GW-028

2016 AGWMR Part 8 of 8

2017

MW-77: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





MW-78: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds

MW-79: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





MW-80: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds

MW-81: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





MW-82: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-83: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

Evaporation Ponds



MW-84: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

Evaporation Ponds

MW-87: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



MW-88: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



MW-120: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



MW-121: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



MW-122: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



MW-123: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-1 & OCD-1R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





OCD-2A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-3: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-4: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

OCD-5: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-6: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-7A & OCD-7AR: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





OCD-7B: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds

OCD-8A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds



OCD-8B: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Evaporation Ponds





KWB-1A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-1C: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-2R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-7: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-8: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

KWB-10R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-11A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-11B: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





KWB-12A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



KWB-12B: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery
MW-57: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



MW-58: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



MW-111: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





MW-113: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery

MW-126A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





MW-127: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery

MW-128: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





MW-129: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



MW-131: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



MW-135: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery





RW-18: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Field East of Refinery



MW-23: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-29: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-39: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area

MW-40: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-41: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





MW-43: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area

MW-59: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-60: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





MW-61: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-62: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

MW-67: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-90: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





MW-91: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-92: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



MW-93: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area

100 10 1 0.1 0.01 Mar-15 Sep-15 Mar-16 Sep-16 Mar-17 Sep-14 Date --------------------------------DRO -------------------------------GRO → Benzene -Ethylbenzene ----- Toluene

Concentration (mg/L)

MW-94: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





MW-96: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

North Refinery Area



MW-98: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-137: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area




RW-2 and RW-2R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area

RW-7 and RW-7R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



RW-9: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area



RW-10: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery North Refinery Area





RW-17: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

North Refinery Area

MW-18: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-45: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-53: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-54A: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-54B: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





MW-56: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-118: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Reverse Osmosis Reject Fields



KWB-2R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





MW-52: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-64: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-65: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-66: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-99: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





MW-102: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

South Refinery Area

MW-103: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-104: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





MW-105: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-106: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-107: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-110: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



MW-114: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area


RW-4 and RW-4R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area





RW-5 and RW-5R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery

RW-6 and RW-6R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery South Refinery Area



TEL-1: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Tetra Ethyl Lead Impoundment





TEL-2: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Tetra Ethyl Lead Impoundment



HollyFrontier Navajo Refining LLC - Artesia Refinery Tetra Ethyl Lead Impoundment





TEL-4: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Tetra Ethyl Lead Impoundment



MW-49: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Tetra Ethyl Lead Impoundment



MW-8: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch



MW-16: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



MW-20: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch



MW-21: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch



MW-25: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



HollyFrontier Navajo Refining LLC - Artesia Refinery





MW-27: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch

MW-46 & MW-46R: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch





MW-68: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch



MW-71: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery



HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch





NP-1: COC Concentrations



NP-6: COC Concentrations

HollyFrontier Navajo Refining LLC - Artesia Refinery Three Mile Ditch

Appendix D: Data Validation

Data reported by ESC Lab Sciences in Nashville, Tennessee for the groundwater samples collected in April and October 2016 were reviewed to ensure that reporting analytical results met the data quality requirements contained in the United States Environmental Protection Agency (EPA) *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, August 2014), *National Functional Guidelines for Superfund Inorganic Methods Data Review* (USEPA, August 2014), and the individual methods, as applicable. It was determined that quality control data associated with analytical results indicate reported concentrations of target analytes are defensible and that measurement data reliability is within the expected limits of sampling and analytical error. Quality control (QC) data indicate that measurement data are sufficient to meet method quality objectives, reported data are defensible, and QC mechanisms were generally effective in ensuring measurement data reliability within the expected limits of sampling and analytical error.

The following section discuss the data QC issues identified during the data review for each of the data reports listed below.

April 2016 Data Packages	October 2016 Data Packages
L832409	L864303
L832422	L864305
L832435	L864320
L832447	L864321
L832450	L864334
L832460	L864567
L832462	L864633
L832468	L864634
L832472	L864646
L832488	L864773
L832603	
L832616	
L832621	

Sample ID	Lab ID
L832409-01	UG-1
L832409-02	UG-2
L832409-03	UG-3R
L832409-04	UG-4
L832409-05	TRIP BLANK-REST-03
L832409-06	MW-117
L832409-07	MW-118
L832409-08	MW-119
L832409-09	MW-57
L832409-10	MW-111
L832409-11	KWB-5
L832409-12	KWB-12A
L832409-13	KWB-12B
L832409-14	DUP-REST-05
L832409-15	EB-REST-05
L832409-16	KWB-11B
L832409-17	KWB-11A
L832409-18	RW-13R
L832409-19	RA-4196
L832409-20	TRIP BLANK-REST-01
L832409-21	RA-4798
L832409-22	MW-50
L832409-23	MW-92
L832409-24	RW-1R*
L832409-25	MW-91
L832409-26	MW-90
L832409-27	MW-96

Sample identifiers cross-referenced to laboratory identifications are presented below.

*Sample ID is listed as RW-1 in corresponding COC

Lab Report L832409 Continued

Data Review Checklist	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	x		
of sample acceptability upon receipt?	Λ		
All samples within holding times?		Х	
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any laboratory control sample (LCS) or LCS duplicates			
(LCSD) % recoveries (%R) out of laboratory defined		Х	
limits?			
Any LCS/LCSD relative percent differences (RPD) above		v	
laboratory defined limits?		Λ	
Any matrix spike (MS) or MS duplicate (MSD) %R	v		
outside of laboratory defined limits?	Λ		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?	Х		

Holding Time

For KWB-11A, TDS was analyzed out of the recommended holding time due to rerun not confirming the original result.

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved boron: KWB-11B
- Boron: KWB-11B, UG-3R
- Iron: KWB-11B, MW-50
- Dissolved manganese: UG-3R, EB-REST-05

Equipment Blanks

Ten equipment blank detections were identified in EB-REST-05. These compounds were detected in the corresponding samples at concentrations within five times the EB-REST-05 equipment blank concentration. Therefore, they may include measurement contributions from the field.

Lab Report L832409 Continued

- Nitrate-nitrite: KWB-5, MW-111, RA-4196, RW-13R
- Dissolved nickel: UG-1, EB-REST-05
- Dissolved vanadium: EB-REST-05

MS/MSDs

Dissolved arsenic in batch WG869123 was below the recovery limit for both MS and MSD %R. Therefore, samples in this batch with a detection in the corresponding analyte may be biased low.

The following analytes were above the recovery limit for both MS and MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased high.

- Dissolved boron in batch WG869425
- Selenium in batch WG869289

The following analytes exceeded their respective RPD. Therefore, any detected analytes in the samples in each of the corresponding batch may be biased high.

- Dissolved arsenic in batch WG869123
- Dissolved selenium in batch WG873946
- Selenium in batch WG869289

Field Duplicates

The duplicate pair KWB-12B and DUP-REST-05 did not meet control limits (20%) for nitratenitrite (39.6%) or sulfate (26.5%). These results for KWB-12B may be considered estimated.

Analytical Method

Selenium in sample MW-91 was analyzed by ICP 6020 due to matrix interferences by ICPMS 6020.

Lab ID	Sample ID
L832422-01	MW-103
L832422-02	MW-104
L832422-03	EB-REST-02
L832422-04	DUP-REST-02
L832422-05	MW-126B
L832422-06	KWB-1A
L832422-07	KWB-6
L832422-08	KWB-10R
L832422-09	RW-#18A
L832422-10	TRIP BLANK-REST-02
L832422-11	MW-40
L832422-12	MW-98
L832422-13	MW-93
L832422-14	MW-23
L832422-15	MW-138
L832422-16	MW-137
L832422-17	MW-42
L832422-18	MW-41
L832422-19	MW-106
L832422-20	MW-101
L832422-21	RA-3156

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?		Х	

Lab Report L832422 Continued

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved Lead: KWB-1A, KWB-6, KWB-10R, MW-93, MW-23, EB-REST-02
- Manganese: EB-REST-02
- Dissolved selenium: KWB-6, KWB-10R, MW-23, MW-40, MW-41, MW-42, MW-98, MW-101, MW-137, MW-138, RW-#18A, DUP-REST-02,
- Dissolved vanadium: MW-137, MW-138

Equipment Blanks

Six equipment blank detections were identified in EB-REST-02. Nitrate-nitrite was detected in the corresponding samples DUP-REST-01, MW-103, MW-104, MW-101, and MW-126B at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The following analytes were below the recovery limit for both MS and MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Benzene in batch WG868978
- Dissolved Mercury in batch WG868782
- Nitrate/Nitrate in batch WG870054

Cadmium (WG869264) was above the recovery limit for both MS and MSD %R. Therefore, samples in this batch with a cadmium detection may be biased high.

The following analytes exceeded their respective RPD. Therefore, any detected analytes in the samples in each of the corresponding batch may be biased high.

- Acetone in batch WG870074
- Selenium in batch WG869264

Lab Duplicates

The RPD in sample L832422-20 (WG870054) exceeded the laboratory-defined control limit for nitrate-nitrite. Therefore, the nitrate-nitrite result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-104 and DUP-REST-02 did not meet control limits (20%) for dissolved selenium (191.2%). the selenium result for MW-104 may be considered estimated.

Lab ID	Sample ID
L832435-01	MW-48
L832435-02	MW-130
L832435-03	MW-67
L832435-04	MW-94
L832435-05	MW-95
L832435-06	RW-7R*
L832435-07	MW-126A
L832435-08	MW-127
L832435-09	MW-129
L832435-10	MW-131
L832435-11	MW-134
L832435-12	EB-REST-03
L832435-13	DUP-REST-03
L832435-14	KWB-7
L832435-15	RA-313
L832435-16	MW-64**

Sample identifiers cross-referenced to laboratory identifications are presented below.

*Sample ID is listed as RW-7 in corresponding COC

**Sample not listed in corresponding COC, but added later per TRC

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?		Х	
Any analyte analyzed by different method than planned?		X	

Lab Report L832435 Continued

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved lead: MW-48
- Manganese: EB-REST-03

Equipment Blanks

Eight equipment blank detections were identified in EB-REST-03. Lead was detected in the corresponding samples MW-67 and MW-134 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG870054 was below the recovery limit for both MS and MSD %R, therefore samples in batch WG870054 with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-94 is below the laboratory limits, therefore the result for TPH High Fraction may be biased low.

Lab Duplicates

The RPD in MW-64 (WG871518) exceeded the laboratory-defined control limit for cyanide, therefore the cyanide result in this sample may be biased high.

Lah ID	Sample ID
	MW 25
L832447-01	IVI W-23
L832447-02	MW-27
L832447-03	MW-89
L832447-04	MW-26

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?		Х	
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?			Х
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Four method blank detections were identified in the QC summary. There was no data interpretation for associated samples because they are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

Lab Duplicates

The RPD in MW-25 (WG870055) exceeded the laboratory-defined control limit for nitratenitrite, therefore the nitrate-nitrite result in this sample may be biased high.

Lab ID	Sample ID
L832450-01	MW-20
L832450-02	NP-1
L832450-03	MW-68
L832450-04	MW-71
L832450-05	TRIP BLANK-TMD-01

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?	Х		
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?			Х
Any analyte analyzed by different method than planned?		Х	

Laboratory Method Blanks

Ten method blank detections were identified in the QC summary. There was no data interpretation for associated samples because they are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

MS/MSDs

The analytes outside the recovery limits for the MS/MSD %R were not qualified because each original result was greater than four times the corresponding spiked amount. The sample concentrations are too high to evaluate accurate spike recoveries.

Lab ID	Sample ID
L832460-01	TEL-3
L832460-02	EB-TEL-01
L832460-03	TEL-2
L832460-04	TRIP BLANK-TEL-01
L832460-05	TEL-1
L832460-06	TEL-4
L832460-07	DUP-TEL-01
L832460-08	MW-49

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?		Х	
Any analyte analyzed by different method than planned?		Х	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: MW-49
- Dissolved manganese: EB-TEL-01
- Vanadium: MW-49

Lab Report L832460 Continued

Equipment Blanks

Six equipment blank detections were identified in EB-TEL-01. Lead was detected in the corresponding samples TEL-1, TEL-2, TEL-3, TEL-4, MW-49, and DUP-TEL-01 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG870055 was below the recovery limit range for the MS/MSD %R, therefore samples in batch WG870055 with a nitrate-nitrite detection may be biased low.

All of the analytes listed in the MS/MSD analysis for batch WG868987 were above the laboratory RPD limits. With the exception of chloroform, all the original results were non-detect, so there was no data interpretation issues for the organic analysis. Samples in batch WG868987 with a chloroform detection may be biased high.

Lab ID	Sample ID
L832462-01	MW-56
L832462-02	NCL-34A
L832462-03	MW-108
L832462-04	NCL-31
L832462-05	NCL-32
L832462-06	EB-NCL-01
L832462-07	NCL-44

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	x		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		X	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Dissolved iron: MW-56
- Dissolved lead: MW-56, MW-108, EB-NCL-01
- Manganese: EB-NCL-01

Equipment Blanks

Seven equipment blank detections were identified in EB-NCL-01. TPH High Fraction was detected in the corresponding sample MW-56 at a concentration within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832462 Continued

MS/MSDs

The recovery limit of calcium in batch WG869321 was outside the recovery limits for the MS/MSD %R, but there was no data interpretation for the related samples. The original result was greater than four times the spiked amount, so the sample concentration is too high to evaluate accurate spike recoveries.

Lab ID	Sample ID
L832468-01	MW-45
L832468-02	TRIP BLANK-NCL-01
L832468-03	NCL-49
L832468-04	DUP-NCL-01
L832468-05	MW-54A
L832468-06	MW-53

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?		Х	
Any detection in equipment blanks?			Х
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?		Х	
Any analyte analyzed by different method than planned?		X	

MS/MSDs

Nitrate-nitrite in batch WG870056 was below the recovery limit range for the MS %R (no MSD reported), therefore samples in batch WG870056 with a nitrate-nitrite detection may be biased low.
L832472-01 MW-83 L832472-02 TRIP BLANK-EP-02 L832472-03 MW-4A L832472-04 MW-123 L832472-05 MW-10 L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-29 MW-124 L832472-29 <th>Lab ID</th> <th colspan="3">Sample ID</th>	Lab ID	Sample ID		
L832472-02 TRIP BLANK-EP-02 L832472-03 MW-4A L832472-04 MW-123 L832472-05 MW-10 L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-30 </td <td>L832472-01</td> <td colspan="3">MW-83</td>	L832472-01	MW-83		
L832472-03 MW-4A L832472-04 MW-123 L832472-05 MW-10 L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-01 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-1R L832472-32 OCD-2A	L832472-02	TRIP BLANK-EP-02		
L832472-04 MW-123 L832472-05 MW-10 L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-1R L832472-32 OCD-2A	L832472-03	MW-4A		
L832472-05 MW-10 L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-09 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-20 MW-6A L832472-20 MW-6A L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-18A L832472-28 EB-EP-02 L832472-30 MW-70 L832472-30 MW-70 L832472-31 <	L832472-04	MW-123		
L832472-06 MW-22A L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-20 MW-6A L832472-20 MW-6A L832472-20 MW-6A L832472-20 MW-72 L832472-20 MW-72 L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-124 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-30 MW-70 L832472-30 MW-70 L832472-31 <	L832472-05	MW-10		
L832472-07 DUP-EP-02 L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-1R L832472-31 OCD-1R L832472-32 OCD-2A	L832472-06	MW-22A		
L832472-08 MW-88 L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-20 MW-6A L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-07	DUP-EP-02		
L832472-09 MW-5A L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-1R L832472-31 OCD-1R L832472-32 OCD-2A	L832472-08	MW-88		
L832472-10 EB-EP-03 L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-30 MW-70 L832472-31 OCD-1R L832472-31 OCD-1R L832472-32 OCD-2A	L832472-09	MW-5A		
L832472-11 MW-7A L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-31 OCD-1R L832472-32 OCD-2A	L832472-10	EB-EP-03		
L832472-12 DUP-EP-01 L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-23 MW-72 L832472-24 MW-72 L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-11	MW-7A		
L832472-13 OCD-8A L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-12	DUP-EP-01		
L832472-14 MW-73 L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-13	OCD-8A		
L832472-15 TRIP BLANK-EP-01 L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-14	MW-73		
L832472-16 MW-74 L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-15	TRIP BLANK-EP-01		
L832472-17 EB-EP-01 L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-16	MW-74		
L832472-18 MW-79 L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-121 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-17	EB-EP-01		
L832472-19 EB-EP-04 L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-18	MW-79		
L832472-20 MW-6A L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-19	EB-EP-04		
L832472-21 OCD-7AR L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-20	MW-6A		
L832472-22 OCD-6 L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-21	OCD-7AR		
L832472-23 MW-72 L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-22	OCD-6		
L832472-24 MW-2A L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-23	MW-72		
L832472-25 MW-122 L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-24	MW-2A		
L832472-26 MW-121 L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-25	MW-122		
L832472-27 MW-124 L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-26	MW-121		
L832472-28 EB-EP-02 L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-27	MW-124		
L832472-29 MW-18A L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-28	EB-EP-02		
L832472-30 MW-70 L832472-31 OCD-1R L832472-32 OCD-2A	L832472-29	MW-18A		
L832472-31 OCD-1R L832472-32 OCD-2A	L832472-30	MW-70		
L832472-32 OCD-2A	L832472-31	OCD-1R		
	L832472-32	OCD-2A		
L832472-33 OCD-3	L832472-33	OCD-3		
L832472-34 OCD-4	L832472-34	OCD-4		
L832472-35 OCD-5	L832472-35	OCD-5		
L832472-36 MW-11A	L832472-36	MW-11A		
L832472-37 MW-15	L832472-37	MW-15		

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab Report L832472 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated sample at a concentration within ten times the method blank concentration. Therefore, theses samples may include measurement contributions from laboratory sources.

- Dissolved iron: MW-121, OCD-3
- Dissolved lead: EB-EP-04
- Dissolved manganese: EB-EP-01, EB-EP-02, EB-EP-03, EB-EP-04
- TPH Low Fraction: MW-15

Equipment Blanks

Equipment blank detections were identified in EB-EP-01 (8 total), EB-EP-02 (6 total), EB-EP-03 (7 total), and EB-EP-04 (10 total).

Dissolved arsenic was detected in sample OCD-5 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in the corresponding samples MW-2A, MW-5A, MW-6A, MW-18A, MW-70, MW-72, MW-73, MW-74, MW-79, MW-121, MW-122, OCD-1R, OCD-2A, OCD-5, OCD-6, and OCD-7AR at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832472 Continued

TPH High Fraction was detected in the corresponding samples MW-2A, MW-15, MW-18A, MW-121, MW-122, OCD-1R, OCD-2A, and OCD-5 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The following analytes were below the recovery limits for the MS/MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Nitrate-nitrite in batch WG870056 and WG870059
- Fluoride in batch WG869689 (no MSD reported)

Fluoride in batch WG869689 exceeded its respective RPD. However, samples with fluoride detections in batch WG869689 are already determined above as possibly biased low.

Surrogate Recoveries

Analytes with surrogate recoveries out of range could be qualified if more than half of the surrogates are outside the laboratory limits. Only one surrogate is out of the laboratory limits for total xylenes in samples DUP-EP-02, MW-5A, and MW-22A, so no data interpretation was needed.

Lab Duplicates

The RPD in MW-73 and OCD-3 (WG870057) exceeded the laboratory-defined control limit for nitrate-nitrite, but the RPD value is not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

Field Duplicates

The duplicate pair MW-7A and DUP-EP-01 did not meet the control limit (20%) for iron (35.6%). The iron result for MW-7A may be considered estimated.

Lab ID	Sample ID
L832488-01	MW-120
L832488-02	MW-81
L832488-03	MW-80
L832488-04	MW-84
L832488-05	MW-82
L832488-06	MW-78
L832488-07	MW-77
L832488-08	MW-76
L832488-09	MW-3
L832488-10	DUP-EP-03
L832488-11	MW-75
L832488-12	MW-87
L832488-13	TRIP BLANK-EP-03
L832488-14	MW-1R

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

TPH Low Fraction was detected in samples for MW-78, MW-81, MW-87, and MW-120 at concentrations within ten times the method blank concentration and therefore may include measurement contributions from laboratory sources.

Lab Report L832488 Continued

MS/MSDs

The analytes outside the recovery limits for the MS/MSD %R were not qualified because each original result was greater than four times the corresponding spiked amount. The sample concentrations are too high to evaluate accurate spike recoveries.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-77, MW-78, and MW-84 is below the laboratory limits, therefore the result for TPH High Fraction may be biased low for each of the samples listed.

Lab Duplicates

The RPD in sample MW-1R (WG870882) was below the laboratory-defined control limit for fluoride, therefore the fluoride result in this sample may be biased low.

Field Duplicates

The duplicate pair MW-3 and DUP-EP-03 did not meet the control limit (20%) for nitrate-nitrite (54.5%) and dissolved selenium (35.6%). The nitrate-nitrite and dissolved selenium result for MW-3 may be considered estimated.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832603-01	MŴ-65
L832603-02	RW-5R
L832603-03	MW-102
L832603-04	RW-6R*
L832603-05	RW-4R**
L832603-06	RW-2R***
L832603-07	MW-62
L832603-08	MW-43
L832603-09	RW-10
L832603-10	MW-39
L832603-11	MW-29
L832603-12	MW-61
L832603-13	MW-105
L832603-14	RW-#16B
L832603-15	RW-9
L832603-16	MW-58
L832603-17	MW-136
L832603-18	KWB-2R
L832603-19	KWB-13
L832603-20	RW-12R
L832603-21	MW-113
L832603-22	EB-REST-01
L832603-23	DUP-REST-01
L832603-24	MW-60
L832603-25	EB-REST-04
L832603-26	DUP-REST-04
L832603-27	MW-107
L832603-28	MW-59
L832603-29	MW-52
L832603-30	MW-109
L832603-31	MW-110
L832603-32	MW-128
L832603-33	MW-28
L832603-34	MW-66
L832603-35	TRIP BLANK-REST-04
L832603-36	MW-99
L832603-37	RW-#17A
L832603-38	MW-135
L832603-39	MW-115
L832603-40	MW-114
L832603-41	MW-125
L832603-42	MW-116

*Sample ID is listed as RW-6 in corresponding COC

Sample ID is listed as RW-4 in corresponding COC *Sample ID is listed as RW-2 in corresponding COC

Lab Report L832603 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	x		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	X		
Any analyte analyzed by different method than planned?	Х		

Laboratory Method Blanks

These compounds were detected in the following associate samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: DUP-REST-04, MW-52, MW-60, MW-115, RW-#17A
- Lead: MW-39, MW-43, MW-65, MW-105, RW-12R
- Manganese: EB-REST-01, EB-REST-04
- Nitrate-Nitrite: MW-65
- Dissolved vanadium: EB-REST-04
- Vanadium: EB-REST-04, MW-60

Equipment Blanks

Equipment blank detections were identified in EB-REST-01 (6 total) and EB-REST-04 (11 total).

Boron was detected in sample KWB-14 at concentrations within five times the equipment blank concentrations and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples KWB-2R, MW-29, MW-43, MW-59, MW-60, MW-62 MW-65, MW-66, MW-99, MW-102, MW-107, MW-109, MW-115, RW-2R, RW-4R, RW-12R, DUP-REST-01, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lab Report L832603 Continued

TPH High Fraction was detected in samples MW-114, MW-115, MW-125, MW-135, MW-136, AND DUP-REST-01 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batches WG870062 and WG870500 were below the recovery limits for MS/MSD %R (only MS analyzed in WG870500). Therefore, samples in the batches with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in RW-2R is above the laboratory limits, therefore the result for TPH High Fraction may be biased high.

Lab Duplicates

The RPD in sample L832603-21 exceeded the laboratory-defined control limit for fluoride, therefore the fluoride result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-113 and DUP-REST-01 did not meet the control limit (20%) for nitratenitrite (156.5%). The nitrate-nitrite result for MW-113 may be considered estimated.

The duplicate pair MW-60 and DUP-REST-04 did not meet the control limit (20%) for dissolved solids (21.7%), TPH Low Fraction (36.9%), and fluoride (55.1%). The dissolved solids, TPH Low Fraction, and fluoride results for MW-60 may be considered estimated.

Analytical Methods

Selenium (L832603-20) was analyzed by ICP 6010 due to matrix interference by ICPMS 6020.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832616-01	MW-21
L832616-02	MW-8
L832616-03	MW-46R

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	x		
of sample acceptability upon receipt?	1		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Method Blanks

Two method blank detections were identified in the QC summary. There was no data interpretation for associated samples that are either non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

MS/MSDs

Nitrate-nitrite in batch WG870500 was below the recovery limit range for both MS and MSD %R. Therefore, any detection of nitrate-nitrite in the samples in batch WG870500 may be biased low.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L832621-01	MW-55
L832621-02	MW-18
L832621-03	NCL-33

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Iron was detected in well MW-55 at a concentration within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

MS/MSDs

Dissolved mercury in batch WG869862 was below the recovery limit range for both MS and MSD %R. Therefore, any detection of dissolved mercury in the samples in batch WG869862 may be biased low.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Sample ID	Lab ID
L864303-01	MW-49

Data Review Checklist	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?	Х		
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?			Х
Any field duplicate data additionally flagged as estimated?			Х
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Nitrate-nitrite and chromium were detected in MW-49 at concentrations within five times the method blank concentrations and therefore may include measurement contributions from laboratory sources.

LCS/LCSDs

Individual LCS or LCSD recoveries were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each LCS/LCSD recoveries were outside the laboratory-defined limits.

Acetone, bromomethane, chloroethane, and 2-butanone (MEK) exceeded their respective RPD in batch WG917623. However, all of these analytes were non-detect in MW-49, so there was no data interpretation.

MS/MSDs

Nitrate-nitrite in batch WG915231 was below the recovery limit for MS %R (no MSD %R reported). Therefore, the nitrate-nitrite detected result in MW-49 may be biased low.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864305-01	NP-1
L864305-02	MW-21
L864305-03	TRIP BLANK-TMD-01

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	x		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?	Х		
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?	Х		
Any MS/MSD %R outside of laboratory defined limits?			Х
Any MS/MSD RPD above laboratory defined limits?			Х
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?			Х
Any field duplicate data additionally flagged as estimated?			X
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Chloromethane was detected in MW-21 and TRIP BLANK-TMD-01 at concentrations within ten times the method blank concentrations and therefore may include measurement contributions from laboratory sources.

Trip Blanks

The detection of chloromethane in TRIP BLANK-TMD-01 was already concluded to contain measurement contributions from laboratory sources, so there is no further data interpretation needed.

LCS/LCSDs

An individual LCSD recovery was below the laboratory-defined limits. However, there was no data interpretation since only one of the LCS/LCSD recoveries was outside the laboratory-defined limits.

Lab Report L864305 Continued

Acetone, bromomethane, chloroethane, and 2-butanone (MEK) exceeded their respective RPD in batch WG917623. However, all of these analytes were non-detect in NP-1, MW-21, and TRIP BLANK-TMD-01, so there was no data interpretation.

Surrogate Recoveries

Analytes with surrogate recoveries out of range could be qualified if more than half of the surrogates are outside the laboratory limits. Only one surrogate is out of the laboratory limits for total xylenes in TRIP BLANK-TMD-01, so no data interpretation was needed.

Lab ID	Sample ID
L864320-01	MW-45
L864320-02	NCL-44
L864320-03	MW-108
L864320-04	NCL-31
L864320-05	TRIP BLANK-NCL-01

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	X		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?			Х
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: NCL-31, NCL-44
- Nitrate-nitrite: MW-108, NCL-31, NCL-44

MS/MSDs

An individual MSD recovery was below the laboratory-defined limits. However, there was no data interpretation since only one of the MS/MSD recoveries was outside the laboratory-defined limits.

Fluoride exceeded the laboratory-defined RPD in batch WG915510, so sample MW-45 may be biased high.

Lab ID	Sample ID
L864321-01	MW-64
L864321-02	MW-65
L864321-03	MW-102
L864321-04	MW-28
L864321-05	MW-60
L864321-06	MW-134
L864321-07	MW-104
L864321-08	DUP-REST-02
L864321-09	EB-REST-02
L864321-10	DUP-REST-04
L864321-11	EB-REST-04
L864321-12	MW-101
L864321-13	KWB-1A
L864321-14	KWB-10R
L864321-15	MW-111
L864321-16	KWB-6
L864321-17	MW-115
L864321-18	MW-114
L864321-19	DUP-REST-03
L864321-20	EB-REST-03
L864321-21	MW-136
L864321-22	MW-106
L864321-23	TRIP BLANK-REST-01
L864321-24	TRIP BLANK-REST-02

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab Report L864321 Continued

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions		x	
of sample acceptability upon receipt?		Λ	
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		Х	

Sample Condition

The VOC pH for samples MW-28, MW-64, and MW-102 were outside the method requirement. The samples were all analyzed within their holding times, so according to the EPA document referenced above, detected and non-detected results will not be qualified.

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: KWB-1A, KWB-6, KWB-10R, MW-28, MW-60, MW-64, MW-65, MW-101, MW-102, MW-104, MW-106, MW-111, MW-114, MW-115, MW-134, MW-136, DUP-REST-02, DUP-REST-03, DUP-REST-04, EB-REST-02, EB-REST-03, EB-REST-04
- Iron: KWB-1A, MW-64, MW-104, MW-106, MW-134, MW-136, DUP-REST-02, DUP-REST-03
- Lead: MW-106, MW-136
- Manganese: MW-106, MW-136
- Nickel: MW-60, MW-136, DUP-REST-04, EB-REST-04
- Nitrate-nitrite: KWB-10R, KWB-1A, KWB-6, MW-101, MW-106, MW-111, MW-114, MW-115, MW-136, DUP-REST-02, DUP-REST-03, DUP-REST-04, EB-REST-02, EB-REST-03, EB-REST-04
- Potassium: EB-REST-02

Lab Report L864321 Continued

Equipment Blanks

Equipment blank detections were identified in EB-REST-02 (12 total), EB-REST-03 (9 total), EB-REST-04 (9 total), and EB-EP-04 (10 total).

Lead was detected in the corresponding samples KWB-1A, KWB-6, KWB-10R, MW-60, MW-64, MW-65, MW-101, MW-102, MW-106, MW-111, MW-114, MW-115, MW-136, DUP-REST-03, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples KWB-6, MW-111, MW-115, DUP-REST-02, and DUP-REST-04 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Sulfate was detected in samples MW-64 and MW-65 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

TPH High Fraction was detected in samples KWB-1A, MW-114, MW-115, MW-134, MW-136, and DUP-REST-03 at concentrations within ten times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

Nitrate-nitrite in batch WG915231 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-102 is above the laboratory limits, therefore the result for TPH high Fraction may be biased high.

Lab Duplicates

The RPD in EB-REST-02 (WG915225) exceeded the laboratory-defined control limit for chloride, therefore the chloride result in this sample may be biased high.

Field Duplicates

The duplicate pair MW-134 and DUP-REST-03 did not meet the control limit (20%) for selenium (43.5%). The selenium result for MW-134 may be considered estimated.

The duplicate pair MW-60 and DUP-REST-04 did not meet the control limit (20%) for benzene (44.0%) or n-propylbenzene. The benzene and n-propylbenzene results for MW-60 may be considered estimated.

Lab ID	Sample ID	
L864334-01	MW-10	
L864334-02	MW-123	
L864334-03	MW-4A	
L864334-04	MW-5A	
L864334-05	MW-7A	
L864334-06	OCD-8A	
L864334-07	DUP-EP-01	
L864334-08	DUP-EP-03	
L864334-09	EB-EP-03	
L864334-10	OCD-7AR	
L864334-11	MW-83	
L864334-12	MW-3	
L864334-13	MW-87	
L864334-14	MW-18A	
L864334-15	MW-70	
L864334-16	MW-124	
L864334-17	MW-120	
L864334-18	MW-121	
L864334-19	MW-122	
L864334-20	MW-2A	
L864334-21	OCD-6	
L864334-22	EB-EP-02	
L864334-23	TRIP BLANK-EP-01	

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?		Х	
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?	Х		
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		Х	

Holding Time

For MW-7A, TDS was prepared and/or analyzed out of the recommended holding time, so the concentrations should be considered minimum values.

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated sample at a concentration within ten times the method blank concentration. Therefore, theses samples may include measurement contributions from laboratory sources.

- Calcium: EB-EP-02
- Chromium: OCD-6, EB-EP-02
- Iron: EB-EP-02
- Lead: MW-3, MW-4A, MW-5A, MW-7A, MW-10, MW-83, MW-123, MW-124, OCD-8A, OCD-6, DUP-EP-01, DUP-EP-03, EB-EP-02
- Manganese: EB-EP-02, EB-EP-03
- Potassium: EB-EP-02
- TPH Low Fraction: MW-121

Equipment Blanks

Equipment blank detections were identified in EB-EP-02 (13 total) and EB-EP-03 (12 total).

Chromium was detected in the corresponding samples MW-2A, MW-3, MW-4A, MW-7A, MW-83, MW-124, OCD-6, OCD-7AR, OCD-8A, DUP-EP-01, and DUP-EP-03 at concentrations within five times the largest equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

Iron was detected in sample MW-123 at concentrations within five times the equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

Nitrate-nitrite was detected in samples MW-2A, MW-3, MW-4A, MW-5A, MW-7A, MW-10, MW-18A, MW-83, MW-120, MW-121, MW-122, MW-123, MW-124, OCD-6, OCD-7AR, OCD-8A, DUP-EP-01, and DUP-EP-03 at concentrations within five times both equipment blank concentrations and therefore may include measurement contributions from the field.

Carbon disulfide was detected in samples MW-3, MW-4A, MW-5A, MW-7A, MW-18A, MW-70, MW-87, and DUP-EP-03 at concentration within five times both equipment blank concentrations and therefore may include measurement contributions from the field.

TPH High Fraction was detected in sample MW-2A at a concentration within ten times the equipment blank (EB-EP-03) concentration and therefore may include measurement contributions from the field.

LCS/LCSDs

The LCS/LCSD recovery for bromomethane in batch WG916718 was above the laboratorydefined limits. However, there was no data interpretation since there are no samples with a bromomethane detection.

Acetone exceeded its RPD in batch WG916718. However, acetone were non-detect in all samples, so there was no data interpretation.

MS/MSDs

Nitrate-nitrite in batch WG915643 and WG915644 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Lab Duplicates

The RPD in MW-18A (WG915644) exceeded the laboratory-defined control limit for nitratenitrite. However, there was no data interpretation because the RPD value is not applicable for sample concentrations less than five times the reporting limit.

Field Duplicates

The duplicate pair MW-7A and DUP-EP-01 did not meet the control limit (20%) for chloride (21.9%) and sulfate (20.3%). The chloride and sulfate result for MW-7A may be considered estimated.

Lab ID	Sample ID		
L864567-01	MW-84		
L864567-02	MW-79		
L864567-03	MW-74		
L864567-04	EB-EP-01		
L864567-05	EB-EP-04		
L864567-06	MW-76		
L864567-07	MW-77		
L864567-08	MW-75		
L864567-09	MW-88		
L864567-10	MW-22A		
L864567-11	DUP-EP-02		
L864567-12	OCD-1R		
L864567-13	OCD-2A		
L864567-14	OCD-3		
L864567-15	OCD-4		
L864567-16	MW-11A		
L864567-17	OCD-5		
L864567-18	TRIP BLANK-EP-02		
L864567-19	TRIP BLANK-EP-03		

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions	X		
of sample acceptability upon receipt?			
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?	Х		
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Barium: EB-EP-01
- Iron: EB-EP-01, EB-EP-04
- Manganese: EB-EP-01, EB-EP-04
- Nitrate-nitrite: MW-11A, MW-76, MW-77, MW-79, OCD-1R, OCD-5, DUP-EP-02, EB-EP-01, EB-EP-04
- Potassium: EB-EP-01, EB-EP-04
- Sodium: EB-EP-01, EB-EP-04

Equipment Blanks

Equipment blank detections were identified in EB-EP-01 (11 total) and EB-EP-04 (12 total).

Barium was detected in the corresponding sample MW-88 at concentrations within five times the equipment blank (EB-EP-04) concentration and therefore may include measurement contributions from the field.

Chromium was detected in samples MW-22A, MW-74, MW-75, MW-76, MW-88, OCD-1R, OCD-2A, OCD-5, and DUP-EP-02 at concentrations within five times the largest equipment blank (EB-EP-04) concentration and therefore may include measurement contributions from the field.

Trip Blanks

Carbon disulfide, which is an analyte commonly used during laboratory sample preparation and analysis, was detected in TRIP BLANK-EP-02 and TRIP BLANK-EP-03, so the trip blanks may include measurement contributions from laboratory sources. The detections of carbon disulfide in other samples (MW-22A, MW-74, MW-75, MW-76, and MW-79) were within ten times the largest carbon disulfide detection in the trip blanks, so these samples may include measurement contributions form laboratory sources too.

LCS/LCSDs

The LCS/LCSD recovery for acetone in batch WG916794 was above the laboratory-defined limits. Acetone was detected in MW-74, MW-75, and MW-76 of this batch, so the acetone detections in these samples are biased high.

MS/MSDs

Nitrate-nitrite in batch WG915788 was below the recovery limit for the MS/MSD %R. Therefore, samples in the batch with a nitrate-nitrite detection may be biased low.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-74, MW-75, MW-76, MW-77, and MW-84 is above the laboratory limits. However, the surrogate recovery cannot be used for control limit evaluation due to the samples large dilution (MW-75, MW-77, and MW-84 diluted 100 times; MW-74 diluted 20 times; MW-76 diluted 50 times). There was no data interpretation for TPH High Fraction in these samples.

Field Duplicates

The duplicate pair MW-22A and DUP-EP-02 did not meet the control limit (20%) for methyl tert-butyl ether (26.0%) and nitrate-nitrite (126.9%). The methyl tert-butyl ether and nitrate-nitrite result for MW-22A may be considered estimated.

Lab ID	Sample ID
L864633-01	MW-56
L864633-02	NCL-34*
L864633-03	NCL-33
L864633-04	NCL-32
L864633-05	MW-55
L864633-06	MW-54A
L864633-07	NCL-49
L864633-08	DUP-NCL-01
L864633-09	EB-NCL-01
*Sample ID is listed as NCL -	34A in corresponding COC

Sample identifiers cross-referenced to laboratory identifications are presented below.

Sample ID is listed as NCL-34A in corresponding COC

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?	Х		
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?		Х	
Any analyte analyzed by different method than planned?		Х	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Iron: MW-55 •
- Manganese: NCL-49, DUP-NCL-01
- Nitrate-nitrite: MW-54A, MW-56, NCL-33, NCL-34

Equipment Blanks

Equipment blank detections were identified in EB-NCL-01 (8 total).

Nitrate-nitrite was detected in the corresponding samples MW-54A, MW-56, NCL-33 and NCL-34 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Chromium was detected in samples MW-55 and NCL-33 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

Lead was detected in samples MW-55, MW-56, and NCL-33 at concentrations within five times the equipment blank concentration and therefore may include measurement contributions from the field.

MS/MSDs

The nitrate-nitrite MS %R in batch WG915789 was below laboratory-defined limits. Therefore, samples in this batch with nitrate-nitrite detections may be biased low.

The RPD for bromomethane in batch WG916858 was above the laboratory RPD limits. All of the original results of samples in this batch were non-detect, so there was no data interpretation issues for the bromomethane.

Lab ID	Sample ID
L864634-01	TEL-4
L864634-02	TEL-3
L864634-03	TEL-2
L864634-04	TEL-1
L864634-05	DUP-TEL-01
L864634-06	EB-TEL-01
L864634-07	TRIP BLANK-TEL-01

Sample identifiers cross-referenced to laboratory identifications are presented below.

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Х		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?		Х	
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?		Х	
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?		Х	
Any field duplicate data additionally flagged as estimated?	Х		
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

These compounds were detected in the following associated samples at concentrations within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

- Chromium: TEL-2, EB-TEL-01
- Nitrate-nitrite: TEL-1, TEL-2, TEL-3, TEL-4, DUP-TEL-01, EB-TEL-01
- Sodium: EB-TEL-01

Equipment Blanks

Equipment blank detections were identified in EB-TEL-01 (10 total). There was no data interpretation for associated samples because all the analytes detected in the equipment blank are non-detect or detected greater than five times the method blank concentration for inorganic analytes or ten times the method blank concentration for organic analytes.

Field Duplicates

The duplicate pair TEL-4 and DUP-TEL-01 did not meet the control limit (20%) for 1,2,4trimethylbenzene (30.1%), chromium (55.5%), iron (57.3%), isopropylbenzene (32.8%), and npropylbenzene (25.4%). The results for these analytes in TEL-4 may be considered estimated.

Lab ID	Sample ID
L864646-01	MW-113
L864646-02	KWB-8
L864646-03	RA-4798
L864646-04	RA-4196
L864646-05	KWB-7
L864646-06	MW-135
L864646-07	KWB-11A
L864646-08	KWB-11B
L864646-09	DUP-REST-01
L864646-10	EB-REST-01
L864646-11	MW-117
L864646-12	MW-118
L864646-13	MW-119

MW-126A

MW-126B

MW-127

MW-129

MW-131

KWB-5

MW-57

KWB-12A

KWB-12B

KWB-2R

MW-58 DUP-REST-05

EB-REST-05

MW-99

MW-66

MW-107

MW-128

MW-125

MW-116

MW-48

MW-130

MW-52

MW-109

MW-110

MW-105

MW-61

MW-62

L864646-14

L864646-15

L864646-16

L864646-17

L864646-18

L864646-19

L864646-20

L864646-21

L864646-22

L864646-23

L864646-24

L864646-25

L864646-26 L864646-27

L864646-28

L864646-29

L864646-30

L864646-31

L864646-32

L864646-33

L864646-34

L864646-35

L864646-36

L864646-37

L864646-38

L864646-39

L864646-40

Sample identifiers cross-referenced to laboratory identifications are presented below.

Cross reference table continued:

Lab ID	Sample ID
L864646-41	MW-93
L864646-42	MW-43
L864646-43	MW-137
L864646-44	MW-138
L864646-45	MW-23
L864646-46	MW-39
L864646-47	MW-98
L864646-48	MW-29
L864646-49	MW-50
L864646-50	MW-92
L864646-51	MW-91
L864646-52	MW-90
L864646-53	MW-96
L864646-54	MW-94
L864646-55	MW-67

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?		Х	
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?	Х		
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?	Х		
Any LCS/LCSD RPD above laboratory defined limits?	Х		
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?	Х		
Any lab duplicate RPD above laboratory defined limits?	Х		
Any field duplicate data additionally flagged as estimated?		Х	
Any analyte analyzed by different method than planned?		X	

Sample Condition

The VOC pH for samples MW-23, MW-94, and MW-138 were outside the method requirement. The samples were all analyzed within their holding times, so according to the USEPA document referenced above, detected and non-detected results will not be qualified.

Laboratory Method Blanks

The inorganic compounds were detected in the following associated samples at concentrations within five times the method blank concentration and the TPH Low Fraction was detected in the following associated samples at concentrations within ten times the method blank concentration. Therefore, theses samples may include measurement contributions from laboratory sources.

- Boron: EB-REST-05
- Chromium: KWB-2R, KWB-8, KWB-12A, KWB-12B, MW-29, MW-39, MW-43, MW-48, MW-52, MW-57, MW-58, MW-61, MW-62, MW-66, MW-92, MW-94, MW-96, MW-98, MW-99, MW-105, MW-107, MW-116, MW-117, MW-118, MW-125, MW-128, MW-129, MW-130, MW-135, MW-137, MW-138, DUP-REST-05 EB-REST-01, EB-REST-05
- Nickel: KWB-8, KWB-11B
- Nitrate-nitrite: KWB-2R, KWB-5, KWB-7, KWB-8, MW-48, MW-58, MW-66, MW-99, MW-105, MW-107, MW-109, MW-110, MW-113, MW-116, MW-117, MW-119, MW-126A, MW-127, MW-128, MW-129, MW-131RA-4798, DUP-REST-01, EB-REST-01, EB-REST-05
- Sulfate: EB-REST-01
- TPH High Fraction: KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-5, MW-113, MW-119, MW-126B, MW-135, DUP-REST-01, DUP-REST-05, EB-REST-01

Equipment Blanks

Equipment blank detections were identified in EB-REST-01 (13 total) and EB-REST-05 (11 total).

Sulfate was detected in the corresponding sample MW-66 at a concentration within five times the equipment blank concentration (EB-REST-05) and therefore may include measurement contributions from the field.

Arsenic was detected in the corresponding samples KWB-2R, KWB-8, KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-29, MW-50, MW-52, MW-61, MW-66, MW-93, MW-96, MW-98, MW-107, MW-109, MW-113, MW-117, MW-119, MW-123, MW-126A, MW-126B, MW-127, MW-133, MW-125, DUP-REST-01, and DUP-REST-05 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Barium was detected in all samples that analyzed for barium in this data package at a concentration within five times the equipment blank concentration (EB-REST-01) with the exception of KWB-5, MW-23, MW-48, MW-66, MW-92, MW-99, MW-105, MW-107, and MW-131. Therefore, the samples with a barium concentration within five times the equipment blank concentration may include measurement contributions from the field.

Calcium was detected in the corresponding samples KWB-5, KWB-8, MW-105, MW-39, MW-43, MW-48, MW-52, MW-58, MW-66, MW-67, MW-92, MW-94, MW-96, MW-99, MW-107, MW-109, MW-110, MW-126A, MW-127, MW-128, MW-129, MW-131, MW-137, and MW-138 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Manganese was detected in the corresponding samples KWB-11B, KWB-12B, MW-62, MW-91, MW-94, MW-96, MW-118, MW-119, and DUP-REST-05 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

Naphthalene was detected in the corresponding samples KWB-2R, KWB-5, KWB-7, KWB-11A, KWB-11B, MW-113, MW-128, MW-129, MW-130, and DUP-REST-01 at a concentration within five times the equipment blank concentration (EB-REST-05) and therefore may include measurement contributions from the field.

Potassium was detected in all samples that analyzed for potassium in this data package at a concentration within five times the equipment blank concentration (EB-REST-01) with the exception of MW-50, MW-105, MW-117, and MW-118. Therefore, the samples with a potassium concentration within five times the equipment blank concentration may include measurement contributions from the field.

Sodium was detected in the corresponding samples KWB-11B, MW-91, MW-98, MW-105, and MW-107 at a concentration within five times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

TPH Low Fraction was detected in the corresponding samples KWB-11A, KWB-11B, KWB-12A, KWB-12B, MW-52, MW-57, MW-110, MW-113, MW-119, MW-126B, MW-130, MW-135, DUP-REST-01, and DUP-REST-05 at a concentration within ten times the equipment blank concentration (EB-REST-01) and therefore may include measurement contributions from the field.

LCS/LCSDs

The LCS/LCSD recovery for naphthalene in batch WG916795 was below the laboratory-defined limits. Therefore, samples in the batch with a detection in naphthalene may be biased low.

Acetone exceeded its RPD in batch WG916864. However, acetone was non-detect in all samples, so there was no data interpretation.

MS/MSDs

The following analytes were below the recovery limit for the MS/MSD %R. Therefore, samples in the batches below with a detection in the corresponding analyte may be biased low.

- Fluoride in batch WG916530 (only MS %R reported)
- Nitrate-nitrite in batches WG915789, WG916593, and WG916597 (only MS %R reported)]
- Selenium in batch WG916403
- All VOCs, with the exception of bromomethane, benzene, and chloroethane, in batch WG916796

Mercury in batch WG917230 exceeded its respective RPD. However, all mercury detections are non-detect, so no data interpretation was necessary.

Surrogate Recoveries

The only surrogate ([S] o-Terphenyl) for TPH High Fraction in MW-58 is above the laboratory limits. However, the surrogate recovery cannot be used for control limit evaluation due to the large dilution of the sample (MW-58 diluted 20 times). There was no data interpretation for TPH High Fraction in MW-58.

Lab Duplicates

The RPD in MW-131 and EB-REST-01 (WG916593) exceeded the laboratory-defined control limit for nitrate-nitrite, but the RPD values are not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

The RPD in EB-REST-01 (WG915776) and EB-REST-05 (WG915777) exceeded the laboratory-defined control limit for chloride and sulfate, but the RPD values are not applicable because the original samples are less than five times the reporting limit. Therefore, no data interpretation was needed.

Sample identifiers cross-referenced to laboratory identifications are presented below.

Lab ID	Sample ID
L864773-01	MW-46R

Items	Yes	No	Not applicable
Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		
All samples within holding times?	Х		
Any detection in method blanks?	Х		
Any detection in equipment blanks?			Х
Any detection in trip blanks?			Х
Any LCS/LCSD %R out of laboratory defined limits?		Х	
Any LCS/LCSD RPD above laboratory defined limits?		Х	
Any MS/MSD %R outside of laboratory defined limits?	Х		
Any MS/MSD RPD above laboratory defined limits?		Х	
Any surrogate %R outside of laboratory defined limits?		Х	
Any lab duplicate RPD above laboratory defined limits?			Х
Any field duplicate data additionally flagged as estimated?			Х
Any analyte analyzed by different method than planned?		X	

Laboratory Method Blanks

Chromium was detected in MW-46R within five times the method blank concentration and therefore may include measurement contributions from laboratory sources.

MS/MSDs

Individual MS/MSD %R were above or below the laboratory-defined limits. However, there was no data interpretation since only one of each MS/MSD %R were outside the laboratory-defined limits.

Appendix E - Summary of Production from Recovery Trenches and Wells

2016 Annual Groundwater Report

HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, New Mexico

Recovery	Recovery Method	Volume of Water Recovered ⁽¹⁾ (gallons)					Volume of PSH Recovered ⁽¹⁾ (gallons)				
wen		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2016	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2016
RW-1R	Automated Pump	101	16,139	0	0	16,240	0	0	0	0	0
RW-2R	Automated Pump	0	110,797	279,973	80,018	470,788	0	223	4,816	4,451	9,490
RW-4R	Automated Pump	0	1	0	5	6	0	0	0	1	1
RW-5R	Automated Pump	0	2	834	50,896	51,732	0	0	0	0	0
RW-6R	Automated Pump	0	13	2	1	16	1	0	0	0	1
RW-7R	Automated Pump	1,318,614	676,672	310,749	87,736	2,393,771	0	0	0	0	0
RW-8R	Automated Pump	421,215	280,097	152,160	713,259	1,566,731	0	4	0	0	4
RW-12R	Automated Pump	0	0	0	0	0	0	0	0	0	0
RW-13R	Automated Pump	0	1	113,481	203,602	317,084	0	0	11,251	2,160	13,411
RW-14R	Automated Pump	0	0	53	0	53	0	1	0	0	1
RW-15	Automated Pump	2,559	0	0	0	2,559	686	267	0	0	953
RW-19	Automated Pump	0	947	50	1,026	2,023	0	1	106	744	851
RW-20	Automated Pump	128,929	501,875	725,853	636,369	1,993,026	0	442	0	0	442
RW-22	Automated Pump	0	396,782	488,137	269,062	1,153,981	0	0	8,803	1	8,804
TOTAL VOLU	JME RECOVERED:	1,871,418	1,983,326	2,071,292	2,041,974	7,968,010	687	938	24,976	7,357	33,958

⁽¹⁾Volumes of recovered water and PSH are based on automated system readings, rounded to the nearest gallon

		Total Fluid	s Readings		PSH Readings			Tank Reading	
Date	RW-1R	RW-2R	RW-7	RW-8R	RW-1R	RW-2R	RW-7	RW-8R	T-9012
12/28/2015	285,752	411,276	16,555	111,762	3	11,584	4	41,947	28,762
1/4/2016	285,752	411,276	16,555	124,785	3	11,584	4	41,947	28,762
1/11/2016	285,752	411,276	16,924	132,325	3	11,584	4	41,947	28,762
1/18/2016	285,752	411,276	98,451	165,093	3	11,584	4	41,947	28,762
1/25/2016	285,853	411,276	245,886	197,861	3	11,584	4	41,947	28,762
2/1/2016	285,853	411,276	395,226	197,861	3	11,584	4	41,947	28,762
2/8/2016	285,853	411,276	540,037	230,629	3	11,584	4	41,947	28,762
2/15/2016	285,853	411,276	687,111	230,632	3	11,584	4	41,947	28,762
2/22/2016	285,853	411,276	802,337	263,400	3	11,584	4	41,947	28,762
2/29/2016	285,853	411,276	912,641	263,400	3	11,584	4	41,947	28,762
3/7/2016	285,853	411,276	1,022,647	263,400	3	11,584	4	41,947	28,762
3/14/2016	285,853	411,276	1,129,488	330,972	3	11,584	4	41,947	28,762
3/21/2016	285,853	411,276	1,232,690	424,834	3	11,584	4	41,947	28,762
3/28/2016	285,853	411,276	1,335,169	532,977	3	11,584	4	41,947	28,762
1Q Totals:	101	0	1,318,614	421,215	0	0	0	0	0
4/4/2016	285,853	411,276	1,437,264	625,106	3	11,584	4	41,947	28,762
4/11/2016	297,046	411,276	1,538,288	625,106	3	11,584	4	41,947	28,762
4/18/2016	301,992	411,276	1,639,005	633,881	3	11,584	4	41,947	28,762
4/25/2016	301,992	411,276	1,738,265	633,881	3	11,584	4	41,947	28,762
5/2/2016	301,992	411,276	1,807,861	633,881	3	11,584	4	41,947	28,762
5/9/2016	301,992	411,276	1,833,003	633,881	3	11,584	4	41,947	28,762
5/16/2016	301,992	411,276	1,857,822	633,881	3	11,584	4	41,947	28,762
5/23/2016	301,992	411,276	1,884,181	633,881	3	11,584	4	41,947	28,762
5/30/2016	301,992	411,276	1,910,411	633,881	3	11,584	4	41,949	28,762
6/6/2016	301,992	411,276	1,936,480	633,881	3	11,584	4	41,949	28,762
6/13/2016	301,992	448,602	1,961,906	678,832	3	11,584	4	41,949	28,762
6/20/2016	301,992	487,133	1,986,519	760,454	3	11,584	4	41,949	28,762
6/27/2016	301,992	522,073	2,011,841	813,074	3	11,807	4	41,949	28,762
2Q Totals:	16,139	110,797	574,577	187,968	0	223	0	2	0
7/4/2016	301,992	558,559	2,039,363	818,210	3	11,981	4	41,949	28,908
7/11/2016	301,992	593,707	2,066,714	818,210	3	11,981	4	41,949	28,908
7/18/2016	301,992	600,949	2,093,801	818,210	3	11,981	4	41,949	28,908
7/25/2016	301,992	632,127	2,120,977	846,550	3	12,853	4	41,949	29,231
8/1/2016	301,992	662,144	2,148,154	873,792	3	14,689	4	41,949	30,431
8/8/2016	301,992	683,881	2,174,878	911,494	3	16,568	4	41,949	30,748
8/15/2016	301,992	683,881	2,202,790	911,494	3	16,568	4	41,949	32,348
8/22/2016	301,992	683,881	2,220,021	911,494	3	16,568	4	41,949	32,523
8/29/2016	301,992	683,881	2,224,551	911,494	3	16,568	4	41,949	32,554
9/5/2016	301,992	683,881	2,224,551	911,494	3	16,568	4	41,949	32,554
9/12/2016	301,992	683,881	2,255,052	911,494	3	16,568	4	41,949	32,554
9/19/2016	301,992	683,881	2,292,394	911,494	3	16,568	4	41,949	32,554
9/26/2016	301,992	802,046	2,322,590	965,234	3	16,623	4	41,949	40,347
3Q Totals:	0	243,487	283,227	147,024	0	4,642	0	0	11,439
10/3/2016	301,992	881,949	2,349,220	1,045,501	3	16,633	4	41,949	48,914
10/10/2016	301,992	881,949	2,375,436	1,111,703	3	19,130	4	41,949	55,348
10/17/2016	301,992	881,949	2,401,582	1,192,790	3	21,074	4	41,949	60,548
10/24/2016	301,992	881,949	2,410,293	1,273,635	3	21,074	4	41,949	61,120
10/31/2016	301,992	881,949	2,410,293	1,353,569	3	21,074	4	41,949	62,673
11/7/2016	301,992	881,949	2,410,293	1,427,053	3	21,074	4	41,949	63,461
11/14/2016	301,992	881,949	2,410,326	1,511,544	3	21,074	4	41,949	63,461
11/28/2016	301,992	881,949	2,410,326	1,678,493	3	21,074	4	41,949	63,461
12/5/2016	301,992	882,001	2,410,326	1,380,730	3	21,074	4	41,949	63,461
12/12/2016	301,992	882,064	2,410,326	1,457,373	3	21,074	4	41,949	63,461
12/19/2016	301,992	882,064	2,410,326	1,528,273	3	21,074	4	41,949	63,461
12/26/2016	301,992	882,064	2,410,326	1,540,215	3	21,074	4	41,949	63,462
4Q Totals:	0	115	61,106	494,714	0	4,441	0	0	14,548

	Total Fluid	s Readings	PSH Re	Tank Reading	
Date	RW-4R	RW-6R	RW-4R	RW-6R	T-9003
12/28/2015	4,709	469,968	1	8,849	14,647
1/4/2016	4,709	469,968	1	8,849	14,709
1/11/2016	4,709	469,968	1	8,849	14,721
1/18/2016	4,709	469,968	1	8,850	14,739
1/25/2016	4,709	469,968	1	8,850	14,752
2/1/2016	4,709	469,968	1	8,850	14,752
2/8/2016	4,709	469,968	1	8,850	14,752
2/15/2016	4,709	469,968	1	8,850	14,752
2/22/2016	4,709	469,968	1	8,850	14,752
2/29/2016	4,709	469,968	1	8,850	14,752
3/7/2016	4,709	469,968	1	8,850	14,/52
3/14/2016	4,709	469,968	1	8,850	14,752
3/21/2016	4,709	469,968	1	<u>ბ,</u> ბეს	14,/52
3/28/2010	4,709	409,900		8,850	14,/52
1Q Totals:	0	100.000	U	1	105
4/4/2016	4,709	469,968	1	8,850	14,752
4/11/2016	4,709	469,968	1	8,850	14,/52
4/18/2016	4,709	469,970	1	8,850	14,752
4/25/2016	4,709	469,970	1	8,850	14,752
5/2/2016	4,709	469,970	1	8,850	14,/52
5/9/2016	4,709	469,981	1	8,850	14,/52
5/16/2016	4,709	409,901	1	0,05U	14,752
5/23/2010	4,709	409,901		ö,ö5U	14,/52
5/30/2016	4,709	409,901	1	0,00U	14,752
6/6/2016	4,709	409,901	1	0,00U	14,152
6/13/2016	4,710	469,981	1	0,80U	14,752
6/20/2010	4,710	409,901	1	0,000 8,850	14,152
20 Totals:	1	13	0	0,000	0
7/4/2016	4 710	469 981	1	8 850	14 752
7/11/2016	4 710	469.981	1	8 850	14 752
7/18/2016	4 710	469,981	1	8 850	14,752
7/25/2016	4 710	469 981	1	8 850	14 825
8/1/2016	4,710	469.981	1	8.850	14.825
8/8/2016	4.710	469.981	1	8.850	14.825
8/15/2016	4,710	469,981	1	8,850	15,388
8/22/2016	4,710	469,981	1	8,850	15,388
8/29/2016	4,710	469,981	1	8,850	15,388
9/5/2016	4,710	469,981	1	8,850	15,388
9/12/2016	4,710	469,983	1	8,850	15,388
9/19/2016	4,710	469,983	1	8,850	15,388
9/26/2016	4,710	469,983	1	8,850	15,388
3Q Totals:	0	2	0	0	636
10/3/2016	4,710	469,983	1	8,850	15,388
10/10/2016	4,710	469,983	1	8,850	15,388
10/17/2016	4,710	469,984	1	8,850	15,388
10/24/2016	4,715	469,984	1	8,850	15,388
10/31/2016	4,715	469,984	1	8,850	15,388
11/7/2016	4,715	469,984	1	8,850	15,388
11/14/2016	4,715	469,984	1	8,850	15,388
11/28/2016	4,715	469,984	1	8,850	15,388
12/5/2016	4,715	469,984	1	8,850	15,391
12/12/2016	4,715	469,984	1	8,850	15,401
12/19/2016	4,715	469,984	1	8,850	15,402
12/26/2016	4,715	469,984	1	8,850	15,402
10 Totalar	F	4	0	0	14

Automated Fluid Readings - Skid Area T-9003
	Tota	al Fluids Readi	ngs			Tank Reading	
Date	RW-5R	RW-15	RW-19	RW-5R	RW-15	RW-19	T-9021
12/28/2015	23,978	0	58,011	13,201	12,117	5,660	44,515
1/4/2016	23,978	0	58,011	13,201	12,117	5,660	44,515
1/11/2016	23,978	0	58,011	13,201	12,122	5,660	44,515
1/18/2016	23,978	0	58,011	13,201	12,149	5,660	44,515
1/25/2016	23,978	0	58,011	13,201	12,200	5,660	44,515
2/1/2016	23,978	0	58,011	13,201	12,261	5,660	44,515
2/8/2016	23,978	0	58,011	13,201	12,316	5,660	44,803
2/15/2016	23,978	0	58,011	13,201	12,365	5,660	44,803
2/22/2016	23,978	0	58,011	13,201	12,418	5,660	44,804
2/29/2016	23,978	0	58,011	13,201	12,469	5,660	44,804
3/7/2016	23,978	0	58,011	13,201	12,524	5,660	45,026
3/14/2016	23,978	0	58,011	13,201	12,679	5,660	45,026
3/21/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,204
3/28/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,204
1Q Totals:	0	2,559	0	0	686	0	689
4/4/2016	23,978	2,559	58,011	13,201	12,803	5,660	45,368
4/11/2016	23,978	2,559	58,011	13,201	12,859	5,660	45,368
4/18/2016	23,979	2,559	58,011	13,201	12,974	5,660	45,526
4/25/2016	23,979	2,559	58,011	13,201	13,054	5,660	45,679
5/2/2016	23,979	2,559	58,913	13,201	13,070	5,660	45,679
5/9/2016	23,979	2,559	58,958	13,201	13,070	5,660	45,679
5/16/2016	23,979	2,559	58,958	13,201	13,070	5,660	45,679
5/23/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
5/30/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
6/6/2016	23,980	2,559	58,958	13,201	13,070	5,660	45,679
6/13/2016	23,980	2,559	58,958	13,201	13,070	5,661	45,679
6/20/2016	23,980	2,559	58,958	13,201	13,070	5,661	45,679
6/27/2016	23,980	2,559	58,958	13,201	13,070	5,661	46,115
2Q Totals:	2	0	947	0	267	1	747
7/4/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/11/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/18/2016	23,980	2,559	59,008	13,201	13,070	5,661	46,115
7/25/2016	23,980	2,559	59,008	13,201	13,070	5,666	54,541
8/1/2016	23,980	2,559	59,008	13,201	13,070	5,675	76,528
8/8/2016	23,980	2,559	59,008	13,201	13,070	5,684	93,794
8/15/2016	23,980	2,559	59,008	13,201	13,070	5,712	105,669
8/22/2016	23,980	2,559	59,008	13,201	13,070	5,766	109,034
8/29/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/5/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/12/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/19/2016	23,980	2,559	59,008	13,201	13,070	5,767	109,034
9/26/2016	24,814	2,559	59,008	13,201	13,070	5,767	109,049
3Q Totals:	834	0	0	0	0	106	62,934
10/3/2016	25,667	2,559	59,008	13,201	13,070	5,780	109,049
10/10/2016	29,818	2,559	59,008	13,201	13,070	5,894	120,384
10/17/2016	38,200	2,559	60,029	13,201	13,070	5,944	134,682
10/24/2016	49,958	2,559	60,029	13,201	13,070	6,094	161,601
10/31/2016	62,629	2,559	60,029	13,201	13,070	6,267	161,601
11/7/2016	75,303	2,559	60,029	13,201	13,070	6,348	161,601
11/14/2016	75,709	2,559	60,034	13,201	13,070	6,390	161,602
11/28/2016	75,709	2,559	60,034	13,201	13,070	6,500	161,615
12/5/2016	75,709	2,559	60,034	13,201	13,070	6,508	161,615
12/12/2016	75,709	2,559	60,034	13,201	13,070	6,508	161,615
12/19/2016	75,709	2,559	60.034	13,201	13.070	6,508	161.615
12/26/2016	75.710	2.559	60.034	13.201	13.070	6.511	161.615
40 Totals:	50 043	_,0	1 026	0	0	731	52 566

Automated Fluid Readings - Skid Area T-9021

Automated Fluid Readings - Skid Area T-9020

		Tota	I Fluids Read	lings		PSH Readings			Tank Reading		
Date	RW-12R	RW-13R	RW-14R	RW-20	RW-22	RW-12R	RW-13R	RW-14R	RW-20	RW-22	T-9020
12/28/2015	234	225,001	355,318	3,837,093	52,430	4,755	9,476	42,550	4	5,759	55,958
1/4/2016	234	225,001	355,318	3,860,460	52,430	4,755	9,476	42,550	4	5,759	55,958
1/11/2016	234	225,001	355,318	3,881,433	52,430	4,755	9,476	42,550	4	5,759	55,959
1/18/2016	234	225,001	355,318	3,900,287	52,430	4,755	9,476	42,550	4	5,759	55,959
1/25/2016	234	225,001	355,318	3,917,028	52,430	4,755	9,476	42,550	4	5,759	55,959
2/1/2016	234	225,001	355,318	3,930,784	52,430	4,755	9,476	42,550	4	5,759	55,962
2/8/2016	234	225,001	355,318	3,941,336	52,430	4,755	9,476	42,550	4	5,759	56,090
2/15/2016	234	225,001	355,318	3,949,874	52,430	4,755	9,476	42,550	4	5,759	56,090
2/22/2016	234	225,001	355,318	3,956,378	52,430	4,755	9,476	42,550	4	5,759	56,090
2/29/2016	234	225,001	355,318	3,960,846	52,430	4,755	9,476	42,550	4	5,759	56,090
3/7/2016	234	225,001	355,318	3,963,480	52,430	4,755	9,476	42,550	4	5,759	56,090
3/14/2016	234	225,001	355,318	3,964,472	52,430	4,755	9,476	42,550	4	5,759	56,090
3/21/2016	234	225,001	355,318	3,965,335	52,430	4,755	9,476	42,550	4	5,759	56,090
3/28/2016	234	225,001	355,318	3,966,022	52,430	4,755	9,476	42,550	4	5,759	56,090
1Q Totals:	0	0	0	128,929	0	0	0	0	0	0	132
4/4/2016	234	225,001	355,318	3,966,910	52,430	4,755	9,476	42,550	4	5,759	56,090
4/11/2016	234	225,001	355,318	3,967,501	52,430	4,755	9,476	42,550	4	5,759	56,090
4/18/2016	234	225,001	355,318	3,968,330	52,454	4,755	9,476	42,550	4	5,759	56,090
4/25/2016	234	225,001	355,318	3,970,073	52,454	4,755	9,476	42,550	4	5,759	56,090
5/2/2016	234	225,001	355,318	3,982,570	02,108	4,755	9,470	42,550	4	5,759	56,090
5/16/2016	234	225,001	355 318	4,040,000	125,555	4,755	9,470	42,550	4	5,759	56,090
5/23/2016	234	225,001	355 318	4,100,239	223.067	4,755	9,470	42,550	4	5 759	56,090
5/30/2016	234	225,001	355 318	4 230 077	252 801	4,755	9,476	42,550		5 759	56,090
6/6/2016	234	225,001	355 318	4 302 305	298,393	4 755	9 476	42,550	4	5 759	56,090
6/13/2016	234	225,002	355 318	4 379 636	338 605	4 755	9 476	42 551	4	5 759	56 090
6/20/2016	234	225,002	355,318	4,402,280	400,808	4,755	9,476	42,551	18	5,759	56,090
6/27/2016	234	225,002	355,318	4,467,897	449,212	4,755	9,476	42,551	446	5,759	68,627
2Q Totals:	0	1	0	500,987	396,782	0	0	1	442	0	12,537
7/4/2016	234	225,002	355,318	4,504,226	503,346	4,755	9,477	42,551	446	5,759	68,633
7/11/2016	234	225,002	355,318	4,570,252	546,342	4,755	9,744	42,551	446	5,759	72,007
7/18/2016	234	225,002	355,318	4,634,461	589,836	4,755	12,092	42,551	446	5,759	86,042
7/25/2016	234	225,002	355,371	4,696,407	624,809	4,755	13,756	42,551	446	7,994	89,127
8/1/2016	234	225,002	355,371	4,754,766	660,608	4,755	15,821	42,551	446	10,936	94,938
8/8/2016	234	225,002	355,371	4,811,940	692,890	4,755	18,247	42,551	446	13,742	99,367
8/15/2016	234	225,002	355,371	4,864,136	730,372	4,755	19,512	42,551	446	14,560	102,304
8/22/2016	234	225,002	355,371	4,918,020	767,310	4,755	20,727	42,551	446	14,560	103,318
8/29/2016	234	241,817	355,371	4,924,945	798,007	4,755	20,727	42,551	446	14,560	103,318
9/5/2016	234	312,426	355,371	4,975,033	836,838	4,755	20,727	42,551	446	14,560	103,318
9/12/2016	234	338,347	355,371	5,065,562	880,497	4,755	20,727	42,551	446	14,561	103,318
9/19/2016	234	338,347	355,371	5,136,620	893,953	4,755	20,727	42,551	0	14,561	103,318
9/26/2016	234	338,483	355,371	5,193,750	937,349	4,755	20,727	42,551	0	14,562	103,318
3Q Totals:	0	113,481	53	689,524	434,003	0	11,250	0	-446	8,803	34,685
10/3/2016	234	340,123	355,371	5,296,995	1,002,512	4,755	20,727	42,551	0	14,563	103,318
10/10/2016	234	380,986	355,371	5,349,610	1,043,224	4,755	22,188	42,551	10	14,563	106,509
10/17/2016	234	410,790	355,371	5,400,296	1,091,186	4,755	22,291	42,551	10	14,563	110,525
10/24/2016	234	448,791	355,371	5,448,546	1,133,919	4,755	22,318	42,551	12	14,563	126,672
10/31/2016	234	494,381	355,371	5,525,411	1,169,999	4,755	22,365	42,551	12	14,563	139,036
11/7/2016	234	540,658	355,371	5,578,917	1,205,303	4,755	22,385	42,551	12	14,563	140,424
11/14/2016	234	542,085	355,371	5,644,273	1,206,411	4,755	22,406	42,551	12	14,563	140,424
11/28/2016	234	542,085	355,371	5,690,743	1,206,411	4,755	22,885	42,551	12	14,563	141,115
12/5/2016	234	542,085	355,371	5,739,092	1,206,411	4,755	22,885	42,551	12	14,563	141,141
12/12/2016	234	542,085	355,371	5,790,157	1,206,411	4,755	22,885	42,551	12	14,563	141,190
12/19/2016	234	542,085	355,371	5,830,119	1,206,411	4,755	22,885	42,551	12	14,563	141,204
12/26/2016	234	542,085	355,371	5,830,119	1,206,411	4,755	22,887	42,551	12	14,563	141,220
4Q Totals:	0	201,962	0	533,124	203,899	0	2,160	0	12	0	37,902

Appendix E- Recovery System Gauging Data 2016 Annual Groundwater Report HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-1R									RW-2R							RW-4R				
Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	0	7.35	Out	0.00	3,367.03		3,359.68	0	8.61	Out	0.00	3,368.17		3,359.56	0	11.14	Out	0.00	3,364.86		3,353.72
1/7/16	0	7.35	Out	0.00	3,367.03		3,359.68	0	8.61	Out	0.00	3,368.17		3,359.56	0	11.14	Out	0.00	3,364.86		3,353.72
1/13/16	0	7.25	Out	0.00	3,367.03		3,359.78	0	8.47	Out	0.00	3,368.17		3,359.70	0	11.11	Out	0.00	3,364.86		3,353.75
1/20/16	0	7.55	Out	0.00	3,367.03		3,359.48	0	8.67	Out	0.00	3,368.17		3,359.50	0	11.2	Out	0.00	3,364.86		3,353.66
1/29/16	0	7.75	Out	0.00	3,367.03		3,359.28	0	8.92	Out	0.00	3,368.17		3,359.25	0	11.35	Out	0.00	3,364.86		3,353.51
2/3/16	0	8.20	Out	0.00	3,367.03		3,358.83	0	9.43	Out	0.00	3,368.17		3,358.74	0	11.6	Out	0.00	3,364.86		3,353.26
2/16/16	0	8.35	Out	0.00	3,367.03		3,358.68	0	9.44	Out	0.00	3,368.17		3,358.73	0	11.6	Out	0.00	3,364.86		3,353.26
2/26/16	0	8.58	Out	0.00	3,367.03		3,358.45	0	9.7	Out	0.00	3,368.17		3,358.47	0	11.8	Out	0.00	3,364.86		3,353.06
3/3/10	0	8.57	Out	0.00	3,367.03		3,358.40	0	9.72	Out	0.00	3,308.17		3,358.45	0	11.50	Out	0.00	3,364.86		3,353.30
3/11/10	0	8.85	Out	0.00	3,307.03		3,358.18	0	9.93	Out	0.00	3,308.17		3,358.24	0	11.01	Out	0.00	3,304.80		3,353.25
3/13/10	0	9.01	Out	0.00	3,307.03		3,357.06	0	10.05	Out	0.00	3,300.17		3 358 12	0	11.02	Out	0.00	3,304.00		3,353,24
3/29/16	0	9.34	Out	0.00	3,367,03		3,357,69	0	10.03	Out	0.00	3 368 17		3,357,77	0	11.00	Out	0.00	3 364 86		3 353 06
4/7/16	0	14.08	Out	0.00	3 367 03		3 352 95	0	10.7	Out	0.00	3 368 17		3 357 40	0	11.0	Out	0.00	3 364 86		3 352 96
4/13/16	0	14.04	Out	0.00	3.367.03		3.352.99	0	10.95	Out	0.00	3.368.17		3.357.22	0	12.03	Out	0.00	3.364.86		3.352.83
4/19/16	0	9.70	Out	0.00	3,367.03		3,357.33	0	10.83	Out	0.00	3,368.17		3,357.34	0	12.1	Out	0.00	3,364.86		3,352.76
4/28/16	0	9.68	Out	0.00	3,367.03		3,357.35	0	10.78	Out	0.00	3,368.17		3,357.39	0	12.18	Out	0.00	3,364.86		3,352.68
5/3/16	0	9.82	Out	0.00	3,367.03		3,357.21	0	9.92	Out	0.00	3,368.17		3,358.25	0	12.26	Out	0.00	3,364.86		3,352.60
5/13/16	0	9.90	Out	0.00	3,367.03		3,357.13	0	10.95	Out	0.00	3,368.17		3,357.22	0	12.44	Out	0.00	3,364.86		3,352.42
5/26/16	0	9.63	Out	0.00	3,367.03		3,357.40	0	10.64	Out	0.00	3,368.17		3,357.53	0	12.5	Out	0.00	3,364.86		3,352.36
6/3/16	0	9.63	Out	0.00	3,367.03		3,357.40	0	10.64	Out	0.00	3,368.17		3,357.53	0	12.48	Out	0.00	3,364.86		3,352.38
6/9/16	0	10.06	Out	0.00	3,367.03		3,356.97	0	16.83	Out	0.00	3,368.17		3,351.34	0	12.55	Out	0.00	3,364.86		3,352.31
6/10/16	0	9.89	Out	0.00	3,367.03		3,357.14	0	10.89	Out	0.00	3,368.17		3,357.28	0	12.33	Out	0.00	3,364.86		3,352.53
6/17/16	0	10.50	Out	0.00	3,367.03		3,356.53	0	16.8	Out	0.00	3,368.17		3,351.37	0	12.54	Out	0.00	3,364.86		3,352.32
6/22/16	0	10.81	Out	0.00	3,367.03		3,356.22	16.7	17.73	16.91	1.03	3,368.17	3,351.47	3,350.44	0	12.64	Out	0.00	3,364.86		3,352.22
6/30/16	0	10.59	Out	0.00	3,367.03		3,356.44	16.79	17.6	16.91	0.81	3,368.17	3,351.38	3,350.57	0	12.65	Out	0.00	3,364.86		3,352.21
7/1/10	0	10.73	Out	0.00	3,307.03		3,356.30	16.59	18.55	16.91	1.55	3,308.17	3,351.17	3,349.62	0	12.07	Out	0.00	3,304.80		3,352.19
7/12/16	0	10.65	Out	0.00	3,307.03		3,356.07	16.80	10.9	16.91	2.32	3,300.17	3,351.39	3,349.27	0	12.72	Out	0.00	3,304.00		3,352,14
7/29/16	0	11.06	Out	0.00	3,367.03		3 355 97	16.74	17.0	16.91	0.91	3 368 17	3 351 43	3 350 47	12.81	12.73	Out	0.00	3 364 86	3 352 05	3 352 05
8/4/16	0	11.00	Out	0.00	3 367 03		3 355 88	0	16 75	16.91	0.00	3 368 17	0,001.40	3 351 42	0	12.01	Out	0.00	3 364 86	0,002.00	3 352 03
8/15/16	0	10.11	Out	0.00	3.367.03		3.356.92	16.78	17.68	16.91	0.90	3.368.17	3.351.39	3.350.49	0	12.73	Out	0.00	3.364.86		3.352.13
8/26/16	0	9.45	Out	0.00	3,367.03		3,357.58	10.82	10.82	16.91	0.00	3,368.17	3,357.35	3,357.35	0	12.4	Out	0.00	3,364.86		3,352.46
9/6/16	0	7.99	Out	0.00	3,367.03		3,359.04	0	10.09	16.91	0.00	3,368.17		3,358.08	0	11.44	Out	0.00	3,364.86		3,353.42
9/29/16	0	9.75	Out	0.00	3,367.03		3,357.28	0	28.94	16.91	0.00	3,368.17		3,339.23	0	11.03	Out	0.00	3,364.86		3,353.83
10/5/16	0	8.55	Out	0.00	3,367.03		3,358.48	0	10.35	16.91	0.00	3,368.17		3,357.82	0	10.97	Out	0.00	3,364.86		3,353.89
10/14/16	0	8.46	Out	0.00	3,367.03		3,358.57	0	9.9	N/A	0.00	3,368.17		3,358.27	0	11.07	Out	0.00	3,364.86		3,353.79
10/20/16	0	8.85	Out	0.00	3,367.03		3,358.18	10.01	10.04	N/A	0.03	3,368.17	3,358.16	3,358.13	0	11.2	Out	0.00	3,364.86		3,353.66
10/26/16	0	8.68	Out	0.00	3,367.03		3,358.35	9.93	9.93	N/A	0.00	3,368.17	3,358.24	3,358.24	0	11.14	Out	0.00	3,364.86		3,353.72
11/2/16	0	8.76	Out	0.00	3,367.03		3,358.27	9.99	10.2	N/A	0.21	3,368.17	3,358.18	3,357.97	0	11.25	Out	0.00	3,364.86		3,353.61
11/8/16	0	8.69	Out	0.00	3,367.03		3,358.34	9.98	9.98	N/A	0.00	3,368.17	3,358.19	3,358.19	0	11.4	Out	0.00	3,364.86		3,353.46
11/16/16	0	8.65	Out	0.00	3,368.03		3,359.38	0	9.88	N/A	0.00	3,369.17	L	3,359.29	0	11.5	Out	0.00	3,365.86		3,354.36
11/22/16	0	8.80	Out	0.00	3,369.03		3,360.23	0	10.01	N/A	0.00	3,370.17		3,360.16	0	11.33	Out	0.00	3,366.86		3,355.53
12/1/16	0	9.15	Out	0.00	3,370.03		3,360.88	0	10.37	N/A	0.00	3,3/1.17		3,360.80	0	11.52	Out	0.00	3,367.86		3,356.34
12/0/16	U	8.83	Out	U	3,370.03		3,301.20	U	10.1	IN/A	U	3,3/1.1/	1	3,301.07	U	11.41	Out	U	3,307.86	1	3,330.45

HollyFrontier Navajo	Refining LLC,	Artesia Refiner	y, Artesia, NM

Well	ell RW-5R										RW-6R							RW-7R			
Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	13.78	13.83	Out	0.05	3,368.56	3,354.78	3,354.73	0	12.42	Out	0.00	3,368.36		3,355.94	0	8.75	Out	0.00	3,367.09		3,358.34
1/7/16	13.78	13.83	Out	0.05	3,368.56	3,354.78	3,354.73	0	12.42	Out	0.00	3,368.36		3,355.94	0	8.75	Out	0.00	3,367.09		3,358.34
1/13/16	13.76	13.83	Out	0.07	3,368.56	3,354.80	3,354.73	0	12.4	Out	0.00	3,368.36		3,355.96	0	8.5	Out	0.00	3,367.09		3,358.59
1/20/16	14.74	14.8	Out	0.06	3,368.56	3,353.82	3,353.76	0	12.4	Out	0.00	3,368.36		3,355.96	0	14.29	Out	0.00	3,367.09		3,352.80
1/29/16	13.91	13.94	Out	0.03	3,368.56	3,354.65	3,354.62	0	12.59	Out	0.00	3,368.36		3,355.77	0	14.98	Out	0.00	3,367.09		3,352.11
2/3/16	14.3	14.32	Out	0.02	3,368.56	3,354.26	3,354.24	0	13	Out	0.00	3,368.36		3,355.36	0	15.07	Out	0.00	3,367.09		3,352.02
2/16/16	14.18	14.28	Out	0.10	3,368.56	3,354.38	3,354.28	0	12.9	Out	0.00	3,368.36		3,355.46	0	15.39	Out	0.00	3,367.09		3,351.70
2/20/10	14.33	14.00	Out	0.25	3,300.30	3,354.23	3,353.90	0	12.95	Out	0.00	3,300.30		3,333.41	14.50	14.30	Out	0.00	3,307.09	2 252 50	3,332.73
2/11/16	14.20	14.52	Out	0.04	2,269,56	2 254 06	2 254 02	0	12.00	Out	0.00	2,260.30		2 255 24	14.59	14.04	Out	0.05	2 267 00	3,352.30	2 252 20
3/15/16	14.5	14.55	Out	0.03	3,368,56	3,354.00	3,354.03	13.01	13.02	Out	0.00	3,308.30	3 355 35	3 355 33	14.09	14.7	Out	0.01	3,307.09	3,352.40	3,352.08
3/22/16	14.5	14.58	Out	0.08	3 368 56	3 354 06	3 353 98	0	12.87	Out	0.02	3,368,36	0,000.00	3 355 49	0	14 73	Out	0.00	3 367 09	0,002.10	3 352 36
3/29/16	14.59	14.6	Out	0.01	3,368,56	3,353.97	3,353,96	13.05	13.07	Out	0.02	3,368,36	3.355.31	3,355,29	0	15.23	Out	0.00	3,367.09		3.351.86
4/7/16	14.7	14.74	Out	0.04	3.368.56	3.353.86	3.353.82	13.7	13.75	Out	0.05	3,368,36	3.354.66	3.354.61	0	15.25	Out	0.00	3.367.09		3.351.84
4/13/16	14.82	14.9	Out	0.08	3,368.56	3,353.74	3,353.66	13.85	13.87	Out	0.02	3,368.36	3,354.51	3,354.49	0	15.5	Out	0.00	3,367.09		3,351.59
4/19/16	14.91	14.98	Out	0.07	3,368.56	3,353.65	3,353.58	13.9	13.93	Out	0.03	3,368.36	3,354.46	3,354.43	0	15.65	Out	0.00	3,367.09		3,351.44
4/28/16	14.86	15.1	Out	0.24	3,368.56	3,353.70	3,353.46	13.95	13.99	Out	0.04	3,368.36	3,354.41	3,354.37	0	15.61	Out	0.00	3,367.09		3,351.48
5/3/16	15.04	15.16	Out	0.12	3,368.56	3,353.52	3,353.40	14.13	14.13	Out	0.00	3,368.36	3,354.23	3,354.23	0	15.69	Out	0.00	3,367.09		3,351.40
5/13/16	15.1	15.16	Out	0.06	3,368.56	3,353.46	3,353.40	14.23	14.28	Out	0.05	3,368.36	3,354.13	3,354.08	0	15.77	Out	0.00	3,367.09		3,351.32
5/26/16	15.25	15.31	Out	0.06	3,368.56	3,353.31	3,353.25	13.76	13.77	Out	0.01	3,368.36	3,354.60	3,354.59	0	15.82	Out	0.00	3,367.09		3,351.27
6/3/16	15.28	15.43	Out	0.15	3,368.56	3,353.28	3,353.13	13.68	13.71	Out	0.03	3,368.36	3,354.68	3,354.65	0	15.51	Out	0.00	3,367.09		3,351.58
6/9/16	15.27	15.45	Out	0.18	3,368.56	3,353.29	3,353.11	13.67	13.72	Out	0.05	3,368.36	3,354.69	3,354.64	0	15.67	Out	0.00	3,367.09		3,351.42
6/10/16	15.36	15.5	Out	0.14	3,368.56	3,353.20	3,353.06	14.1	14.1	Out	0.00	3,368.36	3,354.26	3,354.26	0	15.74	Out	0.00	3,367.09		3,351.35
6/17/16	15.31	15.35	Out	0.04	3,368.56	3,353.25	3,353.21	13.72	13.8	Out	0.08	3,368.36	3,354.64	3,354.56	0	15.57	Out	0.00	3,367.09		3,351.52
6/22/16	15.41	15.65	Out	0.24	3,368.56	3,353.15	3,352.91	13.8	13.88	Out	0.08	3,368.36	3,354.56	3,354.48	0	15.9	Out	0.00	3,367.09	0.050.00	3,351.19
6/30/16	15.39	15.5	Out	0.11	3,368.56	3,353.17	3,353.06	13.8	13.99	Out	0.19	3,368.36	3,354.56	3,354.37	16.26	16.26	Out	0.00	3,367.09	3,350.83	3,350.83
7/1/10	15.4	15.48	Out	0.08	3,308.50	3,353.10	3,353.08	13.82	13.89	Out	0.07	3,308.30	3,354.54	3,354.47	16.40	16.05	Out	0.19	3,367.09	3,350.63	3,350.44
7/10/16	15.44	15.56	Out	0.14	3,300.30	3,353.12	3,352.90	13.91	13.97	Out	0.06	3,300.30	3,354.45	3,354.39	16.50	16.6	Out	0.19	3,367.09	3,350.51	3,350.32
7/20/16	15.54	15.62	Out	0.10	3,368,56	3,353.00	3 352 04	13.01	13.08	Out	0.00	3,368,36	3 354 45	3 354 38	16.45	16.46	Out	0.10	3,367.00	3 350 64	3,350,63
8/4/16	15.54	15.6	Out	0.00	3 368 56	3 353 03	3 352 96	13.91	14 11	Out	0.07	3 368 36	3 354 44	3 354 25	0.45	17 19	Out	0.01	3 367 09	3,330.04	3 349 90
8/15/16	15.3	15.34	Out	0.04	3.368.56	3,353,26	3.353.22	14.35	15.27	Out	0.92	3,368.36	3.354.01	3.353.09	0	16	Out	0.00	3.367.09		3.351.09
8/26/16	15.1	15.15	Out	0.05	3,368,56	3.353.46	3.353.41	13.8	13.82	Out	0.02	3,368,36	3.354.56	3.354.54	0	10.16	Out	0.00	3,367,09		3,356,93
9/6/16	14.08	14.12	Out	0.04	3,368.56	3,354.48	3,354.44	0	13	Out	0.00	3,368.36	-,	3,355.36	9.76	9.89	Out	0.13	3,367.09	3,357.33	3,357.20
9/29/16	13.22	13.31	Out	0.09	3,368.56	3,355.34	3,355.25			Out		3,368.36			0	13.35	Out	0.00	3,367.09		3,353.74
10/5/16	14.66	14.73	Out	0.07	3,368.56	3,353.90	3,353.83			Out		3,368.36			0	13.55	Out	0.00	3,367.09		3,353.54
10/14/16	18.63	18.75	Out	0.12	3,368.56	3,349.93	3,349.81	0	12.17	Out	0.00	3,368.36		3,356.19	0	14.14	Out	0.00	3,367.09		3,352.95
10/20/16	18.62	18.7	Out	0.08	3,368.56	3,349.94	3,349.86	0	12.55	Out	0.00	3,368.36		3,355.81	0	10.2	Out	0.00	3,367.09		3,356.89
10/26/16	18.65	18.81	Out	0.16	3,368.56	3,349.91	3,349.75	0	12.14	Out	0.00	3,368.36		3,356.22	0	9.65	Out	0.00	3,367.09		3,357.44
11/2/16	18.48	18.81	Out	0.33	3,368.56	3,350.08	3,349.75	0	12.36	Out	0.00	3,368.36		3,356.00	9.72	9.75	Out	0.03	3,367.09	3,357.37	3,357.34
11/8/16	13.76	13.99	Out	0.23	3,368.56	3,354.80	3,354.57	0	12.59	Out	0.00	3,368.36		3,355.77	9.54	9.56	Out	0.02	3,367.09	3,357.55	3,357.53
11/16/16	13.5	13.81	Out	0.31	3,369.56	3,356.06	3,355.75	0	12.29	Out	0.00	3,369.36		3,357.07	0	9.51	Out	0.00	3,368.09		3,358.58
11/22/16	13.62	13.85	Out	0.23	3,370.56	3,356.94	3,356.71	0	12.4	Out	0.00	3,370.36		3,357.96	9.67	9.69	Out	0.02	3,369.09	3,359.42	3,359.40
12/1/16	13.81	14.05	Out	0.24	3,371.56	3,357.75	3,357.51	0	12.6	Out	0.00	3,371.36		3,358.76	9.93	10	Out	0.07	3,370.09	3,360.16	3,360.09
12/6/16	13.64	13.85	Out	0.21	3,371.56	3,357.92	3,357.71	0	12.35	Out	0	3,371.36		3,359.01	0	9.5	Out	0	3,370.09		3,360.59

HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well	RW-8R									RW-12R							RW-13R	2			
Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	11.52	11.53	9.5	0.01	3,368.10	3,356.58	3,356.57	0	22.74	Out	0.00	3,351.54		3,328.80	0	21	Out	0.00	3,351.54		3,330.54
1/7/16	11.52	11.53	9.5	0.01	3,368.10	3,356.58	3,356.57	0	22.74	Out	0.00	3,351.54		3,328.80	0	21	Out	0.00	3,351.54		3,330.54
1/13/16	22.5	23	22.6	0.50	3,368.10	3,345.60	3,345.10	0	22.85	Out	0.00	3,351.54		3,328.69	21.07	21.07	Out	0.00	3,351.54	3,330.47	3,330.47
1/20/16	0	16.35	Out	0.00	3,368.10		3,351.75	22.91	22.91	Out	0.00	3,351.54	3,328.63	3,328.63	0	21.12	Out	0.00	3,351.54		3,330.42
1/29/16	0	8.84	Out	0.00	3,368.10		3,359.26	0	23.12	Out	0.00	3,351.54		3,328.42	0	21.24	Out	0.00	3,351.54		3,330.30
2/3/16	0	21.92	Out	0.00	3,368.10		3,346.18	0	23.29	Out	0.00	3,351.54		3,328.25	0	21.45	Out	0.00	3,351.54		3,330.09
2/16/16	13.7	13.8	Out	0.10	3,368.10	3,354.40	3,354.30	0	24.43	Out	0.00	3,351.54		3,327.11	0	21.56	Out	0.00	3,351.54		3,329.98
2/26/16	0	9.6	Out	0.00	3,368.10	0.050.50	3,358.50	0	26.39	Out	0.00	3,351.54		3,325.15	0	21.67	Out	0.00	3,351.54		3,329.87
3/3/16	9.54	9.54	Out	0.00	3,368.10	3,358.56	3,358.56	0	23.75	Out	0.00	3,351.54		3,327.79	0	21.67	Out	0.00	3,351.54		3,329.87
3/11/10	0	21.8	Out	0.00	3,308.10		3,340.30	0	23.89	Out	0.00	3,351.54		3,327.05	0	21.70	Out	0.00	3,351.54		3,329.78
3/13/10	0	10.25	Out	0.00	2 269 10		2 240 05	0	23.95	Out	0.00	2 261 64		2 227 40	0	21.79	Out	0.00	2 251 54		2 220 72
3/22/10	0	19.20	Out	0.00	3,368,10		3,340.00	0	24.05	Out	0.00	3,351.54		3,327.49	0	21.02	Out	0.00	3 351 54		3,329.72
4/7/16	18.45	18.72	Out	0.00	3 368 10	3 349 65	3 349 38	0	21.98	Out	0.00	3 351 54		3 329 56	0	23.94	Out	0.00	3 351 54		3 327 60
4/13/16	17.46	17.81	Out	0.35	3.368.10	3.350.64	3,350,29	0	23.88	Out	0.00	3.351.54		3.327.66	0	20.04	Out	0.00	3.351.54		3.329.54
4/19/16	17	17.4	Out	0.40	3.368.10	3.351.10	3,350.70	0	23.61	Out	0.00	3.351.54		3,327,93	0	21.84	Out	0.00	3.351.54		3,329,70
4/28/16	16.14	16.4	Out	0.26	3,368.10	3,351.96	3,351.70	0	23.33	Out	0.00	3,351.54		3,328.21	0	21.61	Out	0.00	3,351.54		3,329.93
5/3/16	0	15.54	Out	0.00	3,368.10		3,352.56	0	21.08	Out	0.00	3,351.54		3,330.46	20	20.2	Out	0.20	3,351.54	3,331.54	3,331.34
5/13/16	16.32	16.59	Out	0.27	3,368.10	3,351.78	3,351.51	0	18.88	Out	0.00	3,351.54		3,332.66	17.9	18.55	Out	0.65	3,351.54	3,333.64	3,332.99
5/26/16	10.55	11.11	Out	0.56	3,368.10	3,357.55	3,356.99	0	20.2	Out	0.00	3,351.54		3,331.34	19.28	19.3	Out	0.02	3,351.54	3,332.26	3,332.24
6/3/16	10.55	11.14	Out	0.59	3,368.10	3,357.55	3,356.96	0	17.7	Out	0.00	3,351.54		3,333.84	16.65	17.2	Out	0.55	3,351.54	3,334.89	3,334.34
6/9/16	10.8	11.15	Out	0.35	3,368.10	3,357.30	3,356.95	0	17.95	Out	0.00	3,351.54		3,333.59	16.95	17.5	Out	0.55	3,351.54	3,334.59	3,334.04
6/10/16	18.92	19.19	Out	0.27	3,368.10	3,349.18	3,348.91	0	19.52	Out	0.00	3,351.54		3,332.02	18.8	18.91	Out	0.11	3,351.54	3,332.74	3,332.63
6/17/16	0	21.75	Out	0.00	3,368.10		3,346.35	0	16.05	Out	0.00	3,351.54		3,335.49	14.96	15.54	Out	0.58	3,351.54	3,336.58	3,336.00
6/22/16	21.15	21.5	21.22	0.35	3,368.10	3,346.95	3,346.60	0	16.96	Out	0.00	3,351.54		3,334.58	15.97	20	Out	4.03	3,351.54	3,335.57	3,331.54
6/30/16	0	11.32	Out	0.00	3,368.10		3,356.78	0	15.96	Out	0.00	3,351.54		3,335.58	15.16	15.74	Out	0.58	3,351.54	3,336.38	3,335.80
7/7/16	0	11.29	Out	0.00	3,368.10		3,356.81	0	17.33	Out	0.00	3,351.54		3,334.21	16.65	17.25	Out	0.60	3,351.54	3,334.89	3,334.29
7/12/16	0	11.41	Out	0.00	3,368.10	0.047.40	3,356.69	0	16.96	Out	0.00	3,351.54		3,334.58	16.2	16.76	Out	0.56	3,351.54	3,335.34	3,334.78
7/19/16	20.67	20.71	Out	0.04	3,368.10	3,347.43	3,347.39	0	17.75	Out	0.00	3,351.54	0.000.04	3,333.79	17.18	17.65	Out	0.47	3,351.54	3,334.36	3,333.89
7/29/16	20.7	20.8	Out	0.10	3,368.10	3,347.40	3,347.30	18.3	18.3	Out	0.00	3,351.54	3,333.24	3,333.24	17.71	18.3	Out	0.59	3,351.54	3,333.83	3,333.24
0/4/10	11.25	20.05	Out	0.01	3,300.10	3,349.10	3,347.45	0	19 19	Out	0.00	3,331.34		3,332.34	10.77	10.24	Out	0.30	3,351.54	3,332.11	3,332.47
8/26/16	0	10.6	Out	0.01	3,368,10	3,330.05	3,357,50	0	18.75	Out	0.00	3,351.54		3,333.27	17.64	18.34	Out	0.46	3,351.54	3,333.31	3,332.20
9/6/16	0	8.97	Out	0.00	3 368 10		3 359 13	0	16.03	Out	0.00	3 351 54		3 335 51	16.06	16.66	Out	0.40	3 351 54	3 335 48	3 334 88
9/29/16	19.56	19.6	Out	0.04	3 368 10	3 348 54	3 348 50	0	17.91	Out	0.00	3 351 54		3 333 63	16.83	17.39	Out	0.56	3 351 54	3 334 71	3 334 15
10/5/16	0	18.88	Out	0.00	3.368.10	0,010.01	3,349,22	17.24	17.25	Out	0.01	3.351.54	3.334.30	3,334,29	16.59	17.15	Out	0.56	3.351.54	3,334,95	3.334.39
10/14/16	19.1	19.18	Out	0.08	3.368.10	3.349.00	3,348,92	17.9	17.92	Out	0.02	3.351.54	3.333.64	3,333,62	17.23	17.83	Out	0.60	3.351.54	3.334.31	3.333.71
10/20/16	18.8	18.95	Out	0.15	3,368.10	3,349.30	3,349.15	17.15	17.19	Out	0.04	3,351.54	3,334.39	3,334.35	16.45	17	Out	0.55	3,351.54	3,335.09	3,334.54
10/26/16	18.36	18.44	Out	0.08	3,368.10	3,349.74	3,349.66	17.8	17.84	Out	0.04	3,351.54	3,333.74	3,333.70	17.18	17.67	Out	0.49	3,351.54	3,334.36	3,333.87
11/2/16	18.22	18.55	Out	0.33	3,368.10	3,349.88	3,349.55	18.57	18.63	Out	0.06	3,351.54	3,332.97	3,332.91	17.95	18.55	Out	0.60	3,351.54	3,333.59	3,332.99
11/8/16	18.63	18.95	Out	0.32	3,368.10	3,349.47	3,349.15	19.07	19.1	Out	0.03	3,351.54	3,332.47	3,332.44	17.95	18.51	Out	0.56	3,351.54	3,333.59	3,333.03
11/16/16	18.2	18.7	Out	0.50	3,369.10	3,350.90	3,350.40	0	19.56	Out	0.00	3,352.54		3,332.98	18.34	18.54	Out	0.20	3,352.54	3,334.20	3,334.00
11/22/16	17.82	18.15	Out	0.33	3,370.10	3,352.28	3,351.95	19.96	19.99	Out	0.03	3,353.54	3,333.58	3,333.55	18.77	18.98	Out	0.21	3,353.54	3,334.77	3,334.56
12/1/16	17.55	18.03	Out	0.48	3,371.10	3,353.55	3,353.07	20.55	20.57	Out	0.02	3,354.54	3,333.99	3,333.97	19.3	19.44	Out	0.14	3,354.54	3,335.24	3,335.10
12/6/16	17.09	17.4	Out	0.31	3,371.10	3,354.01	3,353.70	0	21.05	Out	0	3,354.54		3,333.49	19.4	19.61	Out	0.21	3,354.54	3,335.14	3,334.93

HollyFrontier Navajo	Refining LLC,	Artesia Refinery	, Artesia, NM

Well	RW-14R										RW-15							RW-19			
Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	17.55	17.67	Out	0.12	3,349.37	3,331.82	3,331.70	13.3	13.4	Out	0.10	3,365.30	3,352.00	3,351.90	21.79	22.09	Out	0.30	3,369.11	3,347.32	3,347.02
1/7/16	17.55	17.67	Out	0.12	3,349.37	3,331.82	3,331.70	13.3	13.4	Out	0.10	3,365.30	3,352.00	3,351.90	21.79	22.09	Out	0.30	3,369.11	3,347.32	3,347.02
1/13/16	16.63	16.81	Out	0.18	3,349.37	3,332.74	3,332.56	13.45	13.52	Out	0.07	3,365.30	3,351.85	3,351.78	21.82	22.19	Out	0.37	3,369.11	3,347.29	3,346.92
1/20/16	17.67	17.8	Out	0.13	3,349.37	3,331.70	3,331.57	13.51	13.54	Out	0.03	3,365.30	3,351.79	3,351.76	21.87	22.27	Out	0.40	3,369.11	3,347.24	3,346.84
1/29/16	17.69	17.83	Out	0.14	3,349.37	3,331.68	3,331.54	13.6	13.75	Out	0.15	3,365.30	3,351.70	3,351.55	21.99	22.34	Out	0.35	3,369.11	3,347.12	3,346.77
2/3/16	17.93	17.96	Out	0.03	3,349.37	3,331.44	3,331.41	13.85	13.94	Out	0.09	3,365.30	3,351.45	3,351.36	22.4	22.92	Out	0.52	3,369.11	3,346.71	3,346.19
2/16/16	17.9	18.11	Out	0.21	3,349.37	3,331.47	3,331.26	13.83	13.91	Out	0.08	3,365.30	3,351.47	3,351.39	22.5	22.8	Out	0.30	3,369.11	3,346.61	3,346.31
2/26/16	18.07	18.18	Out	0.11	3,349.37	3,331.30	3,331.19	14.08	14.12	Out	0.04	3,365.30	3,351.22	3,351.18	22.58	22.99	Out	0.41	3,369.11	3,346.53	3,346.12
3/3/16	18.15	18.46	Out	0.31	3,349.37	3,331.22	3,330.91	14.1	14.14	Out	0.04	3,365.30	3,351.20	3,351.16	22.69	23.08	Out	0.39	3,369.11	3,346.42	3,346.03
3/11/16	18.22	18.8	Out	0.58	3,349.37	3,331.15	3,330.57	14.27	14.3	Out	0.03	3,365.30	3,351.03	3,351.00	22.85	23.18	Out	0.33	3,369.11	3,346.26	3,345.93
3/15/16	18.29	18.45	Out	0.16	3,349.37	3,331.08	3,330.92	14.24	14.3	Out	0.06	3,365.30	3,351.06	3,351.00	22.80	23.29	Out	0.43	3,369.11	3,340.25	3,345.82
3/22/16	18.39	18.49	Out	0.10	3,349.37	3,330.98	3,330.88	14.29	14.3	Out	0.01	3,305.30	3,351.01	3,351.00	22.89	23.24	Out	0.35	3,309.11	3,340.22	3,345.87
3/29/10	10.40	10.79	Out	0.00	2 240 27	2 220 75	2,220,66	14.52	14.30	Out	0.04	2 265 20	2 250 77	2 250 70	22.90	23.33	Out	0.37	2 260 11	2 242 16	3,345.70
4/13/16	18.76	18.86	Out	0.03	3 349 37	3 330 61	3 330 51	14.55	14.0	Out	0.07	3 365 30	3 350 60	3 350 56	22.33	23.75	Out	0.40	3 369 11	3 346 19	3 345 36
4/19/16	18.76	18.86	Out	0.10	3 349 37	3 330 61	3 330 51	14.66	14 69	Out	0.03	3 365 30	3 350 64	3 350 61	23.21	23.55	Out	0.34	3 369 11	3 345 90	3 345 56
4/28/16	17.83	17.9	Out	0.07	3.349.37	3.331.54	3.331.47	14.65	14.7	Out	0.05	3.365.30	3.350.65	3.350.60	23.3	24.1	Out	0.80	3.369.11	3.345.81	3.345.01
5/3/16	16.25	16.37	Out	0.12	3.349.37	3.333.12	3.333.00	14.78	14.8	Out	0.02	3.365.30	3.350.52	3.350.50	23.33	23.65	Out	0.32	3.369.11	3.345.78	3.345.46
5/13/16	15.85	15.98	Out	0.13	3,349.37	3,333.52	3,333.39	14.88	14.93	Out	0.05	3,365.30	3,350.42	3,350.37	23.55	23.96	Out	0.41	3,369.11	3,345.56	3,345.15
5/26/16	16.5	16.75	Out	0.25	3,349.37	3,332.87	3,332.62	14.83	14.95	Out	0.12	3,365.30	3,350.47	3,350.35	23.33	23.71	Out	0.38	3,369.11	3,345.78	3,345.40
6/3/16	15.05	15.1	Out	0.05	3,349.37	3,334.32	3,334.27	N/A	N/A	Out	#VALUE!	3,365.30	#VALUE!	#VALUE!	23.33	23.73	Out	0.40	3,369.11	3,345.78	3,345.38
6/9/16	15.33	15.78	Out	0.45	3,349.37	3,334.04	3,333.59	N/A	N/A	Out	#VALUE!	3,365.30	#VALUE!	#VALUE!	23.3	23.75	Out	0.45	3,369.11	3,345.81	3,345.36
6/10/16	16.16	16.25	Out	0.09	3,349.37	3,333.21	3,333.12	14.89	15	Out	0.11	3,365.30	3,350.41	3,350.30	23.43	23.86	Out	0.43	3,369.11	3,345.68	3,345.25
6/17/16	13.92	14.04	Out	0.12	3,349.37	3,335.45	3,335.33	14.85	14.9	Out	0.05	3,365.30	3,350.45	3,350.40	23.31	23.85	Out	0.54	3,369.11	3,345.80	3,345.26
6/22/16	14.85	15.18	Out	0.33	3,349.37	3,334.52	3,334.19	14.88	14.95	Out	0.07	3,365.30	3,350.42	3,350.35	23.29	23.87	Out	0.58	3,369.11	3,345.82	3,345.24
6/30/16	14.62	14.74	Out	0.12	3,349.37	3,334.75	3,334.63	14.9	14.93	Out	0.03	3,365.30	3,350.40	3,350.37	23.25	25.3	Out	2.05	3,369.11	3,345.86	3,343.81
7/7/16	15.35	15.82	Out	0.47	3,349.37	3,334.02	3,333.55	14.89	14.92	Out	0.03	3,365.30	3,350.41	3,350.38	23.25	23.6	Out	0.35	3,369.11	3,345.86	3,345.51
7/12/16	15.34	15.78	Out	0.44	3,349.37	3,334.03	3,333.59	14.88	14.91	Out	0.03	3,365.30	3,350.42	3,350.39	23.21	23.67	Out	0.46	3,369.11	3,345.90	3,345.44
7/19/16	15.97	16.05	Out	0.08	3,349.37	3,333.40	3,333.32	14.9	14.95	Out	0.05	3,365.30	3,350.40	3,350.35	23.3	23.65	Out	0.35	3,369.11	3,345.81	3,345.46
7/29/16	16.57	16.75	Out	0.18	3,349.37	3,332.80	3,332.62	14.9	15	Out	0.10	3,365.30	3,350.40	3,350.30	26.22	27	Out	0.78	3,369.11	3,342.89	3,342.11
8/4/16	17.06	17.17	Out	0.11	3,349.37	3,332.31	3,332.20	14.84	14.95	Out	0.11	3,365.30	3,350.46	3,350.35	26.2	26.7	Out	0.50	3,369.11	3,342.91	3,342.41
8/15/16	16.8	16.97	Out	0.17	3,349.37	3,332.57	3,332.40	14.94	14.99	Out	0.05	3,365.30	3,350.36	3,350.31	23.85	26.24	Out	2.39	3,369.11	3,345.26	3,342.87
8/26/16	17.3	17.45	Out	0.15	3,349.37	3,332.07	3,331.92	14.58	14.6	Out	0.02	3,365.30	3,350.72	3,350.70	21.95	22.15	Out	0.20	3,369.11	3,347.16	3,346.96
9/6/16	16.14	16.3	Out	0.16	3,349.37	3,333.23	3,333.07	13.95	13.95	Out	0.00	3,365.30	3,351.35	3,351.35	22.42	22.62	Out	0.20	3,369.11	3,346.69	3,346.49
9/29/16	16.22	16.32	Out	0.10	3,349.37	3,333.15	3,333.05	0	12.97	Out	0.00	3,365.30		3,352.33	21.6	21.8	Out	0.20	3,369.11	3,347.51	3,347.31
10/5/16	10.04	10.08	Out	0.04	3,349.37	3,332.73	3,332.69	0	12.8	Out	0.00	3,365.30		3,352.50	21.33	21.54	Out	0.21	3,369.11	3,347.78	3,347.57
10/14/16	16.69	10.8	Out	0.11	3,349.37	3,332.08	3,332.57	0	12.9	Out	0.00	3,305.30		3,352.40	21.30	21.0	Out	0.24	3,309.11	3,347.75	3,347.51
10/20/10	16.85	16.05	Out	0.10	3,349.37	3,332.72	3 332 12	13.06	12.90	Out	0.00	3 365 20	3 352 24	3 352 21	21.33	21.59	Out	0.24	3,309.11	3 347.70	3,347.02
11/2/16	17.00	17.34	Out	0.10	3,349.37	3 332 10	3,332.42	13.00	13.09	Out	0.03	3 365 30	3,332.24	3 352 17	21.43	21.02	Out	0.19	3,309.11	3 347 61	3,347.49
11/8/16	18.17	18.31	Out	0.07	3 349 37	3 331 20	3 331 06	0	13.13	Out	0.00	3 365 30		3 352 10	21.5	22.15	Out	0.23	3 369 11	3 347 50	3 346 96
11/16/16	16.85	16.92	Out	0.07	3 350 37	3 333 52	3 333 45	13.15	13.19	Out	0.00	3 366 30	3 353 15	3 353 11	21.32	21.15	Out	0.03	3 370 11	3 348 72	3 348 65
11/22/16	18.58	18 79	Out	0.21	3 351 37	3 332 79	3 332 58	13.2	13.24	Out	0.04	3 367 30	3 354 10	3 354 06	21.00	21.40	Out	0.18	3 371 11	3 349 61	3 349 43
12/1/16	17.9	17.98	Out	0.08	3.352.37	3.334.47	3.334.39	13.21	13.25	Out	0.04	3,368,30	3.355.09	3,355,05	21.77	21.97	Out	0.20	3.372.11	3,350,34	3.350.14
12/6/16	19.15	19.25	Out	0.1	3,352.37	3,333.22	3,333.12	13.45	13.5	Out	0.05	3,368.30	3,354.85	3,354.80	21.81	22.06	Out	0.25	3,372.11	3,350.30	3,350.05

HollyFrontier Navajo Refining LLC, Artesia Refinery, Artesia, NM

Well				RW-20							RW-22			
Date	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev	Depth to PSH	Depth to Water	Product Pump	PSH Thickness	TOC Elev	PSH Elev	Water Elev
12/22/15	19.87	20.09	Out	0.22	3,348.44	3,328.57	3,328.35	19.79	19.8	Out	0.01	3,349.21	3,329.42	3,329.41
1/7/16	19.87	20.09	Out	0.22	3,348.44	3,328.57	3,328.35	19.79	19.8	Out	0.01	3,349.21	3,329.42	3,329.41
1/13/16	19.8	20.05	Out	0.25	3,348.44	3,328.64	3,328.39	Too Wet	Too Wet	Out		3,349.21		
1/20/16	19.78	19.99	Out	0.21	3,348.44	3,328.66	3,328.45	21.01	21.02	Out	0.01	3,349.21	3,328.20	3,328.19
1/29/16	19.74	20.05	Out	0.31	3,348.44	3,328.70	3,328.39	21.25	21.28	Out	0.03	3,349.21	3,327.96	3,327.93
2/3/16	19.76	20	Out	0.24	3,348.44	3,328.68	3,328.44	21.52	21.55	Out	0.03	3,349.21	3,327.69	3,327.66
2/16/16	19.75	20.05	Out	0.30	3,348.44	3,328.69	3,328.39	21.8	21.86	Out	0.06	3,349.21	3,327.41	3,327.35
2/26/16	19.75	20.13	Out	0.38	3,348.44	3,328.69	3,328.31	22.09	22.14	Out	0.05	3,349.21	3,327.12	3,327.07
3/3/16	19.8	20	Out	0.20	3,348.44	3,328.64	3,328.44	22.18	22.3	Out	0.12	3,349.21	3,327.03	3,326.91
3/11/16	19.77	20	Out	0.23	3,348.44	3,328.67	3,328.44	22.35	22.45	Out	0.10	3,349.21	3,326.86	3,326.76
3/15/16	19.7	20	Out	0.30	3,348.44	3,328.74	3,328.44	22.42	22.5	Out	0.08	3,349.21	3,326.79	3,326.71
3/22/16	19.74	20	Out	0.26	3,348.44	3,328.70	3,328.44	22.54	22.8	Out	0.26	3,349.21	3,326.67	3,326.41
3/29/16	19.74	20	Out	0.26	3,348.44	3,328.70	3,328.44	22.5	22.56	Out	0.06	3,349.21	3,326.71	3,326.65
4/7/16	19.71	20	Out	0.29	3,348.44	3,328.73	3,328.44	22.42	22.49	Out	0.07	3,349.21	3,326.79	3,326.72
4/13/10	19.75	20	Out	0.25	3,340.44	3,320.09	3,320.44	22.44	22.40	Out	0.04	3,349.21	3,320.77	3,320.73
4/19/10	19.72	20.05	Out	0.33	3,346.44	3,320.72	3,320.39	22.00	22.09	Out	0.03	3,349.21	3,327.15	3,327.12
5/3/16	10.74	20.11	Out	0.50	3 3/8 //	3 328 73	3 328 23	Z 1.44 Too Wet	Too Wet	Out	0.01	3 3/0 21	5,521.11	5,521.10
5/13/16	18.74	19.1	Out	0.36	3 348 44	3,329,70	3 329 34	28.52	28.63	Out	0.11	3 349 21	3 320 69	3 320 58
5/26/16	19.77	20.1	Out	0.33	3 348 44	3 328 67	3 328 34	23.12	23.12	Out	0.00	3 349 21	3,326,09	3 326 09
6/3/16	18.18	18.47	Out	0.29	3.348.44	3.330.26	3.329.97	N/A	N/A	Out	0.00	3.349.21	0,020.00	0,020.00
6/9/16	18.1	18.5	Out	0.40	3.348.44	3.330.34	3.329.94	23.55	23.9	Out	0.35	3.349.21	3.325.66	3.325.31
6/10/16	19.74	20.05	Out	0.31	3,348.44	3,328.70	3,328.39	22.44	22.44	Out	0.00	3,349.21	3,326.77	3,326.77
6/17/16	14.1	17.42	Out	3.32	3,348.44	3,334.34	3,331.02	23.19	23.35	Out	0.16	3,349.21	3,326.02	3,325.86
6/22/16	16.88	17.42	Out	0.54	3,348.44	3,331.56	3,331.02	23.5	24	23.6	0.50	3,349.21	3,325.71	3,325.21
6/30/16	9.74	16.94	Out	7.20	3,348.44	3,338.70	3,331.50	22.43	22.45	23.6	0.02	3,349.21	3,326.78	3,326.76
7/7/16	16.87	19.21	Out	2.34	3,348.44	3,331.57	3,329.23	22.83	22.84	23.6	0.01	3,349.21	3,326.38	3,326.37
7/12/16	17.16	17.32	Out	0.16	3,348.44	3,331.28	3,331.12	22.76	23.1	23.6	0.34	3,349.21	3,326.45	3,326.11
7/19/16	17.94	18.11	Out	0.17	3,348.44	3,330.50	3,330.33	23.3	23.62	23.6	0.32	3,349.21	3,325.91	3,325.59
7/29/16	17.54	17.88	Out	0.34	3,348.44	3,330.90	3,330.56	23.25	23.25	23.6	0.00	3,349.21	3,325.96	3,325.96
8/4/16	18.4	18.65	Out	0.25	3,348.44	3,330.04	3,329.79	0	23.82	23.6	0.00	3,349.21		3,325.39
8/15/16	17.88	18.4	Out	0.52	3,348.44	3,330.56	3,330.04	0	23.02	23.6	0.00	3,349.21		3,326.19
8/26/16	13.9	17.2	Out	3.30	3,348.44	3,334.54	3,331.24	0	23.84	23.6	0.00	3,349.21		3,325.37
9/6/16	12.16	12.45	Out	0.29	3,348.44	3,336.28	3,335.99	23.29	23.29	23.6	0.00	3,349.21	3,325.92	3,325.92
9/29/16	20.15	20.25	Out	0.10	3,348.44	3,328.29	3,328.19	0	28.71	23.6	0.00	3,349.21		3,320.50
10/5/16	16.27	17.35	Out	1.08	3,348.44	3,332.17	3,331.09	0	20.92	23.6	0.00	3,349.21		3,328.29
10/14/16	18.54	18.66	Out	0.12	3,348.44	3,329.90	3,329.78	0	22.25	23.6	0.00	3,349.21		3,326.96
10/20/16	17.47	17.55	Out	0.08	3,348.44	3,330.97	3,330.89	0	21.29	N/A	0.00	3,349.21		3,327.92
11/20/16	17.9	10.09	Out	0.19	3,348.44	3,330.54	3,330.35	0	21.19	N/A	0.00	3,349.21		3,328.02
11/2/10	10.32	10.12	Out	0.19	3,340.44	3,330.51	3,330.32	0	17.69	N/A	0.00	3,349.21		3,321.04
11/16/16	0	19.40	Out	0.15	3 340 44	5,529.11	3 330 1/	0	18.1	N/A	0.00	3 350 21		3 332 11
11/22/16	20.23	20.32	Out	0.00	3 350 44	3 330 21	3 330 12	0	18 49	N/A	0.00	3 351 21		3 332 72
12/1/16	20	20.02	Out	0.10	3.351.44	3.331.44	3.331.34	0	19.5	N/A	0.00	3.352.21		3.332.71
12/6/16	20	20.05	Out	0.05	3.351.44	3.331.44	3.331.39	0	19.26	N/A	0	3.352.21		3.332.95

5 of 5



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

February 15, 2016

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.: 1601864

Dear Micki Schultz:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/22/2016 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, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1601864-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst:	SUB
Ignitability	>200	0		°F	1	1/29/2016	R32136
SULFIDE, REACTIVE						Analyst:	SUB
Reactive Sulfide	ND	1.0		mg/L	1	1/29/2016	R32136
SPECIFIC GRAVITY						Analyst:	JRR
Specific Gravity	1.006	0			1	1/27/2016 3:13:00 PM	R31723
EPA METHOD 300.0: ANIONS						Analyst:	LGT
Fluoride	20	2.0	*	ma/L	20	1/23/2016 12:57:44 AM	R31638
Chloride	570	25		mg/L	50	1/26/2016 11:44:39 PM	R31714
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	1/23/2016 12:45:19 AM	R31638
Bromide	2.1	2.0		mg/L	20	1/23/2016 12:57:44 AM	R31638
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	1/23/2016 12:45:19 AM	R31638
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	1/23/2016 12:45:19 AM	R31638
Sulfate	2000	25		mg/L	50	1/26/2016 11:44:39 PM	R31714
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	JRR
Conductivity	5600	0.010		µmhos/cm	1	1/25/2016 8:12:02 PM	R31664
SM2320B: ALKALINITY						Analyst:	JRR
Bicarbonate (As CaCO3)	220.4	20.00		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
Total Alkalinity (as CaCO3)	220.4	20.00		mg/L CaCO3	1	1/25/2016 8:12:02 PM	R31664
SM2540C MOD: TOTAL DISSOLVED SC	DLIDS					Analyst:	KS
Total Dissolved Solids	3780	40.0	*D	mg/L	1	1/28/2016 6:43:00 PM	23428
CORROSIVITY						Analyst:	SUB
рН	7.16			pH Units	1	1/28/2016	R32136
CYANIDE, REACTIVE						Analyst:	SUB
Cyanide, Reactive	ND	1.00		mg/L	1	2/4/2016	R32136
EPA METHOD 7470: MERCURY						Analyst:	pmf
Mercury	ND	0.00020		mg/L	1	1/25/2016 4:48:50 PM	23378
MERCURY, TCLP						Analyst:	pmf
Mercury	ND	0.020		mg/L	1	1/28/2016 11:50:30 AM	23438
EPA METHOD 6010B: TCLP METALS						Analyst:	MED
Arsenic	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Barium	ND	100		mg/L	1	1/25/2016 11:17:08 AM	23359
Cadmium	ND	1.0		mg/L	1	1/25/2016 11:17:08 AM	23359
Chromium	ND	5.0		mg/L	1	1/25/2016 11:17:08 AM	23359

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 1 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

	Hall	Environmental	Analysis	Laboratory.	Inc.
--	------	----------------------	----------	-------------	------

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1601864-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 6010B: TCLP METALS					Analyst:	MED
Lead	ND	5.0	mg/L	1	1/25/2016 11:17:08 AM	23359
Selenium	ND	1.0	mg/L	1	1/25/2016 11:17:08 AM	23359
Silver	ND	5.0	mg/L	1	1/25/2016 11:17:08 AM	23359
EPA 6010B: TOTAL METALS					Analyst:	MED
Aluminum	1.0	0.020	mg/L	1	1/27/2016 10:18:42 AM	23359
Antimony	ND	0.050	mg/L	1	1/27/2016 10:18:42 AM	23359
Arsenic	ND	0.020	mg/L	1	1/27/2016 10:18:42 AM	23359
Barium	ND	0.020	mg/L	1	1/27/2016 10:18:42 AM	23359
Beryllium	ND	0.0030	mg/L	1	1/27/2016 10:18:42 AM	23359
Cadmium	ND	0.0020	mg/L	1	1/27/2016 10:18:42 AM	23359
Calcium	39	1.0	mg/L	1	1/27/2016 10:18:42 AM	23359
Chromium	ND	0.0060	mg/L	1	1/27/2016 10:18:42 AM	23359
Cobalt	ND	0.0060	mg/L	1	1/28/2016 10:29:14 AM	23359
Copper	0.012	0.0060	mg/L	1	1/27/2016 10:18:42 AM	23359
Iron	7.6	0.25	mg/L	5	1/27/2016 10:20:32 AM	23359
Lead	ND	0.0050	mg/L	1	1/27/2016 10:18:42 AM	23359
Magnesium	13	1.0	mg/L	1	1/27/2016 10:18:42 AM	23359
Manganese	0.15	0.0020	mg/L	1	1/27/2016 10:18:42 AM	23359
Nickel	0.042	0.010	mg/L	1	1/27/2016 10:18:42 AM	23359
Potassium	72	1.0	mg/L	1	1/27/2016 10:18:42 AM	23359
Selenium	0.53	0.050	mg/L	1	1/27/2016 10:18:42 AM	23359
Silver	ND	0.0050	mg/L	1	1/27/2016 10:18:42 AM	23359
Sodium	1200	50	mg/L	50	1/29/2016 11:10:54 AM	23359
Thallium	ND	0.050	mg/L	1	1/27/2016 10:18:42 AM	23359
Vanadium	ND	0.050	mg/L	1	1/27/2016 10:18:42 AM	23359
Zinc	0.035	0.020	mg/L	1	1/27/2016 10:18:42 AM	23359
EPA METHOD 8260B: VOLATILES					Analyst:	SUB
Acetonitrile	ND	12	µg/L	1	2/2/2016	R32136
Allyl chloride	ND	2.5	µg/L	1	2/2/2016	R32136
Chloroprene	ND	2.5	µg/L	1	2/2/2016	R32136
Cyclohexane	ND	2.5	µg/L	1	2/2/2016	R32136
Diethyl ether	ND	2.5	μg/L	1	2/2/2016	R32136
Diisopropyl ether	ND	2.5	µg/L	1	2/2/2016	R32136
Epichlorohydrin	ND	25	µg/L	1	2/2/2016	R32136
Ethyl acetate	ND	2.5	µg/L	1	2/2/2016	R32136
Ethyl methacrylate	ND	12	µg/L	1	2/2/2016	R32136
Ethyl tert-butyl ether	ND	2.5	µg/L	1	2/2/2016	R32136
Freon-113	ND	2.5	µg/L	1	2/2/2016	R32136

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 2 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, & 3 Inj WellLab ID:1601864-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Isobutanol	ND	25	µg/L	1	2/2/2016	R32136
Isopropyl acetate	ND	2.5	µg/L	1	2/2/2016	R32136
Methacrylonitrile	ND	12	µg/L	1	2/2/2016	R32136
Methyl acetate	ND	2.5	µg/L	1	2/2/2016	R32136
Methyl ethyl ketone	ND	12	µg/L	1	2/2/2016	R32136
Methyl isobutyl ketone	ND	12	µg/L	1	2/2/2016	R32136
Methyl methacrylate	ND	12	µg/L	1	2/2/2016	R32136
Methylcyclohexane	ND	5.0	µg/L	1	2/2/2016	R32136
n-Amyl acetate	ND	2.5	µg/L	1	2/2/2016	R32136
n-Hexane	ND	2.5	µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	25	µg/L	1	2/2/2016	R32136
Pentachloroethane	ND	25	µg/L	1	2/2/2016	R32136
p-isopropyltoluene	ND	2.5	µg/L	1	2/2/2016	R32136
Propionitrile	ND	12	µg/L	1	2/2/2016	R32136
Tetrahydrofuran	ND	2.5	µg/L	1	2/2/2016	R32136
Benzene	ND	2.5	µg/L	1	2/2/2016	R32136
Toluene	ND	2.5	µg/L	1	2/2/2016	R32136
Ethylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
Methyl tert-butyl ether (MTBE)	3.2	2.5	µg/L	1	2/2/2016	R32136
1,2,4-Trimethylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,3,5-Trimethylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,2-Dichloroethane (EDC)	ND	2.5	µg/L	1	2/2/2016	R32136
1,2-Dibromoethane (EDB)	ND	2.5	µg/L	1	2/2/2016	R32136
Naphthalene	ND	2.5	µg/L	1	2/2/2016	R32136
Acetone	100	12	µg/L	1	2/2/2016	R32136
Bromobenzene	ND	2.5	µg/L	1	2/2/2016	R32136
Bromodichloromethane	ND	2.5	µg/L	1	2/2/2016	R32136
Bromoform	ND	2.5	µg/L	1	2/2/2016	R32136
Bromomethane	ND	2.5	µg/L	1	2/2/2016	R32136
Carbon disulfide	ND	2.5	μg/L	1	2/2/2016	R32136
Carbon Tetrachloride	ND	2.5	μg/L	1	2/2/2016	R32136
Chlorobenzene	ND	2.5	μg/L	1	2/2/2016	R32136
Chloroethane	ND	2.5	μg/L	1	2/2/2016	R32136
Chloroform	ND	2.5	μg/L	1	2/2/2016	R32136
Chloromethane	ND	2.5	μg/L	1	2/2/2016	R32136
2-Chlorotoluene	ND	2.5	μg/L	1	2/2/2016	R32136
4-Chlorotoluene	ND	2.5	μg/L	1	2/2/2016	R32136
cis-1,2-DCE	ND	2.5	μg/L	1	2/2/2016	R32136
cis-1,3-Dichloropropene	ND	2.5	µg/L	1	2/2/2016	R32136

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 3 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, & 3 Inj Well

CLIENT: Navajo Refining Company

1601864-001

Project:

Lab ID:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
1,2-Dibromo-3-chloropropane	ND	2.5	µg/L	1	2/2/2016	R32136
Dibromochloromethane	ND	2.5	μg/L	1	2/2/2016	R32136
Dibromomethane	ND	2.5	μg/L	1	2/2/2016	R32136
1,2-Dichlorobenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,3-Dichlorobenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,4-Dichlorobenzene	ND	2.5	µg/L	1	2/2/2016	R32136
Dichlorodifluoromethane	ND	2.5	µg/L	1	2/2/2016	R32136
1,1-Dichloroethane	ND	2.5	µg/L	1	2/2/2016	R32136
1,1-Dichloroethene	ND	2.5	µg/L	1	2/2/2016	R32136
1,2-Dichloropropane	ND	2.5	µg/L	1	2/2/2016	R32136
1,3-Dichloropropane	ND	2.5	µg/L	1	2/2/2016	R32136
2,2-Dichloropropane	ND	2.5	µg/L	1	2/2/2016	R32136
1,1-Dichloropropene	ND	2.5	µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	2.5	µg/L	1	2/2/2016	R32136
2-Hexanone	ND	2.5	µg/L	1	2/2/2016	R32136
Isopropylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
Methylene Chloride	ND	12	µg/L	1	2/2/2016	R32136
n-Butylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
n-Propylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
sec-Butylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
Styrene	ND	2.5	µg/L	1	2/2/2016	R32136
tert-Butylbenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,1,1,2-Tetrachloroethane	ND	2.5	µg/L	1	2/2/2016	R32136
1,1,2,2-Tetrachloroethane	ND	2.5	µg/L	1	2/2/2016	R32136
Tetrachloroethene (PCE)	ND	2.5	µg/L	1	2/2/2016	R32136
trans-1,2-DCE	ND	2.5	µg/L	1	2/2/2016	R32136
trans-1,3-Dichloropropene	ND	2.5	µg/L	1	2/2/2016	R32136
1,2,3-Trichlorobenzene	ND	2.5	μg/L	1	2/2/2016	R32136
1,2,4-Trichlorobenzene	ND	2.5	µg/L	1	2/2/2016	R32136
1,1,1-Trichloroethane	ND	2.5	µg/L	1	2/2/2016	R32136
1,1,2-Trichloroethane	ND	2.5	µg/L	1	2/2/2016	R32136
Trichloroethene (TCE)	ND	2.5	µg/L	1	2/2/2016	R32136
Trichlorofluoromethane	ND	2.5	µg/L	1	2/2/2016	R32136
1,2,3-Trichloropropane	ND	2.5	µg/L	1	2/2/2016	R32136
Vinyl chloride	ND	2.5	µg/L	1	2/2/2016	R32136
mp-Xylenes	ND	5.0	µg/L	1	2/2/2016	R32136
o-Xylene	ND	2.5	µg/L	1	2/2/2016	R32136
tert-Amyl methyl ether	ND	2.5	µg/L	1	2/2/2016	R32136
tert-Butyl alcohol	ND	25	µg/L	1	2/2/2016	R32136

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
- 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 4 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, & 3 Inj Well

CLIENT: Navajo Refining Company

1601864-001

Project:

Lab ID:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Matrix: AQUEOUS

Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Q	ual Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Acrolein	ND	12	μg/L	1	2/2/2016	R32136
Acrylonitrile	ND	2.5	μg/L	1	2/2/2016	R32136
Bromochloromethane	ND	2.5	µg/L	1	2/2/2016	R32136
2-Chloroethyl vinyl ether	ND	2.5	µg/L	1	2/2/2016	R32136
lodomethane	ND	2.5	µg/L	1	2/2/2016	R32136
trans-1,4-Dichloro-2-butene	ND	2.5	µg/L	1	2/2/2016	R32136
Vinyl acetate	ND	2.5	µg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	100	µg/L	1	2/2/2016	R32136
Surr: 1,2-Dichlorobenzene-d4	89.2	70-130	%Rec	1	2/2/2016	R32136
Surr: 4-Bromofluorobenzene	94.0	70-130	%Rec	1	2/2/2016	R32136
Surr: Toluene-d8	99.6	70-130	%Rec	1	2/2/2016	R32136
EPA 8270D: SEMIVOLATILES						Analyst: SUB
1,1-Biphenyl	ND	5.0	μg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	5.0	µg/L	1	2/2/2016	R32136
Atrazine	ND	5.0	µg/L	1	2/2/2016	R32136
Benzaldehyde	ND	5.0	µg/L	1	2/2/2016	R32136
Caprolactam	ND	5.0	µg/L	1	2/2/2016	R32136
N-Nitroso-di-n-butylamine	ND	5.0	µg/L	1	2/2/2016	R32136
Acetophenone	ND	5.0	µg/L	1	2/2/2016	R32136
1-Methylnaphthalene	ND	5.0	µg/L	1	2/2/2016	R32136
2,3,4,6-Tetrachlorophenol	ND	5.0	µg/L	1	2/2/2016	R32136
2,4,5-Trichlorophenol	ND	5.0	μg/L	1	2/2/2016	R32136
2,4,6-Trichlorophenol	ND	5.0	µg/L	1	2/2/2016	R32136
2,4-Dichlorophenol	ND	5.0	μg/L	1	2/2/2016	R32136
2,4-Dimethylphenol	ND	5.0	µg/L	1	2/2/2016	R32136
2,4-Dinitrophenol	ND	5.0	µg/L	1	2/2/2016	R32136
2,4-Dinitrotoluene	ND	5.0	µg/L	1	2/2/2016	R32136
2,6-Dinitrotoluene	ND	5.0	µg/L	1	2/2/2016	R32136
2-Chloronaphthalene	ND	5.0	µg/L	1	2/2/2016	R32136
2-Chlorophenol	ND	5.0	µg/L	1	2/2/2016	R32136
2-Methylnaphthalene	ND	5.0	µg/L	1	2/2/2016	R32136
2-Methylphenol	ND	5.0	µg/L	1	2/2/2016	R32136
2-Nitroaniline	ND	5.0	µg/L	1	2/2/2016	R32136
2-Nitrophenol	ND	5.0	μg/L	1	2/2/2016	R32136
3,3'-Dichlorobenzidine	ND	5.0	µg/L	1	2/2/2016	R32136
3-Nitroaniline	ND	5.0	μg/L	1	2/2/2016	R32136
4,6-Dinitro-2-methylphenol	ND	5.0	μg/L	1	2/2/2016	R32136
4-Bromophenyl phenyl ether	ND	5.0	μg/L	1	2/2/2016	R32136
4-Chloro-3-methylphenol	ND	5.0	µg/L	1	2/2/2016	R32136

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

Oualifiers: * 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

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

1601864-001

Lab ID:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA 8270D: SEMIVOLATILES						Analyst: SUB
4-Chloroaniline	ND	5.0	µg/L	1	2/2/2016	R32136
4-Chlorophenyl phenyl ether	ND	5.0	μg/L	1	2/2/2016	R32136
4-Nitroaniline	ND	5.0	μg/L	1	2/2/2016	R32136
4-Nitrophenol	ND	5.0	µg/L	1	2/2/2016	R32136
Acenaphthene	ND	5.0	µg/L	1	2/2/2016	R32136
Acenaphthylene	ND	5.0	µg/L	1	2/2/2016	R32136
Anthracene	ND	5.0	µg/L	1	2/2/2016	R32136
Benzo(g,h,i)perylene	ND	5.0	µg/L	1	2/2/2016	R32136
Benz(a)anthracene	ND	0.50	µg/L	1	2/2/2016	R32136
Benzo(a)pyrene	ND	0.50	µg/L	1	2/2/2016	R32136
Benzo(b)fluoranthene	ND	0.50	µg/L	1	2/2/2016	R32136
Benzo(k)fluoranthene	ND	0.50	µg/L	1	2/2/2016	R32136
Bis(2-chloroethoxy)methane	ND	5.0	µg/L	1	2/2/2016	R32136
Bis(2-chloroethyl)ether	ND	5.0	µg/L	1	2/2/2016	R32136
Bis(2-chloroisopropyl)ether	ND	5.0	µg/L	1	2/2/2016	R32136
Bis(2-ethylhexyl)phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Butyl benzyl phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Carbazole	ND	5.0	µg/L	1	2/2/2016	R32136
Chrysene	ND	0.50	µg/L	1	2/2/2016	R32136
Dibenz(a,h)anthracene	ND	0.50	µg/L	1	2/2/2016	R32136
Dibenzofuran	ND	5.0	µg/L	1	2/2/2016	R32136
Diethyl phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Dimethyl phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Di-n-butyl phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Di-n-octyl phthalate	ND	5.0	µg/L	1	2/2/2016	R32136
Fluoranthene	ND	5.0	µg/L	1	2/2/2016	R32136
Fluorene	ND	5.0	µg/L	1	2/2/2016	R32136
Hexachlorobenzene	ND	5.0	µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	5.0	µg/L	1	2/2/2016	R32136
Hexachlorocyclopentadiene	ND	5.0	µg/L	1	2/2/2016	R32136
Hexachloroethane	ND	5.0	µg/L	1	2/2/2016	R32136
Indeno(1,2,3-cd)pyrene	ND	0.50	µg/L	1	2/2/2016	R32136
Isophorone	ND	5.0	µg/L	1	2/2/2016	R32136
Naphthalene	ND	5.0	µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	5.0	µg/L	1	2/2/2016	R32136
N-Nitrosodi-n-propylamine	ND	5.0	µg/L	1	2/2/2016	R32136
N-Nitrosodiphenylamine	ND	5.0	µg/L	1	2/2/2016	R32136
Pentachlorophenol	ND	5.0	µg/L	1	2/2/2016	R32136
Phenanthrene	ND	5.0	µg/L	1	2/2/2016	R32136

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
- 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 6 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, & 3 Inj Well

CLIENT: Navajo Refining Company

Project:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 1/21/2016 7:35:00 AM Pageived Date: 1/22/2016 0.40.00 AM

Lab ID: 1601864-001	Matrix:	Received Date: 1/22/2016 9:40:00 AM				
Analyses	Result	PQL Qual	Units	DF	Date Analyze	d Batch
EPA 8270D: SEMIVOLATILES						Analyst: SUB
Phenol	ND	5.0	µg/L	1	2/2/2016	R32136
Pyrene	ND	5.0	µg/L	1	2/2/2016	R32136
o-Toluidine	ND	5.0	µg/L	1	2/2/2016	R32136
Pyridine	ND	5.0	µg/L	1	2/2/2016	R32136
1,2,4,5-Tetrachlorobenzene	ND	5.0	µg/L	1	2/2/2016	R32136
Surr: 2,4,6-Tribromophenol	94.2	10-123	%Rec	1	2/2/2016	R32136
Surr: 2-Fluorobiphenyl	80.4	19-130	%Rec	1	2/2/2016	R32136
Surr: 2-Fluorophenol	82.8	21-120	%Rec	1	2/2/2016	R32136
Surr: Nitrobenzene-d5	89.6	25-130	%Rec	1	2/2/2016	R32136
Surr: Phenol-d5	86.0	10-130	%Rec	1	2/2/2016	R32136
Surr: Terphenyl-d14	32.8	20-137	%Rec	1	2/2/2016	R32136

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
- В Analyte detected in the associated Method Blank
- Value above quantitation range Е
- Analyte detected below quantitation limits Page 7 of 27 J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1601864

Date Reported:	2/15/2016
----------------	-----------

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK Collection Date:

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

 Lab ID:
 1601864-002
 N

CLIENT: Navajo Refining Company

Matrix: TRIP BLANK Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Acetonitrile	ND	2.5	µg/L	1	2/2/2016	R32136
Allyl chloride	ND	0.50	µg/L	1	2/2/2016	R32136
Chloroprene	ND	0.50	µg/L	1	2/2/2016	R32136
Cyclohexane	ND	0.50	µg/L	1	2/2/2016	R32136
Diethyl ether	ND	0.50	µg/L	1	2/2/2016	R32136
Diisopropyl ether	ND	0.50	µg/L	1	2/2/2016	R32136
Epichlorohydrin	ND	5.0	µg/L	1	2/2/2016	R32136
Ethyl acetate	ND	0.50	µg/L	1	2/2/2016	R32136
Ethyl methacrylate	ND	2.5	µg/L	1	2/2/2016	R32136
Ethyl tert-butyl ether	ND	0.50	µg/L	1	2/2/2016	R32136
Freon-113	ND	0.50	µg/L	1	2/2/2016	R32136
Isobutanol	ND	5.0	µg/L	1	2/2/2016	R32136
Isopropyl acetate	ND	0.50	µg/L	1	2/2/2016	R32136
Methacrylonitrile	ND	2.5	µg/L	1	2/2/2016	R32136
Methyl acetate	ND	0.50	µg/L	1	2/2/2016	R32136
Methyl ethyl ketone	ND	2.5	µg/L	1	2/2/2016	R32136
Methyl isobutyl ketone	ND	2.5	µg/L	1	2/2/2016	R32136
Methyl methacrylate	ND	2.5	µg/L	1	2/2/2016	R32136
Methylcyclohexane	ND	1.0	µg/L	1	2/2/2016	R32136
n-Amyl acetate	ND	0.50	µg/L	1	2/2/2016	R32136
n-Hexane	ND	0.50	µg/L	1	2/2/2016	R32136
Nitrobenzene	ND	5.0	µg/L	1	2/2/2016	R32136
Pentachloroethane	ND	5.0	µg/L	1	2/2/2016	R32136
p-isopropyltoluene	ND	0.50	µg/L	1	2/2/2016	R32136
Propionitrile	ND	2.5	µg/L	1	2/2/2016	R32136
Tetrahydrofuran	ND	0.50	µg/L	1	2/2/2016	R32136
Benzene	ND	0.50	µg/L	1	2/2/2016	R32136
Toluene	ND	0.50	µg/L	1	2/2/2016	R32136
Ethylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Methyl tert-butyl ether (MTBE)	ND	10	µg/L	1	2/2/2016	R32136
1,2,4-Trimethylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,3,5-Trimethylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,2-Dichloroethane (EDC)	ND	0.50	µg/L	1	2/2/2016	R32136
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1	2/2/2016	R32136
Naphthalene	ND	0.50	µg/L	1	2/2/2016	R32136
Acetone	ND	2.5	µg/L	1	2/2/2016	R32136
Bromobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Bromodichloromethane	ND	0.50	µg/L	1	2/2/2016	R32136
Bromoform	ND	0.50	µg/L	1	2/2/2016	R32136

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 8 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1601864

Date Reported: 2/15/2016

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK Collection Date:

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

 Lab ID:
 1601864-002
 N

CLIENT: Navajo Refining Company

Matrix: TRIP BLANK Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Q	ual Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Bromomethane	ND	0.50	µg/L	1	2/2/2016	R32136
Carbon disulfide	ND	0.50	µg/L	1	2/2/2016	R32136
Carbon Tetrachloride	ND	0.50	µg/L	1	2/2/2016	R32136
Chlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Chloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
Chloroform	ND	0.50	µg/L	1	2/2/2016	R32136
Chloromethane	ND	0.50	µg/L	1	2/2/2016	R32136
2-Chlorotoluene	ND	0.50	µg/L	1	2/2/2016	R32136
4-Chlorotoluene	ND	0.50	µg/L	1	2/2/2016	R32136
cis-1,2-DCE	ND	0.50	µg/L	1	2/2/2016	R32136
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	2/2/2016	R32136
1,2-Dibromo-3-chloropropane	ND	0.50	µg/L	1	2/2/2016	R32136
Dibromochloromethane	ND	0.50	µg/L	1	2/2/2016	R32136
Dibromomethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,2-Dichlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,3-Dichlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,4-Dichlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Dichlorodifluoromethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,1-Dichloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,1-Dichloroethene	ND	0.50	µg/L	1	2/2/2016	R32136
1,2-Dichloropropane	ND	0.50	µg/L	1	2/2/2016	R32136
1,3-Dichloropropane	ND	0.50	µg/L	1	2/2/2016	R32136
2,2-Dichloropropane	ND	0.50	µg/L	1	2/2/2016	R32136
1,1-Dichloropropene	ND	0.50	µg/L	1	2/2/2016	R32136
Hexachlorobutadiene	ND	0.50	µg/L	1	2/2/2016	R32136
2-Hexanone	ND	0.50	µg/L	1	2/2/2016	R32136
Isopropylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Methylene Chloride	ND	2.5	µg/L	1	2/2/2016	R32136
n-Butylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
n-Propylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
sec-Butylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
Styrene	ND	0.50	µg/L	1	2/2/2016	R32136
tert-Butylbenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
Tetrachloroethene (PCE)	ND	0.50	µg/L	1	2/2/2016	R32136
trans-1,2-DCE	ND	0.50	µg/L	1	2/2/2016	R32136
trans-1,3-Dichloropropene	ND	0.50	µg/L	1	2/2/2016	R32136
1,2,3-Trichlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136

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 9 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1601864

aboratory,]	[nc
ú	aboratory,]

Date Reported: 2/15/2016

Client Sample ID: TRIP BLANK Collection Date:

Project: Quarterly WDW-1, 2, & 3 Inj Well 1601864-002 Lab ID:

CLIENT: Navajo Refining Company

Matrix: TRIP BLANK Received Date: 1/22/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
1,2,4-Trichlorobenzene	ND	0.50	µg/L	1	2/2/2016	R32136
1,1,1-Trichloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,1,2-Trichloroethane	ND	0.50	µg/L	1	2/2/2016	R32136
Trichloroethene (TCE)	ND	0.50	µg/L	1	2/2/2016	R32136
Trichlorofluoromethane	ND	0.50	µg/L	1	2/2/2016	R32136
1,2,3-Trichloropropane	ND	0.50	µg/L	1	2/2/2016	R32136
Vinyl chloride	ND	0.50	µg/L	1	2/2/2016	R32136
mp-Xylenes	ND	1.0	µg/L	1	2/2/2016	R32136
o-Xylene	ND	0.50	µg/L	1	2/2/2016	R32136
tert-Amyl methyl ether	ND	0.50	µg/L	1	2/2/2016	R32136
tert-Butyl alcohol	ND	5.0	µg/L	1	2/2/2016	R32136
Acrolein	ND	2.5	µg/L	1	2/2/2016	R32136
Acrylonitrile	ND	0.50	µg/L	1	2/2/2016	R32136
Bromochloromethane	ND	0.50	µg/L	1	2/2/2016	R32136
2-Chloroethyl vinyl ether	ND	0.50	µg/L	1	2/2/2016	R32136
lodomethane	ND	0.50	µg/L	1	2/2/2016	R32136
trans-1,4-Dichloro-2-butene	ND	0.50	µg/L	1	2/2/2016	R32136
Vinyl acetate	ND	0.50	µg/L	1	2/2/2016	R32136
1,4-Dioxane	ND	20	µg/L	1	2/2/2016	R32136
Surr: 1,2-Dichlorobenzene-d4	89.2	70-130	%Rec	1	2/2/2016	R32136
Surr: 4-Bromofluorobenzene	93.2	70-130	%Rec	1	2/2/2016	R32136
Surr: Toluene-d8	99.6	70-130	%Rec	1	2/2/2016	R32136

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 Me

- 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
- % Recovery outside of range due to dilution or matrix S
- thod Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 10 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

QC SUM Hall Envir	MARY onment	' REP(al Anal	ORT ysis I	Laborat	ory, Inc.					WO#:	1601864 15-Feb-16
Client: Project:	Navajo I Quarterl	Refining Co y WDW-1,	ompany , 2, & 3	Inj Well							
Sample ID MB		Samp	Type: M I	BLK	Tes	tCode: E	PA Method	300.0: Anions	6		
Client ID: PBW	1	Batc	h ID: R3	31638	F	RunNo: 3	1638				
Prep Date:		Analysis [Date: 1	22/2016	\$	SeqNo: 9	68134	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		ND	0.10					-			
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide		ND	0.10								
Nitrogen, Nitrate (As N	N)	ND	0.10								
Phosphorus, Orthopho	osphate (As P	ND	0.50								
Sample ID LCS		Samp	Type: LC	s	Tes	tCode: E	PA Method	300.0: Anion	5		
Client ID: LCS	w	Batc	h ID: R3	31638	F	RunNo: 3	1638				
Prep Date:		Analysis [Date: 1	22/2016	:	SeqNo: 9	68135	Units: mg/L			
Analvte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HiahLimit	%RPD	RPDLimit	Qual
Fluoride		0.49	0.10	0.5000	0	98.4	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.1	90	110			
Bromide		2.5	0.10	2.500	0	98.2	90	110			
Nitrogen, Nitrate (As N	N)	2.5	0.10	2.500	0	99.2	90	110			
Phosphorus, Orthopho	osphate (As P	4.7	0.50	5.000	0	93.3	90	110			
Sample ID MB		Samp	Туре: М І	BLK	Tes	tCode: E	PA Method	300.0: Anions	6		
Client ID: PBW	1	Batc	h ID: R3	81714	F	RunNo: 3	1714				
Prep Date:		Analysis [Date: 1	/26/2016	:	SeqNo: 9	70466	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND	0.50					-			
Sulfate		ND	0.50								
Sample ID LCS		Samp	Type: LC	s	Tes	tCode: E	PA Method	300.0: Anion	S		
Client ID: LCS	w	Batc	h ID: R3	81714	F	RunNo: 3	1714				
Prep Date:		Analysis [Date: 1	/26/2016	:	SeqNo: 9	70467	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		4.8	0.50	5.000	0	96.5	90	110			
Sulfate		9.8	0.50	10.00	0	98.3	90	110			

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
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 11 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

Client: Project:	Navajo I Quarterl	Refining Co y WDW-1,	mpany 2, & 3	Inj Well							
Sample ID MB-R3	2136	SampT	ype: MI	BLK	Tes	stCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW		Batch	1D: R3	2136	F	RunNo:	32136				
Pren Date:		Analysis D	ato: 2	2/2016		SegNo: 0	282421	Unite: un/l			
TTep Date.		Analysis D		2/2010	·	Sequo.	JOZ 4 2 1				
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	2.5								
Ethyl tert-butyl ether		ND	0.50								
Freon-113		ND	0.50								
Isobutanol		ND	10								
Isopropyl acetate		ND	0.50								
Methacrylonitrile		ND	2.5								
Methyl acetate		ND	0.50								
Methyl ethyl ketone		ND	2.5								
Methyl isobutyl ketone		ND	2.5								
Methyl methacrylate		ND	2.5								
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	2.5								
Tetrahydrofuran		ND	0.50								
Benzene		ND	0.50								
Toluene		ND	0.50								
Ethylbenzene		ND	0.50								
Methyl tert-butyl ether (M	ITBE)	ND	0.50								
1,2,4-Trimethylbenzene	,	ND	0.50								
1,3,5-Trimethylbenzene		ND	0.50								
1,2-Dichloroethane (EDC	2)	ND	0.50								
1,2-Dibromoethane (EDE	3)	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
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 12 of 27

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc

WO#: 1601864 15-Feb-16

Client:NavajoProject:Quarter	o Refining Co erly WDW-1,	ompany 2, & 3	Inj Well								
Sample ID MB-R32136	SampT	ype: MI	BLK	Tes	stCode: E	PA Method	8260B: VOL	ATILES			-
Client ID PBW	Batch	n ID· R 3	2136		RunNo [.] 3	2136					
Bron Data:	Analysia D	nto: 1	2/2016			02424	Linito: ua/l				
Prep Date.	Analysis L	ale. Z	2/2010		Sequo. 3	02421	Units. µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	_
Bromomethane	ND	0.50									
Carbon disulfide	ND	0.50									
Carbon Tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
4-Chlorotoluene	ND	0.50									
cis-1,2-DCE	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	0.50									
Dibromochloromethane	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1.1-Dichloroethene	ND	0.50									
1.2-Dichloropropane	ND	0.50									
1.3-Dichloropropane	ND	0.50									
2.2-Dichloropropane	ND	0.50									
1 1-Dichloropropene	ND	0.50									
Heyachlorobutadiene	ND	0.00									
2 Hexanone		0.50									
Isonronylbanzana		0.50									
Mothylono Chlorido		0.50									
n Butylene Chionae		2.5									
n Dropythonzono		0.50									
		0.50									
Sec-Bulyidenzene	ND	0.50									
Styrene	ND	0.50									
tert-Butylbenzene	ND	0.50									
I, I, I, 2- Letrachloroethane	ND	0.50									
1,1,2,2-I etrachloroethane	ND	0.50									
I etrachloroethene (PCE)	ND	0.50									
trans-1,2-DCE	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									

Qualifiers:

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

Page 13 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID MB-R32136	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8260B: VOLA	TILES		
Client ID: PBW	Batch	n ID: R3	2136	F	unNo: 32	2136				
Prep Date:	Analysis D)ate: 2 /2	2/2016	S	eqNo: 98	82421	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
tert-Amyl methyl ether	ND	0.50								
tert-Butyl alcohol	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	2.5								
Bromochloromethane	ND	0.50								
2-Chloroethyl vinyl ether	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
1,4-Dioxane	ND	0.50								
Sample ID LCS-R32136	SampT	vpe: LC	S	Tes	tCode: EF	PA Method	8260B: VOLA	TILES		

Client ID: LCSW	Batch	n ID: R3	32136	F	RunNo: 3	2136				
Prep Date:	Analysis D	ate: 2	/2/2016	S	SeqNo: 9	82422	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.8		10.00	0	97.7	80	120			
Toluene	9.8		10.00	0	98.4	80	120			
Ethylbenzene	10		10.00	0	102	80	120			
Chlorobenzene	9.6		10.00	0	96.0	80	120			
1,1-Dichloroethene	9.6		10.00	0	96.4	80	120			
Tetrachloroethene (PCE)	9.2		10.00	0	92.4	80	120			
Trichloroethene (TCE)	9.8		10.00	0	98.0	80	120			
o-Xylene	10		10.00	0	104	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
- W Sample container temperature is out of limit as specified

Page 14 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

Client: Navaj Project: Quarte	o Refining Co erly WDW-1,	ompany 2, & 3	Inj Well								
Sample ID MB-R32136	SampT	ype: MI	BLK	Tes	tCode: E	EPA 8270D:	Semivolatiles				—
Client ID: PBW	Batch	n ID: R3	32136	F	RunNo:	32136					
Pren Date:	Analysis D	nato: 2	2/2016			982533	Inite: ua/I				
Thep Date.	Analysis D		2/2010		bequito.	502555					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,1-Biphenyl	ND	5.0									
1,4-Dioxane	ND	5.0									
Atrazine	ND	5.0									
Benzaldehyde	ND	5.0									
Caprolactam	ND	5.0									
N-Nitroso-di-n-butylamine	ND	5.0									
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-Bromonhenyl nhenyl ether	ND	5.0									
4-Chloro-3-methylphenol	ND	5.0									
	ND	5.0									
1-Chlorophenyl phenyl ether	ND	5.0									
4 Nitroanilino		5.0									
4-Mitrophonol		5.0									
		5.0									
Acenaphinene		5.0									
Anthracono		5.U									
		5.0									
Benzo(g,n,i)peryiene	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									

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 15 of 27

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

Navajo Refining Company

WO#: 1601864

15-Feb-16

Sample ID MB-R32136	SampT	ype: ME	BLK	Tes	tCode: EF	PA 8270D:	Semivolatiles			
Client ID: PBW	Batch	ו ID: R3	2136	F	lunNo: 3	2136				
Prep Date:	Analysis D	ate: 2/	2/2016	S	eqNo: 98	82533	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
Carbazole	ND	5.0								
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pvrene	ND	5.0								
o-Toluidine	ND	2.0								
Pvridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID LCS-R32136	SampType: LC	S	Test	tCode: EF	PA 8270D: \$	Semivolatiles			
Client ID: LCSW	Batch ID: R3	2136	R	unNo: 32	2136				
Prep Date:	Analysis Date: 2/	2/2016	S	eqNo: 98	82534	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	134			

Qualifiers:

Client:

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

E Value above quantitation range

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 16 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

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

Sample ID LCS-R32136 SampType: LCS				TestCode: EPA 8270D: Semivolatiles						
Client ID: LCSW	Batch	n ID: R3	32136	F	RunNo: 3	2136				
Prep Date:	Analysis D)ate: 2/	/2/2016	S	SeqNo: 9	82534	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Chlorophenol	4.6		5.000	0	91.6	50	131			
4-Chloro-3-methylphenol	4.7		5.000	0	94.4	42	139			
4-Nitrophenol	4.5		5.000	0	90.2	19	137			
Acenaphthene	5.0		5.000	0	100	36	122			
Bis(2-ethylhexyl)phthalate	5.2		5.000	0	105	50	150			
N-Nitrosodi-n-propylamine	4.7		5.000	0	93.6	46	135			
Pentachlorophenol	3.7		5.000	0	73.2	22	138			
Phenol	5.2		5.000	0	103	45	134			
Pyrene	4.7		5.000	0	93.2	45	139			

Qualifiers:

Value exceeds Maximum Contaminant Level. *

D Sample Diluted Due to Matrix

- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 17 of 27

WO#: 1601864 15-Feb-16

Hall E	l Environmental Analysis Laboratory, Inc.											
Client: Project:	Navajo Quarterl	Refining Company ly WDW-1, 2, & 3	Inj Well									
Sample ID	MB-23378	SampType: MB	LK	Test	Code: EF	PA Method	7470: Mercur	у				
Client ID:	PBW	Batch ID: 233	378	R	unNo: 31	1658						
Prep Date:	1/25/2016	Analysis Date: 1/2	25/2016	S	eqNo: 96	68855	Units: mg/L					
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		ND 0.00020										
Sample ID	LCS-23378	SampType: LC	S	Test	Code: EF	PA Method	7470: Mercur	у				
Client ID:	LCSW	Batch ID: 233	378	R	unNo: 31	1658						
Prep Date:	1/25/2016	Analysis Date: 1/2	25/2016	S	eqNo: 96	68856	Units: mg/L					
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0052 0.00020	0.005000	0	104	80	120					
Sample ID	1601864-001BM	S SampType: MS		Test	Code: EF	PA Method	7470: Mercur	у				
Client ID:	WDW-1,2,&3 Eff	luen Batch ID: 233	378	R	unNo: 31	1658						
Prep Date:	1/25/2016	Analysis Date: 1/2	25/2016	S	eqNo: 96	68858	Units: mg/L					
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0040 0.00020	0.005000	.00006177	79.6	75	125					
Sample ID	1601864-001BM	SD SampType: MS	D	Test	Code: EF	PA Method	7470: Mercur	у				
Client ID:	WDW-1,2,&3 Eff	luen Batch ID: 233	578	R	unNo: 31	1658						
Prep Date:	1/25/2016	Analysis Date: 1/2	25/2016	S	eqNo: 96	68859	Units: mg/L					
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0041 0.00020	0.005000	.00006177	80.1	75	125	0.688	20			

QC SUMMARY REPORT

WO#: 1601864

Analyte detected in the associated Method Blank

Page 18 of 27

- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

В

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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

WO#:	1601864
	15-Feb-16

Client: Project:	Nava Quar	ajo Refining Compa terly WDW-1, 2, &	ny 3 Inj Well							
Sample ID	MB-23438	SampType:	MBLK	Tes	tCode: MER	RCURY, T	CLP			
Client ID:	PBW	Batch ID:	23438	F	RunNo: 317	46				
Prep Date:	1/27/2016	Analysis Date:	1/28/2016	S	SeqNo: 971	551	Units: mg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC L	_owLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.0	20							
Sample ID	LCS-23438	SampType:	LCS	Tes	tCode: MEF	RCURY, T	CLP			
Client ID:	LCSW	Batch ID:	23438	F	RunNo: 3174	46				
Prep Date:	1/27/2016	Analysis Date:	1/28/2016	S	SeqNo: 971	552	Units: mg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC L	_owLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.0	20 0.005000	0	102	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
- W Sample container temperature is out of limit as specified
- Page 19 of 27

QC SU Hall Ei	J MMAR ivironme	RY REP (ntal Anal	ORT lysis I	Laborat	ory, Inc.					WO#:	1601864 15-Feb-16
Client: Project:	Navaj Quarte	o Refining C erly WDW-1	ompany , 2, & 3	Inj Well							
Sample ID Client ID: Prep Date:	MB-23359 PBW 1/22/2016	Samp Batc Analysis I	Type: MI h ID: 23 Date: 1 /	BLK 359 /25/2016	Tes F S	tCode: E RunNo: 3 SeqNo: 9	PA Method 1646 68535	6010B: TCLI Units: mg/L	P Metals		
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-23359	Samp	Type: LC	s	Tes	tCode: E	PA Method	6010B: TCLI	P Metals		
Client ID:	LCSW	Batc	h ID: 23	359	F	RunNo: 3	1646				
Prep Date:	1/22/2016	Analysis [Date: 1	/25/2016	S	SeqNo: 9	68536	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	5.0	0.5000	0	96.1	80	120			
Barium		ND	100	0.5000	0	94.0	80	120			

92.5

93.7

92.9

95.8

92.0

80

80

80

80

80

120

120

120

120

120

0

0

0

0

0

Qualifiers:

Cadmium

Chromium

Selenium

Lead

Silver

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

ND

ND

ND

ND

ND

1.0

5.0

5.0

1.0

5.0

0.5000

0.5000

0.5000

0.5000

0.1000

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 20 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1601864

15-Feb-16

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

Sample ID	MB-23359	Samp	Туре: М	BLK	Tes	tCode: EF	PA 6010B:	Total Metals			
Client ID:	PBW	Bato	ch ID: 23	359	F	RunNo: 3'	1646				
Prep Date:	1/22/2016	Analysis	Date: 1/	25/2016	S	eqNo: 9	68316	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0.020								
Antimony		ND	0.050								
Arsenic		ND	0.020								
Barium		ND	0.020								
Beryllium		ND	0.0030								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Copper		ND	0.0060								
Iron		ND	0.050								
Lead		ND	0.0050								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Potassium		ND	1.0								
Selenium		ND	0.050								
Silver		ND	0.0050								
Thallium		ND	0.050								
Vanadium		ND	0.050								
Zinc		ND	0.020								
Sample ID	LCS-23359	Samp	Type: LC	S	Tes	tCode: EF	PA 6010B: "	Total Metals			
Client ID:	LCSW	Bato	ch ID: 23	359	F	RunNo: 3'	1646				
Prep Date:	1/22/2016	Analysis	Date: 1/	25/2016	S	SeqNo: 90	68317	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		0.46	0.020	0.5000	0	91.9	80	120			
Antimony		0.48	0.050	0.5000	0	95.5	80	120			
Arsenic		0.48	0.020	0.5000	0	96.1	80	120			
Barium		0.47	0.020	0.5000	0	94.0	80	120			
Beryllium		0.49	0.0030	0.5000	0	99.0	80	120			
Cadmium		0.46	0.0020	0.5000	0	92.5	80	120			
Chromium		0.47	0.0060	0.5000	0	93.7	80	120			
Copper		0.47	0.0060	0.5000	0	94.5	80	120			
Iron		0.48	0.050	0.5000	0	95.5	80	120			
Lead		0.46	0.0050	0.5000	0	92.9	80	120			
Manganese		0.47	0.0020	0.5000	0	93.5	80	120			
Nickel		0.46	0.010	0.5000	0	92.2	80	120			
Potassium		44	1.0	50.00	0	88.6	80	120			
Selenium		0.48	0.050	0.5000	0	95.8	80	120			
~		0 092	0 0050	0 1000	0	92.0	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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

- W Sample container temperature is out of limit as specified
- Page 21 of 27

QC SUMMARY REPORT Hall Environmental Analysis

0.050

0.5000

0.49

ımen	ital Anal	ysis L	Laborat	ory, Inc.						15-Feb)-j	
Navajo Quarte	avajo Refining Company puarterly WDW-1, 2, & 3 Inj Well											
359	59 SampType: LCS TestCode: EPA 6010B: Total Metals											
	Batch	n ID: 23	359	F	RunNo: 3	1646						
016 Analysis Date: 1/25/2016 SeqNo: 968317 Units: mg/L												
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
	0.47	0.050	0.5000	0	93.8	80	120					

80

120

Zinc		0.48	0.020	0.5000	0	95.2	80	120			
Sample ID	MB-23359	SampT	ype: ME	BLK	Tes	tCode: El	PA 6010B:	Total Metals			
Client ID:	PBW	Batch	n ID: 23	359	F	RunNo: 3	1648				
Prep Date:	1/22/2016	Analysis D	ate: 1 /	25/2016	5	SeqNo: 9	68397	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								
Sodium		ND	1.0								
Sample ID	LCS-23359	SampT	ype: LC	s	Tes	tCode: El	PA 6010B:	Total Metals			
Client ID:	LCSW	Batch	Batch ID: 23359			RunNo: 3	1648				
Prep Date:	1/22/2016	Analysis D)ate: 1 /	25/2016	5	SeqNo: 9	68398	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		50	1.0	50.00	0	99.1	80	120			
Magnesium		49	1.0	50.00	0	98.8	80	120			
Sodium		48	1.0	50.00	0	96.6	80	120			
Sample ID	MB-23359	SampT	ype: ME	BLK	Tes	tCode: El	PA 6010B:	Total Metals			
Client ID:	PBW	Batch	n ID: 23	359	F	RunNo: 3	1737				
Prep Date:	1/22/2016	Analysis D	ate: 1 /	28/2016	S	SeqNo: 9	71326	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt		ND	0.0060								

0

98.1

Sample ID LCS-23359 SampType: LCS			Test	tCode: El	PA 6010B:	Total Metals				
Client ID: LCSW	Bato	h ID: 23	359	R	unNo: 3	1737				
Prep Date: 1/22/2016	Analysis I	Date: 1 /	28/2016	S	eqNo: 9	71327	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.46	0.0060	0.5000	0	91.5	80	120			

Qualifiers:

Client:

Project:

Client ID:

Prep Date:

Analyte

Thallium

Vanadium

Sample ID LCS-23359

LCSW

1/22/2016

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 22 of 27

WO#:	1601864
	15-Feb-16

Client: Project:	Navajo Quarter	Refining Comp	oany & 3 Inj Well							
Sample ID	MB-R32136	SampType	: MBLK	Tes	tCode: CY	ANIDE, Re	eactive			
Client ID:	PBW	Batch ID	: R32136	F	RunNo: 32	2136				
Prep Date:		Analysis Date	2/4/2016	5	SeqNo: 98	32430	Units: mg/L			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reac	live	ND	1.00							
Sample ID	LCS-R32136	SampType	: LCS	Tes	tCode: CY	ANIDE, Re	eactive			
Client ID:	LCSW	Batch ID	R32136	F	RunNo: 32	2136				
Prep Date:		Analysis Date	2/4/2016	5	SeqNo: 98	32431	Units: mg/L			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reac	tive	0.542	0.5000	0	108	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
- W Sample container temperature is out of limit as specified

Page 23 of 27

WO#:	1601864
	15-Feb-16

Client: Na Project: Qu	vajo Refining Company arterly WDW-1, 2, & 3	Inj Well						
Sample ID MB-R32136	S SampType: MI	BLK	Tes	tCode: SULFID	E, Reactive			
Client ID: PBW	Batch ID: R	32136	F	RunNo: 32136				
Prep Date:	Analysis Date: 1	/29/2016	S	eqNo: 982433	Units: mg/L			
Analyte	Result PQL	SPK value	SPK Ref Val	%REC Lowl	Limit HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND 1.0							
Sample ID LCS-R3213	6 SampType: LC	cs	Tes	tCode: SULFID	E, Reactive			
Client ID: LCSW	Batch ID: R3	32136	F	RunNo: 32136				
Prep Date:	Analysis Date: 1	/29/2016	S	GeqNo: 982434	Units: mg/L			
Analyte	Result PQL	SPK value	SPK Ref Val	%REC Lowl	Limit HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.18	0.2000	0	90.0	80 120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 24 of 27

Client:	Navajo Refining Company	T · TT / 11						
Project:	Quarterly WDW-1, 2, & 3	Inj Well						
Sample ID mb-1	SampType: ME	BLK	TestCode: S	M2320B: All	kalinity			
Client ID: PBW	Batch ID: R3	1664	RunNo: 3	31664				
Prep Date:	Analysis Date: 1/	25/2016	SeqNo: 9	968939	Units: mg/L (CaCO3		
Analyte	Result PQL	SPK value SPK	Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCC	3) ND 20.00							
Sample ID Ics-1	SampType: LC	S	TestCode: S	M2320B: All	kalinity			
Client ID: LCSW	Batch ID: R3	1664	RunNo: 3	31664				
Prep Date:	Analysis Date: 1/	25/2016	SeqNo: 9	968940	Units: mg/L (CaCO3		
Analyte	Result PQL	SPK value SPK	Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCC	3) 75.44 20.00	80.00	0 94.3	90	110			

Qualifiers:

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

Page 25 of 27

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:	Navajo Refin Quarterly WI	ning Compan <u>y</u> DW-1, 2, & 3	/ Inj Well							
Sample ID	1601864-001ADUP	SampType: D	UP	Tes	tCode: Sp	pecific Grav	vity			
Client ID:	WDW-1,2,&3 Effluen	Batch ID: R	31723	F	RunNo: 31	1723				
Prep Date:	Ana	alysis Date: 1	/27/2016	S	SeqNo: 97	70796	Units:			
Analyte	R	esult PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1	1.004 0)					0.179	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
- W Sample container temperature is out of limit as specified

Page 26 of 27

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc

WO#:	1601864
	15-Feb-16

Client:	Navajo F	<pre>tefining Co</pre>	mpany								
Project:	Quarterly	y WDW-1,	2, & 3	Inj Well							
Sample ID	MB-23428	SamnT	vne M	RI K	Test	tCode: SI	M2540C MC	D [.] Total Diss	olved So	lids	
	NID-20420	Datab			103		4755	D. 10tal Di33	01760 00	103	
Client ID:	PBW	Batch	ID: 23	428	R	unno: 3	1/55				
Prep Date:	1/27/2016	Analysis D	ate: 1	/28/2016	S	SeqNo: 9	71754	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	ND	20.0								
Sample ID LCS-23428 SampType: LCS TestCode: SM2540C MOD: Total Dissolved Solids											
Client ID:	LCSW	Batch	ID: 23	428	R	RunNo: 3	1755				
Prep Date:	1/27/2016	Analysis D	ate: 1	/28/2016	S	eqNo: 9	71755	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	1020	20.0	1000	0	102	80	120			
Sample ID	1601864-001AMS	SampT	ype: M	8	Test	tCode: SI	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	WDW-1,2,&3 Effl	uen Batch	ID: 23	428	R	RunNo: 3	1755				
Prep Date:											
'	1/27/2016	Analysis D	ate: 1 /	28/2016	S	eqNo: 9	71765	Units: mg/L			
Analyte	1/27/2016	Analysis D Result	ate: 1 / PQL	28/2016 SPK value	S SPK Ref Val	eqNo: 9 ; %REC	71765 LowLimit	Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Analyte Total Dissolved	1/27/2016 d Solids	Analysis D Result 5800	ate: 1 / PQL 40.0	28/2016 SPK value 2000	SPK Ref Val 3784	eqNo: 9 %REC 101	71765 LowLimit 80	Units: mg/L HighLimit 120	%RPD	RPDLimit	Qual D
Analyte Total Dissolved	1/27/2016 d Solids 1601864-001AMS	Analysis D Result 5800 D SampT	ate: 1/ PQL 40.0 ype: M	28/2016 SPK value 2000	SPK Ref Val 3784 Test	8eqNo: 9 %REC 101 tCode: SI	71765 LowLimit 80 M2540C MC	Units: mg/L HighLimit 120 D: Total Diss	%RPD	RPDLimit lids	Qual D
Analyte Total Dissolved Sample ID Client ID:	1/27/2016 d Solids 1601864-001AMS WDW-1,2,&3 Effli	Analysis D Result 5800 D SampT Jen Batch	ate: 1/ PQL 40.0 ype: Ms	28/2016 SPK value 2000 SD 428	S SPK Ref Val 3784 Test R	eqNo: 9 %REC 101 tCode: SI RunNo: 3	71765 LowLimit 80 M2540C MC 1755	Units: mg/L HighLimit 120 DD: Total Diss	%RPD	RPDLimit	Qual D
Analyte Total Dissolved Sample ID Client ID: Prep Date:	1/27/2016 d Solids 1601864-001AMS WDW-1,2,&3 Effi 1/27/2016	Analysis D Result 5800 D SampT Jen Batch Analysis D	ate: 1/ PQL 40.0 ype: Ms 1D: 23 ate: 1/	28/2016 SPK value 2000 SD 428 /28/2016	S SPK Ref Val 3784 Test R S	SeqNo: 9 <u>%REC</u> 101 tCode: SI RunNo: 3 SeqNo: 9	71765 LowLimit 80 M2540C MC 1755 71766	Units: mg/L HighLimit 120 DD: Total Diss Units: mg/L	%RPD	RPDLimit	Qual D
Analyte Total Dissolved Sample ID Client ID: Prep Date: Analyte	1/27/2016 d Solids 1601864-001AMS WDW-1,2,&3 Effi 1/27/2016	Analysis D Result 5800 D SampT Jen Batch Analysis D Result	ate: 1, PQL 40.0 ype: M3 1D: 23 ate: 1, PQL	28/2016 SPK value 2000 SD 428 28/2016 SPK value	S SPK Ref Val 3784 Test R S SPK Ref Val	8 eqNo: 9 %REC 101 101 101 101 101 101 101 10	71765 LowLimit 80 M2540C MC 1755 71766 LowLimit	Units: mg/L HighLimit 120 DD: Total Diss Units: mg/L HighLimit	%RPD olved So %RPD	RPDLimit lids RPDLimit	Qual D 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
- W Sample container temperature is out of limit as specified
- Page 27 of 27

ENVIRONMENTAL ANALYSIS LABORATORY	AI TEL: 505-345-397 Website: www.1	4901 Hawkins Ibuquerque, NM 87 75 FAX: 505-345-41 hallenvironmental.c	NE 109 Sam 107	Sample Log-In Check List							
Client Name: NAVAJO REFINING	CO Work Order Numbe	er: 1601864		RcptNo: 1							
Received by/date: L_M	01/22/10										
Logged By: Michelle Garcia	1/22/2016 9:40:00 AI	м	Minul Ga	un							
Completed By: Michelle Garcia	1/22/2016 11:23:27	AM	Minue Gas	un							
Reviewed By:	01/22/14		1980								
Chain of Custody	1 1										
1. Custody seals intact on sample bo	tles?	Yes 📋	No 🗌	Not Present 🗹							
2. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present							
3. How was the sample delivered?		Courier									
<u>Log In</u>											
4. Was an attempt made to cool the	samples?	Yes 🗹	No 🗌								
5. Were all samples received at a ten	nperature of >0° C to 6.0°C	Yes 🔽	No 🗌								
6. Sample(s) in proper container(s)?		Yes 🔽	No 🗌								
7, Sufficient sample volume for indica	ted test(s)?	Yes 🗹	No 🗌								
8. Are samples (except VOA and ON	G) properly preserved?	Yes 🗸	No 🗌	20002 - 30							
9. Was preservative added to bottles		Yes	No 🗸	NA 🗌							
10.VOA vials have zero headspace?		Yes 🗌	No 🗌	No VOA Vials 🗹							
11. Were any sample containers recei	ved broken?	Yes	No 🔽	# of preserved bottles checked							
12. Does paperwork match bottle label	s?	Yes 🔽	No 🗌	for pH:	ted)						
13 Are matrices correctly identified on	Chain of Custody?	Yes 🗸	No 🗌	Adjusted? No	-						
14. Is it clear what analyses were requ	ested?	Yes 🗹	No 🗆								
15. Were all holding times able to be n (If no, notify customer for authorization)	net? tion.)	Yes 🗹	No 🗌	Checked by: MG							
Special Handling (if applicable	2										
16, Was client notified of all discrepan	cies with this order?	Yes 🗌	No 🗆	NA 🗹							
Person Notified:	Date	[1140 120 gebber								
By Whom:	Via:	🗌 eMail 🗌 F	Phone 🗌 Fax	In Person							
Regarding:											
17. Additional remarks:											
18 Cooler Information											
Cooler No Temp °C Cond	tion Seal Intact Seal No	Seal Date	Signed By	1							
1 1.2 Good	Yes										
o	hain	-of-Cu	stody Record	nrm-Around	i IIIIe.			HALL	N	VIRONMENTAL	
-------------------	--------------	-------------------	--	-------------------------	-----------------------	-----------------------------------	---	---	---------------	---	-----
Client Nav	/ajo Refi	ning Co.		□ Standar	C Rush			ANAL	YSI.	S LABORATORY	
				Project Nam	0	-		www	hallenvir.	onmental.com	
Mailing Ac	dress: P	O. Box 1	59 Artesia,	Quarterly W	DW-1, 2, & 31	nj Well	49011	Hawkins NE -	Albuquer	que, NM 87109	
NM 88211	-0159			Project #: P.	0.#167796		Tel. 5	05-345-3975	Fax 50	05-345-4107	
Phone #:	575-748-	3311							Analysi	s Request	
email or F.	ax#: 575	-746-545		Project Man	ager:		o c ci'	1.9	1	he	
QA/QC Pax	skage: rd		Level 4 (Full Validation)	Micki Schult	z / Scott Dento	on / Mike Holder	Ca,) 9 8560 EP/40 El' 3' CO3'	0109 1 1 (soc 28,00	6.961 5	1311 1311	
D Other				Sampler:	Elizabeth Sals	sberry	AO(Br, DO(92 SAC	CEF	pou	
D EDD (1	(ype)			On Ice:	Z Yes	O No	y,Hd al., al., Me ist	v ar hei M 8	01/0	only Metho M	
				Sample Teh	hperature: /	2	Hive Hq d no 846 846	1 Pa 1 Pa 1 Pa	юN	194 194	
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO.	Specific Gr SO4, TDS, VOCs/SW- (see attach	SVOCe/SV (see attach R,C,I/40 CI Wetals/SW	Ca, K, Mg,	261/ SW-8	
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	ę	Neat/H2SO4	- 001	×		-	×	
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	٢	HN03	-001		×	×		
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	- 00 1	×				
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001	_	×			
1/21/16	7:35	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	100-	_	×	-		
1/21/16	7:35	Liquid	Trip Blank	2	Neat	- 002	×	-	-		
1/21/16	7:35	Liquid	Temperature Blank	Ţ	Neat						
								+			
											_
Date 1/21/2016	Time:	Relinquis 9 LC	MARTIZOPETH Sulsberry	Received by:	A	Plate Time 31 77 16 04	Remarks: Send	results to Sco ntreras.	t Denton,	Mike Holder, Micki Schultz, Robert Cor	sdm
Date:	Time:	Relinquis	thed by:	Received by.	7	bate Time					
	If neces	sery, sampics	submitted to Hall Environmental may be subco	ntracted to other	accredited laboratori	es. This serves as notice of this	passibility. Any sub-con	tracted data will be o	early notated	on the analytical report	

		E. Mann esia, NM 88210 d) 575.746.3311 x) 575.746.5451		<i>.</i>	Atta	erly Sa letails ichme	mple nt		HOLL	YFRONTIER HolyFronter Companies
Project Name M Samplers Name E Samplers Affiliation N Start Date and Time 1/	DW 1.2, & 3 Ortly lizabeth Salsberry avalo Refining Co. 21/2016 @ 7.40 a.	Inj Weit LLC m,			S ime Weighte low Weighte Parts / San	ample Type Grab od Compos te od Compos te od Compos te	S C C S			Physical Property Solid C Liquid Z Sludge C Type of Sampler Directly to sample jars
Outfail / Sample Locat	tion. Waste water	effluent pumps to	injection w	ells		P-849 sam P-854 sam	typle point (firs	t from east) cond from eas	۵0 ۵	P-856 sample point (third from east) P-857 sample point (fourth from east)
			ALC: NO.	and Passia	and the second	Preservativ	ves		SOLUSS ST	
Container Size	Material	# of Containers	Neat (None)	HCL HN	03 H2SO4	NaOH	Na2\$203	NaHSO4	Other	Analysis and/or Method Requested
1		e	×		×					Specific Gravity.HCO3, CO3, CI, SO4, TD pH, cond, FI, Cation/anion bal., Br, Eh/4(CFR 136.3
CN.		-			~					VOCs/SW-845 Method 8260C (see attach list 'VOCs')
Ø		6		×						SVOCs/SW-546 Method 8270D (see attached list 'SVOCs')
4		2	×							R,C,I/40 CFR part 261
49		2	×							Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
6		2	×							Ca. K. Mg. Na/40 CFR 136.3
7		•-	×							TCLP Metals, cnly /40 CFR Part 261/ SV 846 Method 1311
00		-								
6										
10				-	_					
eid Data (Weather, Obate and Time	servations, Etc)	1/21/2016 Te	mp. 37.4 °	Humidity	70% Wind d	irection NW V	Vind Speed 1	1.5 mph Conk	Sition. Clear	Storage Method
eld Temp. 40 7C	Field pH 7.49									Refrigerated
										Shipping Media loe Other



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

April 01, 2016

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

RE: Monthly R.O. Reject

OrderNo.: 1603242

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/4/2016 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,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Project: Monthly R.O. Reject

1603242-001

Lab ID:

Client Sample ID: R.O. Reject Collection Date: 3/3/2016 9:45:00 AM Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB					Analyst: JME
1,2-Dibromoethane	ND	0.010	µg/L	1	3/7/2016 4:42:17 PM
EPA METHOD 8082: PCB'S					Analyst: SCC
Aroclor 1016	ND	1.0	ua/l	1	3/11/2016 2:01:36 PM
Aroclor 1221	ND	1.0	µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1232	ND	1.0	µg/L	1	3/11/2016 2:01:36 PM
Aroclor 1242	ND	1.0	μg/L	1	3/11/2016 2:01:36 PM
Aroclor 1248	ND	1.0	μg/L	1	3/11/2016 2:01:36 PM
Aroclor 1254	ND	1.0	μg/L	1	3/11/2016 2:01:36 PM
Aroclor 1260	ND	1.0	µg/L	1	3/11/2016 2:01:36 PM
Surr: Decachlorobiphenyl	100	26.1-140	%Rec	1	3/11/2016 2:01:36 PM
Surr: Tetrachloro-m-xylene	119	15-123	%Rec	1	3/11/2016 2:01:36 PM
EPA METHOD 8015M/D: DIESEL RA	NGE				Analyst: KJH
Diesel Range Organics (DRO)	ND	1.0	mg/L	1	3/7/2016 5:37:40 PM
Motor Oil Range Organics (MRO)	ND	5.0	mg/L	1	3/7/2016 5:37:40 PM
Surr: DNOP	102	70-141	%Rec	1	3/7/2016 5:37:40 PM
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	3/4/2016 9:22:09 PM
Surr: BFB	92.5	49.5-130	%Rec	1	3/4/2016 9:22:09 PM
EPA METHOD 8310: PAHS					Analyst: SCC
Naphthalene	ND	2.0	µg/L	1	3/17/2016 12:56:02 PM
1-Methylnaphthalene	ND	2.0	μg/L	1	3/17/2016 12:56:02 PM
2-Methylnaphthalene	ND	2.0	μg/L	1	3/17/2016 12:56:02 PM
Benzo(a)pyrene	ND	0.070	µg/L	1	3/17/2016 12:56:02 PM
Surr: Benzo(e)pyrene	75.2	33.4-129	%Rec	1	3/17/2016 12:56:02 PM
EPA METHOD 300.0: ANIONS					Analyst: JRR
Fluoride	3.5	2.0	mg/L	20	3/4/2016 3:03:27 PM
Chloride	370	10	mg/L	20	3/4/2016 3:03:27 PM
Nitrogen, Nitrate (As N)	2.2	0.10	mg/L	1	3/4/2016 2:51:02 PM
Sulfate	1900	25	mg/L	50	3/18/2016 3:05:33 AM
EPA METHOD 200.7: DISSOLVED M	ETALS				Analyst: ELS
Aluminum	ND	0.020	mg/L	1	3/18/2016 6:31:34 PM
Barium	0.069	0.0020	mg/L	1	3/18/2016 6:31:34 PM
Boron	0.093	0.040	mg/L	1	3/18/2016 6:31:34 PM
Cadmium	ND	0.0020	mg/L	1	3/18/2016 6:31:34 PM
Chromium	ND	0.0060	mg/L	1	3/18/2016 6:31:34 PM
Cobalt	ND	0.0060	ma/L	1	3/18/2016 6:31:34 PM

Matrix: AQUEOUS

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 1 of 20
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Monthly R.O. Reject

1603242-001

Lab ID:

Client Sample ID: R.O. Reject Collection Date: 3/3/2016 9:45:00 AM **Received Date:** 3/4/2016 10:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED ME	TALS				Analyst: ELS
Copper	ND	0.0060	mg/L	1	3/18/2016 6:31:34 PM
Iron	ND	0.020	mg/L	1	3/18/2016 6:31:34 PM
Manganese	ND	0.0020	mg/L	1	3/18/2016 6:31:34 PM
Molybdenum	0.0099	0.0080	mg/L	1	3/18/2016 6:31:34 PM
Nickel	ND	0.010	mg/L	1	3/18/2016 6:31:34 PM
Silver	ND	0.0050	mg/L	1	3/18/2016 6:31:34 PM
Zinc	0.014	0.010	mg/L	1	3/18/2016 6:31:34 PM
EPA 200.8: DISSOLVED METALS					Analyst: JLF
Arsenic	ND	0.0050	mg/L	5	3/29/2016 5:36:33 PM
Lead	ND	0.0025	mg/L	5	3/29/2016 5:36:33 PM
Selenium	0.0093	0.0050	mg/L	5	3/29/2016 5:36:33 PM
Uranium	0.0058	0.0025	mg/L	5	3/29/2016 5:36:33 PM
EPA METHOD 245.1: MERCURY					Analyst: pmf
Mercury	ND	0.00020	mg/L	1	3/10/2016 11:32:03 AM
EPA METHOD 8260B: VOLATILES					Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Toluene	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Ethylbenzene	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Carbon Tetrachloride	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Chloroform	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,1-Dichloroethane	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,1-Dichloroethene	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Methylene Chloride	ND	3.0	µg/L	1	3/11/2016 7:47:26 PM
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	3/11/2016 7:47:26 PM
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,1,1-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
1,1,2-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Trichloroethene (TCE)	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Vinyl chloride	ND	1.0	µg/L	1	3/11/2016 7:47:26 PM
Xylenes, Total	ND	1.5	µg/L	1	3/11/2016 7:47:26 PM
Surr: 1,2-Dichloroethane-d4	97.6	70-130	%Rec	1	3/11/2016 7:47:26 PM
Surr: 4-Bromofluorobenzene	108	70-130	%Rec	1	3/11/2016 7:47:26 PM
Surr: Dibromofluoromethane	94.2	70-130	%Rec	1	3/11/2016 7:47:26 PM
Surr: Toluene-d8	92.0	70-130	%Rec	1	3/11/2016 7:47:26 PM

Matrix: AQUEOUS

TOTAL PHENOLICS BY SW-846 9067

Analyst: SCC

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
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits $P_{age} 2 \text{ of } 20$
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1603242-001

Project: Monthly R.O. Reject

Lab ID:

Client Sample ID: R.O. Reject Collection Date: 3/3/2016 9:45:00 AM Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL (Qual	Units	DF	Date Analyzed
TOTAL PHENOLICS BY SW-846 9067						Analyst: SCC
Phenolics, Total Recoverable	ND	2.5		µg/L	1	3/8/2016
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst: SUB
Cyanide	ND	0.0100		mg/L	1	3/16/2016
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBED)				Analyst: SUB
Radium-226	1.08	0.770		pCi/L	1	3/18/2016 10:42:00 AM
Radium-226 ±	0.67	0.770		pCi/L	1	3/18/2016 10:42:00 AM
Radium-228	0.451	0.810		pCi/L	1	3/18/2016 10:42:00 AM
Radium-228 ±	0.39	0.810		pCi/L	1	3/18/2016 10:42:00 AM
SM4500-H+B: PH						Analyst: JRR
рН	8.02	1.68	Н	pH units	1	3/7/2016 7:54:14 PM
SM2540C MOD: TOTAL DISSOLVED SO	LIDS					Analyst: KS
Total Dissolved Solids	4030	20.0	*	mg/L	1	3/9/2016 11:47:00 AM

Matrix: AQUEOUS

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
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 20
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1603242-002

Project: Monthly R.O. Reject

Lab ID:

Client Sample ID: Trip Blank Collection Date:

Matrix: TRIP BLANK Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB					Analyst: JME
1,2-Dibromoethane	ND	0.010	µg/L	1	3/7/2016 4:57:25 PM
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	3/4/2016 9:46:30 PM
Surr: BFB	88.1	49.5-130	%Rec	1	3/4/2016 9:46:30 PM
EPA METHOD 8260B: VOLATILES					Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Toluene	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Ethylbenzene	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Carbon Tetrachloride	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Chloroform	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,1-Dichloroethane	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,1-Dichloroethene	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Methylene Chloride	ND	3.0	µg/L	1	3/11/2016 8:15:43 PM
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	3/11/2016 8:15:43 PM
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,1,1-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
1,1,2-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Trichloroethene (TCE)	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Vinyl chloride	ND	1.0	µg/L	1	3/11/2016 8:15:43 PM
Xylenes, Total	ND	1.5	µg/L	1	3/11/2016 8:15:43 PM
Surr: 1,2-Dichloroethane-d4	98.7	70-130	%Rec	1	3/11/2016 8:15:43 PM
Surr: 4-Bromofluorobenzene	112	70-130	%Rec	1	3/11/2016 8:15:43 PM
Surr: Dibromofluoromethane	97.7	70-130	%Rec	1	3/11/2016 8:15:43 PM
Surr: Toluene-d8	99.6	70-130	%Rec	1	3/11/2016 8:15:43 PM

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
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 20
	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	W	Sample container temperature is out of limit as specified

WO#:	1603242
	01-Apr-16

Client:Navajo RProject:Monthly	Refining C R.O. Reje	ompany ct								
Sample ID MB-C	Samp	Туре: М	BLK	Tes	tCode: E	PA Method	200.7: Dissolv	ved Metal	s	
Client ID: PBW	Bato	h ID: C3	2891	F	RunNo: 3	32891				
Prep Date:	Analysis I	Date: 3/	18/2016	S	eqNo: 1	1008301	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Boron	ND	0.040								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.020								
Manganese	ND	0.0020								
Molybdenum	ND	0.0080								
Nickel	ND	0.010								
Silver	ND	0.0050								
Zinc	ND	0.010								
Sample ID LCS-C	Samp	Type: LC	s	Tes	tCode: E	PA Method	200.7: Dissolv	ved Metal	s	
Client ID: LCSW	Bato	h ID: C3	2891	F	RunNo: 3	32891				
Prep Date:	Analysis I	Date: 3/	18/2016	5	SeqNo: 1	1008302	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.56	0.020	0.5000	0	112	85	115			
Barium	0.50	0.0020	0.5000	0	99.1	85	115			
Boron	0.51	0.040	0.5000	0	102	85	115			
Cadmium	0.50	0.0020	0.5000	0	101	85	115			
Chromium	0.49	0.0060	0.5000	0	97.0	85	115			
Cobalt	0.48	0.0060	0.5000	0	95.8	85	115			
Copper	0.50	0.0060	0.5000	0	101	85	115			
Iron	0.49	0.020	0.5000	0	98.4	85	115			
Manganese	0.49	0.0020	0.5000	0	97.8	85	115			
Molybdenum	0.51	0.0080	0.5000	0	103	85	115			
Nickel	0.47	0.010	0.5000	0	93.6	85	115			
Zinc	0.48	0.010	0.5000	0	96.3	85	115			
Sample ID LLLCS-C	Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissolv	ved Metal	s	
1				-	RunNo: 3	32891				
Client ID: BatchQC	Bato	h ID: C3	2891	r						
Client ID: BatchQC Prep Date:	Bato Analysis I	ch ID: C3 Date: 3 /	18/2016	S	SeqNo: 1	1008303	Units: mg/L			
Client ID: BatchQC Prep Date: Analyte	Bato Analysis I Result	h ID: C3 Date: 3 / PQL	18/2016 SPK value	SPK Ref Val	eqNo: 1 %REC	1008303 LowLimit	Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Client ID: BatchQC Prep Date: Analyte Aluminum	Bato Analysis I Result ND	xh ID: C3 Date: 3 / PQL 0.020	2 891 18/2016 SPK value 0.01000	SPK Ref Val	SeqNo: 1 %REC 111	1008303 LowLimit 50	Units: mg/L HighLimit 150	%RPD	RPDLimit	Qual
Client ID: BatchQC Prep Date: Analyte Aluminum Barium	Bato Analysis I Result ND 0.0021	ch ID: C3 Date: 3 / PQL 0.020 0.0020	2891 18/2016 SPK value 0.01000 0.002000	SPK Ref Val 0 0	SeqNo: 1 %REC 111 103	LowLimit 50 50	Units: mg/L HighLimit 150 150	%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
- W Sample container temperature is out of limit as specified

Page 5 of 20

WO#: 1603242 01-Apr-16

Client: Project:	-	Navajo Refining C Monthly R.O. Reje	company ect									
Sample ID	LLLCS-	C Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s		
Client ID:	BatchQ	C Bate	ch ID: C3	2891	F	RunNo: 3	2891					
Prep Date:		Analysis	Date: 3/	18/2016	S	SeqNo: 1	008303	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Cadmium		ND	0.0020	0.002000	0	99.5	50	150				
Chromium		ND	0.0060	0.006000	0	87.8	50	150				
Cobalt		ND	0.0060	0.006000	0	85.3	50	150				
Copper		0.0068	0.0060	0.006000	0	114	50	150				
Iron		0.021	0.020	0.02000	0	103	50	150				
Manganese		0.0021	0.0020	0.002000	0	104	50	150				
Molybdenum		0.0097	0.0080	0.008000	0	121	50	150				
Nickel		ND	0.010	0.005000	0	98.6	50	150				
Silver		ND	0.0050	0.005000	0	76.2	50	150				
Zinc		ND	0.010	0.005000	0	100	50	150				
Sample ID	LCS-C	Samp	Type: LC	s	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	ls		
Client ID:	LCSW	Bate	ch ID: C3	2891	F	RunNo: 3	2891					
Prep Date:		Analysis	Date: 3 /	18/2016	S	SeqNo: 1	008305	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Silver		0.10	0.0050	0.1000	0	101	85	115				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 20

Client: Project:		Navajo Refining O Monthly R.O. Rej	Compan ect	У								
Sample ID	LCS	Samp	oType: L	CS	Tes	tCode: El	PA 200.8: I	Dissolved Me	tals			
Client ID:	LCSW	Bat	ch ID: E	333154	F	RunNo: 3	3154					
Prep Date:		Analysis	Date:	3/29/2016	S	SeqNo: 1	018089	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		0.024	0.001	0 0.02500	0	97.7	85	115				
Lead		0.012	0.0005	0 0.01250	0	95.4	85	115				
Selenium		0.025	0.0010	0 0.02500	0	101	85	115				
Uranium		0.011	0.0005	0 0.01250	0	91.8	85	115				
Sample ID	LLLCS	Sam	oType: L	CSLL	Tes	tCode: El	PA 200.8: I	Dissolved Me	tals			
Client ID:	BatchC	C Bat	ch ID: E	333154	F	RunNo: 3	3154					
Prep Date:		Analysis	Date:	3/29/2016	S	SeqNo: 1	018090	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	0.001	0 0.001000	0	98.0	50	150				
Lead		0.00050	0.0005	0 0.0005000	0	100	50	150				
Selenium		ND	0.0010	0.001000	0	94.9	50	150				
Uranium		ND	0.0005	0 0.0005000	0	91.1	50	150				
Sample ID	МВ	Samp	oType: N	/BLK	Tes	tCode: El	PA 200.8: I	Dissolved Me	tals			
Client ID:	PBW	Bat	ch ID: E	333154	F	RunNo: 3	3154					
Pren Date:		Analysis	Date:	3/29/2016	ç	SeaNo [.] 1	018091	Units [.] ma/l				

Prep Date:	Analysis Date: 3/29/2016			S	SeqNo: 1	018091	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	0.0010									
Lead	ND	0.00050									
Selenium	ND	0.0010									

ND ND 0.00050

Qualifiers:

Uranium

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 7 of 20

Client: Project:	Navaj Mont	jo Refining Company hly R.O. Reject	I							
Sample ID	MB-24156	SampType: m	blk	Test	tCode: EF	PA Method	245.1: Mercu	ry		
Client ID:	PBW	Batch ID: 24	4156							
Prep Date:	3/9/2016	Analysis Date: 3	/10/2016	S	eqNo: 10	000942	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.00020								
Sample ID	LCS-24156	SampType: Ic	s	Test	tCode: EF	PA Method	245.1: Mercu	ry		
Client ID:	LCSW	Batch ID: 24	4156	R	unNo: 32	2702				
Prep Date:	3/9/2016	Analysis Date: 3	/10/2016	S	eqNo: 10	00945	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0054 0.00020	0.005000	0	109	80	120			

Qualifiers:

Mercury

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 8 of 20

9.5

0.50

10.00

Client: Project:		Navajo Refining Com Monthly R.O. Reject	pany								
Sample ID	МВ	SampTyp	e: MB	BLK	Tes	tCode: E	PA Method	300.0: Anions	;		
Client ID:	PBW	Batch I): R3	32618	F	RunNo: 3	2618				
Prep Date:		Analysis Date	e: 3/	4/2016	S	SeqNo: 9	97926	Units: mg/L			
Analyte		Result F	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		ND	0.10								
Chloride		ND	0.50								
Nitrogen, Nitra	ite (As N)	ND	0.10								
Sample ID	LCS	SampTyp	e: LC	s	Tes	tCode: E	PA Method	300.0: Anions	;		
Client ID:	LCSW	Batch I): R3	32618	F	RunNo: 3	2618				
Prep Date:		Analysis Date	e: 3/	4/2016	5	SeqNo: 9	97927	Units: mg/L			
Analyte		Result F	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.50	0.10	0.5000	0	101	90	110			
Chloride		4.7	0.50	5.000	0	94.9	90	110			
Nitrogen, Nitra	ite (As N)	2.5	0.10	2.500	0	101	90	110			
Sample ID	МВ	SampTyp	e: Me	BLK	Tes	tCode: E	PA Method	300.0: Anions	5		
Client ID:	PBW	Batch I): R3	32879	F	RunNo: 3	2879				
Prep Date:		Analysis Date	e: 3/	17/2016	S	SeqNo: 1	007965	Units: mg/L			
Analyte		Result F	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		ND	0.50								
Sample ID	LCS	SampTyp	e: LC	s	Tes	tCode: E	PA Method	300.0: Anions	;		
Client ID:	LCSW	Batch I): R3	2879	F	RunNo: 3	2879				
Prep Date:		Analysis Date	e: 3/	/17/2016	S	SeqNo: 1	007966	Units: mg/L			
Analyte		Result F	POI	SPK value	SPK Ref Val	%REC	I owl imit	Highl imit	%RPD	RPDI imit	Qual

0

94.6

90

110

Page 9 of 20

Qualifiers:

Sulfate

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

Client: Project:	Na M	avajo Refining Compa onthly R.O. Reject	any							
Sample ID	MB-24100	SampType:	MBLK	Tes	tCode: EF	PA Method	8011/504.1: E	DB		
Client ID:	PBW	Batch ID:	24100	F	RunNo: 32	2621				
Prep Date:	3/7/2016	Analysis Date:	3/7/2016	S	SeqNo: 99	98470	Units: µg/L			
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	hane	ND 0.0)10							
Sample ID	LCS-2410) SampType:	LCS	Tes	tCode: EF	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch ID:	24100	F	RunNo: 32	2621				
Prep Date:	3/7/2016	Analysis Date:	3/7/2016	5	SeqNo: 99	98471	Units: µg/L			
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	hane	0.11 0.0	0.1000	0	108	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
- W Sample container temperature is out of limit as specified

Page 10 of 20

Client: 1 Project: 1	Navajo Refining C Monthly R.O. Rej	Company ect								
Sample ID LCS-241	01 Samp	Type: LC	s	Tes	tCode: E	PA Method	8015M/D: Die	sel Rang	9	
Client ID: LCSW	Bat	ch ID: 24	101	F	RunNo: 3	2603				
Prep Date: 3/7/201	6 Analysis	/7/2016	S	SeqNo: 9	97914	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (D	RO) 5.9	1.0	5.000	0	118	71.3	139			
Surr: DNOP	0.50		0.5000		99.7	70	141			
Sample ID MB-2410	1 Samp	Type: MI	BLK	Tes	tCode: E	PA Method	8015M/D: Die	sel Rang	e	
Client ID: PBW	Bat	ch ID: 24	101	F	RunNo: 3	2603				
Prep Date: 3/7/201	6 Analysis	Date: 3	/7/2016	8	SeqNo: 9	97915	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (D										
Motor Oil Range Organics	(MRO) ND	5.0								

0.91 1.000 90.8 70

Qualifiers:

Surr: DNOP

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:

Page 11 of 20

141

Client: Navaj Project: Mont	jo Refining Co hly R.O. Reje	ompany ct										
Sample ID 5ML RB	SampT	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e			
Client ID: PBW	Batcl	h ID: A3	2596	F	RunNo: 3	2596						
Prep Date:	Analysis D	Date: 3 /	4/2016	S	SeqNo: 9	97207	Units: mg/L	its: mg/L				
Analyte	Result	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Gasoline Range Organics (GRO)	ND	0.050										
Surr: BFB	19		20.00		95.0	49.5	130					
Sample ID 2.5UG GRO L	CS SampT	Type: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e			
Client ID: LCSW	Batcl	h ID: A3	2596	F	RunNo: 3	2596						
Prep Date:	Analysis E	Date: 3/	4/2016	S	SeqNo: 9	97208	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Range Organics (GRO)	0.51	0.050	0.5000	0	103	80	120					
Surr: BFB	21		20.00		106	49.5	130					

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 12 of 20

WO#: 1603242

Hall Environmental Analysis Laboratory, Inc.										
Client: Nava Project: Mont	jo Refining Co thly R.O. Reje	ompany ct								
Sample ID MB-24175	Samp	Туре: МІ	BLK	Tes						
Client ID: PBW	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3	/11/2016	5	SeqNo: 1	002684				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.4		2.500		94.4	26.1	140			
Surr: Tetrachloro-m-xylene	3.9		2.500		155	15	123			S
Sample ID LCS-24175	Samp	Type: LC	s	Tes	tCode: E	PA Method	8082: PCB's			
Client ID: LCSW	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3	/11/2016	S	SeqNo: 1	002685	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.1	1.0	5.000	0	62.3	15	131			
Aroclor 1260	3.3	1.0	5.000	0	66.9	15	162			
Surr: Decachlorobiphenyl	2.2		2.500		89.2	26.1	140			
Surr: Tetrachloro-m-xylene	3.0		2.500		122	15	123			
Sample ID LCSD-24175	Samp	Type: LC	SD	Tes	tCode: E	PA Method	8082: PCB's			
Client ID: LCSS02	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3	/11/2016	S	SeqNo: 1	002686	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.4	1.0	5.000	0	68.0	15	131	8.66	24.4	
Aroclor 1260	3.7	1.0	5.000	0	74.8	15	162	11.1	28	
Surr: Decachlorobiphenyl	2.4		2.500		94.8	26.1	140	0	0	
Surr: Tetrachloro-m-xylene	3.3		2.500		130	15	123	0	0	S

Qualifiers:

* Value exceeds Maximum Contaminant Level.

QC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 13 of 20

WO#:	160	3242
	01.4	

Client: Nava Project: Mont	ijo Refining Co thly R.O. Reje	ompany et								
Sample ID rb	Samp	vpe: MI	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batcl	1 ID 83	2762	F	RunNo 3	2762				
Bron Data:) nto: 20	44/2016			002006	Inite: ua/l			
Flep Dale.	Analysis L		11/2010	c	sequo. I	002990	01iits. μg/ L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		114	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			
Sample ID 100ng lcs b	SampT	ype: LC	s	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batcl	n ID: B3	2762	F	RunNo: 3	2762				
Prep Date:	Analysis E)ate: 3 /	11/2016	S	SeqNo: 1	003007	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.5	70	130			
Toluene	20	1.0	20.00	0	98.8	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	90.8	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.7	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130			

Qualifiers:

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

Surr: Dibromofluoromethane

Surr: Toluene-d8

H Holding times for preparation or analysis exceeded

9.1

9.8

10.00

10.00

- 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

90.9

98.3

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

70

70

130

130

Page 14 of 20

WO#: 1603242

01-Apr-16

Client: Navajo	o Refining Co	ompany								
Project: Month	ly R.O. Reje	ct								
Sample ID MB-24176	Samp	Туре: М	BLK	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: PBW	Batc	h ID: 24	176	F	RunNo: 3	2851				
Prep Date: 3/10/2016	Analysis [Date: 3/	17/2016	5	SeqNo: 1	006908	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(q,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.4	33.4	129			
Sample ID LCS-24176	Samp	Type [.] LC	s	Tes	tCode [.] E	PA Method	8310: PAHs			
Client ID: LCSW	Batc	h ID: 24	176	F	RunNo: 3	2851				
Pren Date: 3/10/2016	Analysis [Date: 3	17/2016	ç	SeaNo: 1	006935	Units un/l			
	Desult							0/ 000		Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLIMIt	Quai
1 Mathulaanttalana	73	2.0	00.00	0	91.0	54.0 40.4	110			
2 Methylnaphthalene	75	2.0	00.20	0	93.0	49.1 50.5	110			
	75	2.0	00.00	0	94.1	52.5 62.7	111			
Acenaphinyiene	09	2.5	00.20	0	00.9	50.0	122			
Fluerene		2.0	00.00	0	90.2	50.0	114			
Fluorene	8.0	0.80	8.020	0	99.6	48.9	106			
Prienanuniene	4.0	0.60	4.020	0	100	54.7	110			
Anthracene	3.7	0.60	4.020	0	92.5	52	106			
Fluorantnene	ð./	0.30	8.020	U	109	57.8	113			
Pyrene	8.1 0.75	0.30	8.020	U	101	59.7	118			
Benz(a)aninracene	0.75	0.070	0.8020	U	93.5	56.6	109			
Chrysene	4.1	0.20	4.020	U	102	57.6	110			
Benzo(b)fluoranthene	0.96	0.10	1.002	0	95.8	54.9	106			
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112			

Qualifiers:

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

Page 15 of 20

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc

WO#:	1603242	

Client:	Navajo Refining C	Company								
Project:	Monthly R.O. Reje	ect								
Sample ID LCS-24	176 Samp	Type: LC	S	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSW	Bate	ch ID: 24	176	F	unNo: 3	2851				
Prep Date: 3/10/20	016 Analysis	Date: 3/	17/2016	S	eqNo: 1	006935	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107			
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	103	54.8	108			
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110			
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109			
Surr: Benzo(e)pyrene	17		20.00		83.0	33.4	129			
Sample ID LCSD-2	Sample ID LCSD-24176 SampType: LCSD TestCode: EPA Method 8310: PAHs									
Client ID: LCSS02	2 Bate	ch ID: 24	176	F	unNo: 3	2851				
Prep Date: 3/10/20	016 Analysis	Date: 3/	17/2016	S	eqNo: 1	006990	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	73	2.0	80.00	0	91.3	54.6	110	0.314	20	
1-Methylnaphthalene	73	2.0	80.20	0	91.2	49.1	116	2.51	20	
2-Methylnaphthalene	73	2.0	80.00	0	90.7	52.5	111	3.64	20	
Acenaphthylene	68	2.5	80.20	0	85.4	63.7	122	0.640	20	
Acenaphthene	74	2.0	80.00	0	92.3	50.6	114	4.22	20	
Fluorene	7.2	0.80	8.020	0	89.7	48.9	106	10.5	20	
Phenanthrene	4.0	0.60	4.020	0	99.5	54.7	110	0.747	24	
Anthracene	3.7	0.60	4.020	0	92.5	52	106	0	20	
Fluoranthene	8.7	0.30	8.020	0	108	57.8	113	0.460	20.9	
Pyrene	8.1	0.30	8.020	0	101	59.7	118	0.618	20.8	
Benz(a)anthracene	0.77	0.070	0.8020	0	96.0	56.6	109	2.63	20	
Chrysene	4.1	0.20	4.020	0	102	57.6	110	0.244	20	
Benzo(b)fluoranthene	0.95	0.10	1.002	0	94.8	54.9	106	1.05	20.6	
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112	0	20.8	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107	0	20	
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	104	54.8	108	0.966	20	
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110	0	20	
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	0	20	
Surr: Benzo(e)pyrene	17		20.00		82.8	33.4	129	0		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 16 of 20

Client: Project:	Nava Mon	ijo Refining Co thly R.O. Rejec	ompany et								
Sample ID	MB-24124	SampT	ype: M	BLK	TestCode: Total Phenolics by SW-846 9067						
Client ID:	PBW	Batch	n ID: 24	124	F	RunNo: 3	2622				
Prep Date:	3/8/2016	Analysis D	ate: 3	/8/2016	S	SeqNo: 9	98125	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	al Recoverable	ND	2.5								
Sample ID	LCS-24124	SampT	ype: LC	s	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID:	LCSW	Batch	n ID: 24	124	F	RunNo: 3	2622				
Prep Date:	3/8/2016	Analysis D	ate: 3	/8/2016	5	SeqNo: 9	98126	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	al Recoverable	21	2.5	20.00	0	106	64.4	135			

Qualifiers:

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

Client: Project:	Navajo Monthl	Refining Company y R.O. Reject	
Sample ID	MB-R32959	SampType: MBLK	TestCode: EPA 335.4: Total Cyanide Subbed
Client ID:	PBW	Batch ID: R32959	RunNo: 32959
Prep Date:		Analysis Date: 3/16/2016	SeqNo: 1010968 Units: mg/L
Analyte		Result PQL SPK value	e SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual

Cyanide	ND 0.0100		
Sample ID LCS-R32959	SampType: LCS	TestCode: EPA 335.4: Tot	tal Cyanide Subbed
Client ID: LCSW	Batch ID: R32959	RunNo: 32959	
Prep Date:	Analysis Date: 3/16/2016	SeqNo: 1010969	Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit Qual
Cyanide	0.493 0.5000	0 98.6 90	110

Qualifiers:

Client: Project:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 18 of 20

WO#: 1603242 01-Apr-16

Client:	Navajo F	Refining Co	mpany								
Project:	Monthly	R.O. Rejec	t								
Sample ID	MB-R32954	SampT	ype: M	BLK	Tes	tCode: E	PA 903.1: R	a 226 and EP	A 904.0: F	Ra 228-Subbe	d
Client ID:	PBW	Batch	1D: R3	2954	F	unNo: 3	32954				
Prep Date:		Analysis D	ate: 3/	18/2016	S	eqNo: 1	010754	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0.501	0.776								
Radium-226 \pm		0.521	0.776								
Radium-228		0.0536	0.871								
Radium-228 \pm		0.38	0.871								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 19 of 20

Client: Project:	Navajo Monthly	Refining Co / R.O. Rejeo	ompany et								
Sample ID MB	3-24120	SampT	mpType: MBLK TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PB	w	Batch	n ID: 24	120	RunNo: 32669						
Prep Date: 3/	/7/2016	Analysis D	ate: 3/	9/2016	S	SeqNo: 9	99682	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Soli	ids	ND	20.0								
Sample ID LC	S-24120	SampT	ype: LC	S	Tes	tCode: SI	M2540C MC	DD: Total Dise	solved So	lids	
Client ID: LC	SW	Batch	n ID: 24	120	F	RunNo: 3	2669				
Prep Date: 3/	/7/2016	Analysis D	ate: 3/	9/2016	5	SeqNo: 9	99683	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Soli	ids	1030	20.0	1000	0	103	80	120			-

Total Dissolved Solids

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental A Albuq TEL: 505-345-3975 F Website: www.hall	nalysis Laborator 4901 Hawkins N uerque, NM 8710 AX: 505-345-410 environmental.co	rs ^{TE} 09 Sampl 07 07	Sample Log-In Check List				
Client Name: NAVAJO REFINING CO	Work Order Number:	1603242		RcptNo: 1				
Received by/date Logged By: Ashley Gallegos 3 Completed By: Ashley Gallegos 3	0304 8/4/2016 10:00:00 AM 8/4/2016 10:28:24 AM	$ \psi $	AJ					
Reviewed By:	03/04/16							
Chain of Custody		1	. [1]	Not Dragont				
 Custody seals intact on sample bottles? 		Yes [_]		Not Present				
2. Is Chain of Custody complete?		Yes 🐖	NO 1.1	NUC Present Las				
3. How was the sample delivered?		Courier						
<u>Log In</u>								
4. Was an attempt made to cool the samples?		Yes 🖈	No []]	NA				
5. Were all samples received at a temperature	of >0° C to 6.0°C	Yes 🐼	No []]	NA []				
6. Sample(s) in proper container(s)?		Yes 🛃	No 🛄					
7 Sufficient cample volume for indicated test(s	17	Yes 🛃	No []]					
Are samples (excent VOA and ONG) propert	v preserved?	Yes 🛃	No [_]					
9. Was preservative added to bottles?	, .	Yes	No 🔛	NA				
		Yes d	No []	No VOA Vials 🗔				
11. Were any sample containers received broke	en?	Yes	No 🛃					
TT. Were any sample containers received state				# of preserved bottles checked	L			
12. Does paperwork match bottle labels?		Yes 🖈	No	for pH:	or>12)unless noted)			
(Note discrepancies on chain of custody)	Custody2	Yes 🖌	No [_]	Adjusted?	04 Vo			
13. Are matrices correctly identified on chain of	Custody	Yes 🛃	No []]					
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🖈	No [Checked by:	as			
Special Handling (if applicable)	this order?	Yes [No []	NA 🐱				
16. Was client notified of an discrepancies with								
	Uate]	[] Mail ["]	Phone 🗔 Fax	[In Person				
By Whom:	Vid.			L_J				
Client Instructions:)) yéj gét ana an an a chaint a thai ta ta g an lan an a		genelisistik, daleh dastagaranjik elitika tira tetater	ie, se y zaji ni vjezne – Assani se si sije Aske Sani aktorio - Assa				
17. Additional remarks:								
18 Cooler Information								
Cooler No Temp °C Condition S	eal Intact Seal No	Seal Date	Signed By	Į				
1 1.3 Good Ye	2S			1				

(V or V) selddug niA VOCs: 1,1,1-Trichloroethane; 1,1,2,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethylene; 1,1,2-SVOCs: benzo(a)pyrene, phenol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene ANALYSIS LABORATORY 204 1:EDB × HALL ENVIRONMENTAL Trichloroethane; 1,1,2-Trichloroethylene; 1,1-Dichloroethane; 1,1-Dichloroethene; 1,2-Hd × Dibromoethane; 1,2-Dichloroethane; Benzene; Carbon Tetrachloride; Chloroform sbiloS bevlossiG letoT × Metals: As, Al, Ba, B, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, U, Zh 4901 Hawkins NE - Albuquerque, NM 87109 Vitrate/Nitrite × Dichloromethane; Ethylbenzene; Toluene; Total Xylenes; Viryl Chloride Fax 505-345-4107 Fluoride × www.hallenvironmental.com Analysis Request Slonard × Sulfate Chloride × Radioactivity (Ra-226+Ra-228) × **bCB**² × :5808 Tel. 505-345-3975 GRO, DRO, ORO :9108 × × Mercury :0272 × **Total Cyanide** 332'4 × 6010B: WQCC Metals × Remarks: WQCC list SVOCs :00228 × 8260B:WQCC List VOCs × 000 Lime CC am HEAL No. 7 -5-10CF= 104/16 Date N D Elizabeth Salsberry S C Rush Preservative Project #: P.O. # 167796 3-40ml VOA Na2S203 Sample Temperature: Type 1-unpres H2SO4 1 - 1L Glass H2SO4 X Yes EONH HN03 HN03 2 - 1L Glass unpres 1 - 1L Glass unpres 1-250mlGlastunpres Monthly R.O. Reject the last NaOH I urn-Around 1 ime. 3-40ml VOA HCL 2-40ml VOA HCL 3-40ml VOA HCI Project Manager. Robert Combs Project Name X Standard Type and # 2 - 500ml P Container 11: 1-500ml P Received by: 1-125ml P 1-500ml P Received by: Sampler. 2-1L P On Ice: Level 4 (Full Validation) Sample Request ID Relinquished by Elizaboth Saloom Chain-of-Custody Record R.O. Reject Trip Blank lex-anathelenny Mailing Address: P.O. Box 159 Artesia. Relinquished by email or Fax#: 575-746-5451 Matrix Client: Navajo Refinery Phone #: 575-748-3311 9:45 liquid Time NM 88211-0159 QA/QC Package: EDD (Type) 004 Lime: Time: X Standard □ Other 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 3/3/16 Date 3/3/16 Slice Date: Date:

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



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

April 01, 2016

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

RE: Monthly Temporary R.O. Reject

OrderNo.: 1603243

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/4/2016 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, Inc.

CLIENT: Navajo Refining CompanyProject: Monthly Temporary R.O. RejectLab ID: 1603243-001

Client Sample ID: Temporary R.O. Reject Collection Date: 3/3/2016 9:30:00 AM Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL (Qual 1	Units	DF	Date Analyzed
EPA METHOD 8011/504.1: EDB						Analyst: JME
1,2-Dibromoethane	ND	0.010		µg/L	1	3/7/2016 5:12:38 PM
EPA METHOD 8082: PCB'S						Analyst: SCC
Aroclor 1016	ND	1.0		ua/L	1	3/11/2016 3:10:44 PM
Aroclor 1221	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1232	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1242	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1248	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1254	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Aroclor 1260	ND	1.0		µg/L	1	3/11/2016 3:10:44 PM
Surr: Decachlorobiphenyl	119	26.1-140		%Rec	1	3/11/2016 3:10:44 PM
Surr: Tetrachloro-m-xylene	126	15-123	S	%Rec	1	3/11/2016 3:10:44 PM
EPA METHOD 8015M/D: DIESEL RAN	IGE					Analyst: KJH
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	3/7/2016 5:59:24 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	3/7/2016 5:59:24 PM
Surr: DNOP	102	70-141		%Rec	1	3/7/2016 5:59:24 PM
EPA METHOD 8015D: GASOLINE RA	NGE					Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	3/4/2016 10:11:02 PM
Surr: BFB	89.2	49.5-130		%Rec	1	3/4/2016 10:11:02 PM
EPA METHOD 8310: PAHS						Analyst: SCC
Naphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
1-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
2-Methylnaphthalene	ND	2.0		µg/L	1	3/17/2016 1:25:22 PM
Benzo(a)pyrene	ND	0.070		µg/L	1	3/17/2016 1:25:22 PM
Surr: Benzo(e)pyrene	75.2	33.4-129		%Rec	1	3/17/2016 1:25:22 PM
EPA METHOD 300.0: ANIONS						Analyst: JRR
Fluoride	2.6	2.0		mg/L	20	3/4/2016 3:28:16 PM
Chloride	100	10		mg/L	20	3/4/2016 3:28:16 PM
Nitrogen, Nitrate (As N)	1.5	0.10		mg/L	1	3/4/2016 3:15:51 PM
Sulfate	1100	25		mg/L	50	3/18/2016 3:17:58 AM
EPA METHOD 200.7: DISSOLVED ME	TALS					Analyst: ELS
Aluminum	ND	0.020		mg/L	1	3/18/2016 6:33:30 PM
Barium	0.047	0.0020		mg/L	1	3/18/2016 6:33:30 PM
Boron	0.066	0.040		mg/L	1	3/18/2016 6:33:30 PM
Cadmium	ND	0.0020		mg/L	1	3/18/2016 6:33:30 PM
Chromium	ND	0.0060		mg/L	1	3/18/2016 6:33:30 PM
Cobalt	ND	0.0060		mg/L	1	3/18/2016 6:33:30 PM

Matrix: AQUEOUS

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 1 of 21
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company**Project:** Monthly Temporary R.O. Reject**Lab ID:** 1603243-001

Client Sample ID: Temporary R.O. Reject Collection Date: 3/3/2016 9:30:00 AM Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL	Qual Units	DF	Date Analyzed
EPA METHOD 200.7: DISSOLVED ME	TALS				Analyst: ELS
Copper	ND	0.0060	mg/L	1	3/23/2016 5:28:16 PM
Iron	ND	0.020	mg/L	1	3/18/2016 6:33:30 PM
Manganese	ND	0.0020	mg/L	1	3/18/2016 6:33:30 PM
Molybdenum	ND	0.0080	mg/L	1	3/18/2016 6:33:30 PM
Nickel	ND	0.010	mg/L	1	3/18/2016 6:33:30 PM
Silver	ND	0.0050	mg/L	1	3/18/2016 6:33:30 PM
Zinc	0.043	0.010	mg/L	1	3/18/2016 6:33:30 PM
EPA 200.8: DISSOLVED METALS					Analyst: JLF
Arsenic	ND	0.0050	mg/L	5	3/29/2016 5:48:50 PM
Lead	ND	0.00050	mg/L	1	3/28/2016 8:28:07 PM
Selenium	0.0065	0.0010	mg/L	1	3/28/2016 8:28:07 PM
Uranium	0.0042	0.00050	mg/L	1	3/28/2016 8:28:07 PM
EPA METHOD 245.1: MERCURY					Analyst: pmf
Mercury	ND	0.00020	mg/L	1	3/10/2016 11:34:07 AM
EPA METHOD 8260B: VOLATILES					Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
Toluene	ND	1.0	μg/L	1	3/11/2016 8:44:01 PM
Ethylbenzene	ND	1.0	μg/L	1	3/11/2016 8:44:01 PM
1,2-Dichloroethane (EDC)	ND	1.0	μg/L	1	3/11/2016 8:44:01 PM
1,2-Dibromoethane (EDB)	ND	1.0	μg/L	1	3/11/2016 8:44:01 PM
Carbon Tetrachloride	ND	1.0	μg/L	1	3/11/2016 8:44:01 PM
Chloroform	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
1,1-Dichloroethane	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
1,1-Dichloroethene	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
Methylene Chloride	ND	3.0	µg/L	1	3/11/2016 8:44:01 PM
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	3/11/2016 8:44:01 PM
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
1,1,1-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
1,1,2-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
Trichloroethene (TCE)	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
Vinyl chloride	ND	1.0	µg/L	1	3/11/2016 8:44:01 PM
Xylenes, Total	ND	1.5	μg/L	1	3/11/2016 8:44:01 PM
Surr: 1,2-Dichloroethane-d4	101	70-130	%Rec	1	3/11/2016 8:44:01 PM
Surr: 4-Bromofluorobenzene	107	70-130	%Rec	1	3/11/2016 8:44:01 PM
Surr: Dibromofluoromethane	99.8	70-130	%Rec	1	3/11/2016 8:44:01 PM
Surr: Toluene-d8	94.1	70-130	%Rec	1	3/11/2016 8:44:01 PM

Matrix: AQUEOUS

TOTAL PHENOLICS BY SW-846 9067

Analyst: SCC

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 21
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject: Monthly Temporary R.O. RejectLab ID: 1603243-001

Client Sample ID: Temporary R.O. Reject Collection Date: 3/3/2016 9:30:00 AM Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL Qu	ial Units	DF	Date Analyzed
TOTAL PHENOLICS BY SW-846 9067					Analyst: SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	3/8/2016
EPA 335.4: TOTAL CYANIDE SUBBED					Analyst: SUB
Cyanide	ND	0.0100	mg/L	1	3/8/2016
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBED)			Analyst: SUB
Radium-226	0.561	0.671	pCi/L	1	3/21/2016 10:40:00 AM
Radium-226 ±	0.478	0.671	pCi/L	1	3/21/2016 10:40:00 AM
Radium-228	0.425	0.810	pCi/L	1	3/21/2016 10:40:00 AM
Radium-228 ±	0.397	0.810	pCi/L	1	3/21/2016 10:40:00 AM
SM4500-H+B: PH					Analyst: JRR
рН	8.15	1.68	H pH units	1	3/7/2016 7:58:22 PM
SM2540C MOD: TOTAL DISSOLVED SC	LIDS				Analyst: KS
Total Dissolved Solids	2490	20.0	* mg/L	1	3/9/2016 11:47:00 AM

Matrix: AQUEOUS

Oualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
C	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 3 of 21
	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	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject: Monthly Temporary R.O. RejectLab ID: 1603243-002

Client Sample ID: Trip Blank Collection Date:

Matrix: TRIP BLANK Received Date: 3/4/2016 10:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: GASOLINE RANG	θE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	3/4/2016 10:35:40 PM
Surr: BFB	87.8	49.5-130	%Rec	1	3/4/2016 10:35:40 PM
EPA METHOD 8260B: VOLATILES					Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Toluene	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Ethylbenzene	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Carbon Tetrachloride	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Chloroform	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,1-Dichloroethane	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,1-Dichloroethene	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Methylene Chloride	ND	3.0	µg/L	1	3/11/2016 9:12:13 PM
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	3/11/2016 9:12:13 PM
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,1,1-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
1,1,2-Trichloroethane	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Trichloroethene (TCE)	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Vinyl chloride	ND	1.0	µg/L	1	3/11/2016 9:12:13 PM
Xylenes, Total	ND	1.5	µg/L	1	3/11/2016 9:12:13 PM
Surr: 1,2-Dichloroethane-d4	96.1	70-130	%Rec	1	3/11/2016 9:12:13 PM
Surr: 4-Bromofluorobenzene	110	70-130	%Rec	1	3/11/2016 9:12:13 PM
Surr: Dibromofluoromethane	94.6	70-130	%Rec	1	3/11/2016 9:12:13 PM
Surr: Toluene-d8	98.6	70-130	%Rec	1	3/11/2016 9:12:13 PM

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
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 21
	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	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, Inc	

WO#: 1603243 01-Apr-16

Client: Project:		Navajo Refining C Monthly Tempora	Company ry R.O. I	Reject								
Sample ID	МВ-С	Samp	Type: ME	3LK	Tes	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	PBW	Bat	ch ID: C3	2891	F	RunNo: 3	2891					
Prep Date:		Analysis	Date: 3/	18/2016	S	SegNo: 1	008301	Units: mg/L				
Analvte		Result	POI	SPK value	SPK Ref Val	%REC	I owl imit	u Highl imit	%RPD	RPDI imit	Qual	
Aluminum		ND	0.020			/IIIICO	LOWEIIIII	riigitEittiit			Quai	
Barium		ND	0.0020									
Boron		ND	0.040									
Cadmium		ND	0.0020									
Chromium		ND	0.0060									
Cobalt		ND	0.0060									
Iron		ND	0.020									
Manganese		ND	0.0020									
Molybdenum		ND	0.0080									
Nickel		ND	0.010									
Silver		ND	0.0050									
Zinc		ND	0.010									
Sample ID	LCS-C	Samp	SampType: LCS		Tes	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	LCSW	Bat	ch ID: C3	2891	RunNo: 32891							
Prep Date:		Analysis	Date: 3/	18/2016	S	SeqNo: 1	008302	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aluminum		0.56	0.020	0.5000	0	112	85	115				
Barium		0.50	0.0020	0.5000	0	99.1	85	115				
Boron		0.51	0.040	0.5000	0	102	85	115				
Cadmium		0.50	0.0020	0.5000	0	101	85	115				
Chromium		0.49	0.0060	0.5000	0	97.0	85	115				
Cobalt		0.48	0.0060	0.5000	0	95.8	85	115				
Iron		0.49	0.020	0.5000	0	98.4	85	115				
Manganese		0.49	0.0020	0.5000	0	97.8	85	115				
Molybdenum		0.51	0.0080	0.5000	0	103	85	115				
Nickel		0.47	0.010	0.5000	0	93.6	85	115				
Zinc		0.48	0.010	0.5000	0	96.3	85	115				
Sample ID	LLLCS	-C Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s		
Client ID:	BatchC	C Bat	ch ID: C3	2891	F	RunNo: 3	2891					
Prep Date:		Analysis	Date: 3/	18/2016	S	SeqNo: 1	008303	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aluminum		ND	0.020	0.01000	0	111	50	150				
Barium		0.0021	0.0020	0.002000	0	103	50	150				
Boron		ND	0.040	0.04000	0	97.7	50	150				
Cadmium		ND	0.0020	0.002000	0	99.5	50	150				
Chromium		ND	0.0060	0.006000	0	87.8	50	150				

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix \mathbf{S}
- В Analyte detected in the associated Method Blank

Е Value above quantitation range

Analyte detected below quantitation limits J

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

Page 5 of 21

Client:Navajo Refining CompanyProject:Monthly Temporary R.O. Reject

Sample ID	LLLCS-C	SampType: LCSLL			TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	BatchQC	Bato	h ID: C3	2891	RunNo: 32891						
Prep Date:		Analysis I	Date: 3/	18/2016	S	SeqNo: 1	008303	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt		ND	0.0060	0.006000	0	85.3	50	150			
Iron		0.021	0.020	0.02000	0	103	50	150			
Manganese		0.0021	0.0020	0.002000	0	104	50	150			
Molybdenum		0.0097	0.0080	0.008000	0	121	50	150			
Nickel		ND	0.010	0.005000	0	98.6	50	150			
Silver		ND	0.0050	0.005000	0	76.2	50	150			
Zinc		ND	0.010	0.005000	0	100	50	150			
Sample ID	LCS-C	Samp	Type: LC	s	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	ls	
Client ID:	LCSW	Bato	h ID: C3	2891	F	RunNo: 3	2891				
Prep Date:		Analysis I	Date: 3 /	18/2016	S	eqNo: 1	008305	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver		0.10	0.0050	0.1000	0	101	85	115			
Sample ID	МВ-С	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	PBW	Bato	h ID: C3	3001	F	RunNo: 3	3001				
Prep Date:		Analysis I	Date: 3 /	23/2016	S	SeqNo: 1	012812	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper		ND	0.0060								
Sample ID	LCS-C	Samp	Type: LC	s	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Bato	h ID: C3	3001	F	RunNo: 3	3001				
Prep Date:		Analysis I	Date: 3 /	23/2016	S	SeqNo: 1	012813	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper		0.48	0.0060	0.5000	0	95.4	85	115			
Sample ID	LLLCS-C	Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Metal	ls	
Client ID:	BatchQC	Bato	h ID: C3	3001	F	RunNo: 3	3001				
Prep Date:		Analysis I	Date: 3 /	23/2016	S	SeqNo: 1	012814	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper		0.0074	0.0060	0.006000	0	124	50	150			

Qualifiers:

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

Page 6 of 21

	V	NO

O#: 1603243 01-Apr-16

Client: Project:		Navajo Refining (Monthly Tempora	Compa ary R.C	iny D. Reject							
Sample ID	LCS	Sam	oType:	LCS	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	LCSW	Bat	ch ID:	C33120	F	RunNo: 3	3120				
Prep Date:		Analysis	Date:	3/28/2016	S	SeqNo: 1	016768	Units: mg/L			
Analyte		Result	PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead		0.012	0.000	50 0.01250	0	98.1	85	115			
Selenium		0.026	0.00	10 0.02500	0	103	85	115			
Uranium		0.012	0.000	50 0.01250	0	95.1	85	115			
Sample ID	LLLCS	Sam	oType:	LCSLL	Tes	tCode: El	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C Bat	ch ID:	C33120	F	RunNo: 3	3120				
Prep Date:		Analysis	Date:	3/28/2016	5	SeqNo: 1	016770	Units: mg/L			
Analyte		Result	PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead		0.00051	0.000	50 0.0005000	0	103	50	150			
Selenium		0.0011	0.00	10 0.001000	0	108	50	150			
Uranium		ND	0.000	50 0.0005000	0	96.8	50	150			
Sample ID	МВ	Sam	oType:	MBLK	Tes	tCode: El	PA 200.8: [Dissolved Met	als		
Client ID:	PBW	Bat	ch ID:	C33120	F	RunNo: 3	3120				
Prep Date:		Analysis	Date:	3/28/2016	5	SeqNo: 1	016772	Units: mg/L			
Analyte		Result	PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead		ND	0.000	50							
Selenium		ND	0.00	10							
Uranium		ND	0.000	50							
Sample ID	LCS	Sam	oType:	LCS	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	LCSW	Bat	ch ID:	B33154	F	RunNo: 3	3154				
Prep Date:		Analysis	Date:	3/29/2016	5	SeqNo: 1	018089	Units: mg/L			
Analyte		Result	PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.024	0.00	10 0.02500	0	97.7	85	115			
Sample ID	LLLCS	Sam	oType:	LCSLL	Tes	tCode: El	PA 200.8: I	Dissolved Met	als		
Client ID:	BatchQ	c Bat	ch ID:	B33154	F	RunNo: 3	3154				
Prep Date:		Analysis	Date:	3/29/2016	S	SeqNo: 1	018090	Units: mg/L			
Analyte		Result	PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.00	10 0.001000	0	98.0	50	150			

Qualifiers:

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

Page 7 of 21

Client: Project:		Navajo Refining Con Monthly Temporary	mpany ^r R.O. R	Reject							
Sample ID	MB	SampTy	ype: ME	BLK	Test	tCode: El	PA 200.8:	Dissolved Met	als		
Client ID:	PBW	Batch	ID: B3	3154	R	unNo: 3	3154				
Prep Date:		Analysis Da	ate: 3 /2	29/2016	S	eqNo: 1	018091	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010								

Qualifiers:

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

Page 8 of 21

WO#:	1603243
	01-Apr-16

Client: Project:	Nava Mon	Javajo Refining Company Aonthly Temporary R.O. Reject								
Sample ID	MB-24156	SampType: mblk	TestCode: EPA Method							
Client ID:	PBW	Batch ID: 24156	RunNo: 32702							
Prep Date:	3/9/2016	Analysis Date: 3/10/2016	SeqNo: 1000942	Units: mg/L						
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Mercury		ND 0.00020								
Sample ID	LCS-24156	SampType: Ics	TestCode: EPA Method 245.1: Mercury							
Client ID:	LCSW	Batch ID: 24156	RunNo: 32702							
Prep Date:	3/9/2016	Analysis Date: 3/10/2016	SeqNo: 1000945	Units: mg/L						
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Mercury		0.0054 0.00020 0.005000	0 109 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
- W Sample container temperature is out of limit as specified

Page 9 of 21

Navajo Refining Company Monthly Temporary R.O. Reject									
SampType: MBLK Batch ID: R32618 Analysis Date: 3/4/2016			TestCode: EPA Method 300.0: Anions RunNo: 32618 SeqNo: 997926 Units: mg/L				;		
Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
ND ND	0.10 0.50								

Nitrogen, Nitrat	te (As N)	ND	0.10								
Sample ID	LCS	SampT	s	Tes	TestCode: EPA Method 300.0: Anions						
Client ID:	LCSW	Batch ID: R32618			RunNo: 32618						
Prep Date:	ep Date: Analysis Date: 3/4/2016		4/2016	SeqNo: 997927			Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.50	0.10	0.5000	0	101	90	110			
Chloride		4.7	0.50	5.000	0	94.9	90	110			
Nitrogen, Nitrat	te (As N)	2.5	0.10	2.500	0	101	90	110			
Sample ID	МВ	SampT	SampType: MBLK TestCode: EPA Method				300.0: Anion	s			
Client ID:	PBW	Batch	Batch ID: R32879 RunNo: 32879				2879				
Prep Date:	ep Date: Analysis Date: 3/17/2016		SeqNo: 1007965		Units: mg/L						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		ND	0.50								
Sample ID	LCS	SampT	ype: LC	s	TestCode: EPA Method 300.0: Anions						
Client ID:	LCSW	Batch	n ID: R3	32879	RunNo: 32879						
Prep Date:		Analysis D	ate: 3	/17/2016	SeqNo: 1007966			Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		9.5	0.50	10.00	0	94.6	90	110			

Qualifiers:

Client:

Project:

Sample ID MB

PBW

Client ID:

Prep Date:

Analyte

Fluoride

Chloride

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 10 of 21
WO#:	1603243
	01-Apr-16

Client: Project:	Nava Mont	jo Refining Co thly Temporary	mpany 7 R.O. I	Reject							
Sample ID	MB-24100	SampT	TestCode: EPA Method 8011/504.1: EDB								
Client ID:	PBW	Batch	ID: 24	100	F	RunNo: 32	2621				
Prep Date:	3/7/2016	Analysis D	ate: 3 /	7/2016	S	SeqNo: 99	98470	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoet	hane	ND	0.010								
Sample ID	LCS-24100	SampT	ype: LC	s	Tes	tCode: EF	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch	ID: 24	100	F	RunNo: 32	2621				
Prep Date:	3/7/2016	Analysis D	ate: 3 /	7/2016	S	SeqNo: 99	98471	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoet	hane	0.11	0.010	0.1000	0	108	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
- W Sample container temperature is out of limit as specified
- Page 11 of 21

WO#:	1603243	
	07 1 76	

Client:NavajoProject:Monthl	Refining Co y Temporary	ompany 7 R.O. F	Reject							
Sample ID LCS-24101	SampT	ype: LC	S	TestCode: EPA Method 8015M/D: Diesel Range						
Client ID: LCSW	Batch	n ID: 24	101	F	RunNo: 3	2603				
Prep Date: 3/7/2016	Analysis D	ate: 3/	7/2016	5	SeqNo: 9	97914	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.9	1.0	5.000	0	118	71.3	139			
Surr: DNOP	0.50		0.5000		99.7	70	141			
Sample ID MB-24101	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Range	e	
Client ID: PBW	Batch	n ID: 24	101	F	RunNo: 3	2603				
Prep Date: 3/7/2016	Analysis D	ate: 3/	7/2016	8	SeqNo: 9	97915	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.91		1.000		90.8	70	141			

Qualifiers:

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

Page 12 of 21

WO#:	1603243
	01-Apr-16

Client: Project:	Navajo R Monthly	efining Co Temporar	ompany y R.O.	/ Reject								
Sample ID	5ML RB	SampT	уре: М	BLK	Tes	TestCode: EPA Method 8015D: Gasoline Range						
Client ID:	PBW	Batch ID: A32596			F	RunNo: 32596						
Prep Date:		Analysis D	ate: 3	/4/2016	S	eqNo: SeqNo:	97207	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	e Organics (GRO)	ND	0.050									
Surr: BFB		19		20.00		95.0	49.5	130				
Sample ID	2.5UG GRO LCS	SampT	ype: L	cs	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID:	LCSW	Batch	n ID: A	32596	F	RunNo: 🕄	32596					
Prep Date:		Analysis D	ate: 3	/4/2016	5	eqNo: 🤇	97208	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	e Organics (GRO)	0.51	0.050	0.5000	0	103	80	120				
Surr: BFB		21		20.00		106	49.5	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
- W Sample container temperature is out of limit as specified
- Page 13 of 21

Hall Environme	ental Anal	ysis I	laborat	ory, Inc.						01-Apr-16
Client: Nav Project: Mor	ajo Refining Co nthly Temporar	ompany y R.O. I	Reject							
Sample ID MB-24175	Samp	Туре: М	BLK	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: PBW	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3/	/11/2016	5	SeqNo: 1	002684	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.4		2.500		94.4	26.1	140			
Surr: Tetrachloro-m-xylene	3.9		2.500		155	15	123			S
Sample ID LCS-24175	Samp	Type: LC	s	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: LCSW	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3/	/11/2016	S	SeqNo: 1	002685	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.1	1.0	5.000	0	62.3	15	131			
Aroclor 1260	3.3	1.0	5.000	0	66.9	15	162			
Surr: Decachlorobiphenyl	2.2		2.500		89.2	26.1	140			
Surr: Tetrachloro-m-xylene	3.0		2.500		122	15	123			
Sample ID LCSD-24175	Samp	Type: LC	SD	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: LCSS02	Batc	h ID: 24	175	F	RunNo: 3	2727				
Prep Date: 3/10/2016	Analysis [Date: 3/	/11/2016	S	SeqNo: 1	002686	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	3.4	1.0	5.000	0	68.0	15	131	8.66	24.4	
Aroclor 1260	3.7	1.0	5.000	0	74.8	15	162	11.1	28	
Surr: Decachlorobiphenyl	2.4		2.500		94.8	26.1	140	0	0	
Surr: Tetrachloro-m-xvlene	3.3		2,500		130	15	123	0	0	S

Qualifiers:

* Value exceeds Maximum Contaminant Level.

QC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 14 of 21

WO#: 1603243

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

Navajo Refining Company

WO#:

1603243 01-Apr-16

Project: Month	ly Temporar	y R.O. I	Reject								
Sample ID rb	SampT	Гуре: М І	BLK	Tes	TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batcl	h ID: B 3	32762	F	RunNo: 32762						
Prep Date:	Analysis D	Date: 3	/11/2016	SeqNo: 1002996			Units: µg/L	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	1.0									
Toluene	ND	1.0									
Ethylbenzene	ND	1.0									
1,2-Dichloroethane (EDC)	ND	1.0									
1,2-Dibromoethane (EDB)	ND	1.0									
Carbon Tetrachloride	ND	1.0									
Chloroform	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
Methylene Chloride	ND	3.0									
1,1,2,2-Tetrachloroethane	ND	2.0									
Tetrachloroethene (PCE)	ND	1.0									
1,1,1-Trichloroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
Trichloroethene (TCE)	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	1.5									
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.8	70	130				
Surr: 4-Bromofluorobenzene	11		10.00		114	70	130				
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130				
Surr: Toluene-d8	9.8		10.00		97.7	70	130				
Sample ID 100ng lcs b	SampT	Type: LC	s	Tes	tCode: E	PA Method	8260B: VOL	ATILES			
Client ID: LCSW	Batcl	h ID: B 3	32762	F	RunNo: 3	2762					
Prep Date:	Analysis D	Date: 3	/11/2016	S	SeqNo: 1	003007	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	18	1.0	20.00	0	90.5	70	130				
Toluene	20	1.0	20.00	0	98.8	70	130				
1,1-Dichloroethene	18	1.0	20.00	0	90.8	70	130				
Trichloroethene (TCE)	17	1.0	20.00	0	85.7	70	130				
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.7	70	130				
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130				
Surr: Dibromofluoromethane	9.1		10.00		90.9	70	130				
Surr: Toluene-d8	9.8		10.00		98.3	70	130				

Qualifiers:

Client:

- * 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
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 15 of 21

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, In	c.

Client: Navajo Refining Company **Project:** Monthly Temporary R.O. Reject

Sample ID	MB-24176	SampT	ype: ME	BLK	TestCode: EPA Method 8310: PAHs						
Client ID:	PBW	Batch	n ID: 24	176	F	RunNo: 32851					
Prep Date:	3/10/2016	Analysis D)ate: 3 /	17/2016	S	SeqNo: 1	006908	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene		ND	2.0								
1-Methylnaphth	alene	ND	2.0								
2-Methylnaphth	alene	ND	2.0								
Acenaphthylene	e	ND	2.5								
Acenaphthene		ND	2.0								
Fluorene		ND	0.80								
Phenanthrene		ND	0.60								
Anthracene		ND	0.60								
Fluoranthene		ND	0.30								
Pyrene		ND	0.30								
Benz(a)anthrac	ene	ND	0.070								
Chrysene		ND	0.20								
Benzo(b)fluorar	nthene	ND	0.10								
Benzo(k)fluorar	nthene	ND	0.070								
Benzo(a)pyrene	9	ND	0.070								
Dibenz(a,h)anth	nracene	ND	0.12								
Benzo(g,h,i)per	ylene	ND	0.12								
Indeno(1,2,3-cd	l)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.4	33.4	129			
Sample ID	LCS-24176	SampT	ype: LC	S	Tes	tCode: E	PA Method	8310: PAHs			
Client ID:	LCSW	Batch	n ID: 24	176	F	RunNo: 3	2851				
Prep Date:	3/10/2016	Analysis D)ate: 3 /	17/2016	S	SeqNo: 1	006935	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene		73	2.0	80.00	0	91.6	54.6	110			
1-Methylnaphth	alene	75	2.0	80.20	0	93.6	49.1	116			
2-Methylnaphth	alene	75	2.0	80.00	0	94.1	52.5	111			
Acenaphthylene	e	69	2.5	80.20	0	85.9	63.7	122			
Acenaphthene		77	2.0	80.00	0	96.2	50.6	114			
Fluorene		8.0	0.80	8.020	0	99.6	48.9	106			
Phenanthrene		4.0	0.60	4.020	0	100	54.7	110			
Anthracene		3.7	0.60	4.020	0	92.5	52	106			
Fluoranthene		8.7	0.30	8.020	0	109	57.8	113			

Qualifiers:

Pyrene

Chrysene

Benz(a)anthracene

Benzo(b)fluoranthene

Benzo(k)fluoranthene

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded

8.1

0.75

4.1

0.96

0.52

0.30

0.070

0.20

0.10

0.070

8.020

0.8020

4.020

1.002

0.5000

- 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
- Е Value above quantitation range

101

93.5

102

95.8

104

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit

0

0

0

0

0

W Sample container temperature is out of limit as specified

59.7

56.6

57.6

54.9

59.3

118

109

110

106

112

Page 16 of 21

WO#: 1603243

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1603243

01-Apr-16

Client:	Navajo Refining C	Company								
Project:	Monthly Tempora	ry R.O. I	Reject							
Sample ID LCS-241	176 Samp	Type: LC	s	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSW	Bate	ch ID: 24	176	F	RunNo: 3	2851				
Prep Date: 3/10/20	016 Analysis	Date: 3/	17/2016	S	SeqNo: 1	006935	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107			
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	103	54.8	108			
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110			
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109			
Surr: Benzo(e)pyrene	17		20.00		83.0	33.4	129			
Sample ID LCSD-2	4176 Samp	Type: LC	SD	TestCode: EPA Method 8310: PAHs						
Client ID: LCSS02	Bate	Batch ID: 24176			RunNo: 3	2851				
Prep Date: 3/10/20	016 Analysis	Date: 3/	17/2016	SeqNo: 1006990 Units: μ g/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	73	2.0	80.00	0	91.3	54.6	110	0.314	20	
1-Methylnaphthalene	73	2.0	80.20	0	91.2	49.1	116	2.51	20	
2-Methylnaphthalene	73	2.0	80.00	0	90.7	52.5	111	3.64	20	
Acenaphthylene	68	2.5	80.20	0	85.4	63.7	122	0.640	20	
Acenaphthene	74	2.0	80.00	0	92.3	50.6	114	4.22	20	
Fluorene	7.2	0.80	8.020	0	89.7	48.9	106	10.5	20	
Phenanthrene	4.0	0.60	4.020	0	99.5	54.7	110	0.747	24	
Anthracene	3.7	0.60	4.020	0	92.5	52	106	0	20	
Fluoranthene	8.7	0.30	8.020	0	108	57.8	113	0.460	20.9	
Pyrene	8.1	0.30	8.020	0	101	59.7	118	0.618	20.8	
Benz(a)anthracene	0.77	0.070	0.8020	0	96.0	56.6	109	2.63	20	
Chrysene	4.1	0.20	4.020	0	102	57.6	110	0.244	20	
Benzo(b)fluoranthene	0.95	0.10	1.002	0	94.8	54.9	106	1.05	20.6	
Benzo(k)fluoranthene	0.52	0.070	0.5000	0	104	59.3	112	0	20.8	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107	0	20	
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	104	54.8	108	0.966	20	
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	103	56.9	110	0	20	
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	0	20	
Surr: Benzo(e)pyrene	17		20.00		82.8	33.4	129	0		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 17 of 21

WO#:	10
	01-2

Client: Navajo Project: Month	o Refining Company nly Temporary R.O. Reject					
Sample ID MB-24124 Client ID: PBW	SampType: MBLK Batch ID: 24124	TestCode: Total Pheno RunNo: 32622	lics by SW-846 9067			
Prep Date: 3/8/2016	Analysis Date: 3/8/2016	SeqNo: 998125	Units: µg/L			
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual		
Phenolics, Total Recoverable	ND 2.5					
Sample ID LCS-24124	SampType: LCS	TestCode: Total Pheno	lics by SW-846 9067			
Client ID: LCSW	Batch ID: 24124	RunNo: 32622				
Prep Date: 3/8/2016	Analysis Date: 3/8/2016	SeqNo: 998126	Units: µg/L			
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual		
Phenolics, Total Recoverable	21 2.5 20.00	0 106 64.4	135			

Qualifiers:

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

Page 18 of 21

WO#:	1603243
	01-Apr-16

Client: Project:	Navajo Monthl	Refining Company R.	any O. Reject						
Sample ID	MB-R33030	SampType:	MBLK	Test	tCode: EPA 335.4	Total Cyanide	Subbed		
Client ID:	PBW	Batch ID:	R33030	R	RunNo: 33030				
Prep Date:		Analysis Date:	3/8/2016	S	GeqNo: 1013399	Units: mg/L			
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLim	it HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND 0.07	100						
Sample ID	LCS-R33030	SampType:	LCS	Test	tCode: EPA 335.4	Total Cyanide	Subbed		
Client ID:	LCSW	Batch ID:	R33030	R33030 RunNo: 33030					
Prep Date:		Analysis Date:	3/8/2016	2016 SeqNo: 1013400 Units: mg/L					
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLim	it HighLimit	%RPD	RPDLimit	Qual
Cyanide		0.545	0.5000	0	109 9	0 110			

Qualifiers:

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

Page 19 of 21

WO#: 1603243 01-Apr-16

Client:	Navajo Refining Company
Project:	Monthly Temporary R.O. Reject

Sample ID	MB-R32960	SampT	Гуре: М	BLK	Tes	tCode: El	PA 903.1: R	Ra 226 and EF	PA 904.0: F	Ra 228-Subbe	d
Client ID:	PBW	Batcl	h ID: R3	2960	F	RunNo: 3	2960				
Prep Date:		Analysis E	Date: 3/	21/2016	5	SeqNo: 1	010971	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0	0.643								
Radium-226 ±		0.287	0.643								
Radium-228		0.31	0.686								
Radium-228 ±		0.33	0.686								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 20 of 21

WO#:	1603243
	01-Apr-16

Client: Project:	Nav Mor	ajo Refining Cor hthly Temporary	npany R.O. I	Reject							
Sample ID Client ID:	MB-24120 PBW	SampTy Batch	pe: ME ID: 24	3LK 120	Tes	tCode: SN	M2540C MC 2669	DD: Total Diss	olved So	lids	
Prep Date:	3/7/2016	Analysis Da	ite: 3/	9/2016	SeqNo: 999682 Units: mg/L						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	Solids	ND	20.0								
Sample ID	LCS-24120	SampTy	pe: LC	s	Tes	tCode: SI	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	LCSW	Batch	ID: 24	120	F	RunNo: 32	2669				
Prep Date:	3/7/2016	Analysis Da	ite: 3/	9/2016	6 SeqNo: 999683 Units: mg/L						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	l Solids	1030	20.0	1000	0	103	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
- W Sample container temperature is out of limit as specified

Page 21 of 21

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental A. Albuq TEL: 505-345-3975 F Website: www.hall	nalysis 4901 i uerque AX: 50 enviroi	Laborator Hawkins N , NM 8710 5-345-410 mental.co	ry 1E 09 Samp 07	le Log-In Ch	eck List
Client Name: NAVAJO REFINING CO	Work Order Number:	16032	43		RcptNo: 1	
Received by/date:	03/04/11	P		A		
Logged By: Ashley Gallegos	3/4/2016 10:00:00 AM			SAJ		
Completed By: Ashley Gallegos	3/4/2016 10:29:02 AM			AJ		
Reviewed By:	03/04/16					
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?		<u>Cour</u>	ier			
<u>Log In</u>						
4. Was an attempt made to cool the samples')	Yes		No []	NA [_]	
5. Were all samples received at a temperature	e of >0° C to 6.0°C	Yes		No 🗆	na [_]	
6. Sample(s) in proper container(s)?		Yes		No 🗌		
7. Sufficient sample volume for indicated test(s)?	Yes		No []		
8. Are samples (except VOA and ONG) prope	rly preserved?	Yes		No []		
9. Was preservative added to bottles?		Yes		No 🛃	NA	
10.VOA vials have zero headspace?		Yes		No 🗌	No VOA Vials	
11. Were any sample containers received brok	en?	Yes		No 🛃	# of preserved	
12.Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes		No []]	bottles checked 5 for pH:	3 (03/16 2 2 2 2 2 2 1 2 1 2 1 3 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 2 1 6 1 6 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1
13. Are matrices correctly identified on Chain o	f Custody?	Yes		No [_]	Adjusted?	No
14. Is it clear what analyses were requested?		Yes		• No []]		α
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes		No [_]	Checked by:	
Special Handling (if applicable)						
16. Was client notified of all discrepancies with	this order?	Yes		No []	NA 🛃	
Person Notified:	Date	نىر، ئىلىشىرىمەيغۇ م ە	فالمراجع وموجوع والمراجع	laanda laan (16) dhadhat iyo aan ahaa ahaa		
By Whom:	Via:) eN	lail [] F	Phone []] Fax] In Person	
Regarding:	aalaadalaalaa waxaalaa ahaanahayo ahaayoo waxaa kada kada kada dahaa kada dahaa kada kad	e) o nomenan normänänsä dall	100 billio billio da de servên	en algemeinin dieleinin die bester bieden biederwerzen ein erwen ei erwen ei	n denomi den del se teste se se se se se com necessario estal se tato	
Client Instructions:						
17. Additional remarks:						
18. <u>Cooler Information</u> Cooler No Temp °C Condition S	Seal Intact Seal No	Seal E	Date	Signed By		
					I	

. *

U	hain-	of-Cu	stody Record						HAI	L.	Z	IRC	NO	ME	E S	A		
lient:	Navajo F	Refinery		X Standard	C Rush				AN	LY	SIS	P	BO	R	Ĕ	RO	7	
				Project Name					www	haller	viron	nental.	ШQO					
ailing	Address:	P.O. Box	x 159 Artesia,	Monthly Temp	orary R.O. Re	ject	49	01 Haw	kins N	E - A	nbnq	erque.	NM 8	7109				
M 882	11-0159			Project #: P.O	. # 167796		Ē	el. 505-	345-39	75	Fax	505-34	5-41(20				
hone #	: 575-74	8-3311								Ana	lysis	Reque	st					
mail or	Fax#: 5	75-746-5-	451	Project Manag	jer.		_			-	(82						_	
A/QC F	ackage: lard		Level 4 (Full Validation)	Robert Comb:	20		s00 s00	1		05	-ка-гу				S			
1 Othe				Sampler:	Elizbeth Salsb	erry	NS 1	eliste	0.001	10 '0	972				sbilo		UN.	(N
EDD	(Tvpe)			On Ice:	X Yes	D No	isil ;	Werk	1	oЯ	-6Я	ə	_		S P			10
				Sample Temp	perature. 2.3	-1.0=1.36°	000	000	(uno.	1'0	ify (i	onoli	_	etin	əvlo		5	1) 56
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO	8250G: WC	W :80108: WC	19M :0747	8015: GR	Radioactiv	Sulfate Ch	Fluoride	Nitrate/Nit	esid IstoT	Hd	204.1.ED	algana 11A
3/3/16	9:30	liauid	Temporary R.O. Reject	2 - 500ml P	1-unpres 1- H2SO4	-00-						×	×	×	×	×		~
3/3/16	9:30	liquid	Temporary R.O. Reject	3-40ml VOA	HCL		×		_		_		+	+			+	Т
3/3/16	9:30	liquid	Temporary R.O. Reject	1-500ml P	HNO3				×		-		+	+			+	Т
3/3/16	9:30	liauid	Temporary R.O. Reject	1-125ml P	HNO3			×	_		_		+	+				T
3/3/16	9:30	liauid	Temporary R.O. Reject	1-500ml P	NaOH			Î	~	-	-		+	-			1	Т
3/3/16	9:30	liauid	Temporary R.O. Reject	2-1L P	HN03				_		×		+	- 14			:	Т
3/3/16	9:30	liquid	Temporary R.O. Reject	3-40ml VOA	Na2S203				-		-		+	-			×	Т
3/3/16	9:30	liquid	Temporary R.O. Reject	2 - 1L Glass	unpres				-		-		+	_				Т
3/3/16	9:30	liquid	Temporary R.O. Reject	1 - 1L Glass	unpres		×		+		+		+	+				Τ
3/3/16	9-30	liauid	Temporary R.O. Reject	3-40ml VOA	HCI				+	×	+		+	+	_			Т
3/3/16	9:30	liquid	Temporary R.O. Reject	1-250mlGlas	unpres				_	×	+		-	+				Т
3/2/46	0:30	limid	Temporary R.O. Reject	1 - 1L Glass	H2SO4				_		+		×	+	4			Т
3/3/16	9:30	liquid	Trip Blank	2-40ml VOA	HCL	e.00-	_	_	_		-		-	_	_			Т
Date:	Time: 1:00	Relinquist	Hed by: Elizabeth Baltomy	Received by:	er aut	Date Time 03/64/16 10:00	Remarks Metals: At VOCs: 1,	s, AI, Ba, B 1,1-Trichlo dhane: 1.1	, Cd, Cr. roethane	Co, Cu, F 1,1,2,2-	e, Pb, M etrachk v 1.1-D	n, Hg. Mc roethane. chloroeth	o, NI, Se 1,1,2,2 ane: 1,1	, Ag, U, Tetrad	Zn hloroet oether	hylene, e: 1.2-	1,1,2-	
Date:	Time:	Relinquist	hed by:	Received by:		Date Time	Dibromoe Dichloror SVOCs:	thane; 1.2- sethane; Et	Dichloro hylbenze rene, ph	thane; B he; Tolue nol, 1-m	nzene; ne; Tota thyinap	Carbon T Xylenes; thalene.	etrachio Viny C 2-methy	ride: Ch hloride (naphth	lorofor alene,	m; naphth	alene	
													W		-	1		

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



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

June 13, 2016

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

OrderNo.: 1604184

RE: Quarterly R.O. Reject

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/6/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued May 12, 2016.

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. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

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

Sincerely,

andy

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#: **1604184** Date: **6/13/2016**

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

Analytical Notes Regarding EPA Method 8015 DRO/MRO:

The results for EPA Method 8015 DRO/MRO are being reported as past the holding time due to a laboratory error.

Analytical Report Lab Order 1604184 Date Reported: 6/13/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Client Sample ID: R.O. Reject **Project:** Quarterly R.O. Reject Collection Date: 4/5/2016 8:15:00 AM Lab ID: 1604184-001 Matrix: AQUEOUS Received Date: 4/6/2016 9:40:00 AM Result PQL Qual Units DF **Batch ID** Analyses MDL **Date Analyzed** EPA METHOD 8011/504.1: EDB Analyst: JME µg/L 1,2-Dibromoethane ND 0.0033 0.010 1 4/8/2016 2:39:53 PM 24682 EPA METHOD 8082: PCB'S Analyst: SCC ND 0.28 4/19/2016 2:38:24 AM Aroclor 1016 1.0 µg/L 1 24708 Aroclor 1221 ND 0.70 1.0 µg/L 1 4/19/2016 2:38:24 AM 24708 Aroclor 1232 ND 0.76 1.0 µg/L 1 4/19/2016 2:38:24 AM 24708 Aroclor 1242 ND 0.20 1.0 1 4/19/2016 2:38:24 AM 24708 µg/L Aroclor 1248 ND 0.57 1 4/19/2016 2:38:24 AM 24708 1.0 µg/L ND 0.97 24708 Aroclor 1254 1.0 µg/L 1 4/19/2016 2:38:24 AM Aroclor 1260 ND 0.24 1.0 µq/L 1 4/19/2016 2:38:24 AM 24708 Surr: Decachlorobiphenyl 121 0 26.1-140 %Rec 1 4/19/2016 2:38:24 AM 24708 Surr: Tetrachloro-m-xylene 95.2 0 15-123 %Rec 1 4/19/2016 2:38:24 AM 24708 EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM ND 0.69 5/27/2016 3:55:42 PM Diesel Range Organics (DRO) Н mg/L 1 24652 1.0 Motor Oil Range Organics (MRO) 5.0 Н 5/27/2016 3:55:42 PM ND 5.0 mg/L 1 24652 Surr: DNOP %Rec 94.1 0 70-141 Н 1 5/27/2016 3:55:42 PM 24652 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 4/8/2016 11:55:58 AM R33412 Surr: BFB 89.0 0 49.5-130 %Rec 1 4/8/2016 11:55:58 AM R33412 EPA METHOD 8310: PAHS Analyst: SCC Naphthalene ND 1.1 2.0 µg/L 1 4/19/2016 11:30:48 AM 24709 ND 20 1 4/19/2016 11:30:48 AM 24709 1-Methylnaphthalene 11 µg/L 2-Methylnaphthalene ND 2.0 4/19/2016 11:30:48 AM 24709 11 µg/L 1 24709 ND 0.018 0.070 4/19/2016 11:30:48 AM Benzo(a)pyrene µg/L 1 33.4-129 4/19/2016 11:30:48 AM Surr: Benzo(e)pyrene 74.7 0 %Rec 1 24709 **EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 4.7 0.45 2.0 * mg/L 20 4/18/2016 10:52:15 PM R33628 Chloride 390 2.7 50 mg/L 100 4/18/2016 11:04:39 PM R33628 ND 0.83 2.0 20 Nitrogen, Nitrite (As N) mg/L 4/7/2016 4:51:08 AM R33368 0.042 Nitrogen, Nitrate (As N) 2.4 0.10 mg/L 1 4/7/2016 4:38:43 AM R33368 Sulfate 2400 6.4 mg/L 100 4/18/2016 11:04:39 PM R33628 50 **EPA METHOD 200.7: DISSOLVED METALS** Analyst: ELS Aluminum ND 0.0038 0.020 mg/L 4/18/2016 5:43:21 PM A33606 1 Barium 0.094 0.0013 4/18/2016 5:43:21 PM 0.0020 mg/L 1 A33606 Boron 0.10 0.0011 0.040 mg/L 1 4/18/2016 5:43:21 PM A33606 Cadmium 0.00075 ND 0.0020 mg/L 1 4/18/2016 5:43:21 PM A33606 Chromium ND 0.0018 0.0060 mg/L 1 4/18/2016 5:43:21 PM A33606

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Oualifiers:

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

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

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 2 of 22

Analytical Report Lab Order 1604184 Date Reported: 6/13/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Client Sample ID: R.O. Reject **Project:** Quarterly R.O. Reject Collection Date: 4/5/2016 8:15:00 AM Lab ID: 1604184-001 Matrix: AQUEOUS Received Date: 4/6/2016 9:40:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses MDL **EPA METHOD 200.7: DISSOLVED METALS** Analyst: ELS Cobalt 0.0022 0.00074 0.0060 J mg/L 1 4/18/2016 5:43:21 PM A33606 Copper ND 0.0040 0.0060 mg/L 1 4/18/2016 5:43:21 PM A33606 0.034 Iron 0.0091 0.020 mg/L 1 4/18/2016 5:43:21 PM A33606 0.00032 Manganese 0.0014 0.0020 J mg/L 1 4/18/2016 5:43:21 PM A33606 Molybdenum 0.0068 0.0019 0.0080 J mg/L 1 4/18/2016 5:43:21 PM A33606 Nickel ND 0.0024 0.010 mg/L 1 4/18/2016 5:43:21 PM A33606 Silver ND 0.0028 0.0050 mg/L 1 4/18/2016 5:43:21 PM A33606 Zinc 0.027 0.0028 0.010 mg/L 1 4/18/2016 5:43:21 PM A33606 EPA 200.8: DISSOLVED METALS Analyst: JLF 5 4/19/2016 6:19:56 PM Arsenic 0.0027 0.00069 0.0050 J mg/L A33644 Lead ND 0.00036 0.0025 mg/L 5 4/19/2016 6:19:56 PM A33644 20 Selenium 0.011 0.0042 0.020 J mg/L 4/20/2016 6:29:13 PM A33677 Uranium 0.0067 0.00026 0.0025 mg/L 5 4/19/2016 6:19:56 PM A33644 **EPA METHOD 245.1: MERCURY** Analyst: pmf 4/15/2016 12:01:33 PM ND Mercury 0.000053 0.00020 mg/L 1 24817 EPA METHOD 8260B: VOLATILES Analyst: AG Benzene ND 0.096 1.0 1 4/14/2016 6:30:43 PM R33550 µg/L Toluene ND 0.089 1.0 1 4/14/2016 6:30:43 PM R33550 µg/L Ethvlbenzene ND 0.11 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 4/14/2016 6:30:43 PM 1,2-Dichloroethane (EDC) 0.32 0.053 1.0 .1 µg/L 1 R33550 1,2-Dibromoethane (EDB) ND 0.11 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 Chloroform ND 0.089 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 1,1-Dichloroethane ND 0.11 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 ND 0.076 1.0 1.1-Dichloroethene 1 4/14/2016 6:30:43 PM R33550 µg/L Methylene Chloride ND 0.063 3.0 µg/L 1 4/14/2016 6:30:43 PM R33550 1,1,2,2-Tetrachloroethane ND 0.11 2.0 1 4/14/2016 6:30:43 PM R33550 µg/L Tetrachloroethene (PCE) ND 0 15 10 µg/L 1 4/14/2016 6:30:43 PM R33550 ND 0.063 1,1,1-Trichloroethane 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 0.077 1.1.2-Trichloroethane ND 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 Trichloroethene (TCE) ND 0.18 1.0 1 4/14/2016 6:30:43 PM µg/L R33550 Vinyl chloride ND 0.063 1.0 µg/L 1 4/14/2016 6:30:43 PM R33550 Xylenes, Total ND 0.32 1.5 µg/L 1 4/14/2016 6:30:43 PM R33550 Surr: 1,2-Dichloroethane-d4 98.3 0 70-130 %Rec 4/14/2016 6:30:43 PM R33550 1 Surr: 4-Bromofluorobenzene 103 0 70-130 %Rec 1 4/14/2016 6:30:43 PM R33550 Surr: Dibromofluoromethane 110 0 70-130 4/14/2016 6:30:43 PM %Rec 1 R33550 Surr: Toluene-d8 94.9 0 70-130 %Rec 1 4/14/2016 6:30:43 PM R33550

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	E	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	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	W	Sample container temperature is out of limit as specified

Page 3 of 22

Analytical Report Lab Order 1604184 Date Reported: 6/13/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Quarterly R.O. Reject	N	AOUTOU	Clier Co	nt Sampl llection]	le ID: R.O. Date: 4/5/2	. Rejec 2016 8	et :15:00 AM	
Lab ID: 1604184-001	Matrix:	AQUEOU	S R	eceived	Date: 4/6/2	2016 9	:40:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
TOTAL PHENOLICS BY SW-846 9067							Analyst: SCC	
Phenolics, Total Recoverable	ND	1.5	2.5		µg/L	1	4/21/2016	24923
EPA 335.4: TOTAL CYANIDE SUBBED							Analyst: SUB	
Cyanide	ND	0.0100	0.0100		mg/L	1	4/13/2016	R34156
EPA 903.1: RA 226 AND EPA 904.0: RA 2	28-SUBBED)					Analyst: SUB	
Radium-226	1.02	0.578	0.578		pCi/L	1	4/29/2016	R34156
Radium-226 ±	0.608	0.578	0.578		pCi/L	1	4/29/2016	R34156
Radium-228	0.143	0.803	0.803		pCi/L	1	4/29/2016	R34156
Radium-228 ±	0.361	0.803	0.803		pCi/L	1	4/29/2016	R34156
SM4500-H+B: PH							Analyst: MRA	
pH	8.17	0.100	1.68	н	pH units	1	4/9/2016 2:23:07 AM	R33424
SM2540C MOD: TOTAL DISSOLVED SO	IDS						Analyst: KS	
Total Dissolved Solids	5190	10.5	20.0	*	mg/L	1	4/7/2016 3:22:00 PM	24656

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 22
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 460 1 01 22
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1604184

Date Reported: 6/13/2016

CLIENT: Navajo Refining CompanyProject: Quarterly R.O. RejectLab ID: 1604184-002	Matrix:	Client Sample ID: Trip Blank Collection Date: Matrix: TRIP BLANK Received Date: 4/6/2016 9:40:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8011/504.1: EDB							Analyst: JME			
1,2-Dibromoethane	ND	0.0033	0.010		µg/L	1	4/8/2016 2:54:59 PM	24682		
FPA METHOD 8015D: GASOLINE RANG	F						Analyst: NSB			
Gasoline Range Organics (GRO)		0 025	0.050		ma/l	1	4/8/2016 12:20:35 PM	R33412		
Surr: BFB	85 7	0.020	49.5-130		%Rec	1	4/8/2016 12:20:35 PM	R33412		
		Ũ				•	Analyst: AC			
EFA WEITOD 0200D: VOLATILES	ND	0.000	4.0				Analyst. AG	Doorro		
Benzene	ND	0.096	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
	ND	0.089	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Ethylbenzene	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,2-Dichloroethane (EDC)	0.33	0.053	1.0	J	µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,2-Dibromoethane (EDB)	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Chloroform	ND	0.089	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,1-Dichloroethane	ND	0.11	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,1-Dichloroethene	ND	0.076	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Methylene Chloride	ND	0.063	3.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,1,2,2-Tetrachloroethane	ND	0.11	2.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,1,1-Trichloroethane	ND	0.063	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
1,1,2-Trichloroethane	ND	0.077	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Trichloroethene (TCE)	ND	0.18	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Vinyl chloride	ND	0.063	1.0		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Xylenes, Total	ND	0.32	1.5		µg/L	1	4/14/2016 6:59:37 PM	R33550		
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550		
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550		
Surr: Dibromofluoromethane	111	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550		
Surr: Toluene-d8	96.2	0	70-130		%Rec	1	4/14/2016 6:59:37 PM	R33550		

Hall Environmental Analysis Laboratory, Inc.

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	
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 5 of 22
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 uge 5 61 22
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

WO#:	1604184
	13-Jun-16

Client:		Navajo Refining C	Company								
Project:		Quarterly R.O. Re	ject								
Sample ID	MB-A	Samp	Type: MI	BLK	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	PBW	Bate	ch ID: A3	3606	F	RunNo:	33606				
Prep Date:		Analysis	Date: 4	/18/2016	S	SeqNo: '	1034060	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0.020								
Barium		ND	0.0020								
Boron		ND	0.040								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Copper		ND	0.0060								
Iron		ND	0.020								
Manganese		ND	0.0020								
Molybdenum		ND	0.0080								
Nickel		ND	0.010								
Silver		ND	0.0050								
Zinc		ND	0.010								
Sample ID	LCS-A	Samp	Type: LC	S	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID:	LCSW	Bate	ch ID: A3	3606	F	RunNo: :	33606				
Prep Date:		Analysis	Date: 4	/18/2016	S	SeqNo:	1034061	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		0.46	0.020	0.5000	0	92.5	85	115			
Barium		0.49	0.0020	0.5000	0	97.6	85	115			
Boron		0.50	0.040	0.5000	0	99.1	85	115			
Cadmium		0.50	0.0020	0.5000	0	99.3	85	115			
Chromium		0.48	0.0060	0.5000	0	96.7	85	115			
Cobalt		0.47	0.0060	0.5000	0	93.2	85	115			
Copper		0.48	0.0060	0.5000	0	95.7	85	115			
Iron		0.47	0.020	0.5000	0	93.8	85	115			
Manganese		0.47	0.0020	0.5000	0	94.1	85	115			
Molybdenum		0.51	0.0080	0.5000	0	103	85	115			
Nickel		0.46	0.010	0.5000	0	91.9	85	115			
Silver		0.097	0.0050	0.1000	0	96.9	85	115			
Zinc		0.48	0.010	0.5000	0	95.4	85	115			
Sample ID	LLLCS	-A Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
	-	C Bat	ch ID: A3	3606	F	RunNo: :	33606				
Client ID:	BatchC										
Client ID: Prep Date:	BatchC	Analysis	Date: 4	18/2016	S	SeqNo: '	1034062	Units: mg/L			
Client ID: Prep Date: Analyte	BatchG	Analysis Result	Date: 4/ PQL	/ 18/2016 SPK value	SPK Ref Val	SeqNo: ' %REC	1034062 LowLimit	Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Client ID: Prep Date: Analyte Aluminum	BatchG	Analysis Result 0.010	Date: 4/ PQL 0.020	18/2016 SPK value 0.01000	SPK Ref Val	SeqNo: %REC 100	1034062 LowLimit 50	Units: mg/L HighLimit 150	%RPD	RPDLimit	Qual J

Qualifiers:

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

E Value above quantitation range

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 22

WO#: 1604184 13-Jun-16

Client: Navajo Refining Company

Project: Quarterly R.O. Reject

Sample ID LLLC	CS-A	SampType	e: LCS	SLL	Test	Code: EF	PA Method	200.7: Dissolv	ved Metal	s	
Client ID: Batc	chQC	Batch ID): A33	606	R	unNo: 3	3606				
Prep Date:	An	alysis Date	e: 4/1	8/2016	S	eqNo: 10	034062	Units: mg/L			
Analyte	R	esult F	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	C	0.038 0	.040	0.04000	0	94.9	50	150			J
Cadmium	0.	0028 0.0	020	0.002000	0	140	50	150			
Chromium	0.	0063 0.0	0060	0.006000	0	105	50	150			
Cobalt	0.	0056 0.0	0060	0.006000	0	92.7	50	150			J
Copper	0.	0090 0.0	0060	0.006000	0	150	50	150			S
Iron	C	0.020 0	.020	0.02000	0	98.6	50	150			J
Manganese	0.	0018 0.0	020	0.002000	0	90.5	50	150			J
Molybdenum	0.	0079 0.0	0800	0.008000	0	99.0	50	150			J
Nickel	0.	0043 0	.010	0.005000	0	86.2	50	150			J
Silver	0.	0046 0.0	0050	0.005000	0	92.6	50	150			J
Zinc	0.	0054 0	.010	0.005000	0	108	50	150			J

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 22

Client: Project:		Navajo Refining Quarterly R.O. 1	g Con Rejec	npany t	,							
Sample ID	LCS	Sa	mnTvr		38	Tes	tCode: F	PA 200 8· 1	Dissolved Met	als		
	LCSW	F	atch I	ס. ב י	3644	F		3644				
Drop Doto:	LOON	Apoly			140/2016	, ,		026422	Lipito: ma/l			
Fiep Date.		Analys	is Dai	le. 4	19/2010	ι. ·	sequo. I	030133	Units. Ing/L			
Analyte		Resu	lt	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.02	3 0	.0010	0.02500	0	93.5	85	115			
Lead		0.01	1 0.0	00050	0.01250	0	91.9	85	115			
Uranium		0.01	1 0.0	00050	0.01250	0	91.8	85	115			
Sample ID	LCSLL	Sa	трТур	be: LC	SLL	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C E	atch I	D: A3	33644	F	RunNo: 3	3644				
Prep Date:		Analys	is Dat	te: 4	/19/2016	5	SeqNo: 1	036134	Units: mg/L			
Analyte		Resu	lt	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.001	0 0	.0010	0.001000	0	102	50	150			
Lead		0.0005	2 0.0	00050	0.0005000	0	105	50	150			
Uranium		0.0005	0 0.0	00050	0.0005000	0	99.1	50	150			J
Sample ID	MB	Sa	трТур	be: M	BLK	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	PBW	E	atch I	D: A3	33644	F	RunNo: 3	3644				
Prep Date:		Analys	is Dat	te: 4	/19/2016	5	SeqNo: 1	036136	Units: mg/L			
Analyte		Resu	lt	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		N	D 0	.0010								
Lead		Ν	D 0.0	00050								
Uranium		Ν	D 0.0	00050								
Sample ID	LCS	Sa	трТур	be: LC	s	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	LCSW	E	atch I	D: A3	33677	F	RunNo: 3	3677				
Prep Date:		Analys	is Dat	te: 4	/20/2016	S	SeqNo: 1	037321	Units: mg/L			
Analyte		Resu	lt	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.02	4 0	.0010	0.02500	0	97.2	85	115			
Sample ID	LLLCS	Sa	трТур	be: LC	SLL	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C E	atch I	D: A3	33677	F	RunNo: 3	3677				
Prep Date:		Analys	is Dat	te: 4	/20/2016	S	SeqNo: 1	037322	Units: mg/L			
Analyte		Resu	lt	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		0.001	1 0	.0010	0.001000	0	106	50	150			

Qualifiers:

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

Page 8 of 22

WO#: 1604184 13-Jun-16

Client: Project:		Navajo Refining Con Quarterly R.O. Reject	mpany ct								
Sample ID	МВ	SampTy	pe: MB	BLK	Tes	tCode: E	PA 200.8:	Dissolved Me	tals		
Client ID:	PBW	Batch	ID: A3	3677	F	RunNo: 3	3677				
Prep Date:		Analysis Da	ate: 4/2	20/2016	S	SeqNo: 1	037323	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium		ND	0.0010								

Qualifiers:

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

Page 9 of 22

WO#: 1604184 13-Jun-16

Client: Project:	Navajo Quarter	Refining Company rly R.O. Reject						
Sample ID	MB-24817	SampType: MBLK	TestCode: E	PA Method	245.1: Mercu	ry		
Client ID:	PBW	Batch ID: 24817	RunNo: 3	3567				
Prep Date:	4/14/2016	Analysis Date: 4/15/2016	SeqNo: 1	032804	Units: mg/L			
Analyte		Result PQL SPK value	e SPK Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.00020						
Sample ID	LCS-24817	SampType: LCS	TestCode: E	PA Method	245.1: Mercu	ry		
Client ID:	LCSW	Batch ID: 24817	RunNo:	3567				
Prep Date:	4/14/2016	Analysis Date: 4/15/2016	SeqNo: 1	032805	Units: mg/L			
Analyte		Result PQL SPK value	e SPK Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0052 0.00020 0.00500	0 0 105	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
- W Sample container temperature is out of limit as specified

Page 10 of 22

WO#: 1604184

Client:	Navajo Refining C	ompany								
Project:	Quarterly R.O. Rej	ect								
Sample ID MB	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	300.0: Anion	S		
Client ID: PBW	Bato	h ID: R3	3368	F	RunNo: 3	3368				
Prep Date:	Analysis I	Date: 4/	6/2016	S	SeqNo: 1	025773	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N) ND	0.10								
Nitrogen, Nitrate (As	N) ND	0.10								
Sample ID LCS	Samp	Type: LC	S	Tes	tCode: El	PA Method	300.0: Anion	S		
Client ID: LCS	W Bato	h ID: R3	3368	F	RunNo: 3	3368				
Prep Date:	Analysis I	Date: 4/	6/2016	S	SeqNo: 1	025774	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N) 0.98	0.10	1.000	0	98.5	90	110			
Nitrogen, Nitrate (As	N) 2.5	0.10	2.500	0	102	90	110			
Sample ID MB	Samp	Type: ME	BLK	Tes	tCode: El	PA Method	300.0: Anion	S		
Sample ID MB Client ID: PBW	Samp Bato	Type: ME	3LK 3628	Tes F	tCode: El RunNo: 3	PA Method 3628	300.0: Anion	S		
Sample ID MB Client ID: PBW Prep Date:	Samp Bato Analysis I	Type: MB ch ID: R3 Date: 4 /	3LK 3628 18/2016	Tes F S	tCode: El RunNo: 3 SeqNo: 1	PA Method 3628 035257	300.0: Anion Units: mg/L	S		
Sample ID MB Client ID: PBW Prep Date: Analyte	Samp Bato Analysis I Result	Type: Me ch ID: R3 Date: 4 / PQL	3LK 3628 18/2016 SPK value	Tes F S SPK Ref Val	tCode: El RunNo: 3 SeqNo: 1 %REC	PA Method 3628 035257 LowLimit	300.0: Anion Units: mg/L HighLimit	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride	Samp Bato Analysis I Result ND	Type: MB ch ID: R3 Date: 4 / <u>PQL</u> 0.10	3LK 3628 18/2016 SPK value	Tes F SPK Ref Val	tCode: El RunNo: 3 SeqNo: 1 %REC	PA Method 3628 035257 LowLimit	300.0: Anion: Units: mg/L HighLimit	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride	Samp Bato Analysis I Result ND ND	Type: ME ch ID: R3 Date: 4/ <u>PQL</u> 0.10 0.50	3LK 3628 18/2016 SPK value	Tes F S SPK Ref Val	tCode: El RunNo: 3 SeqNo: 1 %REC	PA Method 3628 035257 LowLimit	300.0: Anion: Units: mg/L HighLimit	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate	Samp Bato Analysis I Result ND ND ND	Type: ME th ID: R3 Date: 4/ <u>PQL</u> 0.10 0.50 0.50	3LK 3628 18/2016 SPK value	Tes F SPK Ref Val	tCode: El RunNo: 3 SeqNo: 1 %REC	PA Method 3628 035257 LowLimit	300.0: Anion: Units: mg/L HighLimit	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS	Samp Bato Analysis I Result ND ND ND Samp	Type: Me ch ID: R3 Date: 4 / <u>PQL</u> 0.10 0.50 0.50 Type: LC	3LK 3628 18/2016 SPK value	Tes F SPK Ref Val Tes	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El	PA Method 3628 035257 LowLimit PA Method	300.0: Anion: Units: mg/L HighLimit 300.0: Anion:	s %RPD s	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS Client ID: LCS	Samp Bato Analysis I Result ND ND ND Samp W Bato	Type: ME th ID: R3 Date: 4/ PQL 0.10 0.50 0.50 Type: LC th ID: R3	3LK 3628 18/2016 SPK value SS 3628	Tes F SPK Ref Val Tes F	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El RunNo: 3	PA Method 3628 035257 LowLimit PA Method 3628	300.0: Anion: Units: mg/L HighLimit 300.0: Anion:	s %RPD s	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS Client ID: LCS Prep Date:	Samp Bato Analysis I Result ND ND ND Samp Samp M Bato Analysis I	Type: ME ch ID: R3 Date: 4/ PQL 0.10 0.50 0.50 Type: LC ch ID: R3 Date: 4/	BLK 3628 18/2016 SPK value SS 3628 18/2016	Tes F SPK Ref Val Tes F S	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El RunNo: 3 SeqNo: 1	PA Method 3628 035257 LowLimit PA Method 3628 035258	300.0: Anion: Units: mg/L HighLimit 300.0: Anion: Units: mg/L	s %RPD s	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS Client ID: LCS Prep Date: Analyte	Samp Bato Analysis I Result ND ND ND Samp M Bato Analysis I Result	Type: ME ch ID: R3 Date: 4 / PQL 0.10 0.50 0.50 Type: LC ch ID: R3 Date: 4 / PQL	3LK 3628 18/2016 SPK value SS 3628 18/2016 SPK value	Tes F SPK Ref Val	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El RunNo: 3 SeqNo: 1 %REC	PA Method 3628 035257 LowLimit PA Method 3628 035258 LowLimit	300.0: Anion: Units: mg/L HighLimit 300.0: Anion: Units: mg/L HighLimit	s %RPD s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS Client ID: LCS Prep Date: Analyte Fluoride	Samp Bato Analysis Result ND ND ND Samp M Bato Analysis Result 0.54	Type: ME ch ID: R3 Date: 4/ PQL 0.10 0.50 0.50 Type: LC ch ID: R3 Date: 4/ PQL 0.10	BLK 3628 18/2016 SPK value SS 3628 18/2016 SPK value 0.5000	Tes F SPK Ref Val Tes SPK Ref Val 0	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El RunNo: 3 SeqNo: 1 %REC 109	PA Method 3628 035257 LowLimit PA Method 3628 035258 LowLimit 90	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Fluoride Chloride Sulfate Sample ID LCS Client ID: LCS Prep Date: Analyte Fluoride Chloride	Samp Bato Analysis I Result ND ND ND Samp W Bato Analysis I Result 0.54 4.8	Type: ME ch ID: R3 Date: 4/ PQL 0.10 0.50 0.50 Type: LC ch ID: R3 Date: 4/ PQL 0.10 0.50	3LK 3628 18/2016 SPK value SS 3628 18/2016 SPK value 0.5000 5.000	Tes F SPK Ref Val Tes SPK Ref Val 0 0	tCode: El RunNo: 3 SeqNo: 1 %REC tCode: El RunNo: 3 SeqNo: 1 %REC 109 96.7	PA Method 3628 035257 LowLimit PA Method 3628 035258 LowLimit 90 90	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110	s %RPD s %RPD	RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 11 of 22

Client: Project:	Na Qu	vajo Refining Co arterly R.O. Reje									
Sample ID	MB-24682	SampT	ype: MB	BLK	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	Client ID: PBW Batch ID: 24682					RunNo: 3	3411				
Prep Date: 4/7/2016 Analysis Date: 4/8/2016					S	SeqNo: 1	027492	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoetl	hane	ND	0.010								
Sample ID	LCS-24682	SampT	ype: LC	s	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch	ID: 24	682	F	RunNo: 3	3411				
Prep Date:	4/7/2016	Analysis D	ate: 4 /	8/2016	5	SeqNo: 1	027494	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoet	hane	0.12	0.010	0.1000	0	116	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
- W Sample container temperature is out of limit as specified

Page 12 of 22

Client: Navajo	Refining Company	
Project: Quarte:	rly R.O. Reject	
Sample ID MB-24652	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: PBW	Batch ID: 24652	RunNo: 33385
Prep Date: 4/6/2016	Analysis Date: 4/8/2016	SeqNo: 1026445 Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	ND 1.0	
Motor Oil Range Organics (MRO)	ND 5.0	
Surr: DNOP	1.0 1.000	102 70 141
Sample ID LCS-24652	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: LCSW	Batch ID: 24652	RunNo: 33385
Prep Date: 4/6/2016	Analysis Date: 4/8/2016	SeqNo: 1026634 Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	5.6 1.0 5.000	0 112 71.3 139
Surr: DNOP	0.53 0.5000	107 70 141
Sample ID LCS-25494	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: LCSW	Batch ID: 25494	RunNo: 34489
Prep Date: 5/25/2016	Analysis Date: 5/26/2016	SeqNo: 1064130 Units: %Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Surr: DNOP	0.50 0.5000	101 70 141

Qualifiers:

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

Page 13 of 22

Client: Project:	Navajo R Quarterly										
Sample ID 5ML F	RB	SampT	ype: M	3LK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW		Batch	n ID: R3	3412	F	RunNo: 3	3412				
Prep Date:	Date: Analysis Date: 4/8/2016				S	SeqNo: 1	027408	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organ	nics (GRO)	ND	0.050								
Surr: BFB		17		20.00		86.6	49.5	130			
Sample ID 2.5UG	GRO LCS	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	v	Batch	n ID: R3	3412	F	RunNo: 3	3412				
Prep Date:		Analysis D)ate: 4/	8/2016	S	SeqNo: 1	027409	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organ	iics (GRO)	0.46	0.050	0.5000	0	92.9	80	120			
Surr: BFB		19		20.00		96.6	49.5	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
- W Sample container temperature is out of limit as specified

Page 14 of 22

Hall Environmental Analysis Laboratory, Inc.											
Client: Navajo Project: Quarte	o Refining Co rly R.O. Rej	ompany ect									
Sample ID MB-24708	Samp	Гуре: М	BLK	Tes	tCode: E	PA Method	8082: PCB's				
Client ID: PBW	Batc	h ID: 24	708	F	RunNo: 3	3583					
Prep Date: 4/11/2016	Analysis [Date: 4	18/2016	S	SeqNo: 1	034347	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aroclor 1016	ND	1.0									
Aroclor 1221	ND	1.0									
Aroclor 1232	ND	1.0									
Aroclor 1242	ND	1.0									
Aroclor 1248	ND	1.0									
Aroclor 1254	ND	1.0									
Aroclor 1260	ND	1.0									
Surr: Decachlorobiphenyl	2.5		2.500		99.2	26.1	140				
Surr: Tetrachloro-m-xylene	2.3		2.500		93.2	15	123				
Sample ID LCS-24708	Samp	Type: LC	s	Tes	tCode: E	PA Method	8082: PCB's				
Client ID: LCSW	Batc	h ID: 24	708	F	RunNo: 3	3583					
Prep Date: 4/11/2016	Analysis [Date: 4/	/18/2016	5	SeqNo: 1	034348	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aroclor 1016	6.5	1.0	5.000	0	130	15	131				
Aroclor 1260	9.4	1.0	5.000	0	189	15	162			S	
Surr: Decachlorobiphenyl	5.2		2.500		208	26.1	140			S	
Surr: Tetrachloro-m-xylene	5.2		2.500		208	15	123			S	
Sample ID LCSD-24708	Samp	Гуре: LC	SD	Tes	tCode: E	PA Method	8082: PCB's				
Client ID: LCSS02	Batc	h ID: 24	708	F	RunNo: 3	3583					
Prep Date: 4/11/2016	Analysis [Date: 4	/18/2016	8	SeqNo: 1	034349	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aroclor 1016	3.5	1.0	5.000	0	70.0	15	131	60.1	24.4	R	
Aroclor 1260	6.1	1.0	5.000	0	123	15	162	42.3	28	R	
Surr: Decachlorobiphenyl	3.3		2.500		133	26.1	140	0	0		
Surr: Tetrachloro-m-xvlene	2.9		2,500		118	15	123	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.

QC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 15 of 22

1604184

Client: Project:	Navajo R Quarterly	efining Co R.O. Reje	ompany ect								
Sample ID 100ng lo	cs	SampT	ype: LC	S	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW		Batch	n ID: R3	3550	F	RunNo: 3	3550				
Prep Date:		Analysis D	ate: 4/	14/2016	5	SeqNo: 1	032303	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		23	1.0	20.00	0	114	70	130			
Toluene		20	1.0	20.00	0	99.4	70	130			
1,1-Dichloroethene		23	1.0	20.00	0	115	70	130			
Trichloroethene (TCE)		20	1.0	20.00	0	99.7	70	130			
Surr: 1,2-Dichloroethan	ne-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorober	nzene	11		10.00		106	70	130			
Surr: Dibromofluoromet	thane	12		10.00		117	70	130			
Surr: Toluene-d8		10		10.00		102	70	130			
Sample ID rb		SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW		Batch	n ID: R3	3550	F	RunNo: 3	3550				
Prep Date:		Analysis D	ate: 4/	14/2016	S	SeqNo: 1	032305	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		ND	1.0								
Toluene		ND	1.0								
Ethylbenzene		ND	1.0								
1,2-Dichloroethane (EDC))	0.33	1.0								J
1,2-Dibromoethane (EDB))	ND	1.0								
Carbon Tetrachloride		ND	1.0								
Chloroform		ND	1.0								
1,1-Dichloroethane		ND	1.0								
1,1-Dichloroethene		ND	1.0								
Methylene Chloride		0.79	3.0								J
1,1,2,2-Tetrachloroethane	9	ND	2.0								
Tetrachloroethene (PCE)		ND	1.0								
1,1,1-Trichloroethane		ND	1.0								
1,1,2-Trichloroethane		ND	1.0								
Trichloroethene (TCE)		ND	1.0								
Vinyl chloride		ND	1.0								
Xylenes, Total		ND	1.5								
Surr: 1,2-Dichloroethan	ne-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorober	nzene	10		10.00		102	70	130			
Surr: Dibromofluoromet	thane	11		10.00		112	70	130			
Surr: Toluene-d8		10		10.00		101	70	130			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 16 of 22

WO#: 1604184

Page 17 of 22

13-Jun-16

Client: Navajo I	Refining Co	ompany								
Project: Quarteri	y R.O. Rej	ect								
Sample ID MB-24709	Samp ⁻	Type: ME	BLK	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: PBW	Batc	h ID: 24	709	F	RunNo: 3	3614				
Prep Date: 4/11/2016	Analysis [Date: 4/	19/2016	5	SeqNo: 1	034469	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	15		20.00		77.2	33.4	129			
Sample ID LCS-24709	Samp	Type: LC	s	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: LCSW	Batc	h ID: 24	709	F	RunNo: 3	3614				
Prep Date: 4/11/2016	Analysis [Date: 4/	19/2016	S	SeqNo: 1	034474	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	79	2.0	80.00	0	98.3	54.6	110			
1-Methylnaphthalene	80	2.0	80.20	0	99.9	49.1	116			
2-Methylnaphthalene	81	2.0	80.00	0	101	52.5	111			
Acenaphthylene	73	2.5	80.20	0	91.0	63.7	122			
Acenaphthene	81	2.0	80.00	0	101	50.6	114			
Fluorene	8.2	0.80	8.020	0	103	48.9	106			
Phenanthrene	4.0	0.60	4.020	0	98.5	54.7	110			
Anthracene	3.7	0.60	4.020	0	92.5	52	106			
Fluoranthene	8.7	0.30	8.020	0	109	57.8	113			
Pyrene	7.6	0.30	8.020	0	95.3	59.7	118			
Benz(a)anthracene	0.88	0.070	0.8020	0	110	56.6	109			S
Chrysene	4.1	0.20	4.020	0	102	57.6	110			
Benzo(b)fluoranthene	0.91	0.10	1.002	0	90.8	54.9	106			
Benzo(k)fluoranthene	0.51	0.070	0.5000	0	102	59.3	112			

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.											
Client: Navajo Project: Quarter	Refining Co rly R.O. Rej	ompany ect									
Sample ID LCS-24709	Samp	Гуре: LC	s	Tes	tCode: E	PA Method	8310: PAHs				
Client ID: LCSW	Batc	h ID: 24	709	F	RunNo: 3	3614					
Prep Date: 4/11/2016	Analysis [Date: 4 /	19/2016	S	SeqNo: 1	034474	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzo(a)pyrene	0.53	0.070	0.5020	0	106	62	107				
Dibenz(a,h)anthracene	1.1	0.12	1.002	0	106	54.8	108				
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	105	56.9	110				
Indeno(1,2,3-cd)pyrene	2.3	0.25	2.004	0	113	55.2	109			S	
Surr: Benzo(e)pyrene	11		20.00		53.7	33.4	129				
Sample ID LCSD-24709	Samp	Гуре: LC	SD	Tes	tCode: E	PA Method	8310: PAHs				
Client ID: LCSS02	Batc	h ID: 24	709	F	RunNo: 3	3614					
Prep Date: 4/11/2016	Analysis [Date: 4 /	19/2016	S	SeqNo: 1	034484	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Naphthalene	76	2.0	80.00	0	94.6	54.6	110	3.77	20		
1-Methylnaphthalene	74	2.0	80.20	0	92.8	49.1	116	7.35	20		
2-Methylnaphthalene	73	2.0	80.00	0	91.6	52.5	111	9.80	20		
Acenaphthylene	70	2.5	80.20	0	87.3	63.7	122	4.19	20		
Acenaphthene	73	2.0	80.00	0	91.4	50.6	114	10.4	20		
Fluorene	6.6	0.80	8.020	0	82.8	48.9	106	21.4	20	R	
Phenanthrene	3.8	0.60	4.020	0	95.0	54.7	110	3.60	24		
Anthracene	3.6	0.60	4.020	0	88.6	52	106	4.40	20		
Fluoranthene	8.4	0.30	8.020	0	104	57.8	113	3.98	20.9		
Pyrene	7.3	0.30	8.020	0	91.5	59.7	118	4.01	20.8		
Benz(a)anthracene	0.85	0.070	0.8020	0	106	56.6	109	3.47	20		
Chrysene	4.0	0.20	4.020	0	98.8	57.6	110	3.47	20		
Benzo(b)fluoranthene	0.86	0.10	1.002	0	85.8	54.9	106	5.65	20.6		
Benzo(k)fluoranthene	0.49	0.070	0.5000	0	98.0	59.3	112	4.00	20.8		
Benzo(a)pyrene	0.51	0.070	0.5020	0	102	62	107	3.85	20		
Dibenz(a,h)anthracene	1.0	0.12	1.002	0	101	54.8	108	4.83	20		
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	100	56.9	110	4.88	20		
Indeno(1,2,3-cd)pyrene	2.1	0.25	2.004	0	105	55.2	109	7.78	20		
Surr: Benzo(e)pyrene	10		20.00		51.5	33.4	129	0			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

QC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 18 of 22

Client: Project:	Navajo Quarte										
Sample ID	MB-24923	SampT	ype: MI	BLK	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID:	PBW	Batch	n ID: 24	923	F	RunNo: 3	3678				
Prep Date: 4/21/2016 Analysis Date: 4/21/2016				21/2016	S	SeqNo: 1	037376	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	al Recoverable	ND	2.5								
Sample ID	LCS-24923	SampT	ype: LC	s	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID:	LCSW	Batch	n ID: 24	923	F	RunNo: 3	3678				
Prep Date:	4/21/2016	Analysis D	ate: 4/	21/2016	5	SeqNo: 1	037377	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Tota	al Recoverable	18	2.5	20.00	0	89.0	64.4	135			

Qualifiers:

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

Page 19 of 22

Client: Project:	Navajo Quarter	Refining Comp ly R.O. Reject	any							
Sample ID	MB-R34156	SampType	MBLK	Tes	tCode: EPA 3	335.4: To	otal Cyanide	Subbed		
Client ID:	PBW	Batch ID:	R34156	F	RunNo: 34156	6				
Prep Date:		S	SeqNo: 10531	134	Units: mg/L					
Analyte		Result P	QL SPK value	SPK Ref Val	%REC Lo	wLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		ND 0.0	100							
Sample ID	LCS-R34156	SampType	LCS	Tes	tCode: EPA 3	335.4: To	otal Cyanide	Subbed		
Client ID:	LCSW	Batch ID:	R34156	F	RunNo: 34156	6				
Prep Date:		Analysis Date:	4/13/2016	S	SeqNo: 10531	135	Units: mg/L			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC Lo	wLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide		0.507	0.5000	0	101	90	110			

Qualifiers:

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

Page 20 of 22

13-Jun-16

WO#: 1604184 13-Jun-16

Client:Navajo Refining CompanyProject:Quarterly R.O. Reject											
Sample ID MB-R	34156	SampT	ype: M	BLK	Tes	tCode: E	PA 903.1: R	a 226 and EP	A 904.0: F	Ra 228-Subbe	d
Client ID: PBW		Batch	n ID: R3	4156	F	unNo: 3	4156				
Prep Date:		Analysis D	ate: 4/	/29/2016	S	eqNo: 1	053137	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		-2.01	0.933								
Radium-226 ±		0.459	0.933								
Radium-228		0.321	0.795								
Radium-228 ±		0.376	0.795								

Qualifiers:

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

Page 21 of 22

Client: Project:	N Q	avajo Refining Comp uarterly R.O. Reject									
Sample ID	MB-24656	SampType	: MI	BLK	Tes	tCode: SI	M2540C MC	DD: Total Diss	solved So	lids	
Client ID:	PBW	Batch ID	: 24	656	F	RunNo: 3	3372				
Prep Date: 4/6/2016 Analysis Date: 4/7/2016				7/2016	S	SeqNo: 1	025974	Units: mg/L			
Analyte		Result P	QL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	ND	20.0								
Sample ID	LCS-2465	6 SampType	: LC	s	Tes	tCode: SI	M2540C MC	DD: Total Dise	solved So	lids	
Client ID:	LCSW	Batch ID	: 24	656	F	RunNo: 3	3372				
Prep Date:	4/6/2016	Analysis Date	: 4/	7/2016	5	SeqNo: 1	025975	Units: mg/L			
Analyte		Result P	QL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	1040	20.0	1000	0	104	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
- W Sample container temperature is out of limit as specified
- nge
- ntitation limits

Page 22 of 22
Client Name: NAVAJO REFINING CO Work Ord Received by/date:	ler Number: 160418	4			
Received by/date: AM 04/C		-		RcptNo: 1	
· · · · · · · · · · · · · · · · · · ·	6/10_				
Logged By: Ashley Gallegos 4/6/2016 9:	40:00 AM	A	F		
Completed By: Ashley Sallegos 4/6/2016 12	2:24:03 PM	A	Z		
Reviewed By: AC	6/16		v		
Chain of Custod	· / ·				
1. Custody seals intact on sample bottles?	Yes	I	No 🗌	Not Present 🗹	
2. Is Chain of Custody complete?	Yes		No 🗌	Not Present	
3. How was the sample delivered?	<u>Courie</u>	<u>11</u>			
Log In					
4. Was an attempt made to cool the samples?	Yes		No 🗌	na 🗆	
5. Were all samples received at a temperature of $>0^{\circ}$ C to	6.0°C Yes	2 1	No 🗌		
6. Sample(s) in proper container(s)?	Yes	\checkmark	No 🗌		
7. Sufficient sample volume for indicated test(s)?	Yes	✓	No 🗌		
8. Are samples (except VOA and ONG) properly preserved	? Yes	✓	No 🗌	_	
9. Was preservative added to bottles?	Yes		No 🗹	NA 🗌	
10.VOA vials have zero headspace?	Yes	~	No 🗌	No VOA Vials 🗌	
11. Were any sample containers received broken?	Yes		No 🗹 🛛	# of preserved	
12. Does paperwork match bottle labels?	Yes	✓	No 🗌	for pH:	(612)unless noted)
(Note discrepancies on chain of custody) 12. Are matrices correctly identified on Chain of Custody?	Yes	~	No 🗆	Adjusted?	No_
14. Is it clear what analyses were requested?	Yes		No 🗌		
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes		No 🗌	Checked by:	ar <u>5</u>
Special Handling (if applicable)		_	_	_	
16. Was client notified of all discrepancies with this order?	Yes		No 🗌		1
Person Notified:	Date		<u> </u>	_	
By Whom:	Via: 🗌 eMa	il 🗌 Phone	e 📃 Fax	In Person	
Regarding:			<u>.</u>		
17. Additional remarks:			<u></u>		ļ
19. Cooler Information					
Cooler No Temp °C Condition Seal Intact	Seal No Seal Da	te Sigr	ned By		
1 1.3 Good Yes					

VIRONMENTAL	S LABORATORY	nmental.com	uerque, NM 87109	: 505-345-4107	s Request			(N	, or PS P	noric trite solve B B	Phénolscin Su fate Ch Phénols Nitrate/Nii PH PH Fir Bubble Air Bubble	х х х х х х						×							, Mn, Hg, Mo, Ni, Se, Ag, U, Zn hinorethane; 1,1,2,2-Tetrachioroethylene; 1,1,2- Dichloroethane; 1,1-Dichloroethene; 1,2-	e, Carbon Tetrachloride; Chloroform; stal Xylenes; Vinyl Chloride aphthalene, 2-methylnàphthalene, naphthalene	clearly notated on the analytical report.
HALL EN		www.hallenvirc	1 Hawkins NE - Albuo	. 505-345-3975 Fa	Analys		0	tals OR),ani yani NeO	Bs O' D Igl C Igl C CCC	8082: PC 8015: GR 335.4: To 335.4: Vo			×	×	×			×		×	×			Al, Ba, B, Cd, Cr, Co, Cu, Fe, P (1-Trichloroethane; 1,1,2,2-Tetra 	lane; 1,2-Dichloroethane; Benze thane; Ethylbenzene; Toluene; anzo(a)pyrene, phenol, 1-methyl	Any sub-contracted data will be
			490.	Tel					tsil : tsil :	000	8250B:WC		×							×		_		Domarke.	Metals: As, VOCs: 1,1, Tricklometh	Dibromoeth Dichlorome SVOCs: be	e naeihilitu
Turn-Around Time:	X Standard 🛛 Rush	Project Name:	Quarterly R.O. Reject	Project #: P.O. # 167796		Project Manager.		Samular Brady Hubbard	On Ice: X Yes D No	Sample Temperature:	Container Preservative HEAL No Type and # Type	2 - 500ml P H2SO4	3-40mi VOA HCI				2_11 D HNO3	2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	2 - 1L Glass unpres	1 - 1L Glass unpres	3-40ml VOA HCI	1-250mlGlast unpres	1 - 1L Glass H2SO4		Réceived NY INVIOL/ILO OPPO	Received by: Date Time	
istody Record			ix 159 Artesia,			3451		🗆 Level 4 (Full Valgation)			Sample Request ID	R.O. Reject	R.O. Reject	R.O. Reject	R O Reject	R O Reject	R O Reject	R.O. Reject	R.O. Reject	R.O. Reject	R.O. Reject	R.O. Reject	R.O. Reject	Trip Blank	shed by Elizabeth 2015kerry abouth chaldrug	shed by:	
n-of-Cu	ajo Refinery		ess: P.O. Bo	159	5 748-3311	# 575-746-5	ige:		19		ne Matrix					8.15 liquid	8.15 liquid	8:15 liquid o.15 liquid	8.15 linuid	8-15 liauid	8:15 liquid	8:15 liguid	8-15 liguid	8:15 liquid	e: Relinqui 100 PUSC	le: Relinqui	
Chai	ent: Nava		ailing Addr	A 88211-0		Joint #. 01	VQC Packs	Standard			Date Tir		0L/C/1	1/2/16	1/2/16	1/5/16	1/5/16	4/5/16 4 /5 / 16	101 /01	4/5/16	4/5/16	4/5/16	4/5/16	4/5/16	sate: Tim 5//10)ate: Tim	

HOLLYFRONTIER The HollyFrontier Companies	Physical Property Solid Liguid Liguid Sludge Studge Type of Samplet	scarge		artS04 Other Analysisandio Method Requested	PH, U, F, 304, IVZINU3, 1U3 R015 GRO	6020 total metals, 7470 Hg	6020 Dissolved Metals	Cyanide Doubline 2028	8260 see attached list	8270 see attached list	8082 PCBs	8015 DRO	Radium 226/228	onditions Clear Storage Method (ce 이 이 Refrigerated 이 이 이야)	Shipping Media Ice <
Marterly RO Reject Sample Details Attachment	Time Weighted Composite	· Reject Discarge	A BESEVATIVES STATE	Noar H.	X X		X	×			. ×	X		55.4 °F, Humidity 41%, Wind Dir. SE, Wind Speed 4.6mph, C	
jo Refining Com; . Main ia, NM 88210 575.746.5451 575.746.5451	<u> </u>	□ North Field R.		# of icontainers	2	-1 3		2	m	~ ~	- 2	2	2	4/5/2016 Tmp	
Navaj 501 E Artes (Fax)	lannual RO Reject rady Hubbard avajo Refining Co. LI 5/2016 @ 8:30 a.m.			Material	Plastic	VOA Plactic	Plastic	Plastic	Plastic	VOA	Glass	VOA	VOA	Servations, Etc)	
Nave	Project Name Bi amplers Name Bi plers Affiliation Ni Date and Time 4/ Date and Time	all//Sample Locat		nel: Size	500ml 500ml	40ml	2000111	500ml	1 L	40ml		40ml	40ml	ata (Weather Of Id Time:	emp. 23.00
V CD V	Sam Sam Start I End L	Oute		Contar			17	<u> </u>	9.4	2	0 0	01	EF.	Field D Date ai	



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

May 12, 2016

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

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

OrderNo.: 1604185

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/6/2016 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,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Quarterly WDW-1, 2, &3 Inj Well Lab ID: 1604185-001

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst	SUB
Ignitability	>200	0		°F	1	4/11/2016	R34102
SULFIDE, REACTIVE						Analyst	SUB
Reactive Sulfide	ND	1.0		mg/L	1	4/12/2016	R34102
SPECIFIC GRAVITY						Analyst	JRR
Specific Gravity	0.9996	0			1	4/19/2016 4:21:00 PM	R33651
FPA METHOD 300.0: ANIONS						Analyst	IGT
Fluoride	13	0.50	*	ma/l	5	4/8/2016 1·42·27 PM	R33432
Chloride	420	25		mg/L	50	4/20/2016 9:31:48 PM	A33690
Bromide	1.6	0.50		mg/L	5	4/8/2016 1:42:27 PM	R33432
Phosphorus, Orthophosphate (As P)	ND	2.5	н	mg/L	5	4/8/2016 1:42:27 PM	R33432
Sulfate	1700	25		mg/L	50	4/20/2016 9:31:48 PM	A33690
Nitrate+Nitrite as N	ND	1.0		mg/L	5	4/8/2016 2:07:17 PM	R33432
SM2510B: SPECIFIC CONDUCTANCE	E					Analyst	MRA
Conductivity	4500	0.010		µmhos/cm	1	4/8/2016 2:11:16 PM	R33424
SM2320B: ALKALINITY						Analyst	MRA
Bicarbonate (As CaCO3)	318.5	20.00		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
Total Alkalinity (as CaCO3)	318.5	20.00		mg/L CaCO3	1	4/8/2016 2:11:16 PM	R33424
SM2540C MOD: TOTAL DISSOLVED	SOLIDS					Analyst	KS
Total Dissolved Solids	2950	40.0	*D	mg/L	1	4/7/2016 3:22:00 PM	24656
CORROSIVITY						Analyst	SUB
рН	7.98			pH Units	1	4/12/2016	R34102
CYANIDE, REACTIVE						Analyst	SUB
Cyanide, Reactive	ND	1.00		mg/L	1	4/19/2016	R34102
SM4500-H+B: PH						Analyst	MRA
рН	7.85	1.68	н	pH units	1	4/8/2016 2:11:16 PM	R33424
EPA METHOD 7470: MERCURY						Analyst	pmf
Mercury	ND	0.00020		mg/L	1	4/19/2016 10:26:39 AM	24854
MERCURY, TCLP						Analyst	pmf
Mercury	ND	0.020		mg/L	1	4/18/2016 4:38:52 PM	- 24855
EPA METHOD 6010B: TCLP METALS	6					Analyst	MED
Arsenic	ND	5.0		mg/L	1	4/18/2016 11:58:20 AM	24833
Barium	ND	100		mg/L	1	4/18/2016 11:58:20 AM	24833

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

- 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 1 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Project: Quarterly WDW-1, 2, &3 Inj V		Collection Date: 4/5/2016 7:00:00 AM							
Lab ID: 1604185-001	Matrix:	AQUEOUS	Received Date: 4/6/2016 9:40:00 AM						
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch			
EPA METHOD 6010B: TCLP METALS					Analyst:	MED			
Cadmium	ND	1.0	mg/L	1	4/18/2016 11:58:20 AM	24833			
Chromium	ND	5.0	mg/L	1	4/18/2016 11:58:20 AM	24833			
Lead	ND	5.0	mg/L	1	4/18/2016 11:58:20 AM	24833			
Selenium	ND	1.0	mg/L	1	4/19/2016 12:32:11 PM	24833			
Silver	ND	5.0	mg/L	1	4/18/2016 11:58:20 AM	24833			
EPA 6010B: TOTAL METALS					Analyst:	MED			
Aluminum	ND	0.020	mg/L	1	4/18/2016 11:54:40 AM	24833			
Antimony	ND	0.050	mg/L	1	4/19/2016 12:33:42 PM	24833			
Arsenic	ND	0.020	mg/L	1	4/18/2016 11:54:40 AM	24833			
Barium	0.040	0.020	mg/L	1	4/18/2016 11:54:40 AM	24833			
Beryllium	ND	0.0030	mg/L	1	4/18/2016 11:54:40 AM	24833			
Cadmium	ND	0.0020	mg/L	1	4/18/2016 11:54:40 AM	24833			
Calcium	380	5.0	mg/L	5	4/18/2016 11:56:27 AM	24833			
Chromium	ND	0.0060	mg/L	1	4/18/2016 11:54:40 AM	24833			
Cobalt	ND	0.0060	mg/L	1	4/18/2016 11:54:40 AM	24833			
Copper	ND	0.0060	mg/L	1	4/18/2016 11:54:40 AM	24833			
Iron	0.055	0.050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Lead	ND	0.0050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Magnesium	110	5.0	mg/L	5	4/18/2016 11:56:27 AM	24833			
Manganese	ND	0.0020	mg/L	1	4/20/2016 12:37:59 PM	24833			
Nickel	ND	0.010	mg/L	1	4/18/2016 11:54:40 AM	24833			
Potassium	4.8	1.0	mg/L	1	4/18/2016 11:54:40 AM	24833			
Selenium	ND	0.050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Silver	ND	0.0050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Sodium	47	1.0	mg/L	1	4/18/2016 11:54:40 AM	24833			
Thallium	ND	0.050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Vanadium	ND	0.050	mg/L	1	4/18/2016 11:54:40 AM	24833			
Zinc	0.034	0.020	mg/L	1	4/18/2016 11:54:40 AM	24833			
EPA METHOD 8260B: VOLATILES					Analyst:	SUB			
Acetonitrile	54	10	µg/L	1	4/18/2016	R34102			
Allyl chloride	ND	2.5	µg/L	1	4/18/2016	R34102			
Chloroprene	ND	10	µg/L	1	4/18/2016	R34102			
Cyclohexane	ND	10	µg/L	1	4/18/2016	R34102			
Diethyl ether	ND	2.5	µg/L	1	4/18/2016	R34102			
Diisopropyl ether	ND	10	µg/L	1	4/18/2016	R34102			
Epichlorohydrin	ND	25	µg/L	1	4/18/2016	R34102			
Ethyl acetate	ND	2.5	µg/L	1	4/18/2016	R34102			
Ethyl methacrylate	ND	12	µg/L	1	4/18/2016	R34102			

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Client Sample ID: WDW-1,2,&3 Effluent

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

- D Sample Diluted Due to Matrix
 - Η Holding times for preparation or analysis exceeded
 - 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
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 28 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, &3 Inj WellLab ID:1604185-001Matrix: AQUEOUS

Ĵ

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES				Ana	lyst: SUB
Ethyl tert-butyl ether	ND	10	µg/L	1 4/18/2016	R34102
Freon-113	ND	10	µg/L	1 4/18/2016	R34102
Isobutanol	ND	50	µg/L	1 4/18/2016	R34102
Isopropyl acetate	ND	2.5	µg/L	1 4/18/2016	R34102
Methacrylonitrile	ND	12	µg/L	1 4/18/2016	R34102
Methyl acetate	ND	2.5	µg/L	1 4/18/2016	R34102
Methyl ethyl ketone	ND	12	µg/L	1 4/18/2016	R34102
Methyl isobutyl ketone	ND	12	µg/L	1 4/18/2016	R34102
Methyl methacrylate	ND	12	µg/L	1 4/18/2016	R34102
Methylcyclohexane	ND	10	µg/L	1 4/18/2016	R34102
n-Amyl acetate	ND	2.5	µg/L	1 4/18/2016	R34102
n-Hexane	ND	10	µg/L	1 4/18/2016	R34102
Nitrobenzene	ND	25	µg/L	1 4/18/2016	R34102
Pentachloroethane	ND	25	µg/L	1 4/18/2016	R34102
p-isopropyltoluene	ND	2.5	µg/L	1 4/18/2016	R34102
Propionitrile	ND	12	µg/L	1 4/18/2016	R34102
Tetrahydrofuran	ND	10	µg/L	1 4/18/2016	R34102
Benzene	ND	2.5	µg/L	1 4/18/2016	R34102
Toluene	ND	2.5	µg/L	1 4/18/2016	R34102
Ethylbenzene	ND	2.5	µg/L	1 4/18/2016	R34102
Methyl tert-butyl ether (MTBE)	ND	50	µg/L	1 4/18/2016	R34102
1,2,4-Trimethylbenzene	ND	2.5	µg/L	1 4/18/2016	R34102
1,3,5-Trimethylbenzene	ND	2.5	µg/L	1 4/18/2016	R34102
1,2-Dichloroethane (EDC)	ND	2.5	µg/L	1 4/18/2016	R34102
1,2-Dibromoethane (EDB)	ND	2.5	µg/L	1 4/18/2016	R34102
Naphthalene	ND	2.5	µg/L	1 4/18/2016	R34102
Acetone	ND	12	µg/L	1 4/18/2016	R34102
Bromobenzene	ND	2.5	µg/L	1 4/18/2016	R34102
Bromodichloromethane	ND	2.5	µg/L	1 4/18/2016	R34102
Bromoform	ND	2.5	µg/L	1 4/18/2016	R34102
Bromomethane	ND	2.5	µg/L	1 4/18/2016	R34102
Carbon disulfide	ND	2.5	µg/L	1 4/18/2016	R34102
Carbon Tetrachloride	ND	2.5	µg/L	1 4/18/2016	R34102
Chlorobenzene	ND	2.5	µg/L	1 4/18/2016	R34102
Chloroethane	ND	2.5	µg/L	1 4/18/2016	R34102
Chloroform	ND	2.5	µg/L	1 4/18/2016	R34102
Chloromethane	ND	2.5	µg/L	1 4/18/2016	R34102
2-Chlorotoluene	ND	2.5	µg/L	1 4/18/2016	R34102
4-Chlorotoluene	ND	2.5	µg/L	1 4/18/2016	R34102

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

- 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 3 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, &3 Inj Well

CLIENT: Navajo Refining Company

1604185-001

Project:

Lab ID:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					A	nalyst: SUB
cis-1,2-DCE	ND	2.5	µg/L	1	4/18/2016	R34102
cis-1,3-Dichloropropene	ND	2.5	μg/L	1	4/18/2016	R34102
1,2-Dibromo-3-chloropropane	ND	2.5	µg/L	1	4/18/2016	R34102
Dibromochloromethane	ND	2.5	μg/L	1	4/18/2016	R34102
Dibromomethane	ND	2.5	μg/L	1	4/18/2016	R34102
1,2-Dichlorobenzene	ND	2.5	µg/L	1	4/18/2016	R34102
1,3-Dichlorobenzene	ND	2.5	µg/L	1	4/18/2016	R34102
1,4-Dichlorobenzene	ND	2.5	µg/L	1	4/18/2016	R34102
Dichlorodifluoromethane	ND	2.5	µg/L	1	4/18/2016	R34102
1,1-Dichloroethane	ND	2.5	µg/L	1	4/18/2016	R34102
1,1-Dichloroethene	ND	2.5	μg/L	1	4/18/2016	R34102
1,2-Dichloropropane	ND	2.5	µg/L	1	4/18/2016	R34102
1,3-Dichloropropane	ND	2.5	µg/L	1	4/18/2016	R34102
2,2-Dichloropropane	ND	2.5	μg/L	1	4/18/2016	R34102
1,1-Dichloropropene	ND	2.5	µg/L	1	4/18/2016	R34102
Hexachlorobutadiene	ND	2.5	µg/L	1	4/18/2016	R34102
2-Hexanone	ND	2.5	µg/L	1	4/18/2016	R34102
Isopropylbenzene	ND	2.5	µg/L	1	4/18/2016	R34102
Methylene Chloride	ND	12	µg/L	1	4/18/2016	R34102
n-Butylbenzene	ND	2.5	µg/L	1	4/18/2016	R34102
n-Propylbenzene	ND	2.5	µg/L	1	4/18/2016	R34102
sec-Butylbenzene	ND	2.5	µg/L	1	4/18/2016	R34102
Styrene	ND	2.5	µg/L	1	4/18/2016	R34102
tert-Butylbenzene	ND	2.5	µg/L	1	4/18/2016	R34102
1,1,1,2-Tetrachloroethane	ND	2.5	µg/L	1	4/18/2016	R34102
1,1,2,2-Tetrachloroethane	ND	2.5	µg/L	1	4/18/2016	R34102
Tetrachloroethene (PCE)	ND	2.5	µg/L	1	4/18/2016	R34102
trans-1,2-DCE	ND	2.5	µg/L	1	4/18/2016	R34102
trans-1,3-Dichloropropene	ND	2.5	µg/L	1	4/18/2016	R34102
1,2,3-Trichlorobenzene	ND	2.5	µg/L	1	4/18/2016	R34102
1,2,4-Trichlorobenzene	ND	2.5	µg/L	1	4/18/2016	R34102
1,1,1-Trichloroethane	ND	2.5	µg/L	1	4/18/2016	R34102
1,1,2-Trichloroethane	ND	2.5	µg/L	1	4/18/2016	R34102
Trichloroethene (TCE)	ND	2.5	µg/L	1	4/18/2016	R34102
Trichlorofluoromethane	ND	2.5	µg/L	1	4/18/2016	R34102
1,2,3-Trichloropropane	ND	2.5	µg/L	1	4/18/2016	R34102
Vinyl chloride	ND	2.5	µg/L	1	4/18/2016	R34102
mp-Xylenes	ND	5.0	µg/L	1	4/18/2016	R34102
o-Xylene	ND	2.5	µg/L	1	4/18/2016	R34102

Matrix: AQUEOUS

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

- 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 4 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, &3 Inj WellLab ID:1604185-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	ed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	SUB
tert-Amyl methyl ether	ND	10	µg/L	1	4/18/2016		R34102
tert-Butyl alcohol	ND	20	μg/L	1	4/18/2016		R34102
Acrolein	ND	12	μg/L	1	4/18/2016		R34102
Acrylonitrile	ND	12	μg/L	1	4/18/2016		R34102
Bromochloromethane	ND	2.5	μg/L	1	4/18/2016		R34102
2-Chloroethyl vinyl ether	ND	10	μg/L	1	4/18/2016		R34102
lodomethane	ND	2.5	μg/L	1	4/18/2016		R34102
trans-1,4-Dichloro-2-butene	ND	2.5	µg/L	1	4/18/2016		R34102
Vinyl acetate	ND	2.5	µg/L	1	4/18/2016		R34102
1,4-Dioxane	ND	100	µg/L	1	4/18/2016		R34102
Surr: 1,2-Dichlorobenzene-d4	101	70-130	%Rec	1	4/18/2016		R34102
Surr: 4-Bromofluorobenzene	96.4	70-130	%Rec	1	4/18/2016		R34102
Surr: Toluene-d8	102	70-130	%Rec	1	4/18/2016		R34102
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	SUB
1,1-Biphenyl	ND	5.0	µg/L	1	4/14/2016		R34102
Atrazine	ND	5.0	μg/L	1	4/14/2016		R34102
Benzaldehyde	ND	5.0	μg/L	1	4/14/2016		R34102
Caprolactam	ND	5.0	μg/L	1	4/14/2016		R34102
N-Nitroso-di-n-butylamine	ND	5.0	μg/L	1	4/14/2016		R34102
Acetophenone	ND	5.0	µg/L	1	4/14/2016		R34102
1-Methylnaphthalene	ND	5.0	µg/L	1	4/14/2016		R34102
2,3,4,6-Tetrachlorophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4,5-Trichlorophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4,6-Trichlorophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4-Dichlorophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4-Dimethylphenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4-Dinitrophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2,4-Dinitrotoluene	ND	5.0	µg/L	1	4/14/2016		R34102
2,6-Dinitrotoluene	ND	5.0	µg/L	1	4/14/2016		R34102
2-Chloronaphthalene	ND	5.0	µg/L	1	4/14/2016		R34102
2-Chlorophenol	ND	5.0	µg/L	1	4/14/2016		R34102
2-Methylnaphthalene	ND	5.0	µg/L	1	4/14/2016		R34102
2-Methylphenol	ND	5.0	µg/L	1	4/14/2016		R34102
2-Nitroaniline	ND	5.0	µg/L	1	4/14/2016		R34102
2-Nitrophenol	ND	5.0	µg/L	1	4/14/2016		R34102
3,3'-Dichlorobenzidine	ND	5.0	µg/L	1	4/14/2016		R34102
3-Nitroaniline	ND	5.0	µg/L	1	4/14/2016		R34102
4,6-Dinitro-2-methylphenol	ND	5.0	µg/L	1	4/14/2016		R34102
4-Bromophenyl phenyl ether	ND	5.0	µg/L	1	4/14/2016		R34102

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

- 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 5 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, &3 Inj WellLab ID:1604185-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: SUB
4-Chloro-3-methylphenol	ND	5.0	µg/L	1	4/14/2016	R34102
4-Chloroaniline	ND	5.0	μg/L	1	4/14/2016	R34102
4-Chlorophenyl phenyl ether	ND	5.0	μg/L	1	4/14/2016	R34102
4-Nitroaniline	ND	5.0	μg/L	1	4/14/2016	R34102
4-Nitrophenol	ND	5.0	μg/L	1	4/14/2016	R34102
Acenaphthene	ND	5.0	µg/L	1	4/14/2016	R34102
Acenaphthylene	ND	5.0	µg/L	1	4/14/2016	R34102
Anthracene	ND	5.0	µg/L	1	4/14/2016	R34102
Benzo(g,h,i)perylene	ND	5.0	µg/L	1	4/14/2016	R34102
Benz(a)anthracene	ND	0.50	µg/L	1	4/14/2016	R34102
Benzo(a)pyrene	ND	0.50	µg/L	1	4/14/2016	R34102
Benzo(b)fluoranthene	ND	0.50	µg/L	1	4/14/2016	R34102
Benzo(k)fluoranthene	ND	0.50	µg/L	1	4/14/2016	R34102
Bis(2-chloroethoxy)methane	ND	5.0	µg/L	1	4/14/2016	R34102
Bis(2-chloroethyl)ether	ND	5.0	µg/L	1	4/14/2016	R34102
Bis(2-chloroisopropyl)ether	ND	5.0	µg/L	1	4/14/2016	R34102
Bis(2-ethylhexyl)phthalate	ND	5.0	µg/L	1	4/14/2016	R34102
Butyl benzyl phthalate	ND	5.0	μg/L	1	4/14/2016	R34102
Carbazole	ND	5.0	µg/L	1	4/14/2016	R34102
Chrysene	ND	0.50	µg/L	1	4/14/2016	R34102
Dibenz(a,h)anthracene	ND	0.50	µg/L	1	4/14/2016	R34102
Dibenzofuran	ND	5.0	µg/L	1	4/14/2016	R34102
Diethyl phthalate	ND	5.0	µg/L	1	4/14/2016	R34102
Dimethyl phthalate	ND	5.0	µg/L	1	4/14/2016	R34102
Di-n-butyl phthalate	ND	5.0	µg/L	1	4/14/2016	R34102
Di-n-octyl phthalate	ND	5.0	µg/L	1	4/14/2016	R34102
Fluoranthene	ND	5.0	µg/L	1	4/14/2016	R34102
Fluorene	ND	5.0	μg/L	1	4/14/2016	R34102
Hexachlorobenzene	ND	5.0	µg/L	1	4/14/2016	R34102
Hexachlorobutadiene	ND	5.0	μg/L	1	4/14/2016	R34102
Hexachlorocyclopentadiene	ND	5.0	μg/L	1	4/14/2016	R34102
Hexachloroethane	ND	5.0	μg/L	1	4/14/2016	R34102
Indeno(1,2,3-cd)pyrene	ND	0.50	μg/L	1	4/14/2016	R34102
Isophorone	ND	5.0	μg/L	1	4/14/2016	R34102
Naphthalene	ND	5.0	µg/L	1	4/14/2016	R34102
Nitrobenzene	ND	5.0	µg/L	1	4/14/2016	R34102
N-Nitrosodi-n-propylamine	ND	5.0	µg/L	1	4/14/2016	R34102
N-Nitrosodiphenylamine	ND	2.0	μg/L	1	4/14/2016	R34102
Pentachlorophenol	ND	5.0	µg/L	1	4/14/2016	R34102

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 6 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, &3 Inj Well

CLIENT: Navajo Refining Company

Project:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 4/5/2016 7:00:00 AM **Deceived Dete:** 1/6/2016 0.40.00 AM

Lab ID: 1604185-001	Matrix:	AQUEOUS	Received Date: 4/6/2016 9:40:00 AM						
Analyses	Result	PQL Qua	l Units	DF	Date Analyze	d	Batch		
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	SUB		
Phenanthrene	ND	5.0	µg/L	1	4/14/2016		R34102		
Phenol	ND	5.0	µg/L	1	4/14/2016		R34102		
Pyrene	ND	5.0	µg/L	1	4/14/2016		R34102		
o-Toluidine	ND	2.0	µg/L	1	4/14/2016		R34102		
Pyridine	ND	5.0	µg/L	1	4/14/2016		R34102		
1,2,4,5-Tetrachlorobenzene	ND	5.0	µg/L	1	4/14/2016		R34102		
Surr: 2,4,6-Tribromophenol	108	63-110	%Rec	1	4/14/2016		R34102		
Surr: 2-Fluorobiphenyl	94.0	58-112	%Rec	1	4/14/2016		R34102		
Surr: 2-Fluorophenol	97.0	47-109	%Rec	1	4/14/2016		R34102		
Surr: Nitrobenzene-d5	88.0	58-110	%Rec	1	4/14/2016		R34102		
Surr: Phenol-d5	99.2	52-105	%Rec	1	4/14/2016		R34102		
Surr: Terphenyl-d14	37.4	22-133	%Rec	1	4/14/2016		R34102		

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

В

Oualifiers:	*	Value exceeds Maximum Contaminant Level.
2	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 Е Value above quantitation range
- Analyte detected below quantitation limits Page 7 of 28 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab ID: 1604185-002	Matrix: 7	TRIP BLANK	Received Date: 4/6/2016 9:40:00 AM						
Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch			
EPA METHOD 8260B: VOLATILES					An	alyst: SUB			
Acetonitrile	ND	2.5	µg/L	1	4/18/2016	R34102			
Allyl chloride	ND	0.50	µg/L	1	4/18/2016	R34102			
Chloroprene	ND	2.0	µg/L	1	4/18/2016	R34102			
Cyclohexane	ND	2.0	µg/L	1	4/18/2016	R34102			
Diethyl ether	ND	0.50	µg/L	1	4/18/2016	R34102			
Diisopropyl ether	ND	2.0	µg/L	1	4/18/2016	R34102			
Epichlorohydrin	ND	5.0	µg/L	1	4/18/2016	R34102			
Ethyl acetate	ND	0.50	µg/L	1	4/18/2016	R34102			
Ethyl methacrylate	ND	2.5	µg/L	1	4/18/2016	R34102			
Ethyl tert-butyl ether	ND	2.0	µg/L	1	4/18/2016	R34102			
Freon-113	ND	0.50	µg/L	1	4/18/2016	R34102			
Isobutanol	ND	10	µg/L	1	4/18/2016	R34102			
Isopropyl acetate	ND	0.50	µg/L	1	4/18/2016	R34102			
Methacrylonitrile	ND	2.5	µg/L	1	4/18/2016	R34102			
Methyl acetate	ND	0.50	µg/L	1	4/18/2016	R34102			
Methyl ethyl ketone	ND	2.5	µg/L	1	4/18/2016	R34102			
Methyl isobutyl ketone	ND	2.5	µg/L	1	4/18/2016	R34102			
Methyl methacrylate	ND	2.5	µg/L	1	4/18/2016	R34102			
Methylcyclohexane	ND	2.0	µg/L	1	4/18/2016	R34102			
n-Amyl acetate	ND	0.50	µg/L	1	4/18/2016	R34102			
n-Hexane	ND	2.0	µg/L	1	4/18/2016	R34102			
Nitrobenzene	ND	5.0	µg/L	1	4/18/2016	R34102			
Pentachloroethane	ND	5.0	µg/L	1	4/18/2016	R34102			
p-isopropyltoluene	ND	0.50	µg/L	1	4/18/2016	R34102			
Propionitrile	ND	2.5	µg/L	1	4/18/2016	R34102			
Tetrahydrofuran	ND	2.0	µg/L	1	4/18/2016	R34102			
Benzene	ND	0.50	µg/L	1	4/18/2016	R34102			
Toluene	ND	0.50	µg/L	1	4/18/2016	R34102			
Ethylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102			
Methyl tert-butyl ether (MTBE)	ND	10	µg/L	1	4/18/2016	R34102			
1,2,4-Trimethylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102			
1,3,5-Trimethylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102			
1,2-Dichloroethane (EDC)	ND	0.50	µg/L	1	4/18/2016	R34102			
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1	4/18/2016	R34102			
Naphthalene	ND	0.50	µg/L	1	4/18/2016	R34102			
Acetone	ND	2.5	µg/L	1	4/18/2016	R34102			
Bromobenzene	ND	0.50	µg/L	1	4/18/2016	R34102			
Bromodichloromethane	ND	0.50	µg/L	1	4/18/2016	R34102			
Bromoform	ND	0.50	µg/L	1	4/18/2016	R34102			

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK Collection Date:

Project: Quarterly WDW-1, 2, &3 Inj Well Lab ID: 1604185-002

CLIENT: Navajo Refining Company

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

- 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 8 of 28
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report

Hall Environmental Analysis Laborator	y, Inc. Date Report
CLIENT: Navajo Refining Company	Client Sample ID: TRIP BLANK
Project: Quarterly WDW-1, 2, &3 Inj Well	Collection Date:

Lab ID:

1604185-002

Lab Order 1604185 Date Reported: 5/12/2016

Collection Date:

Matrix: TRIP BLANK Received Date: 4/6/2016 9:40:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzo	ed Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Bromomethane	ND	0.50	µg/L	1	4/18/2016	R34102
Carbon disulfide	ND	0.50	µg/L	1	4/18/2016	R34102
Carbon Tetrachloride	ND	0.50	µg/L	1	4/18/2016	R34102
Chlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102
Chloroethane	ND	0.50	µg/L	1	4/18/2016	R34102
Chloroform	ND	0.50	µg/L	1	4/18/2016	R34102
Chloromethane	ND	0.50	µg/L	1	4/18/2016	R34102
2-Chlorotoluene	ND	0.50	µg/L	1	4/18/2016	R34102
4-Chlorotoluene	ND	0.50	µg/L	1	4/18/2016	R34102
cis-1,2-DCE	ND	0.50	µg/L	1	4/18/2016	R34102
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	4/18/2016	R34102
1,2-Dibromo-3-chloropropane	ND	0.50	µg/L	1	4/18/2016	R34102
Dibromochloromethane	ND	0.50	µg/L	1	4/18/2016	R34102
Dibromomethane	ND	0.50	µg/L	1	4/18/2016	R34102
1,2-Dichlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102
1,3-Dichlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102
1,4-Dichlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102
Dichlorodifluoromethane	ND	0.50	µg/L	1	4/18/2016	R34102
1,1-Dichloroethane	ND	0.50	µg/L	1	4/18/2016	R34102
1,1-Dichloroethene	ND	0.50	µg/L	1	4/18/2016	R34102
1,2-Dichloropropane	ND	0.50	µg/L	1	4/18/2016	R34102
1,3-Dichloropropane	ND	0.50	µg/L	1	4/18/2016	R34102
2,2-Dichloropropane	ND	0.50	µg/L	1	4/18/2016	R34102
1,1-Dichloropropene	ND	0.50	µg/L	1	4/18/2016	R34102
Hexachlorobutadiene	ND	0.50	µg/L	1	4/18/2016	R34102
2-Hexanone	ND	0.50	µg/L	1	4/18/2016	R34102
Isopropylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102
Methylene Chloride	ND	2.5	µg/L	1	4/18/2016	R34102
n-Butylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102
n-Propylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102
sec-Butylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102
Styrene	ND	0.50	µg/L	1	4/18/2016	R34102
tert-Butylbenzene	ND	0.50	µg/L	1	4/18/2016	R34102
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L	1	4/18/2016	R34102
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1	4/18/2016	R34102
Tetrachloroethene (PCE)	ND	0.50	µg/L	1	4/18/2016	R34102
trans-1,2-DCE	ND	0.50	µg/L	1	4/18/2016	R34102
trans-1,3-Dichloropropene	ND	0.50	µg/L	1	4/18/2016	R34102
1,2,3-Trichlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102

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

- 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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 9 of 28 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

CLIENT: Navajo Refining Company		Client Sample ID: TRIP BLANK								
Project: Quarterly WDW-1, 2, &3 Inj	Well		Collection	Date:						
Lab ID: 1604185-002	Matrix:	TRIP BLANK	Received	5/2016 9:40:00	AM					
Analyses	Result	PQL Qual	Units	DF	Date Analyze	d Batch				
EPA METHOD 8260B: VOLATILES						Analyst: SUB				
1,2,4-Trichlorobenzene	ND	0.50	µg/L	1	4/18/2016	R34102				
1,1,1-Trichloroethane	ND	0.50	µg/L	1	4/18/2016	R34102				
1,1,2-Trichloroethane	ND	0.50	µg/L	1	4/18/2016	R34102				
Trichloroethene (TCE)	ND	0.50	µg/L	1	4/18/2016	R34102				
Trichlorofluoromethane	ND	0.50	µg/L	1	4/18/2016	R34102				
1,2,3-Trichloropropane	ND	0.50	µg/L	1	4/18/2016	R34102				
Vinyl chloride	ND	0.50	µg/L	1	4/18/2016	R34102				
mp-Xylenes	ND	1.0	µg/L	1	4/18/2016	R34102				
o-Xylene	ND	0.50	µg/L	1	4/18/2016	R34102				
tert-Amyl methyl ether	ND	0.50	µg/L	1	4/18/2016	R34102				
tert-Butyl alcohol	ND	5.0	µg/L	1	4/18/2016	R34102				
Acrolein	ND	2.0	µg/L	1	4/18/2016	R34102				
Acrylonitrile	ND	2.5	µg/L	1	4/18/2016	R34102				
Bromochloromethane	ND	0.50	µg/L	1	4/18/2016	R34102				
2-Chloroethyl vinyl ether	ND	2.0	µg/L	1	4/18/2016	R34102				
lodomethane	ND	0.50	µg/L	1	4/18/2016	R34102				
trans-1,4-Dichloro-2-butene	ND	0.50	µg/L	1	4/18/2016	R34102				
Vinyl acetate	ND	0.50	µg/L	1	4/18/2016	R34102				
1,4-Dioxane	ND	20	µg/L	1	4/18/2016	R34102				
Surr: 1,2-Dichlorobenzene-d4	98.0	70-130	%Rec	1	4/18/2016	R34102				
Surr: 4-Bromofluorobenzene	96.4	70-130	%Rec	1	4/18/2016	R34102				
Surr: Toluene-d8	102	70-130	%Rec	1	4/18/2016	R34102				

Hall Environmental Analysis Laboratory, Inc.

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information. * Value exceeds Maximum Contaminant Level.

- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- 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
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 10 of 28 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, In	c.

WO#:	1604185
	12-May-16

Client: Project:	Navajo R Quarterly	efining Co WDW-1,	ompany 2, &3	Inj Well								
Sample ID MB		SampT	ype: M	BLK	Tes	TestCode: EPA Method 300.0: Anions						
Client ID: PBW	v	Batch	n ID: R3	3432	RunNo: 33432							
Prep Date:		Analysis Date: 4/8/2016			S	SeqNo: 1	028123	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride		ND	0.10									
Phosphorus, Orthoph	iosphate (As P	ND 0.50										
Nitrate+Nitrite as N		ND	0.20									
Sample ID LCS		SampT	ype: LC	s	Tes	300.0: Anions	;					
Client ID: LCS	w	Batch	n ID: R3	3432	F	RunNo: 3	3432					
Prep Date:		Analysis Date: 4/8/2016			SeqNo: 1028124 U			Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride		0.51	0.10	0.5000	0	103	90	110				
Phosphorus, Orthoph	iosphate (As P	4.6	0.50	5.000	0	92.9	90	110				
Nitrate+Nitrite as N		3.4	0.20	3.500	0	97.9	90	110				
Sample ID MB		SampT	ype: M	BLK	Tes	tCode: El	PA Method	300.0: Anions	;			
Client ID: PBW	v	Batch	n ID: A3	3690	F	RunNo: 3	3690					
Prep Date:		Analysis D	ate: 4/	20/2016	5	SeqNo: 1	037843	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride		ND	0.50									
Sulfate		ND	0.50									
Sample ID LCS		SampT	ype: LC	s	Tes	tCode: El	PA Method	300.0: Anions	i			
Client ID: LCS	w	Batch	n ID: A3	3690	F	RunNo: 3	3690					
Prep Date:		Analysis D	ate: 4	20/2016	5	SeqNo: 1	037844	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride		5.4	0.50	5.000	0	108	90	110				
Sulfate		11	0.50	10.00	0	109	90	110				

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 11 of 28

WO#: 1604185 12-May-16

Client: Project:	Navajo Ouartei	Refining Co lv WDW-1.	ompany 2, &3	Ini Well								
Sample ID MB-R3	4102	SamoT	vpe: M	BLK	TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW		Batch	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	24102		RunNo: 34102						
				/40/0040	I		4054004	11				
Prep Date:		Analysis L		/18/2016		Seqivo:	1051264	Units: µg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	C LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Acetonitrile		ND	2.5									
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	2.5									
Ethyl tert-butyl ether		ND	0.50									
Freon-113		ND	0.50									
Isobutanol		ND	10									
Isopropyl acetate		ND	0.50									
Methacrylonitrile		ND	2.5									
Methyl acetate		ND	0.50									
Methyl ethyl ketone		ND	2.5									
Methyl isobutyl ketone		ND	2.5									
Methyl methacrylate		ND	2.5									
Methylcyclohexane		ND	0.50									
n-Amyl acetate		ND	0.50									
n-Hexane		ND	0.50									
Nitrobenzene		ND	0.50									
Pentachloroethane		ND	5.0									
p-isopropyltoluene		ND	0.50									
Propionitrile		ND	2.5									
Tetrahvdrofuran		ND	0.50									
Benzene		ND	0.50									
Toluene		ND	0.50									
Ethylbenzene		ND	0.50									
Methyl tert-butyl ether (N	(TBE)	ND	10									
1.2.4-Trimethylbenzene	,	ND	0.50									
1.3.5-Trimethylbenzene		ND	0.50									
1.2-Dichloroethane (FDC	C)	ND	0.50									
1.2-Dibromoethane (FDF	B)	ND	0.50									
Naphthalene	,	ND	0.50									
Acetone		ND	2.5									
Bromobenzene		ND	0.50									
Bromodichloromethane		ND	0.50									
Bromoform		ND	0.50									

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 12 of 28

WO#: 1604185 12-May-16

Client: Navaj Project: Quarte	o Refining Co erly WDW-1,	ompany 2, &3	Inj Well								
Sample ID MB-R34102	SampT	Гуре: М	BLK	TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R34102				RunNo: 34102						
Prep Date:	Analysis E	Date: 4	/18/2016		SeqNo:	1051264	Units: µg/L				
Analvte	Result	PQL	SPK value	SPK Ref Val	%RE0	C LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Bromomethane	ND	0.50	0111110100		/01.121						
Carbon disulfide	ND	0.50									
Carbon Tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
4-Chlorotoluene	ND	0.50									
cis-1.2-DCE	ND	0.50									
cis-1.3-Dichloropropene	ND	0.50									
1 2-Dibromo-3-chloropropane	ND	0.50									
Dibromochloromethane	ND	0.50									
Dibromomethane	ND	0.50									
1 2-Dichlorohenzene	ND	0.50									
1.3-Dichlorobenzene	ND	0.50									
		0.00									
		0.50									
		0.50									
		0.50									
1, 1-Dichloropropapa		0.50									
		0.50									
		0.50									
		0.50									
		0.50									
		0.50									
	ND	0.50									
sopropyidenzene	ND	0.50									
vietnyiene Chioride	ND	2.5									
1-Butyibenzene	ND	0.50									
n-Propylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
Styrene	ND	0.50									
ert-Butylbenzene	ND	0.50									
1,1,1,2-1 etrachloroethane	ND	0.50									
1,1,2,2-letrachloroethane	ND	0.50									
I etrachloroethene (PCE)	ND	0.50									
rans-1,2-DCE	ND	0.50									
rans-1,3-Dichloropropene	ND	0.50									
1.2.3-Trichlorobenzene	ND	0.50									

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 13 of 28

WO#: 1604185 12-May-16

Client: Navajo Refining Company

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

Sample ID MB-R34102	SampType: MBLK			Tes	TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R34102		F	RunNo: 3	4102						
Prep Date:	Analysis E	Date: 4/	18/2016	5	SeqNo: 1	051264	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene (TCE)	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
Vinyl chloride	ND	0.50									
mp-Xylenes	ND	1.0									
o-Xylene	ND	0.50									
tert-Amyl methyl ether	ND	0.50									
tert-Butyl alcohol	ND	0.50									
Acrolein	ND	2.5									
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	20									
Sample ID I CS-R34102	Sampl	Type IC	S	Tes	tCode: F	PA Method	8260B · VOL				

	Sampry	pe. LC	3	Tes		A Method	0200D: VUL	AIILES			
Client ID: LCSW	Batch	Batch ID: R34102			RunNo: 3	4102					
Prep Date:	Analysis Da	Analysis Date: 4/18/2016			SeqNo: 1	051265	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	10	0	10.00	0	100	80	120				
Toluene	10	0	10.00	0	105	80	120				
Ethylbenzene	10	0	10.00	0	104	80	120				
Chlorobenzene	10	0	10.00	0	103	80	120				
1,1-Dichloroethene	10	0	10.00	0	99.8	80	120				
Tetrachloroethene (PCE)	10	0	10.00	0	102	80	120				
Trichloroethene (TCE)	10	0	10.00	0	102	80	120				
o-Xylene	11	0	10.00	0	106	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
- W Sample container temperature is out of limit as specified

Page 14 of 28

WO#: 1604185 12-May-16

Client:Navajo FProject:Quarterly	Refining Co y WDW-1,	mpany 2, &3	Inj Well								
Sample ID MB-R34102	SampType: MBLK			Tes	TestCode: EPA 8270C: Semivolatiles/Mod						
Client ID: PBW	Batch ID: R34102			F	RunNo:	34102					
Prep Date:	Analysis D	ate: 4 /	14/2016	S	SeqNo:	1051268	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	CowLimit	HighLimit	%RPD	RPDLimit	Qual	
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									
Carbazole	ND	5.0									

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 15 of 28

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, Inc	

Navajo Refining Company

WO#: 1604185 12-May-16

Project: Qua	arterly WDW-1, 2	2, &3	Inj Well							
Sample ID MB-R34102	SampTy	pe: ME	BLK	Tes	tCode: E	/Mod				
Client ID: PBW	Batch	Batch ID: R34102		F	unNo: 3	84102				
Prep Date:	Analysis Da	ate: 4 /	14/2016	5	eqNo: 1	051268	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
o-Toluidine	ND	2.0								
Pyridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								

Sample ID LCS-R34102	SampT	ype: LC	S	Test	Code: EF	PA 8270C: \$	Semivolatiles/	/Mod		
Client ID: LCSW	Batch	1D: R3	4102	R	lunNo: 34	4102				
Prep Date:	Analysis D	ate: 4/	14/2016	S	eqNo: 10	051269	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.1	0	5.000	0	102	49	134			
2-Chlorophenol	4.7	0	5.000	0	93.8	50	131			
4-Chloro-3-methylphenol	4.8	0	5.000	0	95.4	42	139			
4-Nitrophenol	2.0	0	5.000	0	39.8	19	137			
Acenaphthene	4.4	0	5.000	0	88.2	36	122			
Bis(2-ethylhexyl)phthalate	5.0	0	5.000	0	99.2	43	142			
N-Nitrosodi-n-propylamine	4.9	0	5.000	0	97.8	46	135			

Qualifiers:

Client:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 16 of 28

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

Sample ID LCS-R34102	SampType: LCS			TestCode: EPA 8270C: Semivolatiles/Mod						
Client ID: LCSW	Batch	n ID: R3	4102	F	RunNo: 34	4102				
Prep Date:	Analysis D	ate: 4/	14/2016	S	SeqNo: 1	051269	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	3.6	0	5.000	0	71.4	22	138			
Phenol	4.7	0	5.000	0	94.2	45	134			
Pyrene	4.5	0	5.000	0	89.4	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
- W Sample container temperature is out of limit as specified

Page 17 of 28

Client:	Navajo Refining Company						
Project:	Quarterly WDW-1, 2, &3 Inj Well						
Sample ID	1604185-001a dup SampType: dup	Т					

Sample ID	1604185-001a dup	SampType	: du	р	Test	Code: S	SM2510B: Sp	pecific Condu	ctance		
Client ID:	WDW-1,2,&3 Effluen	Batch ID	R3	3424	R	unNo: 3	33424				
Prep Date:	An	alysis Date	4/3	8/2016	S	eqNo:	1027850	Units: µmho	s/cm		
Analyte	R	lesult P	QL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity		4400 0.	010						0.673	20	

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 18 of 28

WO#:	1604185
	12-Mav-16

Client:	Navajo	Refining Company						
Project:	Quarter	rly WDW-1, 2, &3 Inj Well						
Sample ID	MB-24854	SampType: MBLK	TestCode: EPA Method 7470: Mercury					
Client ID:	PBW	Batch ID: 24854	RunNo: 33624					
Prep Date:	4/18/2016	Analysis Date: 4/19/2016	SeqNo: 1034913	Units: mg/L				
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual			
Mercury		ND 0.00020						
Sample ID	LCS-24854	SampType: LCS	TestCode: EPA Method 7470: Mercury					
Client ID:	LCSW	Batch ID: 24854	RunNo: 33624					
Prep Date:	4/18/2016	Analysis Date: 4/19/2016	SeqNo: 1034914	Units: mg/L				
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual			
Mercury		0.0052 0.00020 0.005000	0 104 80	120				
Sample ID	LCSD-24854	SampType: LCSD	TestCode: EPA Method	7470: Mercury				
Client ID:	LCSS02	Batch ID: 24854	RunNo: 33624					
Prep Date:	4/18/2016	Analysis Date: 4/19/2016	SeqNo: 1034916	Units: mg/L				
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual			
Mercury		0.0054 0.00020 0.005000	0 108 80	120 3.66	20			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 19 of 28

WO#:	1604185
	12-May-16

Client: Project:	Navaj Quart	o Refining Companerly WDW-1, 2, &3	iy 3 Inj Well							
Sample ID	MB-24855	855 SampType: MBLK			TestCode: MERCURY, TCLP					
Client ID:	PBW	Batch ID: 2	24855	RunNo: 33622						
Prep Date:	4/18/2016	Analysis Date:	4/18/2016	S	eqNo: 10346	72	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC Lov	wLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.02	0							
Sample ID	LCS-24855	SampType: I	_cs	TestCode: MERCURY, TCLP						
Client ID:	LCSW	Batch ID: 2	24855	R	unNo: 33622	2				
Prep Date:	4/18/2016	Analysis Date:	4/18/2016	S	eqNo: 10346	74	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC Lov	wLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.02	0 0.005000	0	101	80	120			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 20 of 28

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

Navajo Refining Company

WO#: **1604185** *12-May-16*

Project:	Quarte	erly WDW-1,	2, &3	Inj Well								
Sample ID	MB-24833	SampT	ype: MI	BLK	Tes	TestCode: EPA Method 6010B: TCLP Metals						
Client ID:	PBW	Batch ID: 24833			F	RunNo: 33599						
Prep Date:	4/15/2016	Analysis D	ate: 4/	18/2016	S	SeqNo: 1	033844	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	5.0									
Barium		ND	100									
Cadmium		ND	1.0									
Chromium		ND	5.0									
Lead		ND	5.0									
Selenium		ND	1.0									
Silver		ND	5.0									
Sample ID	LCS-24833	SampT	ype: LC	s	TestCode: EPA Method 6010B: TCLP Metals							
Client ID:	LCSW	Batch	n ID: 24	833	RunNo: 33599							
Prep Date:	4/15/2016	Analysis D	ate: 4	18/2016	5	SeqNo: 1	033845	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	5.0	0.5000	0	98.1	80	120				
Barium		ND	100	0.5000	0	95.6	80	120				
Cadmium		ND	1.0	0.5000	0	96.0	80	120				
Chromium		ND	5.0	0.5000	0	94.8	80	120				
Lead		ND	5.0	0.5000	0	95.3	80	120				
Selenium		ND	1.0	0.5000	0	95.3	80	120				
Silver		ND	5.0	0.1000	0	95.6	80	120				

Qualifiers:

Client:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 21 of 28

WO#: 1604185

12-May-16

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

Sample ID MB-24833	Samp	Type: ME	BLK	Tes	tCode: E	PA 6010B: "	Total Metals			
Client ID: PBW	Bate	ch ID: 24	833	F	RunNo: 3	3599				
Prep Date: 4/15/2016	Analysis	Date: 4/	18/2016	S	SeqNo: 1	033771	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
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	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								
Sample ID LCS-24833	Samp	Type: LC	S	Tes	tCode: E	PA 6010B:	Total Metals			
Client ID: LCSW	Bate	ch ID: 24	833	F	RunNo: 3	3599				
Prep Date: 4/15/2016	Analysis	Date: 4/	18/2016	S	eqNo: 1	033772	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.48	0.020	0.5000	0	96.0	80	120			
Arsenic	0.49	0.020	0.5000	0	98.1	80	120			
Barium	0.48	0.020	0.5000	0	95.6	80	120			
Beryllium	0.50	0.0030	0.5000	0	101	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.0	80	120			
Calcium	51	1.0	50.00	0	101	80	120			
Chromium	0.47	0.0060	0.5000	0	94.8	80	120			
Cobalt	0.47	0.0060	0.5000	0	93.4	80	120			
Copper	0.50	0.0060	0.5000	0	99.1	80	120			
Iron	0.48	0.050	0.5000	0	97.0	80	120			
Lead	0.48	0.0050	0.5000	0	95.3	80	120			
Magnesium	49	1.0	50.00	0	97.6	80	120			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 22 of 28

WO#: 1604185 12-May-16

Client: Navajo Refining Company

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

Sample ID LCS-24833	Samp	Type: LC	S	Tes	tCode: El	PA 6010B: "	Fotal Metals			
Client ID: LCSW	Bato	h ID: 24	833	F	RunNo: 3	3599				
Prep Date: 4/15/2016	Analysis	Date: 4 /	18/2016	S	eqNo: 1	033772	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	49	1.0	50.00	0	97.9	80	120			
Selenium	0.48	0.050	0.5000	0	95.3	80	120			
Silver	0.096	0.0050	0.1000	0	95.6	80	120			
Sodium	50	1.0	50.00	0	100	80	120			
Thallium	0.49	0.050	0.5000	0	97.5	80	120			
Vanadium	0.50	0.050	0.5000	0	100	80	120			
Zinc	0.47	0.020	0.5000	0	94.2	80	120			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 23 of 28

Client: Project:	Navajo Refin Quarterly W	ning Compa DW-1, 2, &	ny 3 Inj Well						
Sample ID	1604185-001a dup	SampType:	dup	Test	tCode: SM4500-H+	З: рН			
Client ID:	WDW-1,2,&3 Effluen	Batch ID:	R33424	R	unNo: 33424				
Prep Date:	An	alysis Date:	4/8/2016	S	eqNo: 1027876	Units: pH u	nits		
Analyte	R	Result PC	L SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
рН		7.86 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
- W Sample container temperature is out of limit as specified

Page 24 of 28

1604185

WO#:

WO#:	1604185
	12-May-16

Client: Project:	Navajo Quarte	Refining Comp rly WDW-1, 2, &	any &3 Inj Well						
Sample ID	MB-R34102	SampType	MBLK	Tes	tCode: CYANIDE,	Reactive			
Client ID:	PBW	Batch ID:	R34102	F	RunNo: 34102				
Prep Date:		Analysis Date:	4/19/2016	S	SeqNo: 1051273	Units: mg/L			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC LowLim	it HighLimit	%RPD	RPDLimit	Qual
Cyanide, React	tive	ND 1	.00						
Sample ID	LCS-R34102	SampType	LCS	Tes	tCode: CYANIDE,	Reactive			
Client ID:	LCSW	Batch ID:	R34102	F	RunNo: 34102				
Prep Date:		Analysis Date:	4/19/2016	S	SeqNo: 1051275	Units: mg/L			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC LowLim	it HighLimit	%RPD	RPDLimit	Qual
Cyanide, React	tive	0.523	0.5000	0	105 8	0 120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 25 of 28

WO#:	1604185
	12-May-16

Client: Project:	Navajo Quarter	Refining Com ly WDW-1, 2,	bany &3 Inj Well						
Sample ID Client ID	MB-R34102 PBW	SampType Batch ID	e: MBLK	Tes	tCode: SULFIDE,	Reactive			
Prep Date:		Analysis Date	± 4/12/2016	S	SeqNo: 1051296	Units: mg/L			
Analyte		Result F	QL SPK value	SPK Ref Val	%REC LowLin	nit HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfid	le	ND	1.0						
Sample ID	LCS-R34102	SampType	e: LCS	Tes	tCode: SULFIDE,	Reactive			
Client ID:	LCSW	Batch ID	: R34102	F	RunNo: 34102				
Prep Date:		Analysis Date	: 4/12/2016	S	SeqNo: 1051297	Units: mg/L			
Analyte		Result F	QL SPK value	SPK Ref Val	%REC LowLin	nit HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfid	le	0.16	0.2000	0	80.0 7	70 130			

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W
- Page 26 of 28

WO#:	1604	185
	10.16	

Client: Project:	Navaj Quarte	o Refining Co erly WDW-1,	ompany 2, &3	Inj Well							
Sample ID	mb-1	SampT	ype: ml	olk	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	PBW	Batch	h ID: R3	3424	F	RunNo: 3	3424				
Prep Date:		Analysis D	Date: 4/	8/2016	S	SeqNo: 1	027796	Units: mg/L	CaCO3		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	ND	20.00								
Sample ID	lcs-1	SampT	ype: Ics	6	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	LCSW	Batch	h ID: R3	3424	F	RunNo: 3	3424				
Prep Date:		Analysis D	Date: 4/	8/2016	S	SeqNo: 1	027797	Units: mg/L	. CaCO3		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	77.96	20.00	80.00	0	97.5	90	110			
Sample ID	1604185-001ai	ns SampT	ype: ms	6	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	WDW-1,2,&3 E	Effluen Batch	h ID: R3	3424	F	RunNo: 3	3424	•			
Prep Date:		Analysis D	Date: 4/	8/2016	S	SeqNo: 1	027799	Units: mg/L	. CaCO3		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	383.7	20.00	80.00	318.5	81.5	75	105			
Sample ID	1604185-001a	nsd SampT	ype: ms	sd	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	WDW-1,2,&3 E	Effluen Batch	h ID: R3	3424	F	RunNo: 3	3424	•			
Prep Date:		Analysis D	Date: 4/	8/2016	S	SeqNo: 1	027800	Units: mg/L	CaCO3		
Analvte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	383.5	20.00	80.00	318.5	81.2	75	105	0.0521	20	
Sample ID	mb-2	SampT	ype: ml	olk	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	PBW	Batcl	h ID: R3	3424	F	RunNo: 3	3424				
Prep Date:		Analysis D	Date: 4	8/2016	S	SeqNo: 1	027820	Units: mg/L	CaCO3		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	ND	20.00					-			
Sample ID	lcs-2	SampT	ype: Ics	3	Tes	tCode: SI	M2320B: AI	kalinity			
Client ID:	LCSW	Batch	h ID: R3	3424	F	RunNo: 3	3424	-			
Prep Date:		Analysis D	Date: 4/	8/2016	S	SeqNo: 1	027821	Units: mg/L	. CaCO3		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity	(as CaCO3)	78.00	20.00	80.00	0	97.5	90	110			

Qualifiers:

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

Page 27 of 28

Client: Project:	Na Qu	vajo Refining Co arterly WDW-1,	ompany 2, &3	Inj Well							
Sample ID	MB-24656	SampT	ype: ME	BLK	Tes	tCode: S I	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	PBW	Batch	n ID: 24	656	F	RunNo: 3	3372				
Prep Date:	4/6/2016	Analysis D	ate: 4/	7/2016	S	SeqNo: 1	025974	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	ND	20.0								
Sample ID	LCS-24656	SampT	ype: LC	s	Tes	tCode: SI	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	LCSW	Batch	n ID: 24	656	F	RunNo: 3	3372				
Prep Date:	4/6/2016	Analysis D	ate: 4/	7/2016	S	SeqNo: 1	025975	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved	d Solids	1040	20.0	1000	0	104	80	120			

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

Page 28 of 28

HALL Hall Environental ENVIRONMENTAL ANALYSIS LABORATORY Website:	nmental Analysis Laborator 4901 Hawkins N Albuquerque, NM 8710 145-3975 FAX: 505-345-410 www.hallenvironmental.com	^y ^E ^{Sampl}	e Log-In Che	ck List
Client Name: NAVAJO REFINING CO Work Order I	Number: 1604185		RcptNo: 1	
Received by/date: Ashley Gallegos 4/6/2016 9:40: Completed By: Ashley Gallegos 4/6/2016 12:25 Received By: Ashley Gallegos 4/6/2016 12:25	00 AM 9:51 PM	AJ		
Chain of Custody	<i>Q</i>			
d. Custody coals intact on sample bottles?	Yes	No 🗌	Not Present 🗹	
2. Is Chain of Custody complete?	Yes 🔽	No 🗌	Not Present	
3. How was the sample delivered?	<u>Courier</u>			
Log In			_	
4. Was an attempt made to cool the samples?	Yes 🗹	No 🗌	NA	
5. Were all samples received at a temperature of >0° C to 6.	0°C Yes 🗹	No 🗌	NA 🗌	
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗌		
7. Sufficient sample volume for indicated test(s)?	Yes 🔽	No 🗌		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No 🗀	•••	
9. Was preservative added to bottles?	Yes 🛄	No 🗹		
10 VOA vials have zero headspace?	Yes 🗹	No 🗌	No VOA Vials 🗌	
11. Were any sample containers received broken?	Yes 🗆	No 🗹	# of preserved	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🔽	No 🗌	for pH:	2 (12) unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🗹	No 🗔		
14. Is it clear what analyses were requested?	Yes 🗹		Checked by:	~J
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 💌			
Special Handling (if applicable) 16. Was client notified of all discrepancies with this order?	Yes 🗌	No 🗌	NA 🗹	1
Person Notified:	Date			1
By Whom:	Via: 📋 eMail 📘			
Regarding: Client Instructions:		<u></u>		
17. Additional remarks:				
Cooler Information Cooler No Temp °C Condition Seal Intact S 1 1.3 Good Yes Image: Seal Seal Seal Seal Seal Seal Seal Seal	Seal No Seal Date	Signed By	-	

ent: Navajć	ain-o Refinin	f-Cus ଡି Co.	tody Record	Turn-Around Standar Project Name	Time: Rush						IVIR IS L ironment		MEN	TOF	ר קר	
iling Addre	3SS: P.O	. Box 15(9 Artesia,	Quarterly WE)W-1, 2, & 3 Inj Well D.# 167796			4901 Hav Tel. 505-	vkins NE 345-3975	- Albuqu Fax	erque, Ni 505-345-	M 87109 4107				
A 88211-0	159 5-748-33	11						···		Analy ر	sis Requ	lest				
nail or Fax	# 575-7	46-5451		Project Man	ager.		#0 D3' C	0128 82701	01 	Aletals	LL FR Pa					
VQC Packa Standard Other	ige:		Level 4 (Full Validation)	Micki Schult Sampler:	z / Scott Denton / Mike Brady Hubbard	Holder	I'' Bt' EP/r couq''EI' HCO3' C(S Method 82 ('YOCs')	st 'SVOCs art 261	M' teil bert	Method 13 Only /40 C					
EDD (Typ	(e)			On Ice: Sample Ten	perature: // 5		Gravity, Hq ,S, pH,	2M-846 W-846	CEK b	ette ette	N-846 I 978-0 978-0					
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	EAL NO.	Specific (SO4, TD Cation/ai	SVOCs/ (see atts VOCs/S/	(see atte R,C,I/40	s) 0747						
15/16	00:2	Liquid	WDW-1, 2, & 3 Effluent	8	Neat/H2SO4	-100-	×	-+-	×		×		╉╼╌╋ ╼┟╍ [┷] ╼┨	╉╼╌╋ ┥╼╌┨		
15/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	-	HNO3											
/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	6	HCL			×							- +	_
15/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				×			+				
1/5/16	7:00	Liquid	WDW-1, 2, & 3 Effluent	~	Neat	600-		×					- +			
1/5/16	7:00	Liquid	Trip Blank		Neat	134										
4/5/16	7:00	Liquid	Temperature Blank		INCOL	2			-+-							
								-+-								
								╄═╇╴ ┥ ┥				 				
						ate Time	Remark	(s: Send I	results to :	Scott Del	iton, Mik∈	Holder, N	dicki Sch	iultz, Rot	Sert Con	squ
Date: 4/5/16	Time: 12:00	Relinqui CL20	Anoth Malizaria	A Received	V OUMBIL		and An	drew Cor	treras.							
Date:	Time:	Relinqu	ished by:	\geq		the active of the		Any sub-con	tracted data w	ill be clearly I	notated on the	: analytical rep	ort.			
				subcontracted to oth	er accredited laboratories. I NIS	Serves as numerican		,								

if necessary, samples submitted to Hall Environmental may be sub

LYFRONTIER he HollyFrontier Companies	Physical Property Solid Colid Liquid C Liquid C Studge C Type of Sampler Directly to sample jars Pes5 sample point (third from east) Pes7 sample point (fourth from east)	Analysis and/or/Method Requested	Specific Gravity,HCO3, CO3, CI, SO4, TDS, Specific Gravity,HCO3, CO3, CI, SO4, TDS, pH, cond.,FI, Cation/anion bal., Br, Eh/40 pH, cond.,FI, Cation/anion bal., Br, Eh/40 VOCs/SW-846 Method 8260C (see attached	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs') B C 1/40 CFR part 261	Metals/SW-8466 Mithof 6010, 7470 (see attached list "Metals") C.a K. Mo. Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW- 846 Method 1311	Storage Method	Refrigerated	Shipping Media (ce J Other
njection Well larterly Sample Details HOLI Attachment	Sample Type Sample Type Weighted Composite wweighted Composite arts / Sample Intervals One arts / Sample Intervals One	P-854 sample point (second non-out) P-854 sample point (second non-out) Presenter (second non-out)	X Nach Naccous Markson					9%. Wind Direction Calm, Wind Speed Calm, Overal Creat	
Navajo Refining Company, LLC Sol E. Main Artesia, NM 88210 (Tel) 575.746.5451 (Fax) 575.746.5451	d Corty Inj Well d G Co. LLC 17 a.m. 17 a.m. 16 a.m.		al X X X X X X X X X X X X X X X X X X X	3 -1	2 X X	2 X X		, Eto. 4/5/2016 Temp.42.8 °F, Humidity 4	
C S S S S S S S S S S S S S S S S S S S	Project Name WDW-1,2, & 3 Samplers Name Brady Hubbar Samplers Affiliation Navalo Refinit Start Date and Time 4/5/2016 @ 7 End Date and Time	Countrall/Sample Location	containen Size Mater		C.C.	φ. φ. τ. σ		Field Data (Weather, Observations Date and Time	Field Temp. 39.0C



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

August 04, 2016

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

OrderNo.: 1607298

RE: Monthly RO Reject

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/7/2016 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
Analytical Report Lab Order 1607298

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 8/4/2016

CLIENT: Navajo Refining Company Monthly RO Reject

1607298-001

Project:

Lab ID:

Client Sample ID: R.O. Reject Collection Date: 7/5/2016 9:30:00 AM

Received Date: 7/7/2016 10:15:00 AM

Analyses	Result PQL Qual Units DF Date Analyzed				Batch		
EPA 200.8: DISSOLVED METALS						Analyst	JLF
Arsenic	ND	0.0050		mg/L	5	7/18/2016 7:46:42 PM	B35777
Lead	ND	0.00050		mg/L	1	7/15/2016 3:55:53 PM	C35755
Selenium	0.0084	0.0050		mg/L	5	7/18/2016 7:46:42 PM	B35777
Uranium	0.0069	0.00050		mg/L	1	7/15/2016 3:55:53 PM	C35755
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBE	ED				Analyst	SUB
Radium-226	1.1	0.776		pCi/L	1	8/3/2016	R36230
Radium-226 ±	0.646	0.776		pCi/L	1	8/3/2016	R36230
Radium-228	1.21	0.822		pCi/L	1	8/3/2016	R36230
Radium-228 ±	0.502	0.822		pCi/L	1	8/3/2016	R36230
EPA METHOD 300.0: ANIONS						Analyst	LGT
Fluoride	3.3	0.10		mg/L	1	7/8/2016 1:40:32 AM	R35519
Chloride	390	10		mg/L	20	7/8/2016 1:52:57 AM	R35519
Sulfate	1700	50		mg/L	100	7/9/2016 12:09:50 AM	A35552
Nitrate+Nitrite as N	1.9	1.0		mg/L	5	7/8/2016 2:17:46 AM	R35519
SM2540C MOD: TOTAL DISSOLVED SO					Analyst	KS	
Total Dissolved Solids	4120	20.0	*	mg/L	1	7/8/2016 4:07:00 PM	26273
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst	SUB
Cyanide	ND	0.0100		mg/L	1	7/19/2016	R36230
SM4500-H+B: PH						Analyst	JRR
рН	7.98	1.68	Н	pH units	1	7/8/2016 3:31:19 PM	R35550
EPA METHOD 200.7: DISSOLVED META	LS					Analyst	ELS
Aluminum	ND	0.020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Barium	0.069	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Boron	0.10	0.040		mg/L	1	7/12/2016 11:49:34 AM	C35577
Cadmium	ND	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Chromium	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Cobalt	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Copper	ND	0.0060		mg/L	1	7/12/2016 11:49:34 AM	C35577
Iron	ND	0.020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Manganese	ND	0.0020		mg/L	1	7/12/2016 11:49:34 AM	C35577
Molybdenum	0.0095	0.0080		mg/L	1	7/12/2016 11:49:34 AM	C35577
Nickel	ND	0.010		mg/L	1	7/12/2016 11:49:34 AM	C35577
Silver	ND	0.0050		mg/L	1	7/12/2016 11:49:34 AM	C35577
Zinc	0.048	0.010		mg/L	1	7/12/2016 11:49:34 AM	C35577
EPA METHOD 245.1: MERCURY						Analyst	pmf
Mercury	ND	0.00020		mg/L	1	7/14/2016 1:04:47 PM	26380
Refer to the QC Summary report an	d sample lo	gin checklis	t for fl	lagged QC d	ata and p	reservation information	n.
Qualifiers: * Value exceeds Maximum Co	ntaminant Lev	el.		B Analyte d	letected in t	the associated Method Blank	:

Matrix: AQUEOUS

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
- % Recovery outside of range due to dilution or matrix S
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 23 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report
Lab Order 1607298

Date Reported: 8/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1607298-001

Monthly RO Reject

Project:

Lab ID:

Client Sample ID: R.O. Reject Collection Date: 7/5/2016 9:30:00 AM Received Date: 7/7/2016 10:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB					Analyst	: JME
1,2-Dibromoethane	ND	0.010	µg/L	1	7/14/2016 4:13:40 PM	26391
EPA METHOD 8082: PCB'S					Analyst	: SCC
Aroclor 1016	ND	1.0	ua/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1221	ND	1.0	µa/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1232	ND	1.0	μg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1242	ND	1.0	μg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1248	ND	1.0	μg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1254	ND	1.0	µg/L	1	7/12/2016 11:17:01 AM	26300
Aroclor 1260	ND	1.0	µg/L	1	7/12/2016 11:17:01 AM	26300
Surr: Decachlorobiphenyl	104	26.1-140	%Rec	1	7/12/2016 11:17:01 AM	26300
Surr: Tetrachloro-m-xylene	103	15-123	%Rec	1	7/12/2016 11:17:01 AM	26300
EPA METHOD 8015M/D: DIESEL RANGE					Analyst	ТОМ
Diesel Range Organics (DRO)	ND	1.0	mg/L	1	7/11/2016 4:26:11 PM	26318
Motor Oil Range Organics (MRO)	ND	5.0	mg/L	1	7/11/2016 4:26:11 PM	26318
Surr: DNOP	117	77.1-144	%Rec	1	7/11/2016 4:26:11 PM	26318
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	7/7/2016 3:19:48 PM	A35501
Surr: BFB	92.1	66.4-120	%Rec	1	7/7/2016 3:19:48 PM	A35501
EPA METHOD 8310: PAHS					Analyst	SCC
Naphthalene	ND	2.0	µg/L	1	7/14/2016 3:06:07 PM	26301
1-Methylnaphthalene	ND	2.0	µg/L	1	7/14/2016 3:06:07 PM	26301
2-Methylnaphthalene	ND	2.0	µg/L	1	7/14/2016 3:06:07 PM	26301
Benzo(a)pyrene	ND	0.070	µg/L	1	7/14/2016 3:06:07 PM	26301
Surr: Benzo(e)pyrene	108	20-153	%Rec	1	7/14/2016 3:06:07 PM	26301
EPA METHOD 8260B: VOLATILES					Analyst	DJF
Benzene	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Toluene	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Ethylbenzene	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Carbon Tetrachloride	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Chloroform	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1-Dichloroethane	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1-Dichloroethene	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Methylene Chloride	ND	3.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	7/8/2016 8:56:29 PM	B35544
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544

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
- 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 2 of 23
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1607298 Date Reported: 8/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Project: Monthly RO Reject

Client Sample ID: R.O. Reject Collection Date: 7/5/2016 9:30:00 AM Pageived Date: 7/7/2016 10:15:00 AM

Lab ID: 1607298-001	Matrix:	AQUEOUS	Received Date: 7/7/2016 10:15:00 AM					
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch		
EPA METHOD 8260B: VOLATILES					Analyst	DJF		
1,1,1-Trichloroethane	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544		
1,1,2-Trichloroethane	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544		
Trichloroethene (TCE)	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544		
Vinyl chloride	ND	1.0	µg/L	1	7/8/2016 8:56:29 PM	B35544		
Xylenes, Total	ND	1.5	µg/L	1	7/8/2016 8:56:29 PM	B35544		
Surr: 1,2-Dichloroethane-d4	105	70-130	%Rec	1	7/8/2016 8:56:29 PM	B35544		
Surr: 4-Bromofluorobenzene	101	70-130	%Rec	1	7/8/2016 8:56:29 PM	B35544		
Surr: Dibromofluoromethane	106	70-130	%Rec	1	7/8/2016 8:56:29 PM	B35544		
Surr: Toluene-d8	95.8	70-130	%Rec	1	7/8/2016 8:56:29 PM	B35544		
TOTAL PHENOLICS BY SW-846 9067					Analyst	SCC		
Phenolics, Total Recoverable	ND	2.5	µg/L	1	8/1/2016	26705		

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
	D	Sample Diluted Due to Matrix	Е	Value above quar
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not I
	R	RPD outside accepted recovery limits	RL	Reporting Detect
	S	% Recovery outside of range due to dilution or matrix	W	Sample container

- in the associated Method Blank
- ntitation range
- below quantitation limits Page 3 of 23
- In Range
- tion Limit
- r temperature is out of limit as specified

Analytical Report
Lab Order 1607298

Date Reported: 8/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Monthly RO Reject

Collection Date:

Lab ID: 1607298-002

Project:

Matrix: TRIP BLANK Received Date: 7/7/2016 10:15:00 AM

Client Sample ID: Trip Blank

Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB					Analyst	: JME
1,2-Dibromoethane	ND	0.010	µg/L	1	7/14/2016 4:29:16 PM	26391
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	7/7/2016 4:33:38 PM	A35501
Surr: BFB	91.0	66.4-120	%Rec	1	7/7/2016 4:33:38 PM	A35501
EPA METHOD 8260B: VOLATILES					Analyst	DJF
Benzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Toluene	ND	1.0	μg/L	1	7/8/2016 9:25:02 PM	B35544
Ethylbenzene	ND	1.0	μg/L	1	7/8/2016 9:25:02 PM	B35544
Methyl tert-butyl ether (MTBE)	ND	1.0	μg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Naphthalene	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1-Methylnaphthalene	ND	4.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Methylnaphthalene	ND	4.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Acetone	ND	10	µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromodichloromethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromoform	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Bromomethane	ND	3.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Butanone	ND	10	µg/L	1	7/8/2016 9:25:02 PM	B35544
Carbon disulfide	ND	10	µg/L	1	7/8/2016 9:25:02 PM	B35544
Carbon Tetrachloride	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Chlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloroethane	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloroform	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Chloromethane	ND	3.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Chlorotoluene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Chlorotoluene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
cis-1,2-DCE	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Dibromochloromethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Dibromomethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3-Dichlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,4-Dichlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544

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 4 of 23
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1607298

Date Reported: 8/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

1607298-002

Project: Monthly RO Reject

Lab ID:

Collection Date:

Matrix: TRIP BLANK Received Date: 7/7/2016 10:15:00 AM

Client Sample ID: Trip Blank

Analyses	Result	PQL Qu	al Units	DF	Batch	
EPA METHOD 8260B: VOLATILES					Analys	t: DJF
Dichlorodifluoromethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloroethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloroethene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2-Dichloropropane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,3-Dichloropropane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
2,2-Dichloropropane	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1-Dichloropropene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Hexachlorobutadiene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
2-Hexanone	ND	10	µg/L	1	7/8/2016 9:25:02 PM	B35544
Isopropylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Isopropyltoluene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
4-Methyl-2-pentanone	ND	10	µg/L	1	7/8/2016 9:25:02 PM	B35544
Methylene Chloride	ND	3.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
n-Butylbenzene	ND	3.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
n-Propylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
sec-Butylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Styrene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
tert-Butylbenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
trans-1,2-DCE	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,1-Trichloroethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,1,2-Trichloroethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Trichloroethene (TCE)	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Trichlorofluoromethane	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
1,2,3-Trichloropropane	ND	2.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Vinyl chloride	ND	1.0	µg/L	1	7/8/2016 9:25:02 PM	B35544
Xylenes, Total	ND	1.5	µg/L	1	7/8/2016 9:25:02 PM	B35544
Surr: 1,2-Dichloroethane-d4	105	70-130	%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: 4-Bromofluorobenzene	98.1	70-130	%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: Dibromofluoromethane	105	70-130	%Rec	1	7/8/2016 9:25:02 PM	B35544
Surr: Toluene-d8	96.1	70-130	%Rec	1	7/8/2016 9:25:02 PM	B35544

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 23
	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	W	Sample container temperature is out of limit as specified

WO#:	1607298
	04-Aug-16

Sample ID MB-C SampType: MBLK TestCode: EPA Method 200.7: Dissolved Metals Client ID: PBW Batch ID: C35577 RunNo: 35577 Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101649 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Aluminum ND 0.020 ND 0.0020 ND 0.0020				
Client ID: PBW Batch ID: C35577 RunNo: 35577 Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101649 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Aluminum ND 0.020 Octoard ND 0.020				
Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101649 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Aluminum ND 0.020 VIIII VIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Aluminum ND 0.020 Parium ND 0.020				
Aluminum ND 0.020	Qual			
Boron ND 0.040				
Cadmium ND 0.0020				
Chromium ND 0.0060				
Cobalt ND 0.0060				
Copper ND 0.0060				
Iron ND 0.020				
Manganese ND 0.0020				
Molybdenum ND 0.0080				
Nickel ND 0.010				
Silver ND 0.0050				
Zinc ND 0.010				
Sample ID LCS-C SampType: LCS TestCode: EPA Method 200.7: Dissolved Metals				
Client ID: LCSW Batch ID: C35577 RunNo: 35577				
Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101650 Units: mg/L	Units: mg/L			
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit	Qual			
Aluminum 0.53 0.020 0.5000 0 107 85 115				
Barium 0.48 0.0020 0.5000 0 96.1 85 115				
Boron 0.50 0.040 0.5000 0 99.4 85 115				
Cadmium 0.49 0.0020 0.5000 0 98.6 85 115				
Chromium 0.49 0.0060 0.5000 0 97.1 85 115				
Cobalt 0.47 0.0060 0.5000 0 94.0 85 115				
Copper 0.49 0.0060 0.5000 0 97.7 85 115				
Iron 0.47 0.020 0.5000 0 94.7 85 115				
Manganese 0.47 0.0020 0.5000 0 94.2 85 115				
Molybdenum 0.51 0.0080 0.5000 0 103 85 115				
Nickel 0.46 0.010 0.5000 0 92.6 85 115				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115 Sample ID LLLCS-C SampType: LCSLL TestCode: EPA Method 200.7: Dissolved Metals				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115 Sample ID LLLCS-C SampType: LCSLL TestCode: EPA Method 200.7: Dissolved Metals Client ID: Batch ID: C35577 RunNo: 35577				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115 Sample ID LLLCS-C SampType: LCSLL TestCode: EPA Method 200.7: Dissolved Metals Client ID: Batch QC Batch ID: C35577 RunNo: 35577 Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101651 Units: mg/L				
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115 Sample ID LLLCS-C SampType: LCSLL TestCode: EPA Method 200.7: Dissolved Metals Client ID: BatchQC Batch ID: C35577 RunNo: 35577 Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101651 Units:<	Qual			
Nickel 0.46 0.010 0.5000 0 92.6 85 115 Silver 0.098 0.0050 0.1000 0 98.3 85 115 Zinc 0.48 0.010 0.5000 0 96.2 85 115 Sample ID LLLCS-C SampType: LCSLL TestCode: EPA Method 200.7: Dissolved Metals Client ID: BatchQC Batch ID: C35577 RunNo: 35577 Prep Date: Analysis Date: 7/12/2016 SeqNo: 1101651 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Aluminum ND 0.020 0.01000 0 116 50 150	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
- W Sample container temperature is out of limit as specified

Page 6 of 23

WO#: 1607298 04-Aug-16

Client:Navajo Refining CompanyProject:Monthly RO Reject

Sample ID	LLLCS-C	Samp	Type: LC	SLL	Tes	TestCode: EPA Method 200.7: Dissolved Metals					
Client ID:	BatchQC	Bato	Batch ID: C35577			RunNo: 3	5577				
Prep Date:		Analysis	Date: 7/	12/2016	5	SeqNo: 1	101651	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron		0.041	0.040	0.04000	0	102	50	150			
Cadmium		ND	0.0020	0.002000	0	95.0	50	150			
Chromium		0.0062	0.0060	0.006000	0	104	50	150			
Cobalt		ND	0.0060	0.006000	0	95.2	50	150			
Copper		0.0079	0.0060	0.006000	0	131	50	150			
Iron		ND	0.020	0.02000	0	99.7	50	150			
Manganese		ND	0.0020	0.002000	0	94.5	50	150			
Molybdenum		0.011	0.0080	0.008000	0	142	50	150			
Nickel		ND	0.010	0.005000	0	95.0	50	150			
Silver		0.0053	0.0050	0.005000	0	106	50	150			
Zinc		ND	0.010	0.005000	0	96.8	50	150			

Qualifiers:

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

Page 7 of 23

Client: Project:		Navajo Refining C Monthly RO Rejec	Compang et	у								
Sample ID	LCS	Samp	Type: L	.CS	Tes	tCode: E	PA 200.8: [Dissolved Me	tals			
Client ID:	LCSW	Bat	ch ID: C	35755	F	RunNo: 35755						
Prep Date:		Analysis	Date:	7/15/2016	S	SeqNo: 1	106254	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		0.012	0.00050	0.01250	0	96.1	85	115				
Uranium		0.012	0.00050	0.01250	0	96.5	85	115				
Sample ID	LLLCS	Samp	Type: L	CSLL	Tes	tCode: E	PA 200.8: [Dissolved Me	tals			
Client ID:	BatchQ	C Bat	ch ID: C	35755	F	RunNo: 3	5755					
Prep Date:		Analysis	Date:	7/15/2016	5	SeqNo: 1	106256	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		ND	0.00050	0.0005000	0	96.1	50	150				
Uranium		ND	0.00050	0.0005000	0	96.2	50	150				
Sample ID	MB	Samp	SampType: MBLK TestCode: EPA 200.8: Dissolved Metals									
Client ID:	PBW	Bat	ch ID: C	35755	F	RunNo: 35755						
Prep Date:		Analysis	Date:	7/15/2016	5	SeqNo: 1	106258	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		ND	0.00050	0								
Uranium		ND	0.00050)								
Sample ID	LCS	Samp	Type: L	.CS	Tes	tCode: E	PA 200.8: [Dissolved Me	tals			
Client ID:	LCSW	Bat	ch ID: B	335777	F	RunNo: 3	5777					
Prep Date:		Analysis	Date:	7/18/2016	S	SeqNo: 1	107271	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		0.024	0.0010	0.02500	0	95.8	85	115				
Selenium		0.024	0.0010	0.02500	0	96.7	85	115				
Sample ID	LLLCS	Samp	Type: L	CSLL	Tes	tCode: E	PA 200.8: [Dissolved Me	tals			
Client ID:	BatchQ	C Bat	ch ID: B	335777	F	RunNo: 3	5777					
Prep Date:		Analysis	Date:	7/18/2016	S	SeqNo: 1	107272	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	0.0010	0.001000	0	95.3	50	150				
Selenium		0.0010	0.0010	0.001000	0	102	50	150				
Sample ID	MB	Samp	Туре: 🛚	IBLK	Tes	tCode: E	PA 200.8: [Dissolved Me	tals			
Client ID:	PBW	Bat	ch ID: B	335777	F	RunNo: 3	5777					
Prep Date:		Analysis	Date:	7/18/2016	S	SeqNo: 1	107273	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%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
- W Sample container temperature is out of limit as specified

Page 8 of 23

Client: Project:	Navajo Refining Compa Monthly RO Reject	any							
Sample ID MB	SampType:	MBLK	Tes	tCode: EF	PA 200.8:	Dissolved Met	als		
Client ID: PBW	Batch ID:	B35777	F	RunNo: 3	5777				
Prep Date:	Analysis Date:	7/18/2016	S	SeqNo: 1'	107273	Units: mg/L			
Analyte	Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND 0.00)10							
Selenium	ND 0.00)10							

Qualifiers:

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

Page 9 of 23

WO#: 1607298 04-Aug-16

Client: Project:	Navajo Month	o Refining Company ly RO Reject						
Sample ID	MB-26380	SampType: MBLK	(Te:	stCode: EPA Method	245.1: Mercu	ry		
Client ID:	PBW	Batch ID: 26380	•	RunNo: 35712				
Prep Date:	7/13/2016	Analysis Date: 7/14/2	2016	SeqNo: 1104894	Units: mg/L			
Analyte		Result PQL SF	PK value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.00020						
Sample ID	LCS-26380	SampType: LCS	Tes	stCode: EPA Method	245.1: Mercu	ry		
Client ID:	LCSW	Batch ID: 26380)	RunNo: 35712				
Prep Date:	7/13/2016	Analysis Date: 7/14/2	2016	SeqNo: 1104895	Units: mg/L			
Analyte		Result PQL SF	PK value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0053 0.00020 0).005000 0	105 80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 10 of 23

1607298 04-Aug-16

Navajo Refining Company

Project:	Monthly RO Reject									
Sample ID MB	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBW	Batch ID: R35519	RunNo: 35519								
Prep Date:	Analysis Date: 7/7/2016	SeqNo: 1099779	Units: mg/L							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual						
Fluoride	ND 0.10									
Chloride	ND 0.50									
Nitrate+Nitrite as N	ND 0.20									
Sample ID LCS	SampType: LCS	TestCode: EPA Method	300.0: Anions							
Client ID: LCSV	Batch ID: R35519	RunNo: 35519								
Prep Date:	Analysis Date: 7/7/2016	SeqNo: 1099780	Units: mg/L							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual						
Fluoride	0.50 0.10 0.5000	0 100 90	110							
Chloride	4.7 0.50 5.000	0 93.8 90	110							
Nitrate+Nitrite as N	3.4 0.20 3.500	0 97.1 90	110							
Sample ID MB	SampType: MBLK	TestCode: EPA Method	300.0: Anions							
Client ID: PBW	Batch ID: A35552	RunNo: 35552								
Prep Date:	Analysis Date: 7/8/2016	SeqNo: 1100904	Units: mg/L							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual						
Sulfate	ND 0.50									
Sample ID LCS	SampType: LCS	TestCode: EPA Method	300.0: Anions							
Client ID: LCSV	Batch ID: A35552	RunNo: 35552								
Prep Date:	Analysis Date: 7/8/2016	SeqNo: 1100905	Units: mg/L							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual						
Sulfate	9.7 0.50 10.00	0 96.9 90	110							

Qualifiers:

Client:

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

Page 11 of 23

Client: Project:	Navajo Month	Refining Co ly RO Reject	ompany t								
Sample ID	MB-26391	SampT	Type: ME	BLK	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID:	D: PBW Batch ID: 26391				F	RunNo: 35717					
Prep Date:	Prep Date: 7/14/2016 Analysis Date: 7/14/2016					SeqNo: 1105070 Units: µg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoet	hane	ND	0.010								
Sample ID	LCS-26391	SampT	Type: LC	s	Tes	tCode: El	PA Method	8011/504.1: E	EDB		
Client ID:	LCSW	Batcl	h ID: 26	391	F	RunNo: 3	5717				
Prep Date:	7/14/2016	14/2016	5	SeqNo: 1	105071	Units: µg/L					
Analyte Result PQL SPK value				SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,2-Dibromoet	hane	0.094	0.010	0.1000	0	93.8	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
- W Sample container temperature is out of limit as specified

Page 12 of 23

Client: Project:	Navajo R Monthly I	efining Cor RO Reject	npany									
Sample ID	1607298-001BMS	SampTy	/pe: MS	6	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e		
Client ID:	R.O. Reject	Batch	ID: 26	318	F	RunNo: 3	5548					
Prep Date:	7/11/2016	Analysis Da	ate: 7/	11/2016	S	SeqNo: 1	101307	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Surr: DNOP	Organics (DRO)	4.6 0.53	1.0	5.000 0.5000	0	91.7 106	59.4 77.1	160 144				
Sample ID	1607298-001BMS) SampTy	pe: MS	SD	TestCode: EPA Method 8015M/D: Diesel Range							
Client ID:	R.O. Reject	Batch	ID: 26	318	RunNo: 35548							
Prep Date:	7/11/2016	Analysis Da	ate: 7/	11/2016	S	SeqNo: 1	101308	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	4.5	1.0	5.000	0	89.1	59.4	160	2.85	20		
Surr: DNOP		0.49		0.5000		97.7	77.1	144	0	0		
Sample ID	LCS-26318	SampTy	vpe: LC	S	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e		
Client ID:	LCSW	Batch	ID: 26	318	F	RunNo: 3	5548					
Prep Date:	7/11/2016	Analysis Da	ate: 7/	11/2016	S	SeqNo: 1	101310	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	4.0	1.0	5.000	0	79.7	71.3	139				
Surr: DNOP		0.44		0.5000		88.9	77.1	144				
Sample ID	MB-26318	SampTy	vpe: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e		
Client ID:	PBW	Batch	ID: 26	318	F	RunNo: 3	5548					
Prep Date:	7/11/2016	Analysis Da	ate: 7/	11/2016	S	SeqNo: 1	101311	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	ND	1.0									
Motor Oil Rang	ge Organics (MRO)	ND	5.0									
Surr: DNOP		0.99		1.000		98.7	77.1	144				

Qualifiers:

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

Page 13 of 23

0

· . .

ът

Project:	Monthly	RO Reject	mpany								
Sample ID	5ML RB	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBW	Batch	ID: A3	5501	F	RunNo: 3	5501				
Prep Date:		Analysis D	ate: 7/	7/2016	S	SeqNo: 1	098949	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	ND	0.050								
Surr: BFB		18		20.00		88.5	66.4	120			
Sample ID	2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSW	5501	F	RunNo: 35501							
Prep Date:		Analysis D	ate: 7/	7/2016	5	SeqNo: 1	098950	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.53	0.050	0.5000	0	106	80	120			
Surr: BFB		17		20.00		87.3	66.4	120			
Sample ID	1607298-001AMS	SampT	уре: М\$	3	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	R.O. Reject	Batch	ID: A3	5501	F	RunNo: 3	5501				
Prep Date:		Analysis D	ate: 7 /	7/2016	5	SeqNo: 1	098954	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.55	0.050	0.5000	0	110	70	130			
Surr: BFB		19		20.00		96.5	66.4	120			
Sample ID	1607298-001AMSI) SampT	уре: М	SD	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	R.O. Reject	Batch	ID: A3	5501	F	RunNo: 3	5501				
Prep Date:		Analysis D	ate: 7 /	7/2016	S	SeqNo: 1	098955	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.54	0.050	0.5000	0	108	70	130	2.24	20	
Surr: BFB		19		20.00		94.9	66.4	120	0	0	

Qualifiers:

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

Page 14 of 23

WO#: 1607298

04-Aug-16

Client: Navajo	o Refining Co	ompany											
Project: Wonth	lly KO Kejeci												
Sample ID MB-26300	SampT	Type: ME	BLK	TestCode: EPA Method 8082: PCB's									
Client ID: PBW	Batcl	h ID: 26	300	RunNo: 35574									
Prep Date: 7/8/2016	Analysis E	Date: 7 /	12/2016	S	SeqNo: 1	101522							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Aroclor 1016	ND	1.0											
Aroclor 1221	ND	1.0											
Aroclor 1232	ND	1.0											
Aroclor 1242	ND	1.0											
Aroclor 1248	ND	1.0											
Aroclor 1254	ND	1.0											
Aroclor 1260	ND	1.0											
Surr: Decachlorobiphenyl	2.1		2.500		82.8	26.1	140						
Surr: Tetrachloro-m-xylene	1.7		2.500		68.4	15	123						
Sample ID LCS-26300	SampT	Type: LC	s	Tes	tCode: El	PA Method	8082: PCB's						
Client ID: LCSW	Batcl	h ID: 26	300	F	RunNo: 3	5574							
Prep Date: 7/8/2016	Analysis D	Date: 7/	12/2016	5	SeqNo: 1	101523	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Aroclor 1016	3.1	1.0	5.000	0	62.6	15	147						
Aroclor 1260	5.2	1.0	5.000	0	104	15	200						
Surr: Decachlorobiphenyl	3.1		2.500		124	26.1	140						
Surr: Tetrachloro-m-xylene	2.7		2.500		109	15	123						

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 15 of 23

NO#:	1607298
	04-Aug-16

Client:	Navajo Refining	Company	ý							
Project:	Monthly RO Reje	ect								
Sample ID rb	Sam	рТуре: М	BLK	Tes	stCode: E	EPA Method	8260B: VOL	ATILES		
Client ID: PBW	Ba	tch ID: B	35544		RunNo:	35544				
Prep Date:	Analysis	Date: 7	/8/2016		SeqNo:	1100562	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0)				-			
Toluene	ND	1.0)							
Ethylbenzene	ND	1.0)							
Methyl tert-butyl ether (M	TBE) ND	1.0)							
1,2,4-Trimethylbenzene	ND	1.0)							
1,3,5-Trimethylbenzene	ND	1.0)							
1,2-Dichloroethane (EDC) ND	1.0)							
1,2-Dibromoethane (EDB	3) ND	1.0)							
Naphthalene	ND	2.0)							
1-Methylnaphthalene	ND	4.0)							
2-Methylnaphthalene	ND	4.0)							
Acetone	ND	10)							
Bromobenzene	ND	1.0)							
Bromodichloromethane	ND	1.0)							
Bromoform	ND	1.0)							
Bromomethane	ND	3.0)							
2-Butanone	ND	10)							
Carbon disulfide	ND	10)							
Carbon Tetrachloride	ND	1.0)							
Chlorobenzene	ND	1.0)							
Chloroethane	ND	2.0)							
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1 (
cis-1.2-DCF	ND	1 ()							
cis-1.3-Dichloropropene	ND	1.0								
1.2-Dibromo-3-chloropror	pane ND	2.0								
Dibromochloromethane	ND	1 (
Dibromomethane	ND	1.0								
1.2-Dichlorobenzene	ND	1.0								
1.3-Dichlorobenzene	ND	1 (
1.4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1.1-Dichloroethane	ND	1 ()							
1.1-Dichloroethene	ND	1.0								
1.2-Dichloropropane		1.0								
1.3-Dichloropropane	ND	1 ()							
2.2-Dichloropropane	ND	2.0)							

Qualifiers:

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

Page 16 of 23

WO#:	1607298
	04-Aug-16

Client: 2 Project: 2	Navajo Ro Monthly I	efining Co RO Rejec	ompany t									
Sample ID rb		Samp	Гуре: МВ	BLK	Tes	stCode:	EPA Method	8260B: VOL	ATILES			
Client ID: PBW		Batc	h ID: B3	5544	RunNo: 35544							
Prep Date:		Analysis [Date: 7/	/8/2016	:	SeqNo:	1100562	Units: µg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,1-Dichloropropene		ND	1.0									
Hexachlorobutadiene		ND	1.0									
2-Hexanone		ND	10									
Isopropylbenzene		ND	1.0									
4-Isopropyltoluene		ND	1.0									
4-Methyl-2-pentanone		ND	10									
Methylene Chloride		ND	3.0									
n-Butylbenzene		ND	3.0									
n-Propylbenzene		ND	1.0									
sec-Butylbenzene		ND	1.0									
Styrene		ND	1.0									
tert-Butylbenzene		ND	1.0									
1,1,1,2-Tetrachloroethane		ND	1.0									
1,1,2,2-Tetrachloroethane		ND	2.0									
Tetrachloroethene (PCE)		ND	1.0									
trans-1,2-DCE		ND	1.0									
trans-1,3-Dichloropropene)	ND	1.0									
1,2,3-Trichlorobenzene		ND	1.0									
1,2,4-Trichlorobenzene		ND	1.0									
1,1,1-Trichloroethane		ND	1.0									
1,1,2-Trichloroethane		ND	1.0									
Trichloroethene (TCE)		ND	1.0									
Trichlorofluoromethane		ND	1.0									
1,2,3-Trichloropropane		ND	2.0									
Vinyl chloride		ND	1.0									
Xylenes, Total		ND	1.5									
Surr: 1,2-Dichloroethane	e-d4	9.8		10.00		98.1	70	130				
Surr: 4-Bromofluoroben	zene	10		10.00		101	70	130				
Surr: Dibromofluorometl	hane	9.9		10.00		98.6	70	130				
Surr: Toluene-d8		9.5		10.00		94.9	70	130				
Sample ID 100ng lo	cs	Samp	Гуре: LC	s	Tes	stCode:	EPA Method	8260B: VOL	ATILES			
Client ID: LCSW		Batch ID: B35544 RunNo: 35544										
Prep Date:		Analysis [Date: 7/	/8/2016	:	SeqNo:	1100565	Units: µg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene		22	1.0	20.00	0	111	70	130				
Toluene		20	1.0	20.00	0	99.1	70	130				
Chlorobenzene		19	1.0	20.00	0	93.6	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
- W Sample container temperature is out of limit as specified
- Page 17 of 23

 1007270
04-Aug-16

Client:NavajProject:Month	o Refining Co hly RO Reject	ompany										
Sample ID 100ng lcs	SampT	ype: LC	s	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	5544	F	RunNo: 3	5544								
Prep Date:	Analysis D)ate: 7/	8/2016	016 SeqNo: 1100565 Units: μg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130					
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130					
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130					
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130					
Surr: Dibromofluoromethane	11		10.00		106	70	130					
Surr: Toluene-d8	9.5		10.00		95.4	70	130					

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 18 of 23

WO#∙ 1607298

Client: Project:	Navajo R Monthly	Refining Co RO Reject	ompany								
Sample ID MB-2	6301	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: PBW		Batcl	h ID: 26	301	F	RunNo: 3	5690				
Prep Date: 7/8/2	2016	Analysis E	Date: 7/	14/2016	S	SeqNo: 1	104212	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene		ND	2.0								
1-Methylnaphthalene		ND	2.0								
2-Methylnaphthalene		ND	2.0								
Benzo(a)pyrene		ND	0.070								
Surr: Benzo(e)pyren	е	15		20.00		74.1	20	153			
Sample ID LCS-2	26301	SampT	ype: LC	S	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSV	v	Batcl	h ID: 26	301	F	RunNo: 3	5690				
Prep Date: 7/8/2	2016	Analysis E	Date: 7/	14/2016	S	SeqNo: 1	104213	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene		71	2.0	80.00	0	88.2	55.6	124			
1-Methylnaphthalene		67	2.0	80.20	0	84.0	55.3	124			
2-Methylnaphthalene		64	2.0	80.00	0	80.4	55.4	124			
Benzo(a)pyrene		0.42	0.070	0.5020	0	83.7	51.3	137			
Surr: Benzo(e)pyren	e	14		20.00		71.6	20	153			

Qualifiers:

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

Page 19 of 23

Client: Nava Project: Mon	ijo Refining Company thly RO Reject				
Sample ID MB-26705	SampType: MBLK	TestCode: Total Pheno	lics by SW-846 9067		
Client ID: PBW	Batch ID: 26705	RunNo: 36172			
Prep Date: 8/1/2016	Analysis Date: 8/1/2016	SeqNo: 1120184	Units: µg/L		
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Phenolics, Total Recoverable	ND 2.5				
Sample ID LCS-26705	SampType: LCS	TestCode: Total Pheno	lics by SW-846 9067		
Client ID: LCSW	Batch ID: 26705	RunNo: 36172			
Prep Date: 8/1/2016	Analysis Date: 8/1/2016	SeqNo: 1120185	Units: µg/L		
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Phenolics. Total Recoverable	19 2.5 20.00	0 967 644	135		

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 20 of 23

0.527

Client: Project:	Navajo Monthl	Refining Company y RO Reject		
Sample ID	MB-R36230	SampType: MBLK	TestCode: EPA 335.4: Total Cyanide Subbed	
Client ID:	PBW	Batch ID: R36230	RunNo: 36230	
Prep Date:		Analysis Date: 7/19/2016	SeqNo: 1122314 Units: mg/L	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	
Cyanide		ND 0.0100		
Sample ID	LCS-R36230	SampType: LCS	TestCode: EPA 335.4: Total Cyanide Subbed	
Client ID:	LCSW	Batch ID: R36230	RunNo: 36230	
Prep Date:		Analysis Date: 7/19/2016	SeqNo: 1122315 Units: mg/L	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	

0

105

90

110

0.5000

Cyanide

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 21 of 23

WO#: 1607298

WO#:	1607298
	04-Aug-16

Client: Project:	Navajo R Monthly	efining Co RO Reject	npany								
Sample ID ME	3-R36230	SampTy	pe: ME	BLK	Test	tCode: E	PA 903.1: R	a 226 and EP	A 904.0: F	Ra 228-Subbe	d
Client ID: PB	W	Batch	ID: R3	6230	R	unNo: 3	36230				
Prep Date:		Analysis Da	ate: 8 /	3/2016	S	eqNo: 1	122317	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0.0741	0.971								
Radium-226 ±		0.482	0.971								
Radium-228		-0.0123	0.985								
Radium-228 ±		0.433	0.985								

Qualifiers:

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

Page 22 of 23

Client: Project:	Na [.] Mo	vajo Refining Con onthly RO Reject	mpany								
Sample ID	MB-26273	SampTy	/pe: MI	BLK	Tes	tCode: SI	M2540C MC	DD: Total Dis	solved So	lids	
Client ID:	PBW	Batch	ID: 26	273	F	RunNo: 3	5537				
Prep Date:	7/7/2016	Analysis Da	ate: 7	/8/2016	5	SeqNo: 1	100261	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolve	d Solids	ND	20.0								
Sample ID	LCS-26273	SampTy	/pe: LC	s	Tes	tCode: SI	M2540C MC	DD: Total Dis	solved So	lids	
Client ID:	LCSW	Batch	ID: 26	273	F	RunNo: 3	5537				
Prep Date:	7/7/2016	Analysis Da	ate: 7	/8/2016	5	SeqNo: 1	100262	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolve	d Solids	1000	20.0	1000	0	100	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
- W Sample container temperature is out of limit as specified

Page 23 of 23

Client Name: NAVAJO REFINING CO Work Order	Number: 1607	298		RcptNo:	1
Received by/date: H > 0710 +	116				
Logged By: Lindsay Mangin 7/7/2016 10:15	5:00 AM		Juniy		
Completed By: Lindsay Mangin 7/7/2016 12:06	5:14 PM		Julip		
Reviewed By: a.J. 7/7/16	Ś		<i>V</i> · V		
Chain of Custody					
1. Custody seals intact on sample bottles?	Yes		No 🗌	Not Present	
2. Is Chain of Custody complete?	Yes	\checkmark	No 🗌	Not Present	
3. How was the sample delivered?	Cou	ier			
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	V	No 🗌		
8. Are samples (except VOA and ONG) properly preserved?	Yes	\checkmark	No 🗌		
9. Was preservative added to bottles?	Yes		No 🗹	NA 🗌	
10.VOA vials have zero headspace?	Yes		No 🗌	No VOA Vials	
11. Were any sample containers received broken?	Yes		No 🗹	# of preserved	1
12 Does papework match bottle labels?	Vec		No 🗔	for pH:	_ /
(Note discrepancies on chain of custody)	103			(<2)01	(12)unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes	\checkmark	No 🗌	Adjusted?	NO
14. Is it clear what analyses were requested?	Yes	~	No 🗌		0
15. Were all holding times able to be met? (If no, notify customer for authorization)	Yes	V	No 🗌	Checked by:	Ja -
(if no, nony costonier for autonization.)				6	
Special Handling (if applicable)					
16. Was client notified of all discrepancies with this order?	Yes		No 🗌	NA 🗹	
Person Notified	Date		Notes and a second s		
By Whom:	Via: eMa	ail 🗆	Phone 🗍 Fax	In Person	
Regarding					
Client Instructions:					
17					

_
repo
lytical
e ana
on th
tated
rly no
e clea
will be
data
acted
-contr
y sub
y. An
sibilit
is pos
e of th
notice
es as
s serv
JH.
atories
pou
g
dited la
accredited la
other accredited la
ted to other accredited la
intracted to other accredited la
subcontracted to other accredited la
ay be subcontracted to other accredited la
Ital may be subcontracted to other accredited la
unmental may be subcontracted to other accredited la
Environmental may be subcontracted to other accredited la
Hall Environmental may be subcontracted to other accredited la
ted to Hall Environmental may be subcontracted to other accredited la
ubmitted to Hall Environmental may be subcontracted to other accredited la
ples submitted to Hall Environmental may be subcontracted to other accredited la
, samples submitted to Hall Environmental may be subcontracted to other accredited la
ssary, samples submitted to Hall Environmental may be subcontracted to other accredited la
if necessary, samples submitted to Hall Environmental may be subcontracted to other accredited la

د	nain	- <u></u>	istoay kecora											C			ŀ	-	
Client:	Navajo	Refinery		X Standard	L Rich		L	_						5				- 2	
				Project Name									ה מ		5	5	5		
Mailing .	Address	: P.O. Bo;	x 159 Artesia,	Monthly R.O.	Reject			4901	Haw	kins 1	/.nalle	Albuor		al.cor	n 18710	g			
NM 882	11-0159			Project #: P.C), # 167796		<u> </u>	Tel	505-3	345-3	 975	Fax	505-	345-4	107	2			
Phone #	t: 575-74	48-3311									An	alysis	Regi	uest					
email or	. Fax#: 5	75-746-5	451	Project Mana	ger:							()							
QA/QC F	ackage:			ı				Ş				-528							
X Stanc	lard		Level 4 (Full Validation)	Robert Comb	S		sD	500			0	-вЯ-	_						
□ Othe				Sampler:	Brady Hubbar	p	οΛ	NS	ap siei		ЧO	+97				shil	0.011		(
	(Type)_			On Ice:	X Yes	D No]si_	jsil	ins/		<u>'٥</u> ٤	2-е;	(05			N Jo
				Sample Temp	oerature:	1.000		00		۸un	ID '	신) / 	epin			hav hav	001))
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	N. OTTRS	8260B:WQC	0W :00728	BIOT :4.865	7470: Merc	8015: GRO	Rodioactivit	olno əteilus	slonard	Fluoride	nnivi/eisinivi lossi(TistoT		204 J EDB	Air Bubbles
7-5-16	9:30	liquid	R.O. Reject	2 - 500ml P	1-unpres 1- H2SO4	181					:	 	×			. ×		;	/ ≻
2-5-16	9:30	liquid	R.O. Reject	3-40ml VOA	HCL	18-	×												
-S-16	9:30	liquid	R.O. Reject	1-500ml P	HNO3	j@				×									
2-5-16	9:30	liquid	R.O. Reject	1-125ml P	HNO3	100-													
7-5-16	9:30	liquid	R.O. Reject	1-500ml P	NaOH	IQ)-			×										
1-5-16	9:30	liquid	R.O. Reject	2- 1L P	HNO3	-001						×							
7-5-16	9:30	liquid	R.O. Reject	3-40ml VOA	Na2S2O3	ICU-												×	
7 346	9:30	liquid	R.O. Reject	2 - 1L Glass	unpres	-íoi													
7-5-16	9:30	liquid	R.O. Reject	1 - 1L Glass	unpres	101		×											
71S-16	9:30	liquid	R.O. Reject	3-40ml VOA	HCI	100-					×								
7-5-1	9:30	liquid	R.O. Reject	1-250mlGlas	unpres	-101			<u> </u>		×								
7-5-16	9:30	liquid	R.O. Reject	1 - 1L Glass	H2SO4									×					
7-5-16	XX	liquid	Trip Blank	2-40ml VOA	HCL	-200-													
Date: デーG - ピ	Time: Ic 30	Relinquishe	ad by: Bridy Hyskeric	Received by	heer	Date Time	Metals	arks: s: As, Al,	Ba, B, C	id, Cr, O	o, Cu, F	e, Pb, M	n, Hg, M	o, Ni, S	e, Ag, L	J, Zn		•	
		22/2						oroethane	1.1.2 ⁻	Trichlord	ethviene	euaciiio : 1.1-Dia	inernant Shloroeth	ane:1, 1,1,∠,	∠-retrac 1-Dichlo	onioroe proethe	unyiene ne: 1.2	'	
		Keinquisne	ad by:	Keceived by:		Date Time	Dibror Dichlo SVOC	noethane romethai s: benzo	e: 1,2-Di ne: Ethy (a)pyrei	chloroet benzen 1e, pher	iane; Be s; Toluer ol, 1-me	nzene; (ie; Total thylnaph	arbon 7 Xylenes thalene,	etrachk Vinyl C 2-meth	oride; Cl Chloride ylnaphtf	hlorofo nalene,	rm; naphtr	alene	
																	•		



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

November 16, 2016

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

OrderNo.: 1610613

RE: Quarterly RO Reject

Dear Robert Combs:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 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

Analytical Report Lab Order 1610613 Date Reported: 11/16/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company

Quarterly RO Reject

Project:

Client Sample ID: R.O. Reject Collection Date: 10/11/2016 11:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Lab ID: 1610613-001	Matrix:	AQUEOUS	5	Received D	ate: 10/	13/2016 8:30:00 AM	
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: DISSOLVED METALS						Analyst:	JLF
Arsenic	ND	0.0050		mg/L	5	10/28/2016 2:36:13 PM	A38300
Lead	ND	0.00050		mg/L	1	10/25/2016 7:44:19 PM	B38214
Selenium	0.0089	0.0010		mg/L	1	10/25/2016 7:44:19 PM	B38214
Uranium	0.0064	0.00050		mg/L	1	10/25/2016 7:44:19 PM	B38214
EPA 903.1: RA 226 AND EPA 904.0: RA	228-SUBBE	D				Analyst:	SUB
Radium-226	0.525	0.552		pCi/L	1	11/16/2016	R38749
Radium-226 ±	0.445	0.552		pCi/L	1	11/16/2016	R38749
Radium-228	0.442	0.785		pCi/L	1	11/16/2016	R38749
Radium-228 ±	0.389	0.785		pCi/L	1	11/16/2016	R38749
EPA METHOD 300.0: ANIONS						Analyst:	LGT
Fluoride	3.6	2.0		mg/L	20	10/14/2016 12:43:59 AM	/I R37942
Chloride	280	10		mg/L	20	10/14/2016 12:43:59 AM	/I R37942
Sulfate	1900	50		mg/L	100	10/25/2016 4:52:17 PM	R38212
Nitrate+Nitrite as N	1.9	1.0		mg/L	5	10/14/2016 1:33:37 AM	R37942
SM2540C MOD: TOTAL DISSOLVED SC	DLIDS					Analyst:	KS
Total Dissolved Solids	3960	20.0	*	mg/L	1	10/20/2016 2:01:00 PM	28134
EPA 335.4: TOTAL CYANIDE SUBBED						Analyst:	SUB
Cyanide	ND	0.0100		mg/L	1	10/19/2016	R38749
SM4500-H+B: PH						Analyst:	JRR
рН	7.82	1.68	Н	pH units	1	10/18/2016 1:22:12 PM	R38048
EPA METHOD 200.7: DISSOLVED MET	ALS					Analyst:	MED
Aluminum	ND	0.020		mg/L	1	10/25/2016 12:47:24 PN	/I A38197
Barium	0.079	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Boron	0.092	0.040		mg/L	1	10/21/2016 6:01:00 PM	B38141
Cadmium	ND	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Chromium	ND	0.0060		mg/L	1	10/21/2016 6:01:00 PM	B38141
Cobalt	ND	0.0060		mg/L	1	10/21/2016 6:01:00 PM	B38141
Copper	ND	0.0060		mg/L	1	10/25/2016 12:47:24 PM	/I A38197
Iron	ND	0.020		mg/L	1	10/25/2016 12:47:24 PM	/I A38197
Manganese	ND	0.0020		mg/L	1	10/21/2016 6:01:00 PM	B38141
Molybdenum	ND	0.0080		mg/L	1	10/21/2016 6:01:00 PM	B38141
Nickel	ND	0.010		mg/L	1	10/21/2016 6:01:00 PM	B38141
Silver	ND	0.0050		mg/L	1	10/21/2016 6:01:00 PM	B38141
Zinc	0.014	0.010		mg/L	1	10/21/2016 6:01:00 PM	B38141
EPA METHOD 245.1: MERCURY						Analyst	JLF
Mercury	ND	0.00020		mg/L	1	10/21/2016 12:15:12 PM	/ 28201
Refer to the QC Summary report an	nd sample log	gin checklist	t for fl	agged QC da	ta and p	reservation information	1.
Qualifiers: * Value exceeds Maximum Co	ontaminant Leve	1.		B Analyte de	tected in the	he associated Method Blank	

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

% Recovery outside of range due to dilution or matrix S

- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 22 J

Р Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1610613

Date Reported: 11/16/2016

CLIENT: Navajo Refining Company

Quarterly RO Reject

Project:

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: R.O. Reject Collection Date: 10/11/2016 11:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Lab ID: 1610613-001 Matrix: AQUEOUS Result POL Oual Units **DF** Date Analyzed Batch Analyses **EPA METHOD 8015D: GASOLINE RANGE** Analyst: AG mg/L Gasoline Range Organics (GRO) ND 0.050 1 10/19/2016 9:14:28 PM W38060 Surr: BFB 90.7 70-130 %Rec 1 10/19/2016 9:14:28 PM W38060 EPA METHOD 8011/504.1: EDB Analyst: JME 1,2-Dibromoethane ND 0.010 µg/L 1 10/17/2016 4:51:55 PM 28082 EPA METHOD 8082: PCB'S Analyst: SCC Aroclor 1016 ND 1.0 µg/L 1 10/19/2016 8:28:00 AM 28040 Aroclor 1221 ND 1.0 µg/L 1 10/19/2016 8:28:00 AM 28040 Aroclor 1232 ND 1.0 µg/L 1 10/19/2016 8:28:00 AM 28040 Aroclor 1242 ND 1.0 10/19/2016 8:28:00 AM 28040 µg/L 1 Aroclor 1248 ND 1.0 µg/L 1 10/19/2016 8:28:00 AM 28040 Aroclor 1254 ND 1.0 µg/L 1 10/19/2016 8:28:00 AM 28040 Aroclor 1260 ND µg/L 10/19/2016 8:28:00 AM 28040 1.0 1 %Rec 10/19/2016 8:28:00 AM 28040 Surr: Decachlorobiphenyl 117 26.1-140 1 Surr: Tetrachloro-m-xylene 15-123 %Rec 10/19/2016 8:28:00 AM 28040 112 1 EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM **Diesel Range Organics (DRO)** ND 1.0 mg/L 1 10/14/2016 10:46:55 PM 28063 Motor Oil Range Organics (MRO) ND 5.0 mg/L 10/14/2016 10:46:55 PM 28063 1 Surr: DNOP 117 77.1-144 %Rec 10/14/2016 10:46:55 PM 28063 1 EPA METHOD 8310: PAHS Analyst: SCC Naphthalene ND 2.0 µg/L 1 10/20/2016 3:19:37 PM 28041 1-Methylnaphthalene ND 2.0 10/20/2016 3:19:37 PM 28041 µg/L 1 2-Methylnaphthalene ND 2.0 10/20/2016 3:19:37 PM 28041 µg/L 1 ND 0.070 10/20/2016 3:19:37 PM 28041 Benzo(a)pyrene µg/L 1 80.6 10/20/2016 3:19:37 PM 28041 Surr: Benzo(e)pyrene 20-153 %Rec 1 EPA METHOD 8260B: VOLATILES Analyst: AG Benzene ND 1.0 1 10/14/2016 10:07:29 AM R37973 µg/L Toluene ND 1.0 µg/L 1 10/14/2016 10:07:29 AM R37973 ND 10/14/2016 10:07:29 AM R37973 Ethylbenzene 1.0 µg/L 1 1.2-Dichloroethane (EDC) 10/14/2016 10:07:29 AM R37973 ND 1.0 µg/L 1 1,2-Dibromoethane (EDB) ND µg/L 10/14/2016 10:07:29 AM R37973 1.0 1 Carbon Tetrachloride ND 1.0 µg/L 1 10/14/2016 10:07:29 AM R37973 Chloroform ND 1.0 µg/L 1 10/14/2016 10:07:29 AM R37973 1.1-Dichloroethane ND 1.0 10/14/2016 10:07:29 AM R37973 µg/L 1 1,1-Dichloroethene ND 1.0 µg/L 1 10/14/2016 10:07:29 AM R37973 ND 10/14/2016 10:07:29 AM R37973 Methylene Chloride 3.0 µg/L 1 1,1,2,2-Tetrachloroethane ND 2.0 µg/L 1 10/14/2016 10:07:29 AM R37973 Tetrachloroethene (PCE) ND 1.0 µg/L 1 10/14/2016 10:07:29 AM R37973

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 2 of 22
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1610613 Date Reported: 11/16/2016

CLIENT: Navajo Refining Company		C	lient Samp	le ID: R.	O. Reject	
Project: Quarterly RO Reject			Collection	Date: 10.	/11/2016 11:00:00 #	AM
Lab ID: 1610613-001	Matrix:	AQUEOUS	Received	Date: 10.	/13/2016 8:30:00 A	М
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Anal	yst: AG
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/14/2016 10:07:29	AM R37973
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/14/2016 10:07:29	AM R37973
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/14/2016 10:07:29	AM R37973
Vinyl chloride	ND	1.0	µg/L	1	10/14/2016 10:07:29	AM R37973
Xylenes, Total	ND	1.5	µg/L	1	10/14/2016 10:07:29	AM R37973
Surr: 1,2-Dichloroethane-d4	96.3	70-130	%Rec	1	10/14/2016 10:07:29	AM R37973
Surr: 4-Bromofluorobenzene	100	70-130	%Rec	1	10/14/2016 10:07:29	AM R37973
Surr: Dibromofluoromethane	103	70-130	%Rec	1	10/14/2016 10:07:29	AM R37973
Surr: Toluene-d8	97.8	70-130	%Rec	1	10/14/2016 10:07:29	AM R37973
TOTAL PHENOLICS BY SW-846 9067					Anal	yst: SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	10/18/2016	28115

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	Е
	Н	Holding times for preparation or analysis exceeded	J
	ND	Not Detected at the Reporting Limit	Р
	R	RPD outside accepted recovery limits	RL

- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 22
- Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1610613 Date Reported: 11/16/2016

CLIENT: Navajo Refining Company	Client Sample ID: Trip Blank									
Project: Quarterly RO Reject			Collection	Date:						
Lab ID: 1610613-002	Matrix:	/13/2016 8:30:00 AM	-							
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch				
EPA METHOD 8011/504.1: EDB					Analys	st: JME				
1,2-Dibromoethane	ND	0.010	µg/L	1	10/17/2016 5:07:17 PI	M 28082				
EPA METHOD 8260B: VOLATILES					Analys	st: AG				
Benzene	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
Toluene	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	AM R37973				
Ethylbenzene	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	AM R37973				
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	AM R37973				
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	AM R37973				
Carbon Tetrachloride	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
Chloroform	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
1,1-Dichloroethane	ND	1.0	µg/L	1	10/14/2016 11:33:59 4	M R37973				
1,1-Dichloroethene	ND	1.0	µg/L	1	10/14/2016 11:33:59 /	M R37973				
Methylene Chloride	ND	3.0	µg/L	1	10/14/2016 11:33:59 /	M R37973				
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/14/2016 11:33:59 /	M R37973				
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	10/14/2016 11:33:59 /	M R37973				
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/14/2016 11:33:59 A	M R37973				
Vinyl chloride	ND	1.0	µg/L	1	10/14/2016 11:33:59 /	M R37973				
Xylenes, Total	ND	1.5	µg/L	1	10/14/2016 11:33:59 /	M R37973				
Surr: 1,2-Dichloroethane-d4	93.1	70-130	%Rec	1	10/14/2016 11:33:59 /	M R37973				
Surr: 4-Bromofluorobenzene	95.7	70-130	%Rec	1	10/14/2016 11:33:59 4	M R37973				
Surr: Dibromofluoromethane	98.5	70-130	%Rec	1	10/14/2016 11:33:59 4	M R37973				
Surr: Toluene-d8	104	70-130	%Rec	1	10/14/2016 11:33:59 A	M R37973				

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	E
	Н	Holding times for preparation or analysis exceeded	J
	ND	Not Detected at the Reporting Limit	Р
	р		л

- 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 4 of 22
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1610613
	16-Nov-16

Client:	-	Navajo Refining C	ompany	I								
Project:		Quarterly RO Reje	ect									
Sample ID	MB-B	Samp	Tvpe: M	BLK	TestCode: EPA Method 200.7: Dissolved Metals							
Client ID [.]	PBW	Bate	Batch ID: B38141			RunNo: 38141						
Bron Doto:	. 511	Analysia					400207	Lipito: ma/l				
Flep Date.		Analysis		0/21/2010	c c	sequo. I	190207	Units. IIIg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Barium		ND	0.0020									
Boron		ND	0.040									
Cadmium		ND	0.0020									
Chromium		ND	0.0060									
Cobalt		ND	0.0060									
Manganese		ND	0.0020									
Molybdenum		ND	0.0080									
Nickel		ND	0.010									
Silver		ND	0.0050									
Zinc		ND	0.010									
Sample ID	LLLCS-	B Samp	Type: LO	CSLL	TestCode: EPA Method 200.7: Dissolved Metals							
Client ID:	BatchQ	C Bato	Batch ID: B38141			RunNo: 3	8141					
Prep Date:		Analysis	vsis Date: 10/21/2016		SeqNo: 1190211			Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Barium		0.0026	0.0020	0.002000	0	130	50	150				
Boron		0.040	0.040	0.04000	0	101	50	150				
Cadmium		ND	0.0020	0.002000	0	84.5	50	150				
Chromium		0.0062	0.0060	0.006000	0	103	50	150				
Cobalt		0.0064	0.0060	0.006000	0	106	50	150				
Manganese		0.0021	0.0020	0.002000	0	106	50	150				
Molybdenum		ND	0.0080	0.008000	0	97.5	50	150				
Nickel		ND	0.010	0.005000	0	96.6	50	150				
Silver		ND	0.0050	0.005000	0	99.4	50	150				
Zinc		ND	0.010	0.005000	0	105	50	150				
Sample ID	LCS-B	Samp	Type: LO	cs	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls		
Client ID:	LCSW	Bate	h ID: B	38141	F	RunNo: 3	8141					
Prep Date:		Analysis	Date: 1	0/21/2016	5	SeqNo: 1	190212	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Barium		0.51	0.0020	0.5000	0	101	85	115				
Boron		0.53	0.040	0.5000	0	106	85	115				
Cadmium		0.52	0.0020	0.5000	0	104	85	115				
Chromium		0.50	0.0060	0.5000	0	101	85	115				
Cobalt		0.49	0.0060	0.5000	0	97.8	85	115				
Manganese		0.50	0.0020	0.5000	0	100	85	115				
Molybdenum		0.53	0.0080	0.5000	0	105	85	115				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 5 of 22

Client: Project:		Navajo Refining C Quarterly RO Reje	ompany ct								
Sample ID Client ID: Prep Date:	LCS-B LCSW	Samp Bato Analysis I	Type: LC h ID: B3 Date: 1	CS 38141 0/21/2016	Tes F S	tCode: EF RunNo: 34 SeqNo: 1	PA Method 8141 190212	200.7: Dissol Units: mg/L	ved Meta	s	
Analyte Silver		Result 0.10	PQL 0.0050	SPK value 0.1000	SPK Ref Val 0	%REC 99.9	LowLimit 85	HighLimit 115	%RPD	RPDLimit	Qual
Zinc		0.49	0.010	0.5000	0	97.9	85	115			
Sample ID	MB-A	Samp	Type: M I	BLK	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls	
Client ID:	PBW	Bato	Batch ID: A38197			RunNo: 3	8197				
Prep Date:		Analysis I	Analysis Date: 10/25/2016			SeqNo: 1192092 Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum Copper Iron		ND ND ND	0.020 0.0060 0.020								
Sample ID	LCS-A	Samp	Type: LC	cs	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	LCSW	Bato	h ID: A3	88197	RunNo: 38197						
Prep Date:		Analysis I	Date: 1	0/25/2016	S	SeqNo: 1	192093	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum Copper Iron		0.57 0.49 0.50	0.020 0.0060 0.020	0.5000 0.5000 0.5000	0 0 0	114 97.8 99.1	85 85 85	115 115 115			
Sample ID	LLLCS	-A Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Meta	s	
Client ID:	BatchC	C Batc	h ID: A3	88197	F	RunNo: 3	8197				
Prep Date:		Analysis I	Date: 1	0/25/2016	8	SeqNo: 1 '	192094	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0 020	0.01000	0	123	50	150			
•			0.020		•	10-		4 - 6			

Qualifiers:

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

Page 6 of 22

Client:		Navajo Refining C	Company									
Project:		Quarterly RO Reje	ect									
Sample ID	LCS	Samp	Type: LC	s	Tes	tCode: EF	PA 200.8: I	Dissolved Met	als			
Client ID:	LCSW	Bato	Batch ID: B38214			RunNo: 38	8214					
Prep Date:		Analysis	Date: 1	0/25/2016	S	SeqNo: 1'	192768	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		0.012	0.00050	0.01250	0	95.6	85	115				
Selenium		0.025	0.0010	0.02500	0	99.1	85	115				
Uranium		0.012	0.00050	0.01250	0	96.0	85	115				
Sample ID	LLLCS	Samp	Type: LC	SLL	Tes	TestCode: EPA 200.8: Dissolved Metals						
Client ID:	BatchQ	c Bate	ch ID: B3	8214	F	RunNo: 38	8214					
Prep Date:		Analysis	Date: 1	0/25/2016	5	SeqNo: 1'	192770	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		0.00051	0.00050	0.0005000	0	101	50	150				
Selenium		0.0011	0.0010	0.001000	0	113	50	150				
Uranium		ND	0.00050	0.0005000	0	97.5	50	150				
Sample ID	МВ	Samp	Туре: М	BLK	Tes	tCode: EF	PA 200.8: I	Dissolved Met	als			
Client ID:	PBW	Bate	ch ID: B3	8214	F	RunNo: 38	8214					
Prep Date:		Analysis	Date: 1	0/25/2016	S	SeqNo: 1192772 Units: mg/L						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead		ND	0.00050									
Selenium		ND	0.0010									
Uranium		ND	0.00050									
Sample ID	LCS	Samp	Type: LC	s	Tes	tCode: EF	PA 200.8: I	Dissolved Met	als			
Client ID:	LCSW	Bate	ch ID: A3	8300	F	RunNo: 38	8300					
Prep Date:		Analysis	Date: 1	0/28/2016	S	SeqNo: 1'	195760	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		0.025	0.0010	0.02500	0	98.3	85	115				
Sample ID	LLLCS	Samp	Type: LC	SLL	Tes	tCode: EF	PA 200.8: I	Dissolved Met	als			
Client ID:	BatchQ	c Bate	ch ID: A3	8300	F	RunNo: 38	8300					
Prep Date:		Analysis	Date: 1	0/28/2016	S	SeqNo: 1	195761	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	0.0010	0.001000	0	99.2	50	150				

Qualifiers:

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

Page 7 of 22

Client: Project:		Navajo Refining Co Quarterly RO Reject	mpany t								
Sample ID	MB	SampT	ype: ME	BLK	Tes	tCode: E	PA 200.8:	Dissolved Me	tals		
Client ID:	PBW	Batch	ID: A3	8300	F	RunNo: 3	8300				
Prep Date:		Analysis Da	ate: 10	0/28/2016	S	SeqNo: 1	195762	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	0.0010								

Qualifiers:

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

Page 8 of 22

Client: Project:	Navajo Quarterl	Refining Company ly RO Reject								
Sample ID	MB-28201	SampType: MBLK	Tes	TestCode: EPA Method 245.1: Mercury						
Client ID:	PBW	Batch ID: 28201	F	RunNo: 38122						
Prep Date:	10/20/2016	Analysis Date: 10/21/20	016	SeqNo: 1189575	Units: mg/L					
Analyte		Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		ND 0.00020								
Sample ID	LCS-28201	SampType: LCS	Tes	tCode: EPA Method	245.1: Mercu	ry				
Client ID:	LCSW	Batch ID: 28201	F	RunNo: 38122						
Prep Date:	10/20/2016	Analysis Date: 10/21/20)16	SeqNo: 1189576	Units: mg/L					
Analyte		Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury		0.0049 0.00020 0.00	05000 0	97.4 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
- W Sample container temperature is out of limit as specified

Page 9 of 22

Client: Project:		Navajo Refining Con Quarterly RO Reject	npany								
Sample ID	MB	SampTy	vpe: ME	BLK	TestCode: EPA Method 300.0: Anions						
Client ID:	PBW	Batch	ID: R3	7942	F	RunNo: 3	7942				
Prep Date:		Analysis Da	ate: 10	0/13/2016	S	SeqNo: 1	182401	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		ND	0.10								
Chloride		ND	0.50								
Nitrate+Nitrite	as N	ND	0.20								
Sample ID LCS SampType: LCS				Tes	tCode: E	PA Method	300.0: Anions	S			
Client ID:	LCSW	Batch ID: R37942			RunNo: 37942						
Prep Date:		Analysis Date: 10/13/2016		S	SeqNo: 1	182402	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.54	0.10	0.5000	0	107	90	110			
Chloride		4.7	0.50	5.000	0	93.9	90	110			
Nitrate+Nitrite	as N	3.4	0.20	3.500	0	97.3	90	110			
Sample ID	МВ	SampTy	pe: ME	BLK	TestCode: EPA Method 300.0: Anions						
Client ID:	PBW	Batch	ID: R3	8212	F	RunNo: 3	8212				
Prep Date:		Analysis Da	ate: 10	0/25/2016	S	SeqNo: 1	192608	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		ND	0.50								
Sample ID	LCS	SampTy	/pe: LC	s	Tes	tCode: E	PA Method	300.0: Anion	s		
Client ID:	LCSW	Batch	ID: R3	8212	F	RunNo: 3	8212				
Prep Date:		Analysis Da	ate: 10	0/25/2016	S	SeqNo: 1	192609	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		9.7	0.50	10.00	0	96.9	90	110			

Qualifiers:

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

Page 10 of 22

WO#: 1610613 16-Nov-16
Client: Project:	Navajo Quarte	o Refining Compa erly RO Reject	ny							
Sample ID	MB-28082	SampType:	MBLK	Test	tCode: EF	PA Method	8011/504.1: E	DB		
Client ID:	PBW	Batch ID:	28082	R	RunNo: 37	7992				
Prep Date:	10/17/2016	Analysis Date:	10/17/2016	S	SeqNo: 11	183982	Units: µg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	nane	ND 0.0	10							
Sample ID	LCS-28082	SampType:	LCS	Test	tCode: EF	PA Method	8011/504.1: E	DB		
Client ID:	LCSW	Batch ID:	28082	R	RunNo: 37	7992				
Prep Date:	10/17/2016	Analysis Date:	10/17/2016	S	6eqNo: 11	183984	Units: µg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoeth	nane	0.093 0.0	10 0.1000	0	93.2	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
- W Sample container temperature is out of limit as specified

_ _ _ _

Page 11 of 22

Client: Project:	Navajo R Quarterly	efining Co RO Rejec	mpany t								
Sample ID	1610613-001AMS	SampT	ype: MS	6	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID:	R.O. Reject	Batch	ID: 28	063	F	RunNo: 3	7940				
Prep Date:	10/14/2016	Analysis D	ate: 10)/14/2016	S	eqNo: 1	183256	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Surr: DNOP	Organics (DRO)	6.1 0.51	1.0	5.000 0.5000	0	121 103	79.6 77.1	148 144			
Sample ID	1610613-001AMSE) SampT	уре: МS	SD	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID:	R.O. Reject	Batch	ID: 28	063	F	RunNo: 3	7940				
Prep Date:	10/14/2016	Analysis D	ate: 10	0/14/2016	S	SeqNo: 1	183257	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	5.8	1.0	5.000	0	115	79.6	148	5.02	20	
Surr: DNOP		0.49		0.5000		98.6	77.1	144	0	0	
Sample ID	LCS-28063	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID:	LCSW	Batch	ID: 28	063	F	RunNo: 3	7940				
Prep Date:	10/14/2016	Analysis D	ate: 10	0/14/2016	S	eqNo: 1	183264	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	5.8	1.0	5.000	0	116	63.2	155			
Surr: DNOP		0.49		0.5000		97.8	77.1	144			
Sample ID	MB-28063	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	e	
Client ID:	PBW	Batch	ID: 28	063	F	RunNo: 3	7940				
Prep Date:	10/14/2016	Analysis D	ate: 10)/14/2016	5	SeqNo: 1	183265	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	ND	1.0								
Motor Oil Rang	ge Organics (MRO)	ND	5.0								
Surr: DNOP		1.1		1.000		114	77.1	144			

Qualifiers:

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

Page 12 of 22

Client: Navajo	Refining Co	ompany										
Project: Quarter	rly RO Rejec	et										
Sample ID MB-28040	SampT	Type: ME	BLK	Tes	tCode: El	PA Method	8082: PCB's					
Client ID: PBW	Batch	h ID: 28	040	RunNo: 38063								
Prep Date: 10/13/2016	Analysis D	Date: 10	0/18/2016	SeqNo: 1187392 Units: μ g/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Aroclor 1016	ND	1.0										
Aroclor 1221	ND	1.0										
Aroclor 1232	ND	1.0										
Aroclor 1242	ND	1.0										
Aroclor 1248	ND	1.0										
Aroclor 1254	ND	1.0										
Aroclor 1260	ND	1.0										
Surr: Decachlorobiphenyl	2.7		2.500		110	26.1	140					
Surr: Tetrachloro-m-xylene	2.7		2.500		108	15	123					
Sample ID LCS-28040	SampT	Type: LC	s	Tes	tCode: El	PA Method	8082: PCB's					
Client ID: LCSW	Batch	h ID: 28	040	F	RunNo: 3	8063						
Prep Date: 10/13/2016	Analysis D	Date: 10	0/18/2016	5	SeqNo: 1	187408	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Aroclor 1016	5.2	1.0	5.000	0	103	15	147					
Aroclor 1260	5.2	1.0	5.000	0	105	15	200					
Surr: Decachlorobiphenyl	2.8		2.500		112	26.1	140					
Surr: Tetrachloro-m-xylene	2.8		2.500		112	15	123					

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 13 of 22

Navajo Refining Company

Quarterly RO Reject

Sample ID 100ng Ics SampType: LCS TestCode: EPA Method 8260B: VOLATILES										
Client ID: LCSW	Batch	ID: R3	7973	R	unNo: 3	7973				
Prep Date:	Analysis Da	ate: 10)/14/2016	S	eqNo: 1	183336	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	90.7	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	78.5	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			
Sample ID 1610613-001bms	SampTy	/pe: MS	6	Test	tCode: EF	PA Method	8260B: VOL	ATILES		
Client ID: R.O. Reject	Batch	ID: R3	7973	RunNo: 37973						
Prep Date:	Analysis Da	ate: 10	0/14/2016	SeqNo: 1183339 Units: μg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.2	70	130			
Toluene	19	1.0	20.00	0	97.4	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	88.0	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	77.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.3	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			
Sample ID 1610613-001bmsd	SampTy	/pe: MS	SD	Test	tCode: EF	PA Method	8260B: VOL	ATILES		
Client ID: R.O. Reject	Batch	ID: R3	7973	R	unNo: 3	7973				
Prep Date:	Analysis Da	ate: 10)/14/2016	S	eqNo: 1'	183340	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.0	70	130	1.25	20	
Toluene	18	1.0	20.00	0	92.4	70	130	5.28	20	
1,1-Dichloroethene	17	1.0	20.00	0	86.1	70	130	2.18	20	
Trichloroethene (TCE)	15	1.0	20.00	0	76.1	70	130	2.11	20	
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.9		10.00		99.2	70	130	0	0	
Surr: Dibromofluoromethane	9.9		10.00		98.9	70	130	0	0	
Surr: Toluene-d8	9.7		10.00		97.3	70	130	0	0	

Qualifiers:

Client:

Project:

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

Page 14 of 22

WO#: 1610613

WO#:	1610613
	16-Nov-16

Client:NProject:Q	avajo Refining Co uarterly RO Rejec	ompany st								
Sample ID rb	SampT	ype: M	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	n ID: R3	37973	F	RunNo: 3	7973				
Prep Date:	Analysis D	ate: 1	0/14/2016	S	SeqNo: 1	183360	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qua
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-	d4 9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenze	ene 9.8		10.00		97.6	70	130			
Surr: Dibromofluorometha	ine 10		10.00		105	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	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
- W Sample container temperature is out of limit as specified

Page 15 of 22

WO#: 1610613

16-Nov-16

Client: Navajo	Refining Co	ompany								
Project: Quarter	rly RO Reje	ct								
Sample ID MB-28041	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: PBW	Batc	h ID: 28	041	F	RunNo: 3	8100				
Prep Date: 10/13/2016	Analysis [Date: 10	0/20/2016	S	SeqNo: 1	188744	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(q,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	13		20.00		64.1	20	153			
Sample ID ICS 28041	Samp		· c	Tos	tCodo: E	PA Mothod				
Client ID: ICSW	Bato	h ID· 28	,5 041	F		8100	0310. FARS			
	Analysia (Dete: 40				400740	Linites and			
Prep Date: 10/13/2016	Analysis L	Jale: 1	0/20/2016		Sedino: 1	188746	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	81	2.0	80.00	0	101	55.6	124			
I-Methylnaphtnalene	82	2.0	80.20	0	102	55.3	124			
2-Methylnaphthalene	79	2.0	80.00	0	99.2	55.4	124			
Acenaphthylene	85	2.5	80.20	0	106	60.2	119			
Acenaphthene	81	2.0	80.00	0	101	56	126			
Fluorene	7.5	0.80	8.020	0	93.9	51.6	129			
Phenanthrene	3.4	0.60	4.020	0	84.6	58.8	129			
Anthracene	4.0	0.60	4.020	0	98.8	59.9	121			
Fluoranthene	7.4	0.30	8.020	0	92.4	48	145			
Pyrene	8.2	0.30	8.020	0	102	56.2	130			
Benz(a)anthracene	0.81	0.070	0.8020	0	101	50.4	142			
Chrysene	3.9	0.20	4.020	0	95.8	54.7	134			
Benzo(b)fluoranthene	0.93	0.10	1.002	0	92.8	61.8	120			
Benzo(k)fluoranthene	0.49	0.070	0.5000	0	98.0	55.9	134			

Qualifiers:

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

Page 16 of 22

Client:Navajo Refining CompanyProject:Quarterly RO Reject

Sample ID LCS-28041	SampT	Гуре: LC	S	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSW	Batch	h ID: 28	041	F	RunNo: 3	8100				
Prep Date: 10/13/2016	Analysis D	Date: 10)/20/2016	S	SeqNo: 1	188746	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.51	0.070	0.5020	0	102	51.3	137			
Dibenz(a,h)anthracene	0.98	0.12	1.002	0	97.8	57.8	134			
Benzo(g,h,i)perylene	1.0	0.12	1.000	0	100	57.2	134			
Indeno(1,2,3-cd)pyrene	2.2	0.25	2.004	0	108	58.2	137			
Surr: Benzo(e)pyrene	20		20.00		100	20	153			

Qualifiers:

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

Page 17 of 22

Client: Project:	Navajo F Quarterly	Refining Co 7 RO Rejeo	ompany st								
Sample ID MB	-28115	SampT	ype: ME	BLK	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID: PB	w	Batch	n ID: 28	115	F	RunNo: 3	8004				
Prep Date: 10)/18/2016	Analysis D	ate: 10	0/18/2016	5	SeqNo: 1	184471	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Rec	coverable	ND	2.5								
Sample ID LCS	S-28115	SampT	ype: LC	s	Tes	tCode: To	otal Phenol	ics by SW-84	6 9067		
Client ID: LCS	SW	Batch	n ID: 28	115	F	RunNo: 3	8004				
Prep Date: 10)/18/2016	Analysis D	ate: 10	0/18/2016	5	SeqNo: 1	184472	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics, Total Rec	coverable	22	2.5	20.00	0	109	64.4	135			

Qualifiers:

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

Page 18 of 22

Client: Project:	Navajo I Quarterl	Refining Compan y RO Reject	Ŋ							
Sample ID	MB-R38749	SampType: N	//BLK	Tes	tCode: EPA 335.4:	Total Cyanide	Subbed			
Client ID:	PBW	Batch ID: F	R38749	F						
Prep Date:		Analysis Date:	10/19/2016	S	GeqNo: 1210509	Units: mg/L				
Analyte		Result PQL	SPK value	SPK Ref Val	%REC LowLimi	t HighLimit	%RPD	RPDLimit	Qual	
Cyanide		ND 0.010	0							
Sample ID	LCS-R38749	SampType: L	CS	Tes	tCode: EPA 335.4:	Total Cyanide	Subbed			_
Client ID:	LCSW	Batch ID: F	R38749	F	RunNo: 38749					
Prep Date:		Analysis Date:	10/19/2016	S	GeqNo: 1210510	Units: mg/L				
Analyte		Result PQL	SPK value	SPK Ref Val	%REC LowLimi	t HighLimit	%RPD	RPDLimit	Qual	
Cvanide		0.543	0.5000	0	109 90) 110				

Qualifiers:

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

Page 19 of 22

Client: Project:	Navajo R Quarterly	efining Co RO Rejec	ompany t								
Sample ID	1610613-001bms	SampT	ype: MS	8	Tes	tCode: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID:	R.O. Reject	Batch	n ID: W 3	38060	F	RunNo: 3	8060				
Prep Date:		Analysis D	ate: 1	0/20/2016	S	SeqNo: 1	187259	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	je Organics (GRO)	0.49	0.050	0.5000	0	97.8	53.8	128			
Surr: BFB		9.2		10.00		92.3	70	130			
Sample ID	1610613-001bmsc	I SampT	ype: MS	SD	Tes	tCode: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID:	R.O. Reject	Batch	n ID: W	38060	F	RunNo: 3	8060				
Prep Date:		Analysis D	ate: 1	0/20/2016	S	SeqNo: 1	187260	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	je Organics (GRO)	0.44	0.050	0.5000	0	88.0	53.8	128	10.6	20	
Surr: BFB		8.6		10.00		86.5	70	130	0	0	
Sample ID	rb	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID:	PBW	Batch	1D: W	38060	F	RunNo: 3	8060				
Prep Date:		Analysis D	ate: 1	0/19/2016	S	SeqNo: 1	187443	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	ND	0.050								
Surr: BFB		8.9		10.00		88.8	70	130			

Sample ID 2.5ug gro Ics	SampTy	/pe: LC	S	TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSW	Batch	ID: W3	38060	R	tunNo: 3	8060				
Prep Date:	Analysis Da	ate: 10)/19/2016	S	eqNo: 1	188464	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.53	0.050	0.5000	0	105	75.4	118			
Surr: BFB	9.3		10.00		93.3	70	130			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 20 of 22

WO#:	1610613
	16-Nov-16

Client: Project:	Navajo Ro Quarterly	efining Co RO Rejec	mpany t								
Sample ID MB-R	38749	SampT	ype: ME	BLK	Test	Code: E	PA 903.1: R	a 226 and EP	A 904.0: F	Ra 228-Subbe	d
Client ID: PBW		Batch	ID: R3	8749	R	unNo: 3	88749				
Prep Date:		Analysis D	ate: 1 1	1/16/2016	S	eqNo: 1	1210512	Units: pCi/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226		0	0.518								
Radium-226 ±		0.321	0.518								
Radium-228		0.2	0.627								
Radium-228 ±		0.292	0.627								

Qualifiers:

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

Page 21 of 22

Client: Project:	Navajo I Quarterl	Refining Co y RO Rejec	ompany ct								
Sample ID ME	MB-28134 SampType: MBLK TestCode: SM2540C MOD: Total Dissolved Solids										
Client ID: PB	3W	Batch	n ID: 28	134	RunNo: 38086						
Prep Date: 1	0/18/2016	Analysis D	0ate: 10	0/20/2016	S	eqNo: 1	188295	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Sol	lids	ND	20.0								
Sample ID LC	LCS-28134 SampType: LCS TestCode: SM2540C MOD: Total Dissolved Solids										
Client ID: LC	sw	Batch	n ID: 28	134	F	RunNo: 38	8086				
Prep Date: 1	0/18/2016	Analysis D)ate: 10	0/20/2016	S	eqNo: 1	188296	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Sol	lids	1010	20.0	1000	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
- W Sample container temperature is out of limit as specified
- Page 22 of 22

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

Sample Log-In Check List

Client Name: NAVAJO-REFINING CO Work Order Numb	er: 1610613		RcptNo: 1
Received by/date:	ļ		
Logged By: Ashlev Gallegos 10/13/2016 8:30:00	AM	AJ	
Completed By: Ashley Gallegos 10/13/2016 11:53:15	SAM	A	
		J.J.J	
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		
<u>Log In</u>			
4. Was an attempt made to cool the samples?	Yes 🗹	No 🗌	
5. Were all samples received at a temperature of $>0^{\circ}$ 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 🗍
11. Were any sample containers received broken?	Yes	No 🗹	
	_		# of preserved bottles checked
12. Does paperwork match bottle labels?	Yes 🔽	No 🗌	for pH: (k2)or (12) unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🔽	No 🗌	Adjusted? No
14, Is it clear what analyses were requested?	Yes 🗹	No 🗌	đ
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🗌	Checked by:
Special Handling (if applicable)			
16. Was client notified of all discrepancies with this order?	Yes 🗌	No 🗌	NA 🗹
Person Notified: Date		<u>, , , , , , , , , , , , , , , , , , , </u>	
By Whom: Via:	eMail	Phone 🗌 Fax	in Person
Regarding:	<u>`</u>		
Client Instructions:			
17. Additional remarks:			
18. <u>Cooler Information</u>			
Cooler No Temp °C Condition Seal Intact Seal No	Seal Date	Signed By	
1 1.0 Good Yes			

ort.
alre
atytic
e aná
n th
ted o
notai
arly
ecle
dilib
ata
fed
ntrac
ş
y sut
An
oility
ossil
his p
e of t
otice
as n
Nes
is se
, Th
iories
borat
Sd la
redite
acci
other
ğ
acteo
contra
subc
y be
ll ma
lenta
Tong
Ē
Hall
đđ
mitte
Igns
tpies
sam
sary,
SOCES
lf ne



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

November 16, 2016

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

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

OrderNo.: 1610612

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/13/2016 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,

ander

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#:
 1610612

 Date:
 11/16/2016

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

Analytical Comments for WDW-1,2, & 3 Effluent:

The above referenced water sample was analyzed by EPA 8260C and the corresponding analytical report is attached in the following pages. The analyst also performed an NIST library review of the sample and the tentatively identified compounds (TIC's) are listed with estimated concentrations; 3-chloro-2-methyl-1-propene (~1 ppb), dibromofluoromethane (~9 ppb) and dimethyl disulfide (~1 ppb). The above referenced water sample was also analyzed by EPA 8270D and the corresponding analytical report is attached in the following pages.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject: Quarterly WDW-1, 2, &3 Inj WellLab ID: 1610612-001

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
IGNITABILITY METHOD 1010						Analyst	: SUB
Ignitability	>200	0		°F	1	10/18/2016	R38745
SULFIDE, REACTIVE						Analyst	: SUB
Reactive Sulfide	ND	0.40		mg/L	1	10/18/2016	R38745
SPECIFIC GRAVITY				-		Analyst	LGT
Specific Gravity	0.9997	0			1	10/27/2016 10:52:00 A	M R38258
FPA METHOD 300.0: ANIONS						Analysi	IGT
	35	20	*	ma/l	20	10/14/2016 12·19·11 A	M R37942
Chloride	360	25		mg/L	50	10/25/2016 9:50:38 PM	R38187
Bromide	0.72	0.10		mg/L	1	10/14/2016 12:06:47 A	M R37942
Phosphorus, Orthophosphate (As P)	ND	10	н	mg/L	20	10/14/2016 12:19:11 A	M R37942
Sulfate	1500	25		mg/L	50	10/25/2016 9:50:38 PN	R38187
Nitrate+Nitrite as N	ND	1.0		mg/L	5	10/14/2016 1:21:13 AN	R37942
SM2510B: SPECIFIC CONDUCTANCE						Analyst	: JRR
Conductivity	4900	1.0		µmhos/cm	1	10/18/2016 4:54:00 PN	R38048
SM2320B: ALKALINITY						Analyst	: JRR
Bicarbonate (As CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PM	R38048
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	10/18/2016 4:54:00 PN	R38048
Total Alkalinity (as CaCO3)	288.8	20.00		mg/L CaCO3	1	10/18/2016 4:54:00 PN	R38048
SM2540C MOD: TOTAL DISSOLVED SC	DLIDS					Analyst	: KS
Total Dissolved Solids	3210	20.0	*	mg/L	1	10/18/2016 6:58:00 PN	28098
CORROSIVITY						Analyst	SUB
рН	8.23			pH Units	1	10/17/2016	R38745
CYANIDE, REACTIVE						Analyst	SUB
Cyanide, Reactive	0.0250	0.0100		mg/L	1	10/25/2016	R38745
SM4500-H+B: PH						Analyst	: JRR
рН	8.10	1.68	Н	pH units	1	10/18/2016 4:54:00 PM	R38048
EPA METHOD 7470: MERCURY						Analyst	: DBD
Mercury	ND	0.00020		mg/L	1	10/18/2016 5:17:17 PM	28113
MERCURY, TCLP						Analyst	: DBD
Mercury	ND	0.020		mg/L	1	10/19/2016 5:06:28 PM	28165
EPA METHOD 6010B: TCLP METALS						Analyst	: MED
Arsenic	ND	5.0		mg/L	1	10/24/2016 8:45:55 AN	28191
Barium	ND	100		mg/L	1	10/24/2016 8:45:55 AN	28191

Matrix: AQUEOUS

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

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 2 of 29
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab ID: 1610612-001	Matrix:	AQUEOUS	Received	Received Date: 10/13/2016 8:30:00 AM				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch		
EPA METHOD 6010B: TCLP METALS					Analys	st: MED		
Cadmium	ND	1.0	mg/L	1	10/24/2016 8:45:55 AI	M 28191		
Chromium	ND	5.0	mg/L	1	10/24/2016 8:45:55 AI	M 28191		
Lead	ND	5.0	mg/L	1	10/24/2016 8:45:55 Al	M 28191		
Selenium	ND	1.0	mg/L	1	10/24/2016 8:45:55 AI	M 28191		
Silver	ND	5.0	mg/L	1	10/24/2016 8:45:55 AI	M 28191		
EPA 6010B: METALS					Analys	st: MED		
Aluminum	0.31	0.020	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Antimony	ND	0.050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Arsenic	0.040	0.020	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Barium	ND	0.020	mg/L	1	10/31/2016 10:15:38 /	AM 28190		
Beryllium	ND	0.0030	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Cadmium	ND	0.0020	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Calcium	96	5.0	mg/L	5	11/7/2016 12:08:14 PI	M 28190		
Chromium	ND	0.0060	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Cobalt	ND	0.0060	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Copper	0.017	0.0060	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Iron	0.14	0.050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Lead	ND	0.0050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Magnesium	36	1.0	mg/L	1	11/7/2016 12:04:39 PI	M 28190		
Manganese	0.052	0.0020	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Nickel	ND	0.010	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Potassium	120	5.0	mg/L	5	10/31/2016 10:22:16 #	AM 28190		
Selenium	ND	0.050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Silver	ND	0.0050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Sodium	800	10	mg/L	10	11/7/2016 12:15:14 PI	M 28190		
Thallium	ND	0.050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Vanadium	ND	0.050	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
Zinc	0.027	0.020	mg/L	1	10/31/2016 10:15:38 A	AM 28190		
EPA METHOD 8260B: VOLATILES					Analys	st: SUB		
2-isopropyltoluene	ND	0.50	µg/L	1	10/20/2016	R38745		
Acetonitrile	58	5.0	µg/L	1	10/20/2016	R38745		
Allyl chloride	ND	0.50	µg/L	1	10/20/2016	R38745		
Chloroprene	ND	0.50	µg/L	1	10/20/2016	R38745		
Cyclohexane	ND	0.50	µg/L	1	10/20/2016	R38745		
Diethyl ether	ND	0.50	µg/L	1	10/20/2016	R38745		
Epichlorohydrin	ND	100	µg/L	1	10/20/2016	R38745		
Ethyl acetate	ND	0.50	µg/L	1	10/20/2016	R38745		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company Project: Quarterly WDW-1, 2, &3 Inj Well Lab ID: 1610612-001 Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

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

2.5

µg/L

ND

Qualifiers: * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Ethyl methacrylate

- 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

1

- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 29

10/20/2016

R38745

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, &3 Inj WellLab ID:1610612-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
Ethyl tert-butyl ether	ND	0.50	µg/L	1	10/20/2016	R38745
Freon-113	ND	0.50	µg/L	1	10/20/2016	R38745
Isobutanol	ND	100	µg/L	1	10/20/2016	R38745
Isopropyl acetate	ND	0.50	µg/L	1	10/20/2016	R38745
Methacrylonitrile	ND	2.5	µg/L	1	10/20/2016	R38745
Methyl acetate	ND	0.50	µg/L	1	10/20/2016	R38745
Methyl ethyl ketone	ND	2.5	µg/L	1	10/20/2016	R38745
Methyl isobutyl ketone	ND	2.5	µg/L	1	10/20/2016	R38745
Methyl methacrylate	ND	2.5	µg/L	1	10/20/2016	R38745
Methylcyclohexane	ND	1.0	µg/L	1	10/20/2016	R38745
n-Amyl acetate	ND	0.50	µg/L	1	10/20/2016	R38745
n-Hexane	ND	0.50	µg/L	1	10/20/2016	R38745
Nitrobenzene	ND	5.0	µg/L	1	10/20/2016	R38745
Pentachloroethane	ND	5.0	µg/L	1	10/20/2016	R38745
p-isopropyltoluene	ND	0.50	µg/L	1	10/20/2016	R38745
Propionitrile	ND	2.5	µg/L	1	10/20/2016	R38745
Tetrahydrofuran	ND	0.50	µg/L	1	10/20/2016	R38745
Benzene	ND	0.50	µg/L	1	10/20/2016	R38745
Toluene	ND	0.50	µg/L	1	10/20/2016	R38745
Ethylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
Methyl tert-butyl ether (MTBE)	ND	10	µg/L	1	10/20/2016	R38745
1,2,4-Trimethylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
1,3,5-Trimethylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
1,2-Dichloroethane (EDC)	ND	0.50	µg/L	1	10/20/2016	R38745
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1	10/20/2016	R38745
Naphthalene	ND	0.50	µg/L	1	10/20/2016	R38745
Acetone	4.2	2.5	µg/L	1	10/20/2016	R38745
Bromobenzene	ND	0.50	µg/L	1	10/20/2016	R38745
Bromodichloromethane	ND	0.50	µg/L	1	10/20/2016	R38745
Bromoform	ND	0.50	µg/L	1	10/20/2016	R38745
Bromomethane	ND	0.50	µg/L	1	10/20/2016	R38745
2-Butanone	ND	2.5	µg/L	1	10/20/2016	R38745
Carbon disulfide	0.96	0.50	µg/L	1	10/20/2016	R38745
Carbon Tetrachloride	ND	0.50	µg/L	1	10/20/2016	R38745
Chlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745
Chloroethane	ND	0.50	µg/L	1	10/20/2016	R38745
Chloroform	ND	0.50	µg/L	1	10/20/2016	R38745
Chloromethane	1.1	0.50	µg/L	1	10/20/2016	R38745
2-Chlorotoluene	ND	0.50	ua/L	1	10/20/2016	R38745

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 4 of 29
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company **Project:** Quarterly WDW-1, 2, &3 Inj Well 1610612-001 Lab ID: Matrix: AQUEOUS Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyze	ed Batch
EPA METHOD 8260B: VOLATILES						Analyst: SUB
4-Chlorotoluene	ND	0.50	µg/L	1	10/20/2016	R38745
cis-1,2-DCE	ND	0.50	µg/L	1	10/20/2016	R38745
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	10/20/2016	R38745
1,2-Dibromo-3-chloropropane	ND	0.50	µg/L	1	10/20/2016	R38745
Dibromochloromethane	ND	0.50	µg/L	1	10/20/2016	R38745
Dibromomethane	ND	0.50	µg/L	1	10/20/2016	R38745
1,2-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745
1,3-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745
1,4-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745
Dichlorodifluoromethane	ND	0.50	µg/L	1	10/20/2016	R38745
1,1-Dichloroethane	ND	0.50	µg/L	1	10/20/2016	R38745
1,1-Dichloroethene	ND	0.50	µg/L	1	10/20/2016	R38745
1,2-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745
1,3-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745
2,2-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745
1,1-Dichloropropene	ND	0.50	µg/L	1	10/20/2016	R38745
Hexachlorobutadiene	ND	0.50	µg/L	1	10/20/2016	R38745
2-Hexanone	ND	0.50	µg/L	1	10/20/2016	R38745
lsopropylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
Methylene Chloride	ND	2.5	μg/L	1	10/20/2016	R38745
n-Butylbenzene	ND	0.50	μg/L	1	10/20/2016	R38745
n-Propylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
sec-Butylbenzene	ND	0.50	μg/L	1	10/20/2016	R38745
Styrene	ND	0.50	µg/L	1	10/20/2016	R38745
tert-Butylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745
1,1,1,2-Tetrachloroethane	ND	0.50	μg/L	1	10/20/2016	R38745
1,1,2,2-Tetrachloroethane	ND	0.50	μg/L	1	10/20/2016	R38745
Tetrachloroethene (PCE)	ND	0.50	μg/L	1	10/20/2016	R38745
trans-1,2-DCE	ND	0.50	μg/L	1	10/20/2016	R38745
trans-1,3-Dichloropropene	ND	0.50	μg/L	1	10/20/2016	R38745
1,2,3-Trichlorobenzene	ND	0.50	μg/L	1	10/20/2016	R38745
1,2,4-Trichlorobenzene	ND	0.50	μg/L	1	10/20/2016	R38745
1,1,1-Trichloroethane	ND	0.50	μg/L	1	10/20/2016	R38745
1,1,2-Trichloroethane	ND	0.50	μg/L	1	10/20/2016	R38745
Trichloroethene (TCE)	ND	0.50	μg/L	1	10/20/2016	R38745
Trichlorofluoromethane	ND	0.50	μg/L	1	10/20/2016	R38745
1,2,3-Trichloropropane	ND	0.50	μg/L	1	10/20/2016	R38745
Vinyl chloride	ND	0.50	μg/L	1	10/20/2016	R38745
mp-Xvlenes	ND	1.0	ua/L	1	10/20/2016	R38745

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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 29 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject:Quarterly WDW-1, 2, &3 Inj WellLab ID:1610612-001Matrix: AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL Q	ual	Units	DF	Date Analyz	ed Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
o-Xylene	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Amyl methyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
tert-Butyl alcohol	ND	0.50		µg/L	1	10/20/2016	R38745
Acrolein	ND	2.5		µg/L	1	10/20/2016	R38745
Acrylonitrile	ND	2.5		µg/L	1	10/20/2016	R38745
Bromochloromethane	ND	0.50		µg/L	1	10/20/2016	R38745
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	10/20/2016	R38745
lodomethane	ND	0.50		µg/L	1	10/20/2016	R38745
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	10/20/2016	R38745
Vinyl acetate	ND	0.50		µg/L	1	10/20/2016	R38745
Surr: 1,2-Dichlorobenzene-d4	105	0-0	s	%Rec	1	10/20/2016	R38745
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	10/20/2016	R38745
Surr: Toluene-d8	100	70-130		%Rec	1	10/20/2016	R38745
EPA 8270C: SEMIVOLATILES/MOD							Analyst: SUB
1,1-Biphenyl	ND	1.0		µg/L	1	10/29/2016	R38745
Atrazine	ND	1.0		µg/L	1	10/29/2016	R38745
Benzaldehyde	2.5	1.0		µg/L	1	10/29/2016	R38745
Caprolactam	ND	1.0		µg/L	1	10/29/2016	R38745
N-Nitroso-di-n-butylamine	ND	1.0		µg/L	1	10/29/2016	R38745
Acetophenone	ND	5.0		µg/L	1	10/29/2016	R38745
1-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2,3,4,6-Tetrachlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4,5-Trichlorophenol	ND	5.0		μg/L	1	10/29/2016	R38745
2,4,6-Trichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dichlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dimethylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2,4-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2,6-Dinitrotoluene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chloronaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Chlorophenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylnaphthalene	ND	5.0		µg/L	1	10/29/2016	R38745
2-Methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
2-Nitrophenol	ND	5.0		µg/L	1	10/29/2016	R38745
3,3'-Dichlorobenzidine	ND	5.0		µg/L	1	10/29/2016	R38745
3-Nitroaniline	ND	5.0		µg/L	1	10/29/2016	R38745
4,6-Dinitro-2-methylphenol	ND	5.0		µg/L	1	10/29/2016	R38745
4-Bromophenyl phenyl ether	ND	5.0		µg/L	1	10/29/2016	R38745

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 6 of 29
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

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

1610612-001

Lab ID:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Analyses	Result	PQL Q	ual Units	DF	Date Analyze	d Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst: SUB
4-Chloro-3-methylphenol	ND	5.0	µg/L	1	10/29/2016	R38745
4-Chloroaniline	ND	5.0	μg/L	1	10/29/2016	R38745
4-Chlorophenyl phenyl ether	ND	5.0	μg/L	1	10/29/2016	R38745
4-Nitroaniline	ND	5.0	μg/L	1	10/29/2016	R38745
4-Nitrophenol	ND	5.0	µg/L	1	10/29/2016	R38745
Acenaphthene	ND	5.0	µg/L	1	10/29/2016	R38745
Acenaphthylene	ND	5.0	µg/L	1	10/29/2016	R38745
Anthracene	ND	5.0	μg/L	1	10/29/2016	R38745
Benzo(g,h,i)perylene	ND	5.0	μg/L	1	10/29/2016	R38745
Benz(a)anthracene	ND	0.10	μg/L	1	10/29/2016	R38745
Benzo(a)pyrene	ND	0.10	μg/L	1	10/29/2016	R38745
Benzo(b)fluoranthene	ND	0.10	μg/L	1	10/29/2016	R38745
Benzo(k)fluoranthene	ND	0.10	μg/L	1	10/29/2016	R38745
Bis(2-chloroethoxy)methane	ND	5.0	μg/L	1	10/29/2016	R38745
Bis(2-chloroethyl)ether	ND	5.0	μg/L	1	10/29/2016	R38745
Bis(2-chloroisopropyl)ether	ND	5.0	μg/L	1	10/29/2016	R38745
Bis(2-ethylhexyl)phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Butyl benzyl phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Carbazole	ND	5.0	µg/L	1	10/29/2016	R38745
Chrysene	ND	0.10	µg/L	1	10/29/2016	R38745
Dibenz(a,h)anthracene	ND	0.10	μg/L	1	10/29/2016	R38745
Dibenzofuran	ND	5.0	μg/L	1	10/29/2016	R38745
Diethyl phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Dimethyl phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Di-n-butyl phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Di-n-octyl phthalate	ND	5.0	μg/L	1	10/29/2016	R38745
Fluoranthene	ND	5.0	μg/L	1	10/29/2016	R38745
Fluorene	ND	5.0	μg/L	1	10/29/2016	R38745
Hexachlorobenzene	ND	1.0	μg/L	1	10/29/2016	R38745
Hexachlorobutadiene	ND	5.0	μg/L	1	10/29/2016	R38745
Hexachlorocyclopentadiene	ND	5.0	μg/L	1	10/29/2016	R38745
Hexachloroethane	ND	5.0	µg/L	1	10/29/2016	R38745
Indeno(1,2,3-cd)pyrene	ND	0.10	μg/L	1	10/29/2016	R38745
Isophorone	ND	5.0	µg/L	1	10/29/2016	R38745
Naphthalene	ND	5.0	µg/L	1	10/29/2016	R38745
Nitrobenzene	ND	5.0	µg/L	1	10/29/2016	R38745
N-Nitrosodi-n-propylamine	ND	5.0	µg/L	1	10/29/2016	R38745
N-Nitrosodiphenylamine	ND	2.0	µg/L	1	10/29/2016	R38745
Pentachlorophenol	ND	5.0	μg/L	1	10/29/2016	R38745

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
- 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 29
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Quarterly WDW-1, 2, &3 Inj Well

CLIENT: Navajo Refining Company

Project:

Client Sample ID: WDW-1,2,&3 Effluent Collection Date: 10/11/2016 9:00:00 AM Received Date: 10/13/2016 8:30:00 AM

Lab ID: 1610612-001	Matrix:	Received	Received Date: 10/13/2016 8:30:00 AM					
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch		
EPA 8270C: SEMIVOLATILES/MOD					A	nalyst: SUB		
Phenanthrene	ND	5.0	µg/L	1	10/29/2016	R38745		
Phenol	ND	5.0	µg/L	1	10/29/2016	R38745		
Pyrene	ND	5.0	µg/L	1	10/29/2016	R38745		
o-Toluidine	ND	2.0	µg/L	1	10/29/2016	R38745		
Pyridine	ND	5.0	µg/L	1	10/29/2016	R38745		
1,2,4,5-Tetrachlorobenzene	ND	5.0	µg/L	1	10/29/2016	R38745		
Surr: 2,4,6-Tribromophenol	103	63-110	%Rec	1	10/29/2016	R38745		
Surr: 2-Fluorobiphenyl	92.4	58-112	%Rec	1	10/29/2016	R38745		
Surr: 2-Fluorophenol	87.2	47-109	%Rec	1	10/29/2016	R38745		
Surr: Nitrobenzene-d5	83.6	58-110	%Rec	1	10/29/2016	R38745		
Surr: Phenol-d5	85.4	52-105	%Rec	1	10/29/2016	R38745		
Surr: Terphenyl-d14	46.0	22-133	%Rec	1	10/29/2016	R38745		

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
	D	Sample Diluted Due to Matrix	Е	Value ab
	Н	Holding times for preparation or analysis exceeded	J	Analyte
	ND	Not Detected at the Reporting Limit	Р	Sample p
	R	RPD outside accepted recovery limits	RL	Reportin
	S	% Recovery outside of range due to dilution or matrix	W	Sample of

- detected in the associated Method Blank
- oove quantitation range
- detected below quantitation limits Page 8 of 29
- pH Not In Range
- ng Detection Limit
- Sample container temperature is out of limit as specified W

Lab ID: 1610612-002	Matrix:	Received	Received Date: 10/13/2016 8:30:00 AM					
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed		Batch	
EPA METHOD 8260B: VOLATILES					A	nalyst:	SUB	
Acetonitrile	ND	5.0	µg/L	1	10/20/2016		R38745	
Allyl chloride	ND	0.50	μg/L	1	10/20/2016		R38745	
Chloroprene	ND	0.50	μg/L	1	10/20/2016		R38745	
Cyclohexane	ND	0.50	µg/L	1	10/20/2016		R38745	
Diethyl ether	ND	0.50	µg/L	1	10/20/2016		R38745	
Epichlorohydrin	ND	100	µg/L	1	10/20/2016		R38745	
Ethyl acetate	ND	0.50	µg/L	1	10/20/2016		R38745	
Ethyl methacrylate	ND	2.5	µg/L	1	10/20/2016		R38745	
Ethyl tert-butyl ether	ND	0.50	µg/L	1	10/20/2016		R38745	
Freon-113	ND	0.50	µg/L	1	10/20/2016		R38745	
Isobutanol	ND	100	µg/L	1	10/20/2016		R38745	
Isopropyl acetate	ND	0.50	µg/L	1	10/20/2016		R38745	
Methacrylonitrile	ND	2.5	µg/L	1	10/20/2016		R38745	
Methyl acetate	ND	0.50	µg/L	1	10/20/2016		R38745	
Methyl ethyl ketone	ND	2.5	µg/L	1	10/20/2016		R38745	
Methyl isobutyl ketone	ND	2.5	µg/L	1	10/20/2016		R38745	
Methyl methacrylate	ND	2.5	µg/L	1	10/20/2016		R38745	
Methylcyclohexane	ND	1.0	µg/L	1	10/20/2016		R38745	
n-Amyl acetate	ND	0.50	µg/L	1	10/20/2016		R38745	
n-Hexane	ND	0.50	µg/L	1	10/20/2016		R38745	
Nitrobenzene	ND	5.0	µg/L	1	10/20/2016		R38745	
Pentachloroethane	ND	5.0	µg/L	1	10/20/2016		R38745	
p-isopropyltoluene	ND	0.50	µg/L	1	10/20/2016		R38745	
Propionitrile	ND	2.5	µg/L	1	10/20/2016		R38745	
Tetrahydrofuran	ND	0.50	µg/L	1	10/20/2016		R38745	
Benzene	ND	0.50	µg/L	1	10/20/2016		R38745	
Toluene	ND	0.50	µg/L	1	10/20/2016		R38745	
Ethylbenzene	ND	0.50	µg/L	1	10/20/2016		R38745	
Methyl tert-butyl ether (MTBE)	ND	10	µg/L	1	10/20/2016		R38745	
1,2,4-Trimethylbenzene	ND	0.50	µg/L	1	10/20/2016		R38745	
1,3,5-Trimethylbenzene	ND	0.50	µg/L	1	10/20/2016		R38745	
1,2-Dichloroethane (EDC)	ND	0.50	µg/L	1	10/20/2016		R38745	
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1	10/20/2016		R38745	
Naphthalene	ND	0.50	µg/L	1	10/20/2016		R38745	
Acetone	ND	2.5	µg/L	1	10/20/2016		R38745	
Bromobenzene	ND	0.50	µg/L	1	10/20/2016		R38745	
Bromodichloromethane	ND	0.50	µg/L	1	10/20/2016		R38745	
Bromoform	ND	0.50	µg/L	1	10/20/2016		R38745	
Bromomethane	ND	0.50	µg/L	1	10/20/2016		R38745	

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK Collection Date:

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

CLIENT: Navajo Refining Company

-1 Ĵ

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

* **Oualifiers:** 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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 9 of 29 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Lab ID: 1610612-002	Matrix: 7	TRIP BLANK	Received Date: 10/13/2016 8:30:00 AM					
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch		
EPA METHOD 8260B: VOLATILES					Ana	Analyst: SUB		
2-Butanone	ND	2.5	µg/L	1	10/20/2016	R38745		
Carbon disulfide	ND	0.50	µg/L	1	10/20/2016	R38745		
Carbon Tetrachloride	ND	0.50	µg/L	1	10/20/2016	R38745		
Chlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
Chloroethane	ND	0.50	µg/L	1	10/20/2016	R38745		
Chloroform	ND	0.50	µg/L	1	10/20/2016	R38745		
Chloromethane	ND	0.50	µg/L	1	10/20/2016	R38745		
2-Chlorotoluene	ND	0.50	µg/L	1	10/20/2016	R38745		
4-Chlorotoluene	ND	0.50	µg/L	1	10/20/2016	R38745		
cis-1,2-DCE	ND	0.50	µg/L	1	10/20/2016	R38745		
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	10/20/2016	R38745		
1,2-Dibromo-3-chloropropane	ND	0.50	µg/L	1	10/20/2016	R38745		
Dibromochloromethane	ND	0.50	µg/L	1	10/20/2016	R38745		
Dibromomethane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,2-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
1,3-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
1,4-Dichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
Dichlorodifluoromethane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,1-Dichloroethane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,1-Dichloroethene	ND	0.50	µg/L	1	10/20/2016	R38745		
1,2-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,3-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745		
2,2-Dichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,1-Dichloropropene	ND	0.50	µg/L	1	10/20/2016	R38745		
Hexachlorobutadiene	ND	0.50	µg/L	1	10/20/2016	R38745		
2-Hexanone	ND	0.50	µg/L	1	10/20/2016	R38745		
Isopropylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
Methylene Chloride	ND	2.5	µg/L	1	10/20/2016	R38745		
n-Butylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
n-Propylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
sec-Butylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
Styrene	ND	0.50	µg/L	1	10/20/2016	R38745		
tert-Butylbenzene	ND	0.50	µg/L	1	10/20/2016	R38745		
1,1,1,2-Tetrachloroethane	ND	0.50	µg/L	1	10/20/2016	R38745		
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1	10/20/2016	R38745		
Tetrachloroethene (PCE)	ND	0.50	µg/L	1	10/20/2016	R38745		
trans-1,2-DCE	ND	0.50	µg/L	1	10/20/2016	R38745		

Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: TRIP BLANK Collection Date:

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

CLIENT: Navajo Refining Company

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

0.50

0.50

µg/L

µg/L

ND

ND

Qualifiers: * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

trans-1,3-Dichloropropene

1,2,3-Trichlorobenzene

- 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

1

1

- E Value above quantitation range
- J Analyte detected below quantitation limits Page 10 of 29

10/20/2016

10/20/2016

R38745

R38745

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

W Sample container temperature is out of limit as specified

CLIENT: Navajo Refining Company		Client Sample ID: TRIP BLANK							
Project: Quarterly WDW-1, 2, &3 Inj	Well		Collection 1	Date:					
Lab ID: 1610612-002	Matrix:	TRIP BLANK	Received	Received Date: 10/13/2016 8:30:					
Analyses	Result	PQL Qu	al Units	DF	Date Analyze	d Batch			
EPA METHOD 8260B: VOLATILES						Analyst: SUB			
1,2,4-Trichlorobenzene	ND	0.50	µg/L	1	10/20/2016	R38745			
1,1,1-Trichloroethane	ND	0.50	µg/L	1	10/20/2016	R38745			
1,1,2-Trichloroethane	ND	0.50	µg/L	1	10/20/2016	R38745			
Trichloroethene (TCE)	ND	0.50	µg/L	1	10/20/2016	R38745			
Trichlorofluoromethane	ND	0.50	µg/L	1	10/20/2016	R38745			
1,2,3-Trichloropropane	ND	0.50	µg/L	1	10/20/2016	R38745			
Vinyl chloride	ND	0.50	µg/L	1	10/20/2016	R38745			
mp-Xylenes	ND	1.0	µg/L	1	10/20/2016	R38745			
o-Xylene	ND	0.50	µg/L	1	10/20/2016	R38745			
tert-Amyl methyl ether	ND	0.50	µg/L	1	10/20/2016	R38745			
tert-Butyl alcohol	ND	0.50	µg/L	1	10/20/2016	R38745			
Acrolein	ND	2.5	µg/L	1	10/20/2016	R38745			
Acrylonitrile	ND	2.5	µg/L	1	10/20/2016	R38745			
Bromochloromethane	ND	0.50	µg/L	1	10/20/2016	R38745			
2-Chloroethyl vinyl ether	ND	0.50	µg/L	1	10/20/2016	R38745			
lodomethane	ND	0.50	µg/L	1	10/20/2016	R38745			
trans-1,4-Dichloro-2-butene	ND	0.50	µg/L	1	10/20/2016	R38745			
Vinyl acetate	ND	0.50	µg/L	1	10/20/2016	R38745			
Surr: 1,2-Dichlorobenzene-d4	102	0-0	S %Rec	1	10/20/2016	R38745			
Surr: 4-Bromofluorobenzene	96.4	70-130	%Rec	1	10/20/2016	R38745			
Surr: Toluene-d8	98.0	70-130	%Rec	1	10/20/2016	R38745			

Hall Environmental Analysis Laboratory, Inc.

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
	D	Somela Dilutad Dua ta Mateir	E	Value above questitatio

- 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
- % Recovery outside of range due to dilution or matrix S
- associated Method Blank
- Value above quantitation range Е
- Analyte detected below quantitation limits Page 11 of 29 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SU Hall En	MMARY	' REP(al Anal	ORT ysis I	Laborat	ory, Inc.					WO#:	1610612 16-Nov-16
Client: Project:	Navajo F Quarterly	efining Co y WDW-1,	ompany 2, &3	Inj Well							
Sample ID	MB	SampT	Гуре: МГ	BLK	Tes	tCode: El	PA Method	300.0: Anion:	s		
Client ID:	PBW	Batch	h ID: R3	37942	F	RunNo: 37942					
Prep Date:		Analysis D	Date: 10	0/13/2016	٤	SeqNo: 1 '	182401	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		ND	0.10								
Bromide		ND	0.10								
Phosphorus, Orth	hophosphate (As P	ND	0.50								
Nitrate+Nitrite as	; N	ND	0.20								
Sample ID	LCS	SampT	Type: LC	s	Tes	tCode: El	PA Method	300.0: Anion:	ŝ		
Client ID:	LCSW	Batch	h ID: R3	7942	F	≀unNo: 3	7942				
Prep Date:		Analysis D)ate: 1 (J/13/2016	٤	SeqNo: 1'	182402	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.54	0.10	0.5000	0	107	90	110			
Bromide		2.6	0.10	2.500	0	103	90	110			
Phosphorus, Ort	hophosphate (As P	4.7	0.50	5.000	0	93.6	90	110			
Nitrate+Nitrite as	S N	3.4	0.20	3.500	0	97.3	90	110			
Sample ID	MB	SampT	Type: MI	зlk	Tes	tCode: El	PA Method	300.0: Anion:	5		
Client ID:	PBW	Batch	h ID: R3	8187	F	≀unNo: 3	8187				
Prep Date:		Analysis E	Date: 1 (0/25/2016	ξ	SegNo: 1	193019	Units: mg/L			l

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

Sample ID	LCS	SampType:	LCS	S	TestCode: EPA Method 300.0: Anions						
Client ID:	LCSW	Batch ID:	R38	3187	R	8187					
Prep Date:		Analysis Date:	10	/25/2016	S	SeqNo: 1	193020	Units: mg/L			
Analyte		Result PC	λ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		4.8 0	.50	5.000	0	96.7	90	110			
Sulfate		9.9 0	.50	10.00	0	99.1	90	110			

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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 12 of 29

WO#: 1610612 16-Nov-16

Client: Navajo Project: Quarte	o Refining Co erly WDW-1,	ompany 2, &3	Inj Well							
Sample ID MB-R38745	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	h ID: R3	8745	F	RunNo: 3	88745				
Prep Date:	Analysis D	Date: 10	0/20/2016	S	SeqNo: 1	210379	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	2.5								
Isobutanol	ND	10								
Methacrylonitrile	ND	2.5								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	2.5								
Propionitrile	ND	2.5								
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								
2-Butanone	ND	2.5								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
cis-1.2-DCE	ND	0.50								
cis-1.3-Dichloropropene	ND	0.50								
1.2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1.2-Dichlorobenzene	ND	0.50								
1.4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1.1-Dichloroethane		0.50								
1 1-Dichloroethene		0.50								
1 2-Dichloronronane		0.50								
1 3-Dichloronronane		0.50								
2.2-Dichloropropane		0.50								
z,z-niciliolopiopane	IND	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
- W Sample container temperature is out of limit as specified

Page 13 of 29

WO#: 1610612 16-Nov-16

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

Sample ID MB-R38745	SampT	уре: М	BLK	Test	Code: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	1D: R 3	38745	R	unNo: 3	8745				
Prep Date:	Analysis D	ate: 1	0/20/2016	S	eqNo: 1	210379	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.50								
2-Hexanone	ND	0.50								
Methylene Chloride	ND	2.5								
Styrene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
Acrolein	ND	2.5								
Acrylonitrile	ND	2.5								
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-R38745	SampT	ype: LC	cs	Test	Code: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: R	38745	R	unNo: 3	8745				
Prep Date:	Analysis D	ate: 1	0/20/2016	S	eqNo: 1	210380	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.7	0	10.00	0	96.7	80	120			

0

0

0

0

0

0

0

Qualifiers:

Toluene

o-Xylene

Ethylbenzene

Chlorobenzene

1,1-Dichloroethene

Tetrachloroethene (PCE)

Trichloroethene (TCE)

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

9.7

9.8

9.8

9.7

9.5

9.7

10

0

0

0

0

0

0

0

10.00

10.00

10.00

10.00

10.00

10.00

10.00

- 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

97.2

98.0

97.8

96.7

95.0

96.6

102

80

80

80

80

80

80

80

120

120

120

120

120

120

120

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 14 of 29

WO#: 1610612 16-Nov-16

Client: I Project: 0	Navajo Refining C Quarterly WDW-1	Company 1, 2, &3	Inj Well							
Sample ID MB-R38	745 Samp	Type: MI	BLK	Tes	TestCode: EPA 8270C: Semivolatiles/M					
Client ID: PBW	Bat	ch ID: R3	8745	F	RunNo:	38745				
Prep Date:	Analysis	Date: 1	0/29/2016	5	SeqNo:	1210383	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	C LowLimit	HighLimit	%RPD	RPDLimit	Qual
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 eth	er ND	5.0								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	5.0								
4-Chlorophenyl phenyl eth	er 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)methar	ne ND	5.0								
Bis(2-chloroethyl)ether	ND	5.0								
Bis(2-chloroisopropyl)ethe	ND	5.0								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	5.0								
Carbazole	ND	5.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 15 of 29

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, In	IC.

WO#: 1610612 16-Nov-16

Client: Project:	Navajo Quarter	Refining Co ly WDW-1,	ompany 2, &3	Inj Well					
Sample ID MB	-R38745	SampT	ype: ME	BLK	Test	Code: El	PA 8270C: 3	Semivolatiles	/Mod
Client ID: PB	N	Batch	n ID: R3	8745	R	unNo: 3	8745		
Prep Date:		Analysis D	ate: 10	0/29/2016	S	eqNo: 1	210383	Units: µg/L	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%R
Chrysene		ND	0.10						
Dibenz(a,h)anthrace	ne	ND	0.10						
Dibonzofuran			50						

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qua
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	5.0								
Diethyl phthalate	ND	5.0								
Dimethyl phthalate	ND	5.0								
Di-n-butyl phthalate	ND	5.0								
Di-n-octyl phthalate	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	5.0								
Hexachlorocyclopentadiene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	0.10								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodi-n-propylamine	ND	2.0								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
o-Toluidine	ND	5.0								
Pyridine	ND	5.0								
1,2,4,5-Tetrachlorobenzene	ND	5.0								
Sample ID LCS-R38745	SampT	ype: LC	S	Tes	tCode: El	PA 8270C: S	Semivolatiles	/Mod		
Client ID: LCSW	Batch	n ID: R3	8745	F	RunNo: 3	8745				
Prep Date:	Analysis D	ate: 10)/29/2016	S	eqNo: 1	210384	Units: µg/L			

Prep Date:	Analysis Date: 10/29/2016			S	SeqNo: 1	210384	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.5	0	5.000	0	110	49	134			
2-Chlorophenol	4.6	0	5.000	0	91.4	50	131			
4-Chloro-3-methylphenol	5.1	0	5.000	0	102	42	139			
4-Nitrophenol	5.5	0	5.000	0	110	19	137			
Acenaphthene	5.0	0	5.000	0	101	36	122			
Bis(2-ethylhexyl)phthalate	4.9	0	5.000	0	98.6	43	142			
N-Nitrosodi-n-propylamine	4.3	0	5.000	0	86.8	46	140			

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
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Page 16 of 29

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

Sample ID LCS-R38745	SampT	SampType: LCS			TestCode: EPA 8270C: Semivolatiles/Mod					
Client ID: LCSW	Batch	n ID: R3	8745	F	RunNo: 3	8745				
Prep Date:	Analysis D	ate: 10)/29/2016	S	SeqNo: 1	210384	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	5.5	0	5.000	0	111	22	138			
Phenol	4.7	0	5.000	0	94.4	45	134			
Pyrene	4.5	0	5.000	0	90.8	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
- W Sample container temperature is out of limit as specified
- Page 17 of 29

WO#:	1610612
	16-Nov-16

Client: Project:	Navajo F Quarterly	Refining Company y WDW-1, 2, &3	Inj Well							
Sample ID	MB-28113	SampType: M	BLK	Test	Code: EP	A Method	7470: Mercur	y		
Client ID:	PBW	Batch ID: 28	113	R	unNo: 38	8030				
Prep Date:	10/17/2016	Analysis Date: 10	0/18/2016	S	eqNo: 11	85736	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.00020								
Sample ID	LCS-28113	SampType: LC	s	Test	Code: EP	A Method	7470: Mercury	y		
Client ID:	LCSW	Batch ID: 28	113	R	unNo: 38	8030				
Prep Date:	10/17/2016	Analysis Date: 10	0/18/2016	S	eqNo: 11	85737	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0047 0.00020	0.005000	0	93.6	80	120			
Sample ID	1610612-001BMS	SampType: MS	3	Test	Code: EP	A Method	7470: Mercur	y		
Client ID:	WDW-1,2,&3 Effl	uen Batch ID: 28	113	R	unNo: 38	8030				
Prep Date:	10/17/2016	Analysis Date: 10	0/18/2016	S	eqNo: 11	85804	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0061 0.00020	0.005000	0.0001625	118	75	125			
Sample ID	1610612-001BMS	D SampType: MS	SD	Test	Code: EP	A Method	7470: Mercur	y		
Client ID:	WDW-1,2,&3 Effl	uen Batch ID: 28	113	R	unNo: 38	8030				
Prep Date:	10/17/2016	Analysis Date: 10	0/18/2016	S	eqNo: 11	85805	Units: mg/L			
Analyte		Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0059 0.00020	0.005000	0.0001625	114	75	125	3.16	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
- W Sample container temperature is out of limit as specified
- Page 18 of 29

WO#:	1610612
	16 Nov 16

16-Nov-16

Client: Project:	Navaj Quarte	o Refining Compa erly WDW-1, 2, 8	any 23 Inj Well						
Sample ID Client ID:	MB-28165 PBW	SampType: Batch ID:	MBLK 28165	Test R	Code: MERCURY,	TCLP			
Prep Date:	10/19/2016	/19/2016 Analysis Date: 10/19/2016 SeqNo: 1186813 Units: mg/L							
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.0)20						
Sample ID	LCS-28165	SampType:	LCS	Test	Code: MERCURY,	TCLP			
Client ID:	LCSW	Batch ID:	28165	R	unNo: 38056				
Prep Date:	10/19/2016	Analysis Date:	10/19/2016	S	eqNo: 1186814	Units: mg/L			
Analyte		Result PC	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.0	0.005000	0	104 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
- W Sample container temperature is out of limit as specified

Page 19 of 29

Hall Er	Environmental Analysis Laboratory, Inc.									WO#:	1610612 16-Nov-16	
Client: Project:	Navajo F Quarterly	efining Company v WDW-1, 2, &3 Inj Well										
Sample ID	MB-28191	SampT	ype: MI	BLK	Tes	TestCode: EPA Method 6010B: TCLP Metals						
Client ID:	PBW	Batch	n ID: 28	191	F							
Prep Date:	10/20/2016	Analysis Date: 10/24/2016			SeqNo: 1190360 Units: mg/L							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	5.0									
Barium		ND	100									
Cadmium		ND	1.0									
Chromium		ND	5.0									
Lead		ND	5.0									
Selenium		ND	1.0									
Silver		ND	5.0									
Sample ID	LCS-28191	SampT	ype: LC	s	Tes							
Client ID:	LCSW	Batch	n ID: 28	191	RunNo: 38144							
Prep Date:	10/20/2016	Analysis Date: 10/24/2016			SeqNo: 1190361 Units: mg/L							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	5.0	0.5000	0	108	80	120				
Barium		ND	100	0.5000	0	96.0	80	120				
Cadmium		ND	1.0	0.5000	0	101	80	120				
Chromium		ND	5.0	0.5000	0	97.0	80	120				
Lead		ND	5.0	0.5000	0	93.2	80	120				
Selenium		ND	1.0	0.5000	0	106	80	120				
Silver		ND	5.0	0.1000	0	106	80	120				
Sample ID	TCLP FL#2-2661	SampType: MBLK			TestCode: EPA Method 6010B: TCLP Metals							
Client ID:	PBW	Batch ID: 28191			RunNo: 38144							
Prep Date:	10/20/2016	Analysis Date: 10/24/2016		SeqNo: 1190451 U			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									

Qualifiers:

* Value exceeds Maximum Contaminant Level.

OC SUMMARY REPORT

- 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
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 20 of 29

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, In	IC.

WO#: 1610612

Client:	Navajo	Refining C	ompany								
Project:	Quarter	ly WDW-1	, 2, &3	Inj Well							
Sample ID	MB-28190	SampType: MBLK			Tes	tCode: El	PA 6010B: I				
Client ID:	PBW	Batch ID: 28190			F	RunNo: 3	8332				
Prep Date:	10/20/2016	Analysis Date: 10/31/2016			S	SeqNo: 1	196520	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0.020								
Antimony		ND	0.050								
Arsenic		ND	0.020								
Barium		ND	0.020								
Beryllium		ND	0.0030								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Copper		ND	0.0060								
Iron		ND	0.050								
Lead		ND	0.0050								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Potassium		ND	1.0								
Selenium		ND	0.050								
Silver		ND	0.0050								
Thallium		ND	0.050								
Vanadium		ND	0.050								
Zinc		ND	0.020								
Sample ID	LCS-28190	SampType: LCS TestCode: EPA 6010B: Metals									
Client ID:	LCSW	Batch ID: 28190			F	8332					
Prep Date:	10/20/2016	Analysis Date: 10/31/2016		SeqNo: 1196521		Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		0.55	0.020	0.5000	0	109	80	120			
Antimony		0.49	0.050	0.5000	0	98.4	80	120			
Arsenic		0.52	0.020	0.5000	0	104	80	120			
Barium		0.50	0.020	0.5000	0	100	80	120			
Beryllium		0.53	0.0030	0.5000	0	106	80	120			

0

0

0

0

0

0

0

0

0

Р

Qualifiers:

Cadmium

Chromium

Cobalt

Copper

Iron

Lead

Manganese Nickel

Potassium

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

0.51

0.50

0.49

0.50

0.50

0.50

0.50

0.50

50

0.0020

0.0060

0.0060

0.0060

0.0050

0.0020

0.010

1.0

0.050

0.5000

0.5000

0.5000

0.5000

0.5000

0.5000

0.5000

0.5000

50.00

- 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

101

99.5

97.7

99.6

101

99.5

100

99.9

100

80

80

80

80

80

80

80

80

80

120

120

120

120

120

120

120

120

120

Page 21 of 29

- J Analyte detected below quantitation limits
 - Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
| Hall Er | vironment: | ксг
al Ana | UK I
Ivsis I | Laborat | orv. Inc. | | | | | WO#: | 1610612
16-Nov-16 |
|-------------|------------------|---------------|-----------------|-----------|-------------|----------|-----------|--------------------|-------|-----------------|----------------------|
| | | | -5 | | | | | | | | 10-1107-10 |
| Client: | Navajo F | Refining C | Company | | | | | | | | |
| Project: | Quarterly | y WDW-1 | , 2, &3 | Inj Well | | | | | | | |
| Sample ID | LCS-28190 | Samp | Type: LC | s | Tes | | | | | | |
| Client ID: | LCSW | Bat | ch ID: 28 | 190 | F | RunNo: 3 | 8332 | | | | |
| Prep Date: | 10/20/2016 | Analysis | Date: 1 | 0/31/2016 | S | SeqNo: 1 | 196521 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Selenium | | 0.49 | 0.050 | 0.5000 | 0 | 99.0 | 80 | 120 | | | |
| Silver | | 0.10 | 0.0050 | 0.1000 | 0 | 103 | 80 | 120 | | | |
| Thallium | | 0.49 | 0.050 | 0.5000 | 0 | 98.9 | 80 | 120 | | | |
| Vanadium | | 0.53 | 0.050 | 0.5000 | 0 | 105 | 80 | 120 | | | |
| Zinc | | 0.50 | 0.020 | 0.5000 | 0 | 101 | 80 | 120 | | | |
| Sample ID | 1610612-001BMS | Samp | Type: M | 3 | Tes | tCode: E | PA 6010B: | Metals | | | |
| Client ID: | WDW-1,2,&3 Efflu | uen Bat | ch ID: 28 | 190 | F | RunNo: 3 | 8332 | | | | |
| Prep Date: | 10/20/2016 | Analysis | Date: 1 | 0/31/2016 | 5 | SeqNo: 1 | 196523 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Aluminum | | 0.89 | 0.020 | 0.5000 | 0.3134 | 115 | 75 | 125 | | | |
| Antimony | | 0.47 | 0.050 | 0.5000 | 0 | 94.3 | 75 | 125 | | | |
| Arsenic | | 0.57 | 0.020 | 0.5000 | 0.04017 | 106 | 75 | 125 | | | |
| Barium | | 0.50 | 0.020 | 0.5000 | 0.01602 | 96.0 | 75 | 125 | | | |
| Beryllium | | 0.51 | 0.0030 | 0.5000 | 0 | 102 | 75 | 125 | | | |
| Cadmium | | 0.50 | 0.0020 | 0.5000 | 0 | 99.7 | 75 | 125 | | | |
| Chromium | | 0.47 | 0.0060 | 0.5000 | 0 | 94.3 | 75 | 125 | | | |
| Cobalt | | 0.47 | 0.0060 | 0.5000 | 0.003260 | 93.6 | 75 | 125 | | | |
| Copper | | 0.53 | 0.0060 | 0.5000 | 0.01704 | 103 | 75 | 125 | | | |
| Iron | | 0.63 | 0.050 | 0.5000 | 0.1353 | 98.3 | 75 | 125 | | | |
| Lead | | 0 47 | 0.0050 | 0 5000 | 0 | 94.8 | 75 | 125 | | | |
| Manganese | | 0.53 | 0.0020 | 0.5000 | 0.05227 | 95.7 | 75 | 125 | | | |
| Nickel | | 0.00 | 0.0020 | 0.5000 | 0.006520 | 95.7 | 75 | 125 | | | |
| Selenium | | 0.52 | 0.050 | 0.5000 | 0.000020 | 103 | 75 | 125 | | | |
| Silver | | 0.02 | 0.0050 | 0.0000 | 0 | 100 | 75 | 125 | | | |
| Thallium | | 0.10 | 0.0000 | 0.1000 | 0.01260 | 80.8 | 75 | 125 | | | |
| Vanadium | | 0.40 | 0.050 | 0.5000 | 0.01200 | 103 | 75 | 125 | | | |
| Zinc | | 0.52 | 0.020 | 0.5000 | 0.02719 | 99.6 | 75 | 125 | | | |
| Sample ID | 1610612-001BMS | D Samp | Type: M | SD | Tes | tCode: E | PA 6010B: | Metals | | | |
| Client ID: | WDW-1,2,&3 Efflu | uen Bat | ch ID: 28 | 190 | F | RunNo: 3 | 8332 | | | | |
| Prep Date: | 10/20/2016 | Analysis | Date: 1 | 0/31/2016 | S | SeqNo: 1 | 196524 | Units: mg/L | | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | <u>RPDLimit</u> | Qual |
| Aluminum | | 0.88 | 0.020 | 0.5000 | 0.3134 | 114 | 75 | 125 | 0.858 | 20 | |
| Antimony | | 0.45 | 0.050 | 0.5000 | 0 | 90.8 | 75 | 125 | 3.77 | 20 | |
| Arsenic | | 0.55 | 0.020 | 0.5000 | 0.04017 | 103 | 75 | 125 | 2.57 | 20 | |
| Barium | | 0.49 | 0.020 | 0.5000 | 0.01602 | 94.6 | 75 | 125 | 1.42 | 20 | |
| Beryllium | | 0.51 | 0.0030 | 0.5000 | 0 | 101 | 75 | 125 | 1.17 | 20 | |
| 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
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

W Sample container temperature is out of limit as specified Page 22 of 29

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1610612

16-Nov-16

Client: Navajo Refining Company

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

Sample ID	1610612-001BMS	SD	TestCode: EPA 6010B: Metals								
Client ID:	WDW-1,2,&3 Effl	uen Bato	h ID: 28	190	F	RunNo: 3	8332				
Prep Date:	10/20/2016	Analysis I	Date: 1(0/31/2016	S	SeqNo: 1	196524	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium		0.49	0.0020	0.5000	0	98.2	75	125	1.47	20	
Chromium		0.46	0.0060	0.5000	0	92.6	75	125	1.81	20	
Cobalt		0.46	0.0060	0.5000	0.003260	91.8	75	125	1.92	20	
Copper		0.54	0.0060	0.5000	0.01704	104	75	125	0.996	20	
Iron		0.64	0.050	0.5000	0.1353	102	75	125	2.59	20	
Lead		0.47	0.0050	0.5000	0	93.8	75	125	1.05	20	
Manganese		0.52	0.0020	0.5000	0.05227	94.4	75	125	1.23	20	
Nickel		0.48	0.010	0.5000	0.006520	94.3	75	125	1.45	20	
Selenium		0.51	0.050	0.5000	0	102	75	125	1.76	20	
Silver		0.10	0.0050	0.1000	0	103	75	125	1.49	20	
Thallium		0.45	0.050	0.5000	0.01260	86.9	75	125	3.22	20	
Vanadium		0.51	0.050	0.5000	0.006120	101	75	125	1.60	20	
Zinc		0.52	0.020	0.5000	0.02719	98.2	75	125	1.35	20	
Sample ID	1610612-001BMS	Samp	Type: MS	3	Tes	tCode: El	PA 6010B:	Metals			
Client ID:	WDW 4 2 82 Eff	RunNo: 38332									
	VVDVV-1,2,03 EIII	F	kunNo: 3	8332							
Prep Date:	10/20/2016	Analysis l	Date: 1 (190 D/31/2016	F S	RunNo: 3 SeqNo: 1	8332 196526	Units: mg/L			
Prep Date: Analyte	10/20/2016	Analysis I Result	n ID: 28 Date: 1(PQL	0/31/2016 SPK value	۲ SPK Ref Val	RunNo: 3 SeqNo: 1 %REC	8332 196526 LowLimit	Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium	10/20/2016	uen Bato Analysis I <u>Result</u> 180	n ID: 28 Date: 1(<u>PQL</u> 5.0	190 0/31/2016 SPK value 50.00	SPK Ref Val 123.0	RunNo: 3 SeqNo: 1 <u>%REC</u> 104	8332 196526 LowLimit 75	Units: mg/L HighLimit 125	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium Sample ID	10/20/2016 1610612-001BMS	Analysis I Result 180	Date: 10 PQL 5.0	190 0/31/2016 SPK value 50.00	SPK Ref Val 123.0 Tes	RunNo: 3 SeqNo: 1 %REC 104 tCode: El	8332 196526 LowLimit 75 PA 6010B: 1	Units: mg/L HighLimit 125 Metals	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium Sample ID Client ID:	10/20/2016 1610612-001BMS WDW-1,2,&3 Effl	Analysis I Result 180 SD Samp uen Bato	m ID: 28 Date: 1(PQL 5.0 Type: MS ch ID: 28	190 0/31/2016 SPK value 50.00 SD 190	F SPK Ref Val 123.0 Tes F	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3	8332 196526 LowLimit 75 PA 6010B: 1 8332	Units: mg/L HighLimit 125 Metals	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date:	10/20/2016 1610612-001BMS WDW-1,2,&3 Effl 10/20/2016	Analysis I Result 180 BD Samp uen Bato Analysis I	Date: 10 PQL 5.0 Type: MS th ID: 28 Date: 10	190 0/31/2016 SPK value 50.00 5D 190 0/31/2016	F SPK Ref Val 123.0 Tes F S	SeqNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1	8332 196526 LowLimit 75 PA 6010B: 1 8332 196527	Units: mg/L HighLimit 125 Metals Units: mg/L	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte	10/20/2016 1610612-001BMS WDW-1,2,&3 Effl 10/20/2016	Analysis Result 180 CD Samp uen Bato Analysis Result	Date: 10 PQL 5.0 Type: MS th ID: 28 Date: 10 PQL	190 D/31/2016 SPK value 50.00 SD 190 D/31/2016 SPK value	SPK Ref Val 123.0 Tes F SPK Ref Val	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC	8332 196526 LowLimit 75 PA 6010B: 1 8332 196527 LowLimit	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium	WDW-1,2,&3 Em 10/20/2016 1610612-001BMS WDW-1,2,&3 Effl 10/20/2016	uen Bato Analysis I Result 180 SD Samp uen Bato Analysis I Result 180	28 Date: 10 PQL 5.0 Type: MS th ID: 28 Date: 10 PQL 5.0	190 0/31/2016 SPK value 50.00 5D 190 0/31/2016 SPK value 50.00	SPK Ref Val 123.0 Tes F SPK Ref Val 123.0	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123	8332 196526 LowLimit 75 PA 6010B: 1 8332 196527 LowLimit 75	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit 125	%RPD %RPD 5.31	RPDLimit RPDLimit 20	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID	MB-28190	uen Bato Analysis I Result 180 SD Samp uen Bato Analysis I Result 180 Samp	28 Date: 10 PQL 5.0 Type: MS ch ID: 28 Date: 10 PQL 5.0 Type: ME	190 D/31/2016 SPK value 50.00 SD 190 D/31/2016 SPK value 50.00 BLK	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B:	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit 125 Metals	%RPD %RPD 5.31	RPDLimit RPDLimit 20	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID Client ID:	MB-28190 PBW	uen Bato Analysis I Result 180 D Samp uen Bato Analysis I Result 180 Samp Bato	28 Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: ME ch ID: 28	190 0/31/2016 SPK value 50.00 5D 190 0/31/2016 SPK value 50.00 3LK 190	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes F	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B: 8490	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit 125 Metals	%RPD %RPD 5.31	RPDLimit RPDLimit 20	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID Client ID: Prep Date:	MB-28190 PBW 10/20/2016	uen Bato Analysis I Result 180 D Samp uen Bato Analysis I Result 180 Samp Bato Analysis I	28 Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: ME ch ID: 28 Date: 11 Date: 11	190)/31/2016 SPK value 50.00 SD 190)/31/2016 SPK value 50.00 3LK 190 1/7/2016	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes F SPK Ref Val 123.0	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B: 8490 202197	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit 125 Metals Units: mg/L	%RPD %RPD 5.31	RPDLimit RPDLimit 20	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte	MB-28190 PBW 10/20/2016	uen Bato Analysis I Result 180 SD Samp uen Bato Analysis I Result 180 Samp Bato Analysis I Result	28 Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: ME ch ID: 28 Date: 11 PQL Date: 11 PQL	190)/31/2016 SPK value 50.00 3D 190)/31/2016 SPK value 50.00 3LK 190 1/7/2016 SPK value	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes SPK Ref Val SPK Ref Val	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B: 8490 202197 LowLimit	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit	%RPD %RPD 5.31 %RPD	RPDLimit RPDLimit 20	Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Calcium	MB-28190 PBW 10/20/2016	uen Bato Analysis I Result 180 SD Samp uen Bato Analysis I Result 180 Samp Bato Analysis I Result ND	m ID: 28 Date: 10 PQL 5.0 Type: MS ch ID: 28 Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: ME Date: 11 PQL 1.0	190 D/31/2016 SPK value 50.00 SD 190 D/31/2016 SPK value 50.00 BLK 190 1/7/2016 SPK value	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes SPK Ref Val SPK Ref Val	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC 3 %REC 1	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B: 8490 202197 LowLimit	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit Units: mg/L HighLimit	%RPD %RPD 5.31 %RPD	RPDLimit RPDLimit 20 RPDLimit	Qual Qual Qual
Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Potassium Sample ID Client ID: Prep Date: Analyte Calcium Magnesium	MB-28190 PBW 10/20/2016	uen Bato Analysis I Result 180 SD Samp uen Bato Analysis I Result 180 Samp Bato Analysis I Result ND ND	m ID: 28 Date: 10 PQL 5.0 Type: MS Date: 10 PQL 5.0 Type: ME ch ID: 28 Date: 11 PQL 1.0 1.0	190)/31/2016 SPK value 50.00 3D 190)/31/2016 SPK value 50.00 3LK 190 1/7/2016 SPK value	SPK Ref Val 123.0 Tes SPK Ref Val 123.0 Tes SPK Ref Val SPK Ref Val	RunNo: 3 SeqNo: 1 %REC 104 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC 123 tCode: El RunNo: 3 SeqNo: 1 %REC %REC	8332 196526 LowLimit 75 PA 6010B: 8332 196527 LowLimit 75 PA 6010B: 8490 202197 LowLimit	Units: mg/L HighLimit 125 Metals Units: mg/L HighLimit Units: mg/L HighLimit	%RPD %RPD 5.31 %RPD	RPDLimit RPDLimit 20 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
- W Sample container temperature is out of limit as specified

Page 23 of 29

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:	Navajo R Quarterly	efining Co WDW-1	ompany	Ini Well								
	Quarterry	WDW-1,	2, 00	ing wen								
Sample ID	LCS-28190	SampT	ype: LC	S	Tes	tCode: El	PA 6010B: I	Metals				
Client ID:	LCSW	Batch	n ID: 28	190	RunNo: 38490							
Prep Date:	10/20/2016	Analysis D)ate: 1 1	1/7/2016	S	eqNo: 1	202198	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		52	1.0	50.00	0	103	80	120				
Sodium		51	1.0	50.00	0	102	80	120				
Sample ID	1610612-001BMS	SampT	Гуре: М	3	Tes	tCode: El	PA 6010B: I	Metals				
Client ID:	WDW-1,2,&3 Efflu	en Batcl	h ID: 28	190	F	RunNo: 3	8490					
Prep Date:	10/20/2016	Analysis D)ate: 1 *	1/7/2016	5	SeqNo: 12	202200	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Magnesium		86	1.0	50.00	35.82	100	75	125				
Sample ID	1610612-001BMSI) SampT	Гуре: М\$	SD	Tes	tCode: El	PA 6010B: I	Metals				
Client ID:	WDW-1,2,&3 Efflu	en Batcl	h ID: 28	190	F	RunNo: 3	8490					
Prep Date:	10/20/2016	Analysis D	Date: 1 '	1/7/2016	S	SeqNo: 1	202201	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Magnesium		86	1.0	50.00	35.82	101	75	125	0.560	20		
Sample ID	1610612-001BMS	SampT	Гуре: М\$	6	Tes	tCode: El	PA 6010B: I	Metals				
Client ID:	WDW-1,2,&3 Efflu	en Batcl	h ID: 28	190	F	RunNo: 3	8490					
Prep Date:	10/20/2016	Analysis D)ate: 1 *	1/7/2016	S	eqNo: 1	202203	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium		140	5.0	50.00	95.77	95.5	75	125				
Sample ID	1610612-001BMSI) SampT	Гуре: М	SD	Tes	tCode: El	PA 6010B: I	Metals				
Client ID:	WDW-1,2,&3 Efflu	en Batcł	h ID: 28	190	F	RunNo: 3	8490					
Prep Date:	10/20/2016	Analysis D)ate: 1 *	1/7/2016	5	eqNo: 1	202211	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium		150	5.0	50.00	95.77	105	75	125	3.14	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
- W Sample container temperature is out of limit as specified

Page 24 of 29

WO#:	1610612
	16-Nov-16

Client: Project:	Navajo Quarte	Refining Com rly WDW-1, 2,	ıpany , &3 Inj Well						
Sample IDMB-R38745SampType:MBLKClient ID:PBWBatch ID:R38745				Tes	tCode: CYANIDE, R	eactive			
Client ID: PBW Batch ID: R38745 Prep Date: Analysis Date: 10/25/2016				S	SeqNo: 1210388	Units: mg/L			
Analyte Result PQL			PQL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Read	ctive	ND	1.00						
Sample ID	LCS-R38745	SampTyp		Tes	tCode: CYANIDE, R	eactive			
Client ID:	LCSW	Batch IL	J: R38745	Runno: 38745					
Prep Date: Analysis Date: 10/25/2016			S	SeqNo: 1210389	Units: mg/L				
Analyte Result PQL SPK value				SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive 0.542 0.5000				0	108 80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 25 of 29

WO#:	1610612
	16-Nov-16

Client: Project:	Navajo Quarter	Refining Compa ly WDW-1, 2, &	any 23 Inj Well						
Sample ID MB-R38745 SampType: MBLK			Tes	tCode: SULFIDE	E, Reactive				
Client ID:	PBW	Batch ID:	F	RunNo: 38745					
Prep Date: Analysis Date: 10/18/2016			S	SeqNo: 121039 1	I Units: mg/L				
Analyte		Result P	L SPK value	SPK Ref Val	%REC LowL	imit HighLimit.	%RPD	RPDLimit	Qual
Reactive Sulfid	е	ND	1.0						
Sample ID	LCS-R38745	SampType	LCS	Tes	tCode: SULFIDE	E, Reactive			
Client ID:	LCSW	Batch ID:	R38745	F	RunNo: 38745				
Prep Date: Analysis Date: 10/18/2016			S	SeqNo: 1210392	2 Units: mg/L				
Analyte Result PQL SPK value			SPK Ref Val	%REC LowL	imit HighLimit	%RPD	RPDLimit	Qual	
Reactive Sulfide0.160.2000				0	80.0	70 130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 26 of 29

WO#:	1610612
	16-Nov-16

Client:		Navajo Refining C	ompany	,									
Project:		Quarterly WDW-1	, 2, &3	Inj Well									
Sample ID	mb-1	Samp	Type: m	blk	TestCode: SM2320B: Alkalinity								
Client ID:	PBW	Bate	h ID: R	38048	RunNo: 38048								
Prep Date:		Analysis	Date: 1	0/18/2016	SeqNo: 1186486 Units: mg/L CaCO3								
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Total Alkalinity ((as CaCO3) ND	20.00										
Sample ID	lcs-1	Samp	Type: Ic	s	Tes	tCode: SI	M2320B: Al	kalinity					
Client ID:	LCSW	Bate	h ID: R	38048	RunNo: 38048								
Prep Date:		Analysis	Date: 1	0/18/2016	SeqNo: 1186487			Units: mg/L CaCO3					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Total Alkalinity ((as CaCO3) 80.60	20.00	80.00	0	101	90	110					
Sample ID	mb-2	Samp	Type: m	blk	Tes	tCode: SI	M2320B: Al	kalinity					
Client ID:	PBW	Bate	h ID: R	38048	F	RunNo: 3	8048						
Prep Date:		Analysis	Date: 1	0/18/2016	S	SeqNo: 1	186510	Units: mg/L	CaCO3				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Total Alkalinity ((as CaCO3) ND	20.00										
Sample ID	lcs-2	Samp	Type: Ic	s	Tes	tCode: SI	M2320B: Al	kalinity					
Client ID:	LCSW	Bato	h ID: R	38048	F	RunNo: 3	8048						
Prep Date:		Analysis	Analysis Date: 10/18/2016 SeqNo: 1186511 Units: mg/L CaCO3										
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Total Alkalinity ((as CaCO3) 81.52	20.00	80.00	0	102	90	110					

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 27 of 29

Client: Project:	Navajo Refining Ouarterly WDW	; Company 7-1, 2, &3	Inj Well							
		, ,	5							
Sample ID	1610612-001ADUP Sa	mpType: D	JP	Tes	tCode: Sp	pecific Grav	vity			
Client ID:	WDW-1,2,&3 Effluen B	atch ID: R	38258	F	RunNo: 3	8258				
Prep Date:	Analys	is Date: 1	0/27/2016	S	SeqNo: 1	193976	Units:			
Analyte	Resu	lt PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	/ 0.999	3 0						0.0400	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
- W Sample container temperature is out of limit as specified

Page 28 of 29

WO#:	1610612
	16-Nov-16

Client: Project:	Navajo Quarte	o Refining Co erly WDW-1,	mpany 2, &3	Inj Well							
Sample ID MB-28098 SampType: MBLK Client ID: PBW Batch ID: 28098				BLK	Tes	tCode: SN	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	Client ID: PBW Batch ID: 28098				F	RunNo: 38	3034				
Prep Date:	Prep Date: 10/17/2016 Analysis Date: 10/18/2016			0/18/2016	S	SeqNo: 11	185818	Units: mg/L			
Analyte Result PQL SP			SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved	Solids	ND	20.0								
Sample ID	LCS-28098	SampT	ype: LC	S	Tes	tCode: SN	M2540C MC	D: Total Diss	olved So	lids	
Client ID:	LCSW	Batch	n ID: 28	098	RunNo: 38034						
Prep Date: 10/17/2016 Analysis Date: 10/18/2016				S	SeqNo: 11	185819	Units: mg/L				
Analyte Result PQL SPK value				SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids 1050 20.0 1000				0	105	80	120				

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
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 29 of 29

HALL Hall Environmental Environmental ANALYSIS LABORATORY TEL: 505-345 Website: w	ILL Hall Environmental Analysis Laborator IVIRONMENTAL 4901 Hawkins N IALYSIS Albuquerque, NM 8710 IBORATORY TEL: 505-345-3975 FAX: 505-345-410 Website: www.hallenvironmental.co							
Client Name: NAVAJO REFINING CO Work Ofder Nu	mber: 1610612		RcptNo: 1	_				
Received by/date: //////	$\mu \rho$	۸						
Logged By: Ashley Gallegos 10/13/2016 8:30:	00 AM 5	AF						
Completed By: Ashley Gallegos 10/13/2016 11:20):49 AM	AZ						
Reviewed By: 10/13/16								
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?	<u>Courier</u>							
Log In								
4. Was an attempt made to cool the samples?	Yes 🔽	No 🗌						
5. Were all samples received at a temperature of $>0^{\circ}$ 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 🗌					
11. Were any sample containers received broken?	Yes 🗆	No 🔽						
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🔽	No 🗌	# of preserved bottles checked 2 2 for pH: (2)or E12unless n	oted)				
13. Are matrices correctly identified on Chain of Custody?	Yes 🗹	No 🗌	Adjusted? NO					
14. Is it clear what analyses were requested?	Yes 🗹	No 🗌						
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🛄	Checked by:					
Special Handling (if applicable)								
16. Was client notified of all discrepancies with this order?	Yes	No 📋	NA 🔽					
Person Notified: Da	ate	<u> </u>						
By Whom: Vi	a: 🗌 eMail 🛄 Pho	one 🗌 Fax	In Person					
Regarding:								
Client Instructions:								
I / · Additional remarks:								
18. <u>Cooler Information</u> <u>Cooler No</u> Temp °C Condition Seal Intact Seal No <u>1</u> 1.0 Good Yes	o Seal Date Si	igned By						

Chain-of-Custody Record		Turn-Around Time:				age an early General control				-	13 <i>7</i> T		~ •			·					
Client: Navajo Refining Co.		T X Standard □ Rush					- T	1A N	IAL I	EN Ze	IVL		UT NR		1C D/		1 <i>F</i>	ll Dì	,		
		Project Name:																			
Mailing Ac	dress: P.	O. Box 1	59 Artesia,					400			BIT.WWW	lienv	lionme	nial.	com	~					
		Quarterly WDW-1, 2, & 3 Inj Well																			
<u>VM 88211</u>	-0159			-			:	l el.	505-3	45-3	3975 ł	-ax :	505-34 vis Roc	5-41	07 +						
Phone #: 575-748-3311			Decident Mar			_ <u> </u>					laiys 		lues					-			
	ax#: 5/5-	740-045			lager:			З	101		als')	6	Pal								
JA/QC Package: □ Standard □ Level 4 (Full Validation)		Micki Schultz / Scott Denton / Mike Holder			5, CO	l 826 (s')	Cs')	3	010, 'Met	136	CFR 1311										
Other				Sampler: Brady Hubbard			N P N	9 5 4	Set	261	hd 6 I list	HH H	<u>6</u> 8							1	
⊐ EDD (T	уре)			On ice. X Yes 🗆 No.		E S H	Me. ist	6 M ist '6	art	s Mt	6	Aeth Meth									
ı ——		1		Sample Ter	nperature: [. (<u>у</u>	pH avit	646 1ed 1	V-84 led I	H H	atta	Na/	als, e 46 h								
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO 1010612	Specific Gr SO4, TDS, Cation/anic	VOCs/SW- (see attach	SVOCs/SV (see attach	R,C,I/40 CI	Metals/SW 7470 (see	Ca, K, Mg,	TCLP Meta 261/ SW-8								
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	x						x	.							
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	,					x	x									
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			x													
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				x												
10/11/16	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					x											
10/11/16	9:00	Liquid	Trip Blank	2	Neat	-002		x											Τ		
10/11/16	9:00	Liquid	Temperature Blank	1	Neat							Ì									
																			\square		
		[
Date: 10-11-16 Date:	Time:	Relinquist Bgu Relinquist	ed by: Brack Hibbard De Culton	Received by:	ey Conel	Date Time <u>19</u> 10/13 /16 0830 Date Time	Remarks Contrera	s: Send as.	d resul	ts to	Scott De	nton	, Mike	Hold	ier, R	ober	t Co	nbs a	and ,	Andr	ЗW

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

~