab Order 1507D99

Date Reported: 9/10/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company		(lient Sampl	e ID: W	DW-1,2,&3 Efflu	ient
Project: Quarterly WDW-1, 2, & 3 In	j Well		Collection 1	Date: 7/3	30/2015 8:55:00 /	AM
Lab ID: 1507D99-001	Matrix:	AQUEOUS	Received]	Date: 7/3	31/2015 8:00:00 2	AM
Analyses	Result	RL Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD					A	nalyst: 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.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 8 of 31
	ND	Not Detected at the Reporting Limit	Ρ.	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 Envi	ironmental Analys	is Labora	tory, In	ıc.		Analytical Rep Lab Order 1507I Date Reported: 9	999
Project: Qu	avajo Refining Company uarterly WDW-1, 2, & 3 In 507D99-002	•	TRIP BLA	Co	nt Sample ID: T llection Date: eceived Date: 7/	RIP BLANK /31/2015 8:00:00	AM
Analyses		Result	RL	Qual Ur	nits DI	F Date Analyzed	Batch
EPA METHO	D 8260B: VOLATILES					A	nalyst: SUB
Acetonitrile		ND	0.50	ц	g/L 1	8/11/2015	R28710
Allyl chloride		ND	0.50		, g/L 1	8/11/2015	R28710
Chloroprene		ND	0.50		j/L 1	8/11/2015	R28710
Cyclohexane		ND	0.50		g/L 1	8/11/2015	R28710
Diethyl ether		ND	0.50		g/L 1	8/11/2015	R28710
Diisopropyl e	ether	ND	0.50		, g/L 1	8/11/2015	R28710
Epichlorohyd		ND	5.0		, g/L 1	8/11/2015	R28710
Ethyl acetate		ND	0.50		, g/L 1	8/11/2015	R28710
Ethyl methad	crylate	ND	0.50		, g/L 1	8/11/2015	R28710
Ethyl tert-but	tyl ether	ND	0.50		, g/L 1	8/11/2015	R28710
Freon-113		ND	0.50		, g/L 1	8/11/2015	R28710
Isobutanol		ND	0.50		, g/L 1	8/11/2015	R28710
Isopropyl ace	etate	ND	0.50		, g/L 1	8/11/2015	R28710
Methacryloni		ND	0.50		g/L 1	8/11/2015	R28710
Methyl aceta		ND	0.50		g/L 1	8/11/2015	R28710
Methyl ethyl		ND	2.5		у g/L 1	8/11/2015	R28710
Methyl isobu		ND	2.5		р/L 1	8/11/2015	R28710
Methyl metha	•	ND	0.50		g/L 1	8/11/2015	R28710
Methylcycloh	•	ND	1.0		g/L 1	8/11/2015	R28710
n-Amyl aceta		ND	0.50		ŋ/L 1	8/11/2015	R28710
n-Hexane		ND	0.50		у у/L 1	8/11/2015	R28710
Nitrobenzene	e	ND	5.0		у у/L 1	8/11/2015	R28710
Pentachloroe	-	ND	5.0		y∕∟ 1	8/11/2015	R28710
p-isopropylto		ND	0.50		µ∕∟ 1	8/11/2015	R28710
Propionitrile		ND	0.50		r− 1/L 1	8/11/2015	R28710
Tetrahydrofu	ran	ND	0.50		y/L 1	8/11/2015	R28710
Benzene		ND	0.50		· -	8/11/2015	R28710
Toluene		ND	0.50		y'= 1	8/11/2015	R28710
Ethylbenzen	e	ND	0.50		µ∕L 1	8/11/2015	R28710
•	utyl ether (MTBE)	ND	10		µ∕L 1	8/11/2015	R28710
1,2,4-Trimeth		ND	0.50		µ∕L 1	8/11/2015	R28710
1,3,5-Trimeth	•	ND	0.50		у у/L 1	8/11/2015	R28710
	ethane (EDC)	ND	0.50		у/L 1	8/11/2015	R28710
	ethane (EDB)	ND	0.50		,∽ µ/L 1	8/11/2015	R28710
Naphthalene		ND	0.50) j/L 1	8/11/2015	R28710
Acetone		ND	2.5		, j/L 1	8/11/2015	R28710
Bromobenze	ne	ND	0.50		, /L 1	8/11/2015	R28710
Bromodichlo		ND	0.50		у— р/L 1	8/11/2015	R28710
Bromoform		ND	0.50		r – 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.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 9 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report Lab Order 1507D99

Date Reported: 9/10/2015

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK **CLIENT:** Navajo Refining Company Quarterly WDW-1, 2, & 3 Inj Well Project: Lab ID: 1507D99-002 Matrix: TRIP BLANK

Collection Date:

Received Date: 7/31/2015 8:00:00 AM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					A	nalyst: SUB
Bromomethane	ND	0.50	µg/L	1	8/11/2015	R2871
Carbon disulfide	ND	0.50	µg/L	1	8/11/2015	R2871
Carbon Tetrachloride	ND	0.50	µg/L	1	8/11/2015	R2871
Chlorobenzene	ND	0.50	μg/L	1	8/11/2015	R2871
Chloroethane	ND	0.50	µg/L	. 1	8/11/2015	R2871
Chloroform	ND	0.50	µg/L	1	8/11/2015	R2871
Chloromethane	ND	0.50	µg/L	1	8/11/2015	R2871
2-Chlorotoluene	ND	0.50	μg/L	1	8/11/2015	R2871
4-Chlorotoluene	ND	0.50	μg/L	1	8/11/2015	R2871
cis-1,2-DCE	ND	0.50	µg/L	1	8/11/2015	R2871
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	8/11/2015	R2871
1,2-Dibromo-3-chloropropane	ND	0.50	µg/L	1	8/11/2015	R2871
Dibromochloromethane	ND	0.50	µg/L	1	8/11/2015	R2871
Dibromomethane	ND	0.50	μg/L	1	8/11/2015	R2871
1,2-Dichlorobenzene	ND	0.50	µg/L	1	8/11/2015	R2871
1,3-Dichlorobenzene	ND	0.50	µg/L	1	8/11/2015	R2871
1,4-Dichlorobenzene	ND	0.50	µg/L	1	8/11/2015	R287
Dichlorodifluoromethane	ND	0.50	µg/L	1	8/11/2015	R2871
1,1-Dichloroethane	ND	0.50	µg/L	1	8/11/2015	R2871
1,1-Dichloroethene	ND	0.50	µg/L	1	8/11/2015	R287
1,2-Dichloropropane	ND	0.50	µg/L	1	8/11/2015	R2871
1,3-Dichloropropane	ND	0.50	µg/L	1	8/11/2015	R2871
2,2-Dichloropropane	ND	0.50	µg/L	. 1	8/11/2015	R287
1,1-Dichloropropene	ND	0.50	µg/L	1	8/11/2015	R287
Hexachlorobutadiene	ND	0.50	µg/L	1	8/11/2015	R287
2-Hexanone	ND	0.50	µg/L	1	8/11/2015	R287
Isopropylbenzene	ND	0.50	μg/L	1	8/11/2015	R287 ⁻
Methylene Chloride	ND	2.5	µg/L	1	8/11/2015	R2871
n-Butylbenzene	ND	0.50	µg/L	1	8/11/2015	R2871
n-Propylbenzene	ND	0.50	μg/L	· 1	8/11/2015	R287
sec-Butylbenzene	ND	0.50	µg/L	1	8/11/2015	R2871
Styrene	ND	0.50	μg/L	1	8/11/2015	R2871
tert-Butylbenzene	ND	0.50	µg/L	1	8/11/2015	R2871
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L	1	8/11/2015	R2871
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1	8/11/2015	R2871
Tetrachloroethene (PCE)	ND	0.50	µg/L	1	8/11/2015	R287
trans-1,2-DCE	ND	0.50	µg/L	1	8/11/2015	R287
trans-1,3-Dichloropropene	ND	0.50	µg/L	1	8/11/2015	R2871
1,2,3-Trichlorobenzene	ND	0.50	μg/L	1	8/11/2015	R2871

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limit Page 10 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall En	wironmental Analys	sis Labora	atory, Inc.			Date Reported:	9/10/2015
CLIENT: Project:	Navajo Refining Company Quarterly WDW-1, 2, & 3 Ir	ıj Well	(Client Samp Collection		IP BLANK	
Lab ID:	1507D99-002	Matrix:	TRIP BLANK	Received	Date: 7/3	1/2015 8:00:00	AM
Analyses		Result	RL Qual	Units	DF	Date Analyze	d Batch
EPA MET	HOD 8260B: VOLATILES						Analyst: SUB
1,2,4-Tric	hlorobenzene	ND	0.50	µg/L	1	8/11/2015	R28710
1,1,1-Tric	hloroethane	ND	0.50	µg/L	1	8/11/2015	R28710
1,1,2-Tric	hloroethane	ND	0.50	µg/L	1	8/11/2015	R28710
Trichloroe	ethene (TCE)	ND	0.50	µg/L	1	8/11/2015	R28710
Trichlorof	luoromethane	ND	0.50	µg/L	1	8/11/2015	R28710
1,2,3-Tric	hloropropane	ND	0.50	µg/L	1	8/11/2015	R28710
Vinyl chlo	pride	ND	0.50	µg/L	1	8/11/2015	R28710
mp-Xylen	es	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
Acrylonitr	ile	ND	0.50	µg/L	1	8/11/2015	R28710
Bromochl	loromethane	ND	0.50	µg/L	1	8/11/2015	R28710
2-Chloroe	ethyl vinyl ether	ND	0.50	µg/L	1	8/11/2015	R28710
lodometh	ane	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 acet	tate	ND	0.50	µg/L	1	8/11/2015	R28710
1,4-Dioxa	ine	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: T	oluene-d8	93.6	70-130	%REC	1	8/11/2015	R28710

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Ε	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 11 of 31
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report Lab Order 1507D99

Client: Navajo Refining Company

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

Sample ID MB	SampT	ype: ME	BLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBW	Batcl	h ID: R2	7901	R	RunNo: 27901							
Prep Date:	Analysis E	Date: 7/	31/2015	S	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	SampT	Type: LC	S	Tes	SampType: LCS TestCode: EPA Method 300.0: Anions							
			ID: R27901 RunNo: 27901									
Client ID: LCSW	Batc	h ID: R2	7901	R	unNo: 2	7901						
Client ID: LCSW Prep Date:	Batcl Analysis [unNo: 2 eqNo: 8		Units: mg/L					
			31/2015				Units: mg/L HighLimit	%RPD	RPDLimit	Qual		
Prep Date: Analyte	Analysis [)ate: 7/	31/2015	S	eqNo: 8	39137		%RPD	RPDLimit	Qual		
Prep Date: Analyte Fluoride	Analysis [Result	Date: 7/	31/2015 SPK value	S SPK Ref Val	eqNo: 8 %REC	39137 LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Prep Date: Analyte Fluoride Chloride	Analysis E Result 0.52	Date: 7/ PQL 0.10	31/2015 SPK value 0.5000	SPK Ref Val	eqNo: 8 %REC 104	39137 LowLimit 90	HighLimit 110	%RPD	RPDLimit	Qual		
Prep Date: Analyte Fluoride Chloride Nitrogen, Nitrite (As N)	Analysis E Result 0.52 4.8	Date: 7/ PQL 0.10 0.50	31/2015 SPK value 0.5000 5.000	SPK Ref Val 0 0	eqNo: 8 %REC 104 95.8	39137 LowLimit 90 90	HighLimit 110 110	%RPD	RPDLimit	Qual		
Prep Date:	Analysis E Result 0.52 4.8 0.96	Date: 7/ PQL 0.10 0.50 0.10	31/2015 SPK value 0.5000 5.000 1.000	SPK Ref Val 0 0 0	eqNo: 8 %REC 104 95.8 95.9	39137 LowLimit 90 90 90	HighLimit 110 110 110	%RPD	RPDLimit	Qual		
Prep Date: Analyte Fluoride Chloride Nitrogen, Nitrite (As N) Bromide	Analysis E Result 0.52 4.8 0.96 2.5	Date: 7/ PQL 0.10 0.50 0.10 0.10	31/2015 SPK value 0.5000 5.000 1.000 2.500	SPK Ref Val 0 0 0 0 0	eqNo: 8 %REC 104 95.8 95.9 98.2	39137 LowLimit 90 90 90 90	HighLimit 110 110 110 110	%RPD	RPDLimit	Qual		

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

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

RL

Reporting Detection Limit

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WO#:

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Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, & 3 Inj Well

Sample ID MB-R28710	SampT	Гуре: МІ	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batc	h ID: R2	8710	F	RunNo: 2	8710				-
Prep Date:	Analysis [Date: 8	11/2015	S	SeqNo: 8	70221	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	N							
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.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- в Analyte detected in the associated Method Blank
- Ε Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL **Reporting Detection Limit**

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WO#:

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Client: Navajo Refining Company

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

Sample ID MB-R28710	SampTy	pe: ME	LK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R2	8710	F	RunNo: 2	8710				
Prep Date:	Analysis Da	ate: 8/ '	11/2015	S	SeqNo: 8	70221	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								
I,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
,2-Dichlorobenzene	ND	0.50								
1,3-Dichlorobenzene	ND	0.50								
,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
,1-Dichloroethane	ND	0.50								
,1-Dichloroethene	ND	0.50								
,2-Dichloropropane	ND	0.50								
,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
I,1-Dichloropropene	ND	0.50								
lexachlorobutadiene	ND	0.50								
2-Hexanone	ND	0.50								
sopropylbenzene	ND	0.50								
Vethylene Chloride	ND	2.5								
n-Butylbenzene	ND	0.50								
n-Propylbenzene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Styrene	ND	0.50								
ert-Butylbenzene	ND	0.50								
,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Fetrachloroethene (PCE)	ND	0.50								
rans-1,2-DCE	ND	0.50								
rans-1,3-Dichloropropene	ND	0.50								
I,2,3-Trichlorobenzene	ND	0.50								

Qualifiers:

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

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

Sample ID MB-R28710	Samp	Гурс: МЕ	BLK	TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batc	h ID: R2	8710	F	RunNo:	28710					
Prep Date:	Analysis E	Date: 8/	11/2015	\$	SeqNo:	870221	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	C 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									
lodomethane	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	SampT	ype: LC	S	TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch	h ID: R2	8710	F	RunNo: 2	8710				
Prep Date:	Analysis D)ate: 8 /	11/2015	S	SeqNo: 8	70222	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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:

Navajo Refining Company **Client:**

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

Sample ID MB-R28710	SampT	ype: ME	BLK	Tes						
Client ID: PBW	Batch	ID: R2	8710	F	RunNo: 2	8710				
Prep Date:	Analysis D	ate: 8 /	12/2015	S	SeqNo: 8	70225	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.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank в
- Ε Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

RL

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- **Reporting Detection Limit**

WO#:

1507D99 10-Sep-15

Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, & 3 Inj Well

Sample ID MB-R28710	SampT	ype: ME	BLK	TestCode: EPA 8270C: Semivolatiles/Mod						
Client ID: PBW	Batcl	h ID: R2	8710	F	RunNo: 2	8710				
Prep Date:	Analysis D)ate: 8 /	12/2015	S	SeqNo: 8	70225	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								
lexachlorobenzene	ND	1.0								
lexachlorobutadiene	ND	5.0								
lexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
ndeno(1,2,3-cd)pyrene	ND	0.10								
sophorone	ND	5.0								
Vaphthalene	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								
^o yrene	ND	2.0								
o-Toluidine	ND	5.0								
Pyridine	ND	5.0								
,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID LCS-R28710	SampTy	/pe: LC	S	Tes	tCode: El	PA 8270C:	Semivolatiles	/Mod		
Client ID: LCSW	Batch	ID: R2	8710	F	RunNo: 2	8710				
Prep Date:	Analysis Da	ate: 8 /	12/2015	S	SeqNo: 8	70226	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.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- в Analyte detected in the associated Method Blank
- Value above quantitation range Ε
- J Analyte detected below quantitation limits
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- Р Sample pH Not In Range
- RL Reporting Detection Limit

1507D99

WO#:

10-Sep-15

Client: Navajo Refining Company

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

Sample ID LCS-R28710	SampT	ype: L C	s	Tes	TestCode: EPA 8270C: Semivolatiles/Mod						
Client ID: LCSW	Batch	n ID: R2	8710	F	RunNo: 2	8710					
Prep Date:	Analysis D	ate: 8/	12/2015	S	SeqNo: 8	70226	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.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:

Client: Navajo Refining Company

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

Sample ID	1507d99-001adup	JP	TestCode: SM2510B: Specific Conductance								
Client ID:	WDW-1,2,&3 Effluen	D: R2	28029	F	RunNo: 2	8029					
Prep Date:	A	nalysis Da	te: 8 ,	/6/2015	S	SeqNo: 8	43890	Units: µmho	os/cm		
Analyte	ł	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.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:

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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 RPDLimi	t Qual
Mercury	ND 0.00020				
interest is a second	ND 0.00020				
Sample ID LCS-20588	SampType: LCS	TestCode: EPA Method	7470: Mercury	••••••••••••••••••••••••••••••••••••••	
		TestCode: EPA Method RunNo: 27941	7470: Mercury		
Sample ID LCS-20588	SampType: L CS		7470: Mercury Units: mg/L		
Sample ID LCS-20588 Client ID: LCSW	SampType: LCS Batch ID: 20588 Analysis Date: 8/4/2015	RunNo: 27941	Units: mg/L	RPD RPDLimi	t Qual

Qualifiers:

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

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RL **Reporting Detection Limit**

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

Sample ID MB-20636	SampType: MBLK	TestCode: MERCURY, T	TCLP				
Client ID: PBW	Batch ID: 20636	RunNo: 28011					
Prep Date: 8/6/2015	Analysis Date: 8/6/2015	SeqNo: 843195	Units: mg/L	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, T	TCLP				
· ·	SampType: LCS Batch ID: 20636	TestCode: MERCURY, T RunNo: 28011	TCLP				
Client ID: LCSW	1 31		CLP Units: mg/L				
Sample ID LCS-20636 Client ID: LCSW Prep Date: 8/6/2015 Analyte	Batch ID: 20636 Analysis Date: 8/6/2015	RunNo: 28011		%RPD	RPDLimit	Qual	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank в
- Ε Value above quantitation range
- Sample pH Not In Range
- RL Reporting Detection Limit

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J Analyte detected below quantitation limits Р

WO#: 1507D99

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	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	6010B: TCLF	P Metals			
Client ID: PBW	Batch	n ID: 20	620	F	RunNo: 2	7997					
Prep Date: 8/5/2015	Analysis D	ate: 8/	6/2015	S	SeqNo: 8	42847	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									
	110	0.0									
Sample ID LCS-20620		ype: LC	S	Test	tCode: E	PA Method	6010B: TCLF	P Metals			
	SampT				tCode: El tunNo: 2		6010B: TCLF	P Metals	,		
Sample ID LCS-20620	SampT	ype: LC	620	R		7997	6010B: TCLF Units: mg/L	P Metals			
Sample ID LCS-20620 Client ID: LCSW	SampT Batch	ype: LC	620 6/2015	R	tunNo: 2	7997		9 Metals %RPD	RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015	SampT Batch Analysis D	ype: LC 1 ID: 20 Date: 8/	620 6/2015	R	tunNo: 2 SeqNo: 8	7997 42848	Units: mg/L		RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015 Analyte	SampT Batch Analysis D Result	ÿpe: LC n ID: 20 Pate: 8/ PQL	620 6/2015 SPK value	R S SPK Ref Val	RunNo: 2 SeqNo: 8 %REC	7997 42848 LowLimit	Units: mg/L HighLimit		RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015 Analyte Arsenic	SampT Batch Analysis D Result ND	ype: LC 1 ID: 20 Date: 8/ PQL 5.0	620 6/2015 SPK value 0.5000	R SPK Ref Val 0	tunNo: 2 SeqNo: 8 <u>%REC</u> 95.8	7997 42848 LowLimit 80	Units: mg/L HighLimit 120		RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015 Analyte Arsenic Barium	SampT Batch Analysis D Result ND ND	ype: LC 1 ID: 20 Pate: 8/ PQL 5.0 100	620 6/2015 SPK value 0.5000 0.5000	R S SPK Ref Val 0 0	tunNo: 2 SeqNo: 8 %REC 95.8 98.8	7997 42848 LowLimit 80 80	Units: mg/L HighLimit 120 120		RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015 Analyte Arsenic Barium Cadmium	SampT Batch Analysis D Result ND ND ND	Type: LC n ID: 20 Pate: 8/ PQL 5.0 100 1.0	620 6/2015 SPK value 0.5000 0.5000 0.5000	F S SPK Ref Val 0 0 0	2000 2000 2000 2000 2000 2000 2000 200	7997 42848 LowLimit 80 80 80	Units: mg/L HighLimit 120 120 120		RPDLimit	Qual	
Sample ID LCS-20620 Client ID: LCSW Prep Date: 8/5/2015 Analyte Arsenic Barium Cadmium Chromium	SampT Batch Analysis D Result ND ND ND ND	Type: LC Date: 8/ PQL 5.0 1.0 5.0	620 6/2015 SPK value 0.5000 0.5000 0.5000 0.5000	F S SPK Ref Val 0 0 0 0	RunNo: 2 SeqNo: 8 %REC 95.8 98.8 96.2 98.4	7997 42848 LowLimit 80 80 80 80	Units: mg/L HighLimit 120 120 120 120		RPDLimit	Qual	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 22 of 31

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

Client: Navajo Refining Company **Project:**

Quarterly WDW-1, 2, & 3 Inj Well

Sample ID MB-20620	SampTy	/pe: MB	BLK	Test	Code: El	PA 6010B: '	Total Metals			
Client ID: PBW	Batch	ID: 206	620	R	lunNo: 2	7997				
Prep Date: 8/5/2015	Analysis Da	ate: 8 /	6/2015	S	eqNo: 8	42849	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								
on	ND	0.050								
.ead	ND (0.0050								
Manganese	ND (0.0020								
lickel	ND	0.010								
Selenium	ND	0.050								
Silver	ND (0.0050								
Thallium	ND	0.050								
/anadium	ND	0.050								
Zinc	ND	0.020								
Sample ID LCS-20620	SampTy	/pe: L C	S	Tes	tCode: El	PA 6010B:	Total Metals			
Client ID: LCSW	Batch	ID: 206	620	R	unNo: 2	7997				
				-		12050	Units: mg/L			
Prep Date: 8/5/2015	Analysis Da	ate: 8/	6/2015	5	eqNo: 8	42030	•			
-	Analysis Da Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte	-						-	%RPD	RPDLimit	Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte Numinum Antimony	Result 0.47	PQL 0.020	SPK value 0.5000	SPK Ref Val 0	%REC 94.7	LowLimit 80	HighLimit 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic	Result 0.47 0.49	PQL 0.020 0.050	SPK value 0.5000 0.5000	SPK Ref Val 0 0	%REC 94.7 98.3	LowLimit 80 80	HighLimit 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium	Result 0.47 0.49 0.49 0.50	PQL 0.020 0.050 0.020	SPK value 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0	%REC 94.7 98.3 98.5	LowLimit 80 80 80	HighLimit 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Beryllium	Result 0.47 0.49 0.49 0.50 0.50	PQL 0.020 0.050 0.020 0.020	SPK value 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0	%REC 94.7 98.3 98.5 100	LowLimit 80 80 80 80	HighLimit 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Baryllium Cadmium	Result 0.47 0.49 0.49 0.50 0.50 0.49	PQL 0.020 0.050 0.020 0.020 0.0030	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101	LowLimit 80 80 80 80 80	HighLimit 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Beryllium Cadmium Chromium	Result 0.47 0.49 0.49 0.50 0.50 0.49 0.49 0.50	PQL 0.020 0.050 0.020 0.020 0.0030 0.0020	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7	LowLimit 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Baryllium Beryllium Cadmium Chromium Copper	Result 0.47 0.49 0.49 0.50 0.50 0.49 0.49 0.50	PQL 0.020 0.050 0.020 0.020 0.0030 0.0020 0.0060	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100	LowLimit 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Juminum Intimony Insenic Barium Baryllium Cadmium Chromium Copper Ton	Result 0.47 0.49 0.50 0.50 0.50 0.49 0.50 0.51 0.51	PQL 0.020 0.050 0.020 0.020 0.0030 0.0020 0.0060 0.0060	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103	LowLimit 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Seryllium Cadmium Chromium Copper ron Lead	Result 0.47 0.49 0.50 0.50 0.50 0.49 0.50 0.51 0.51 0.51 0.50	PQL 0.020 0.020 0.020 0.0030 0.0020 0.0060 0.0060 0.0060 0.050	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103 102	LowLimit 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Beryllium Cadmium Chromium Copper ron Lead Manganese	Result 0.47 0.49 0.50 0.50 0.50 0.49 0.50 0.51 0.51 0.51 0.50	PQL 0.020 0.050 0.020 0.0030 0.0020 0.0060 0.0060 0.050	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103 102 99.7	LowLimit 80 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Beryllium Cadmium Chromium Copper ron Lead Aanganese lickel	Result 0.47 0.49 0.50 0.50 0.50 0.50 0.51 0.51 0.50 0.51 0.50	PQL 0.020 0.050 0.020 0.0030 0.0020 0.0060 0.0060 0.050 0.0050 0.0020	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103 102 99.7 101	LowLimit 80 80 80 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Prep Date: 8/5/2015 Analyte Numinum Antimony Arsenic Barium Baryllium Cadmium Cadmium Chromium Copper ron Lead Manganese Nickel Selenium Silver	Result 0.47 0.49 0.50 0.50 0.50 0.50 0.50 0.51 0.50 0.51 0.50 0.51 0.50 0.51 0.50 0.51 0.49	PQL 0.020 0.050 0.020 0.0030 0.0020 0.0060 0.0060 0.0050 0.0050 0.0020 0.010	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103 102 99.7 101 101	LowLimit 80 80 80 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual
Analyte Numinum Antimony Arsenic Barium Baryllium Cadmium Cadmium Chromium Copper ron Lead Manganese Nickel Selenium	Result 0.47 0.49 0.50 0.50 0.50 0.50 0.50 0.51 0.50 0.51 0.50 0.51 0.50 0.51 0.50 0.51 0.49	PQL 0.020 0.020 0.020 0.020 0.0030 0.0020 0.0060 0.0050 0.0050 0.0050 0.010 0.010	SPK value 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000	SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	%REC 94.7 98.3 98.5 100 101 97.7 100 103 102 99.7 101 101 97.5	LowLimit 80 80 80 80 80 80 80 80 80 80 80 80 80	HighLimit 120 120 120 120 120 120 120 120 120 120	%RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- % Recovery outside of range due to dilution or matrix S

в Analyte detected in the associated Method Blank

- Ε Value above quantitation range
- Analyte detected below quantitation limits J
- Page 23 of 31
- P Sample pH Not In Range RL **Reporting Detection Limit**

WO#: 1507D99

10-Sep-15

QC SUMMARY REPORT

10-Sep-15

Hall Environmental Analysis Laboratory, Inc.

Client:	Navajo R	efining C	ompany								
Project:	Quarterly	WDW-1	, 2, & 3	Inj Well							
Sample ID	LCS-20620	Sama			Tee		DA 6040D.	Tetal Matala			
		-	Type: LC					Total Metals			
	LCSW		ch ID: 20			RunNo: 2					
Prep Date:	8/5/2015	Analysis	Date: 8/	6/2015	Ś	SeqNo: 8	42850	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	Samp	Type: MS		Tes	tCode: El	PA 6010B:	Total Metals			
Client ID:	WDW-1,2,&3 Efflu	ien Bate	h ID: 20	620	F	RunNo: 2	7997				
Prep Date:	8/5/2015	Analysis	Date: 8/	6/2015	\$	SeqNo: 8	42864	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	0.000100	87.6	75	125			
Cadmium		0.44	0.0020	0.5000	0	87.4	75	125			
Chromium		0.44	0.0020	0.5000	0.003330	84.3	75	125			
Cobalt		0.42	0.0060	0.5000	0.003330	84.3 84.7	75	125			
Copper		0.43	0.0060	0.5000	0.008400	93.8	75	125			
ron		1.3	0.0000	0.5000		93.8 92.2	75	125			
_ead		0.43	0.0050		0.8854 0			125			
				0.5000	-	85.8	75	125			
Manganese Nickel		0.53	0.0020	0.5000	0.1014	84.8	75 75				
		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	1507D99-001BMS	D Samp	Type: MS	SD	Tes	tCode: El	PA 6010B:	Total Metals			
Client ID:	WDW-1,2,&3 Efflu	i en Bato	ch ID: 20	620	F	RunNo: 2	7997				
Prep Date:	8/5/2015	Analysis	Date: 8/	6/2015	Ş	SeqNo: 8	42865	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	
		0.43	0.0030	0.5000	0	85.0	75	125	3.04	20	
Beryllium					0	85.0	75	125	2.73	20	
•		0.43	0.0020	0.5000	0	00.0					
Beryllium Cadmium Chromium								125			
Cadmium		0.43 0.41 0.42	0.0020 0.0060 0.0060	0.5000 0.5000 0.5000	0.003330 0.008460	82.1 82.7	75 75	125 125	2.67 2.33	20 20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- RPD outside accepted recovery limits R
- % Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank в

Ε Value above quantitation range

J Analyte detected below quantitation limits Page 24 of 31

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

Client: Navajo Refining Company

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

Sample ID	1507D99-001B	MSD Samp	Type: MS	SD	Tes	tCode: E	PA 6010B: 1	Total Metals			
Client ID:	WDW-1,2,&3 E	ffluen Bato	h ID: 20	620	F	RunNo: 2	7997				
Prep Date:	8/5/2015	Analysis I	Date: 8 /	6/2015	S	SeqNo: 8	42865	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	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA 6010B: 1	Total Metals			
Client ID:	PBW	Bato	h ID: 20	675	F	RunNo: 2	8076				
Prep Date:	8/10/2015	Analysis I	Date: 8/	10/2015	S	SeqNo: 8	45664	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	Samp	Type: LC	s	Tes	tCode: E	PA 6010B: 1	Total Metals			
Client ID:	LCSW	Bato	h ID: 20	675	F	RunNo: 2	8076				
Prep Date:	8/10/2015	Analysis I	Date: 8/	10/2015	S	SeqNo: 8	45665	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

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1507D99 10-Sep-15

WO#:

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

Sample ID 1507d99-	001adup SampT	ype: Dl	JP	Tes	tCode: S	M4500-H+B	:pH			
Client ID: WDW-1,2	,&3 Effluen Batch	1D: R 2	28029	F	RunNo: 2	8029				
Prep Date:	Analysis D	ate: 8	/6/2015	S	SeqNo: 8	43901	Units: pH u	nits		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.15	1.68								Н

Qualifiers:

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

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WO#: 1507D99

10-Sep-15

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

Sample ID MB-R28710	SampType: MBLK	TestCode: CYANIDE, Re	eactive									
Client ID: PBW	Batch ID: R28710	RunNo: 28710	No: 28710									
Prep Date:	Analysis Date: 8/13/2015	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, Re	eactive									
Sample ID LCS-R28710 Client ID: LCSW	SampType: LCS Batch ID: R28710	TestCode: CYANIDE, Re RunNo: 28710	eactive									
•		,	eactive Units: mg/L									
Client ID: LCSW	Batch ID: R28710 Analysis Date: 8/13/2015	RunNo: 28710										

Qualifiers:

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

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1507D99

WO#:

10-Sep-15

WO#: 1507D99

Qual

RPDLimit

10-Sep-15

Client: Navajo Refining Company

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

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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 Ics-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	
	<u> </u>
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit	Qual
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Total Alkalinity (as CaCO3) 78.64 20.00 80.00 0 98.3 90 110	Qual
	Qual
Total Alkalinity (as CaCO3) 78.64 20.00 80.00 0 98.3 90 110	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	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	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	- - -
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	- - -
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 Total Alkalinity (as CaCO3) ND 20.00 ND 20.00 ND 20.00	- - -
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 Total Alkalinity (as CaCO3) ND 20.00 TestCode: SM2320B: Alkalinity	- - -
Total Alkalinity (as CaCO3)78.6420.0080.00098.390110Sample IDmb-2SampType:MBLKTestCode:SM2320B:AlkalinityClient ID:PBWBatch ID:R28029RunNo:28029Prep Date:Analysis Date:8/6/2015SeqNo:843874Units:mg/L CaCO3AnalyteResultPQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitTotal Alkalinity (as CaCO3)ND20.0020.00Sample IDIcs-2SampType:LCSTestCode:SM2320B:AlkalinityClient ID:LCSWBatch ID:R28029RunNo:28029RunNo:28029Prep Date:Analysis Date:8/6/2015SeqNo:843875Units:mg/L CaCO3	- - -

Qualifiers:

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

WO#: 1507D99

10-Sep-15

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Client: Navajo Refining Company

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

Sample ID	1507D99-001ADUP	SampTyp	: DL	JP	Tes	tCode: S	Specific Grav	/ity			
Client ID:	WDW-1,2,&3 Effluen	Batch IE	: R2	27979	F	RunNo:	27979				
Prep Date:	A	nalysis Date	: 8/	/5/2015	S	SeqNo:	841885	Units:			
Analyte		Result F	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	, C	.9985	0				····		0.180	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank

E Value above quantitation range

- J Analyte detected below quantitation limits
- P Sample pH Not In Range

RL

Reporting Detection Limit

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WO#: 1507D99

10-Sep-15

WO#:

1507D99 10-Sep-15

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

Sample ID MB-20581	SampT	ype: ME	BLK	Tos	tCode: SN	12540C MC	D: Total Diss	olved So	lids	
Client ID: PBW	Batch	ID: 20	581	F	RunNo: 27	7984				
Prep Date: 8/4/2015	Analysis D	ate: 8/	5/2015	S	SeqNo: 84	42184	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fotal Dissolved Solids	ND	20.0								
Total Dissolved Solids Sample ID LCS-20581		20.0 ype: LC	S	Tes	tCode: SN	M2540C MC	D: Total Diss	olved So	lids	
	SampT				tCode: SN		DD: Total Diss	olved So	lids	
Sample ID LCS-20581 Client ID: LCSW	SampT	ype: LC	581	F		7984	DD: Total Diss Units: mg/L	olved So	lids	
Sample ID LCS-20581 Client ID: LCSW	SampT Batch	ype: LC	581 5/2015	F	RunNo: 27	7984		olved So %RPD	lids RPDLimit	Qual

Qualifiers:

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

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- 0
- ion Limit

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory 4991 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:	
Received by/date: JA 0718115	anaana ahaa maada ahaa ahaa ahaa ahaa ahaa ah			
Logged By: Lindsay Mangin 7/31/2015 8:00:00 AM		Julito		
Completed By: Lindsay Mangin 7/31/2015 9:56:04 AM		- tythey		
Reviewed By IG 07/31/15		$\nu \star \star$		
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 🗔		
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes 🗹	No 🗍		
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	1997 - Serri Sandaran 1997 - Serri Sandaran
11. Were any sample containers received broken?	Yes □	No 🗹		
			# of preserved bottles checked of	2
12. Does paperwork match bottle labels?	Yes 🗹	No	for pH:	r (12) unless noted)
(Note discrepancies on chain of custody) 13. Are matrices correctly identified on Chain of Custody?	Yes 🔽	No 🗍		10
14. Is it clear what analyses were requested?	Yes 🗹	No 🗍		tertynes (f. 1999) San Star
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🗌	Checked by;	CSS
Special Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes 🖸	No 🗂		
Person Notified: Date				
By Whom: Via: [🗌 eMail 📋	Phone 🗌 Fax	In Person	
Regarding:				
Client Instructions:				
17. Additional remarks:		ajora di sensi di sensi se di sedise		distruction and the second second second second
18. Cooler Information	eeleene tiisstittii Saagaa toogooloo 📽	an an air air an		
provide a second s	Seal Date	Signed By		
1 1.8 Good Yes		n sy source in the		

NTAL	TORY					<u>}</u>															Remarks: Send results to Scott Denton, Mike Holder, Micki Schultz, Robert Comb and Andrew Contreras.			
ENVIRONMENTAL	LABORATORY	at com	87109	107	ist																ilder, Micki Schu	dicel report.		
AIV			nerque, NN	Fax 505-345-4107	Analysis Request		1 833) 0	6/ Á	ua 's	261/ SW-84	×									n, Mike Ho	ted on the analy		
		www.hallenvironmental.com	E - Albuqi		Analy		steM	, 18	i pa	ttach	Metals/SW- 7470 (see a 63. K, Mg, 1		×								scott Dente	be clearly nota		
HALL	AN		4901 Hawkins NE - Albuquerque, NM 87109	505-345-3975		00	(,s;	11 200	97 1 AS.	ed 원	R.C.I/40 CF (see attache SVOCs/SW				×	×					results to 8 ntreras.	tracted data wi		
			4901	Tel.			() 9529 1/40	\$0(20 13	οΛ. ettic	109 1 10 10 10	Cation/anioi VOCs/SW-8			×			×				Remarks: Send results and Andrew Contreras	Ny. Any sub-co		
						CI	603	13 13 13		1, vitv 1, vitv DHc	Specific Gra Specific Gra	×										idissod sivi la		
			& 3 Inj Well				2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	n / Mike Holder	beny	20	HEAL NO.	8-	(W)-	Ŕ	$-\mathcal{O}\mathcal{N}$	8	g g	1			Date Time 7/3///5 0800 Date Time	. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report		
d Time:	C Rush	Je.	N	P.O. # 167796		lager:	4	Micki Schultz / Scott Denton / Mike Holder	Salst	٨.	Preservative Type	Neat/H2SO4	HNO3	HCL	Neat	Neat	Neat	Neat			Refelter 0	accedied laborationer		
Turn-Around Time	C Standar	Project Name:	Quarterly WDW-1.	Project #. P		Project Manager.		Micki Schul	Sampler	On Joe K Yes Sample Temperature	Container Type and #	ო	÷	3	2	7	3	۳			Received by	atracted to other		
Chain-of-Custody Record								D Level 4 (Full Validation)			Sample Request ID	WDW-1, 2, & 3 Effluent	WDW-1, 2, & 3 Effluent	Trip Blank	Temperature Blank			Reinnussied by El (Zobeth Soutsberry) Perion 1008 M Zollherry Reinnussied by	es submitted to 1466 Environmental may be subcontracted to other accredied laborationes.	-minore sierennen	chan sin have been			
f-dust	ပ် ပြ		Box 1597	an a s	- -	6-5451		—			Mathtx	Liquid W			I		Liquid Tr				entruquished			ilini ujego toto opjania
hain-o	ajo Refinin	in a si che a ma in ain producto compositione matteriare esta	fress: P.O.	0159	75-748-33	x#: 575-74	:eđe:	o		(be)	j,	CBS L	CSSS Liquid	CSS Liquid	Ę	0835 L		CRSS Liquid				If necensary, samp		
ΰ	Client: Navajo Refining Co		Mailing Address: P.O. Box 159 Artesia	NM 88211-0159	Phone #: 575-748-3311	email or Fax#: 575-746-5451	QAVQC Package.	□ Standard	Other		Date	7/30/15		7/30/15	7/30/15	7/30/15 1	7/30/15	7/30/15			Date: 7/30/2015 Date:			

HOLLYFRONTIER The HollyFrontier Companies	Physical Property Solid Liquid Sludge Type of Sampler Directly to sample jars 	P-856 sample point (third from east) P-857 sample point (fourth from east)		specific Gravity, HCU3, CU3, CU4, LU5, pH, cond., FI, Cation/anion bal., Br, Eh/40 CFR 136.3	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 Mind 601u, 7470 (See attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW- 846 Method 1311		the Clouder Procession Storatore Method Procession and	Refrigera	Shipping Media Ice J Other
Injection Well Quarterly Sample Details HOI Attachment	Sample Type Sample Type Grab C Time Weighted Composite	P-849 sample point (first from east) P-854 sample point (second from east) Dreservatives	HNO3 H2SO4 NaOH Na2S2O3 NaHSO4 Other	×	×							15. 3 °E Humidith: 69%, Wind Direction: North Wind Seeed: 10.0 mi Over all Condition: Padly Clurdy		
Navajo Refining Company, LLC 501 E. Main Artesia, NM 88210 (Tel) 575.748.3311 (Fax) 575.746.5451	3 Ortly Inj Well Isberry Ing Co. 1LC 8:50 am 9:01 am	Waste water effluent pumps to injection wells.	# of Neat Containers (None) HCL	× m	-	3 X	2 X	2 X	2 X	1 ×		Trams	06	
O LE NE	Project NameWDW-1,2, & 3 Orth Inj WellSamplers NameElizabeth SalsberrySamplers AffiliationNavajo Refining Co. 1LCStart Date and Time7/30/2015 @ 9:01 amEnd Date and Time7/30/2015 @ 9:01 am	Outfall / Sample Location Wast	Container Size Materia			~	4 (1997)	QI	0	4	10	Field Other Microsofter Checkingtone Erd	Date and Time Vost versus, 1000 Parts Part	

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. , 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,

about O Bri 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 & Quar

 1,2,3
 Injection Wells/Reports C-115 & Quar

R Orosco, R Combs, S Denton Injection Wells/Reports C-115 & Quarterly/2015/4th quarter/2016-02-05 4th QTR Inj. Rpt. for Wells WDW-

HollyFrontier Navajo Refining LLC 501 East Main • Artesia, NM 88210 (575) 748-3311 • <u>http://www.hollyfrontier.com</u>