ANNUAL CLASS I NON-HAZAROUS WELL REPORT
Waste Disposal Well #2
January – December 2020

Western Refining Southwest, Inc.
Bloomfield Terminal
Bloomfield, New Mexico
Permit # - UICI-011
API # - 30-45-35747

May 2021

By: Margaret Garza

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

This report provides a summary of activities conducted in 2020 on Waste Disposal Well #2 (WDW-#2) at the Western Refining Bloomfield ("Western") facility. The following is a summary of well operations and well testing activities performed in 2020.

Operational Summary

Injection Volume - The volume injected into the disposal well during 2020 was 1,298,526 gallons. Since the commissioning of the well on March 8, 2017, approximately 6,709,138 gallons have been disposed of via the on-site injection well. The well was not operational for approximately 8,019 hours, which is equivalent to 334.1 days. Table 1 provides a summary of the well's operation in 2020.

Sampling and Chemical Analyses - Injection fluids samples were collected on a quarterly basis for chemical analysis pursuant to Permit Condition 2.A. Analytical results show that the wastewaters injected through the on-site injection well exhibit characteristics of being a RCRA non-hazardous waste. A summary of the analytical results is provided in Table 2. A copy of the analytical laboratory reports, including the Quality Assurance / Quality Control (QA/QC) results are provided in Attachment A.

Bradenhead Tests – The Bradenhead Test was conducted September 18, 2020 in conjunction with the annual Fall-Off Test. No concerns were observed during testing. A copy of the test report is included in Attachment B.

Mechanical Integrity Tests – Pursuant to Permit Condition 3.D.1. of UICI-011, a Mechanical Integrity Test (MIT) is required once every five year unless otherwise instructed by the NMOCD Director. The most recent MIT was conducted on June 8, 2017 with a representative of NMOCD present to observe. There were no issues or concerns raised by NMOCD. An MIT was not performed in 2020.

Area of Review (AOR) – Western conducted an Area of Review within a 1-mile radius of WDW #2. The results of this review are provided in Attachment C of this report.

Pressure Fall-Off Test and Bottom-Hole Survey – A bottom-hole pressure survey and pressure fall-off test analysis was performed in September 2020. The pressure survey and fall-off pressure test were conducted in accordance with United States Environmental Protection Agency (USEPA) 40 CFR 146.13, State of New Mexico Fall-Off Test Guidelines, dated December 3, 2007, and EPA Region 6 Pressure Falloff Testing Guidelines, Third Revision, dated August 8, 2002. A detailed report including the data collected and data interpretation by a third-party Petroleum Engineer is included as Attachment D.

1.0 INTRODUCTION

This report provides a summary of activities conducted during 2020 on Waste Disposal Well #2 (WDW #2). The disposal well is part of the Western Bloomfield Terminal facility operations. The facility is located south of Bloomfield, New Mexico in San Juan County. The physical address of the facility is as follows:

Bloomfield Terminal
#50 County Road 4990
Bloomfield, NM 87413

The Bloomfield Terminal is located on approximately 263 acres. Bordering the facility is a combination of federal and private properties. Public property managed by the Bureau of Land Management lies to the south. The majority of undeveloped land in the vicinity of the facility is used extensively for oil and gas production and, in some instances, grazing. U.S. Highway 550 is located approximately one-half mile west of the facility. The topography of the main portion of the site is generally flat with steep bluffs to the north. Figure 1 shows the general layout of the Terminal.

1.1 Well Information

Well Name & Number:	Waste Disposal Well #2
OCD UIC:	UICI-011
Well Classification:	Class I Non-hazardous
API Number:	30-045-35747
Legal Location:	2028 FNL, 111 FEL, H S27 T29N R11W
Physical Address:	#50 Road 4990, Bloomfield, NM 87413

2.0 OPERATION AND MAINTENANCE ACTIVITIES

2.1 Well Operations

The non-hazardous injection well at the Bloomfield Terminal is used to dispose of treated wastewaters generated from Terminal operations. Typically, treated wastewater from the on-site Wastewater Treatment Plant (WWTP) is pumped from the WWTP aeration ponds to the on-site evaporation ponds, located south of County Road 4990. Treated wastewater that is not evaporated at the evaporation ponds can be routed to the injection well for final disposal. Figure 2 shows a schematic of the well construction.

In 2020 approximately 1,298,526 gallons of wastewater was disposed of via the on-site injection well. Since the commissioning of the well on March 8, 2017, approximately 6,709,138 gallons have been disposed of via the on-site injection well. Total injected wastewater volumes, well injection pressures, and injection flow rates are continuously monitored and stored into a database. Injection volumes and average injection pressure readings are reported monthly to New Mexico Oil Conservation Division (NMOCD) through the on-line C-115 reporting web-link and in the quarterly reports submitted to NMOCD each quarter. In 2020, operation of the injection well did not exceed the permitted injection pressure limit of 1,465 psi, and no abnormal operating condition were observed. A summary of the monthly maximum, minimum, and average operation values is provided in Table 1.

2.2 Quarterly Sampling and Chemical Analysis

In 2020 quarterly samples were collected of water injected through WDW #2. The samples were analyzed for the following pursuant to Permit Condition 2.A. of UICI-011 dated July 20, 2016:

- pH;
- Oxidation Reduction Potential;
- Specific Conductance;
- Specific gravity;

- Temperature;
- Major dissolved cations and anions; and
- EPA RCRA characteristically hazardous constituents.

First quarter samples were collected on March 25, 2020. Second quarter samples were collected on June 30, 2020. Third quarter samples were collected on September 18, 2020. Fourth quarter samples were collected on December 18, 2020. A summary of the analytical results is provided in Table 2.

All quarterly samples collected for laboratory analysis were submitted to Hall Environmental Analysis Laboratory located in Albuquerque, NM. The analytical results show that the injected water exhibited characteristics of RCRA non- hazardous waste. The analytical results were compared to the respective Water Quality Control Commission (WQCC) limits. Chloride and Calcium were detected above the respective WQCC standards for each sampling event in 2020. All other detected concentrations were below the respective RCRA and WQCC standards. Copies of the quarterly reports that include the analytical reports and operational data are provided as an attachment (Attachment A).

2.3 Well Maintenance Activities

General routine preventative maintenance was performed on the injection well system equipment. No major mechanical maintenance work was required to be performed in 2020. No issues were observed during routine maintenance activities conducted in 2020.

3.0 WELL EVALUATION

3.1 Bradenhead Test

The annual Bradenhead Test was conducted on September 18, 2020. All activities were conducted following NMOCD approval and the respective documentation is provided as an attachment (Attachment B). No concerns were observed during testing activities.

3.1 Area of Review (AOR)

The Area of Review (AOR) data was updated in 2021 using the NMOCD mapping program. The area of review data shows all wells known to have been drilled within a one-mile radius of WDW-1. Based on the NMOCD database only one well, Ashcroft SWD #1, operates within the same injection zone as WDW #2. This well is 0.64 miles from WDW-2 and is an active water disposal well. No wells are currently producing from the Entrada injection zone within the AOR. A copy of the AOR and list of wells identified within the one-mile radius is provided as an Attachment (Attachment C).

3.2 Pressure Fall-Off Test

A pressure Fall-Off Test (FOT) was conducted in September 2020. The well test was conducted in accordance with United States Environmental Protection Agency (USEPA) 40 CFR 146.13 and the State of New Mexico Falloff Test Guidelines dated December 3, 2007. The FOT was conducted with tandem bottom hole pressure memory gauges. A detailed report including the data collected and data interpretation by a third-party Petroleum Engineer is included as an attachment (Attachment D).

3.3 Bottom-Hole Pressure Survey

A bottom-hole pressure survey was conducted following the completion of the FOT activities. The bottom-hole pressures gauges used for the FOT were pulled from the well making gradient stops every 1,000 feet. The results of the pressure survey are provided in the 2020 Fall-Off Test Report (Attachment D).

3.0 SPILL REPORTING

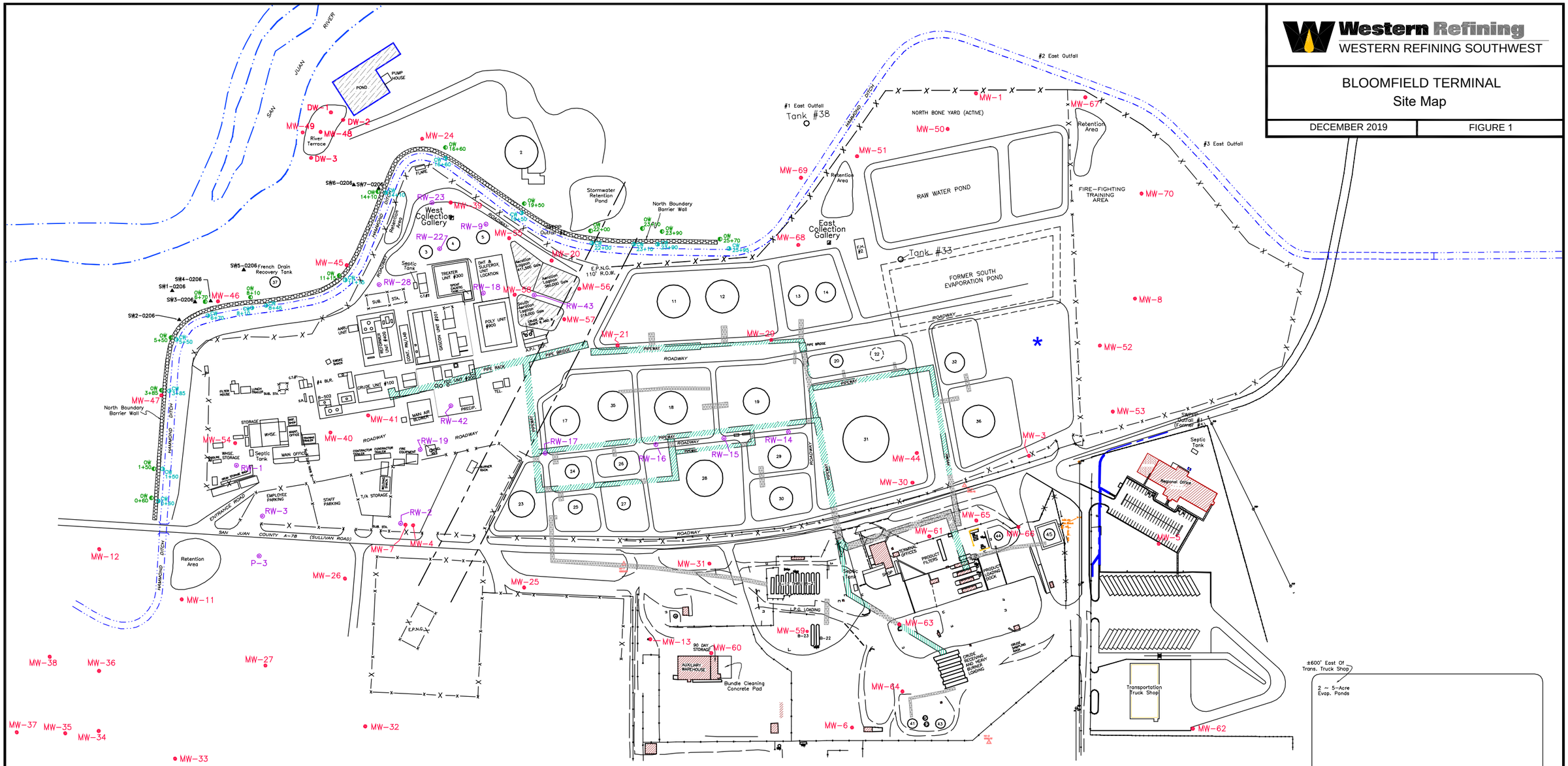
No reportable leaks or spill events occurred in 2020. Groundwater sampling activities were conducted in August 2020. A summary of the activities conducted, and copies of the sampling results were submitted to NMOCD in April 2021 (2020 Groundwater Remediation and Monitoring Annual Report).

FIGURES

Western Refining
WESTERN REFINING SOUTHWEST

BLOOMFIELD TERMINAL
Site Map

DECEMBER 2019 | FIGURE 1



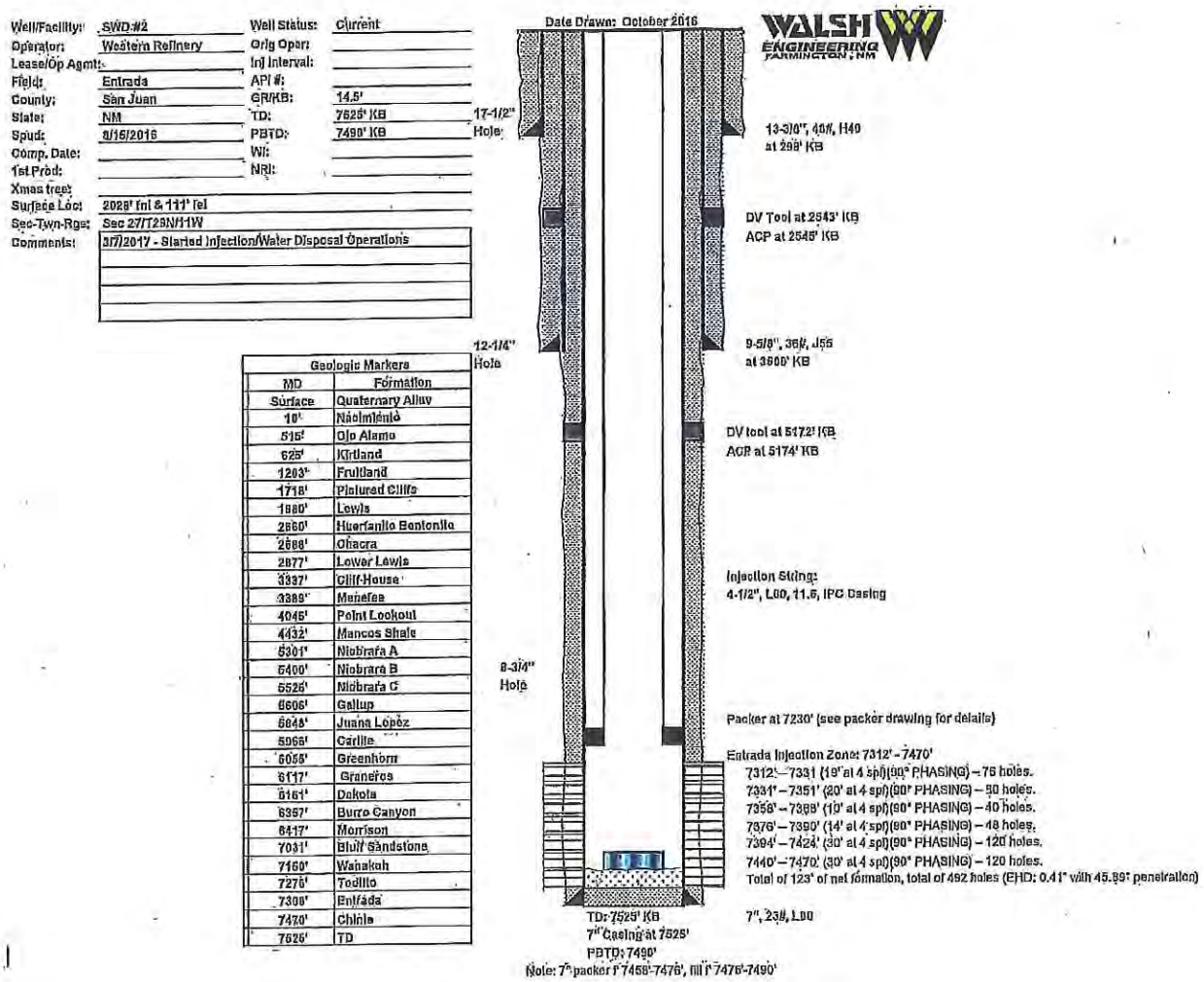
LEGEND

MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
RW-1 ⊛	RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
OW 1+50 ◐	OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
CW 1+50 ◑	COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
SW1-0206 ▲	SUMP WELL LOCATION AND IDENTIFICATION NUMBER
P-2	PIEZOMETER IDENTIFICATION
	SURFACE WATER DRAINAGE PATTERN
	UNDER GROUND PIPE-WAY
	ABOVE GROUND PIPE-WAY
	SLURRY BARRIER WALL
	FORMER TANK LOCATION
*	Injection Well

0 300
SCALE IN FEET

FIGURE 2

A wellbore diagram showing the current configuration of the wellbore.



Geologic Markers	
MD	Formation
Surface	Quaternary Alluv
10'	Nacimiento
515'	Ojo Alamo
625'	Kirtland
1203'	Fruitland
1718'	Pictured Cliffs
1880'	Lewis
2550'	Huerfanito Bentonite
2688'	Ohacra
2877'	Lower Lewis
3337'	Cliff House
3389'	Menefee
4045'	Point Lookout
4432'	Mancos Shale
5301'	Niobrara A
5400'	Niobrara B
5525'	Niobrara C
6606'	Gallup
6848'	Juana Lopez
6956'	Carlile
6955'	Greenhorn
6117'	Graneros
6161'	Dakota
6397'	Burro Canyon
6417'	Morrison
7031'	Bluff Sandstone
7160'	Wanakah
7276'	Todilto
7300'	Entrada
7470'	Chinle
7525'	TD

TABLES

ATTACHMENT A

WESTERN REFINING SOUTHWEST, INC. - BLOOMFIELD TERMINAL
P.O. BOX 159
BLOOMFIELD, NEW MEXICO 87413

QUARTERLY INJECTION WELL REPORT
DISCHARGE PERMIT UICI-011 (WDW #2)
U.L: H, SEC 27, T29N, R11W
API #: 30-045-35747

PERIOD 2020	AMOUNT OF WATER FROM RIVER (GALLONS)	AMOUNT FROM WWTP (GALLONS)	TOTALIZER AMOUNT INJECTED (GALLONS)	DOWN-TIME (HRS)	INJECTION PRESSURE MAX (PSIA)	INJECTION PRESSURE MIN (PSIA)	INJECTION PRESSURE AVG (PSIA)	ANNULAR PRESSURE MAX (PSIA)	ANNULAR PRESSURE MIN (PSIA)	ANNULAR PRESSURE AVG (PSIA)	ON-LINE FLOW RATES MAX (GPM)	ON-LINE FLOW RATES MIN (GPM)	ON-LINE FLOW RATES AVG (GPM)
JAN	0	1,262,000	282,210	576	1,382	514	753	92	<-9	61	34	23	28
FEB	0	888,000	171,612	600	1,378	601	762	65	<-6	34	34	26	29
MAR	0	1,134,000	83,244	699	1,391	597	705	55	<-6	29	34	28	31
APR	0	1,149,000	109,368	658	1,376	702	711	44	<-6	23	33	25	29
MAY	0	1,472,000	179,634	633	1,384	595	755	65	<-6	40	31	24	27
JUN	0	1,689,000	76,230	681	1,357	596	674	73	<-6	42	37	4	32
JUL	0	2,068,000	0	745	906	567	611	94	<-6	64	0	0	0
AUG	64,554	1,962,000	0	745	567	536	550	115	93	105	0	0	0
SEP	76,062	1,908,000	99,792	648	1,291	524	635	119	<-6	84	27	20	22
OCT	0	1,985,000	274,925	581	1,351	589	794	85	<-6	50	34	25	28
NOV	0	1,636,000	20,923	709	1,376	591	671	110	<-6	70	29	25	28
DEC	0	1,220,000	588	744	813	550	569	114	22	108	35	35	35

The total amount injected in 2020 is: **1,298,526** gallons

CERTIFICATION: *Kelly Robinson* DATE: 2/15/2021

Note: Well officially brought on-line full time March 8, 2017.

Attachment B - Analytical Summary

		Toxicity Characteristics (40 CFR261.24)	WQCC (20.6.2.3103 NMAC)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Volatile Organic Compounds *(mg/L)*				**3/25/2020**	**6/30/2020**	**9/18/2020**	**12/18/2020**
D029	1,1-Dichloroethene	0.70	5	< 0.20	<0.70	<0.70	<0.70
D028	1,2-Dichloroethane (EDC)	0.50	10	< 0.20	<0.50	<0.50	<0.50
D027	1,4-Dichlorobenzene	7.5		< 0.20	<7.5	<7.5	<7.5
D035	2-Butanone (MEK)	200		< 2.0	<200	<200	<200
D018	Benzene	0.50	10	< 0.50	<0.50	<0.50	<0.50
D019	Carbon Tetrachloride	0.50	10	< 0.20	<0.50	<0.50	<0.50
D021	Chlorobenzene	100		< 0.20	<100	<100	<100
D022	Chloroform	6.0	100	< 0.20	<6.0	<6.0	<6.0
D033	Hexachlorobutadiene	0.50		< 0.20	<5.0	<5.0	<5.0
D039	Tetrachloroethene (PCE)	0.70	20	< 0.20	<0.70	<0.70	<0.70
D040	Trichloroethene (TCE)	0.50	100	< 0.20	<0.50	<0.50	<0.50
D043	Vinyl chloride	0.20	1	< 0.20	<0.20	<0.20	<0.20
Semi-Volatile Organic Compounds *(mg/L)*							
D027	1,4-Dichlorobenzene	7.5		<0.01	<7.5	<7.5	<7.5
D041	2,4,5-Trichlorophenol	400		<0.01	<4000	<400	<400
D042	2,4,6-Trichlorophenol	2.0		<0.01	<20	<2.0	<2.0
D030	2,4-Dinitrotoluene	0.13		<0.01	<1.3	<1.3	<0.13
D023	2-Methylphenol (o-Cresol)	200		<0.01	<2000	<200	<200
D024, D025	3+4-Methylphenol (m, p-Cresol)	200		<0.01	<2000	<200	<200
D032	Hexachlorobenzene	0.13		<0.01	<1.3	<0.13	<0.13
D033	Hexachlorobutadiene	0.50		<.020	<5.0	<0.50	<0.50
D034	Hexachloroethane	3.0		<0.01	<30	<3.0	<3.0
D036	Nitrobenzene	2.0		<0.01	<20	<2.0	<2.0
D037	Pentachlorophenol	100		<0.020	<1000	<100	<100
D038	Pyridine	5.0		<0.03	<50	<5.0	<5.0
General Chemistry *(mg/L unless otherwise stated)*							
	Specific Conductance *(umhos/cm3)*			4500	4500	3800	3400
	Bromide			4	4.0	3.2	1.6
	Chloride		250 *	**1200**	**1200**	**830**	**890**
	Fluoride			<2.0	< 0.50	<0.50	<0.50
	Nitrate + Nitrite as N			<0.50	< 0.50	<1.0	<1.0
	Phosphorus, Orthophosphate (As P)			<2.5	< 2.5	<2.5	<2.5
	Sulfate		600 *	87	78	86	72
	Total Dissolved Solids		10,000	2920	2870	2190	1950
	pH *(pH Units)*			7.27	7.77	7.71	7.96
	Bicarbonate (As CaCO3)			569	647.1	626.3	349.6
	Carbonate (As CaCO3)			<2.0	<2.0	<2.0	<2.0
	Total Alkalinity (as CaCO3)			569	647.1	626.3	349.6
	Oxidation-Reduction Potential (mV)			6.2	37.7	179	24
	Specific Gravity			0.993	0.9946	0.9958	0.999
Total Metals *(mg/L)*							
D004	Arsenic	5.0		< 0.030	< 0.030	<0.030	<5.0
D005	Barium	100		0.32	0.22	0.27	<100
D006	Cadmium	1.0		< 0.0020	< 0.0020	<0.0020	<1.0
D007	Chromium	5.0		< 0.0060	< 0.0060	<0.0060	<5.0
D008	Lead	5.0		< 0.020	< 0.020	<0.020	<5.0
D010	Selenium	1.0		< 0.050	< 0.050	<0.050	<1.0
D011	Silver	5.0		< 0.0050	< 0.0050	<0.0050	<5.0
D009	Mercury	0.2	0.002	< 0.00020	<0.0010	<0.00020	<0.020
Dissolved Metals *(mg/L)*							
	Calcium		0.01	**90**	**73**	**79**	**87**
	Magnesium			53	52	43	22
	Potassium			< 20	13	13	55
	Sodium			830	910	650	500
Ignitability, Corrosivity, and Reactivity							
D003	Reactive Cyanide *(mg/L)*			<0.005	<0.005	<0.00500	<0.00500
D003	Reactive Sulfide *(mg/L)*			0.32	0.833	<0.0500	0.213
D001	Ignitability *(° F)*	< 140° F		>170	>170	>170	>170
D002	Corrosivity (ph Units)	≤ 2 or ≥ 12.5	6-9	7.27	7.63	7.82	7.36
Pesticides (mg/L)							
	Chlordane	0.03		<0.002	<0.20	<0.30	<0.030
Field Parameters							
	pH			7.59	7.63	7.73	7.96

ATTACHMENT A

2020 Quarterly Reports

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

April 15, 2020

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: WDW 2 Injection Well OrderNo.: 2003C07

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 3/26/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2003C07**
Date Reported: **4/15/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well Water
Project: WDW 2 Injection Well **Collection Date:** 3/25/2020 11:20:00 AM
Lab ID: 2003C07-001 **Matrix:** AQUEOUS **Received Date:** 3/26/2020 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst:	**JRR**
Specific Gravity	0.9930	0			1	4/8/2020 10:27:00 AM	R67933
EPA METHOD 300.0: ANIONS						Analyst:	**CJS**
Fluoride	ND	2.0		mg/L	20	4/3/2020 8:22:57 PM	R67842
Chloride	1200	50	*	mg/L	100	4/2/2020 8:17:18 PM	R67807
Nitrogen, Nitrite (As N)	ND	0.50	H	mg/L	5	3/27/2020 8:58:18 PM	R67641
Bromide	4.0	0.50		mg/L	5	3/27/2020 8:58:18 PM	R67641
Nitrogen, Nitrate (As N)	ND	0.50	H	mg/L	5	3/27/2020 8:58:18 PM	R67641
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	4/3/2020 9:01:34 PM	R67842
Sulfate	87	2.5		mg/L	5	3/27/2020 8:58:18 PM	R67641
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**vfs**
Conductivity	4500	5.0		µmhos/c	1	3/31/2020 10:27:05 AM	R67720
SM2320B: ALKALINITY						Analyst:	**vfs**
Bicarbonate (As CaCO3)	569.0	20.00		mg/L Ca	1	3/30/2020 6:28:59 PM	R67685
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	3/30/2020 6:28:59 PM	R67685
Total Alkalinity (as CaCO3)	569.0	20.00		mg/L Ca	1	3/30/2020 6:28:59 PM	R67685
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	2920	100	*D	mg/L	1	4/3/2020 3:27:00 PM	51479
SM4500-H+B / 9040C: PH						Analyst:	**vfs**
pH	7.64		H	pH units	1	3/30/2020 6:28:59 PM	R67685
EPA METHOD 7470: MERCURY						Analyst:	**pmf**
Mercury	ND	0.00020		mg/L	1	4/6/2020 4:53:53 AM	51574
EPA METHOD 6010B: DISSOLVED METALS						Analyst:	**ELS**
Calcium	90	20		mg/L	20	4/2/2020 10:08:06 AM	A67781
Magnesium	53	20		mg/L	20	4/2/2020 10:08:06 AM	A67781
Potassium	ND	20		mg/L	20	4/2/2020 10:08:06 AM	A67781
Sodium	830	20		mg/L	20	4/2/2020 10:08:06 AM	A67781
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst:	**ELS**
Arsenic	ND	0.030		mg/L	1	3/31/2020 10:10:10 AM	51418
Barium	0.32	0.0020		mg/L	1	3/31/2020 9:11:22 AM	51418
Cadmium	ND	0.0020		mg/L	1	3/31/2020 9:11:22 AM	51418
Chromium	ND	0.0060		mg/L	1	3/31/2020 9:11:22 AM	51418
Lead	ND	0.020		mg/L	1	3/31/2020 9:11:22 AM	51418
Selenium	ND	0.050		mg/L	1	3/31/2020 9:11:22 AM	51418
Silver	ND	0.0050		mg/L	1	3/31/2020 9:11:22 AM	51418
EPA METHOD 8081: PESTICIDES						Analyst:	**JME**

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

Qualifiers:

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

Analytical Report
Lab Order **2003C07**
Date Reported: **4/15/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well Water
Project: WDW 2 Injection Well **Collection Date:** 3/25/2020 11:20:00 AM
Lab ID: 2003C07-001 **Matrix:** AQUEOUS **Received Date:** 3/26/2020 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES						Analyst: **JME**	
Chlordane	ND	2.0		µg/L	1	4/8/2020 8:58:41 AM	51482
Surr: Decachlorobiphenyl	32.2	38.2-102	S	%Rec	1	4/8/2020 8:58:41 AM	51482
Surr: Tetrachloro-m-xylene	28.4	32.3-92.4	S	%Rec	1	4/8/2020 8:58:41 AM	51482
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
1,4-Dichlorobenzene	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
2,4-Dinitrotoluene	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
Hexachlorobenzene	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
Hexachlorobutadiene	ND	20		µg/L	1	4/5/2020 8:28:42 PM	51448
Hexachloroethane	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
2-Methylphenol	11	10		µg/L	1	4/5/2020 8:28:42 PM	51448
3+4-Methylphenol	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
Nitrobenzene	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
Pentachlorophenol	ND	20		µg/L	1	4/5/2020 8:28:42 PM	51448
Pyridine	ND	30		µg/L	1	4/5/2020 8:28:42 PM	51448
2,4,5-Trichlorophenol	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
2,4,6-Trichlorophenol	ND	10		µg/L	1	4/5/2020 8:28:42 PM	51448
Surr: 2-Fluorophenol	28.6	19.1-74.7		%Rec	1	4/5/2020 8:28:42 PM	51448
Surr: Phenol-d5	22.6	19.2-57		%Rec	1	4/5/2020 8:28:42 PM	51448
Surr: 2,4,6-Tribromophenol	34.3	31-96.4		%Rec	1	4/5/2020 8:28:42 PM	51448
Surr: Nitrobenzene-d5	48.2	46.2-101		%Rec	1	4/5/2020 8:28:42 PM	51448
Surr: 2-Fluorobiphenyl	15.8	39.7-98.2	S	%Rec	1	4/5/2020 8:28:42 PM	51448
Surr: 4-Terphenyl-d14	16.4	31.1-102	S	%Rec	1	4/5/2020 8:28:42 PM	51448
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.50		µg/L	200	4/3/2020 8:35:00 PM	R67816
Toluene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Ethylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Methyl tert-butyl ether (MTBE)	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2,4-Trimethylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,3,5-Trimethylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2-Dichloroethane (EDC)	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2-Dibromoethane (EDB)	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Naphthalene	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
1-Methylnaphthalene	ND	0.80		µg/L	200	4/3/2020 8:35:00 PM	R67816
2-Methylnaphthalene	ND	0.80		µg/L	200	4/3/2020 8:35:00 PM	R67816
Acetone	ND	2.0		µg/L	200	4/3/2020 8:35:00 PM	R67816
Bromobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Bromodichloromethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Bromoform	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816

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

Qualifiers:

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

Analytical Report
Lab Order **2003C07**
Date Reported: **4/15/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well Water
Project: WDW 2 Injection Well
Collection Date: 3/25/2020 11:20:00 AM
Lab ID: 2003C07-001 **Matrix:** AQUEOUS **Received Date:** 3/26/2020 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Bromomethane	ND	0.60		µg/L	200	4/3/2020 8:35:00 PM	R67816
2-Butanone	ND	2.0		µg/L	200	4/3/2020 8:35:00 PM	R67816
Carbon disulfide	ND	2.0		µg/L	200	4/3/2020 8:35:00 PM	R67816
Carbon Tetrachloride	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Chlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Chloroethane	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
Chloroform	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Chloromethane	ND	0.60		µg/L	200	4/3/2020 8:35:00 PM	R67816
2-Chlorotoluene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
4-Chlorotoluene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
cis-1,2-DCE	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
cis-1,3-Dichloropropene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2-Dibromo-3-chloropropane	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
Dibromochloromethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Dibromomethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2-Dichlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,3-Dichlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,4-Dichlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Dichlorodifluoromethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1-Dichloroethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1-Dichloroethene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2-Dichloropropane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,3-Dichloropropane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
2,2-Dichloropropane	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1-Dichloropropene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Hexachlorobutadiene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
2-Hexanone	ND	2.0		µg/L	200	4/3/2020 8:35:00 PM	R67816
Isopropylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
4-Isopropyltoluene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
4-Methyl-2-pentanone	ND	2.0		µg/L	200	4/3/2020 8:35:00 PM	R67816
Methylene Chloride	ND	0.60		µg/L	200	4/3/2020 8:35:00 PM	R67816
n-Butylbenzene	ND	0.60		µg/L	200	4/3/2020 8:35:00 PM	R67816
n-Propylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
sec-Butylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Styrene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
tert-Butylbenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1,1,2-Tetrachloroethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1,2,2-Tetrachloroethane	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
Tetrachloroethene (PCE)	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816

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

Qualifiers:

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

Analytical Report
Lab Order **2003C07**
Date Reported: **4/15/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well Water
Project: WDW 2 Injection Well
Collection Date: 3/25/2020 11:20:00 AM
Lab ID: 2003C07-001 **Matrix:** AQUEOUS **Received Date:** 3/26/2020 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
trans-1,2-DCE	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
trans-1,3-Dichloropropene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2,3-Trichlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2,4-Trichlorobenzene	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1,1-Trichloroethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,1,2-Trichloroethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Trichloroethene (TCE)	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Trichlorofluoromethane	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
1,2,3-Trichloropropane	ND	0.40		µg/L	200	4/3/2020 8:35:00 PM	R67816
Vinyl chloride	ND	0.20		µg/L	200	4/3/2020 8:35:00 PM	R67816
Xylenes, Total	ND	0.30		µg/L	200	4/3/2020 8:35:00 PM	R67816
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	200	4/3/2020 8:35:00 PM	R67816
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	200	4/3/2020 8:35:00 PM	R67816
Surr: Dibromofluoromethane	108	70-130		%Rec	200	4/3/2020 8:35:00 PM	R67816
Surr: Toluene-d8	95.2	70-130		%Rec	200	4/3/2020 8:35:00 PM	R67816

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

Qualifiers:

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

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

April 02, 2020

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1203632

Samples Received: 03/28/2020

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

TABLE OF CONTENTS

SAMPLE SUMMARY

2003C07-001 INJECTION WELL WATER L1203632-01 GW

Collected by	Collected date/time	Received date/time
	03/25/20 11:20	03/28/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1452842	1	03/31/20 13:43	03/31/20 13:43	MJA	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2011	WG1452851	1	04/01/20 10:50	04/01/20 17:06	BAM	Mt. Juliet, TN
Wet Chemistry by Method 9034-9030B	WG1452619	1	03/30/20 16:39	03/30/20 16:39	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1452768	1	03/30/20 14:00	03/30/20 14:00	JIC	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1452856	1	04/01/20 12:32	04/01/20 12:32	MJA	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	6.20	T8	1	03/31/2020 13:43	WG1452842

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	04/01/2020 17:06	WG1452851

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	0.325		0.0500	1	03/30/2020 16:39	WG1452619

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.27	T8	1	03/30/2020 14:00	WG1452768

Sample Narrative:

L1203632-01 WG1452768: 7.27 at 19.4C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	04/01/2020 12:32	WG1452856

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

L1203632-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1203632-01 03/31/20 13:43 • (DUP) R3514562-2 03/31/20 13:43

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	6.20	9.50	1	3.30		20

Laboratory Control Sample (LCS)

(LCS) R3514562-1 03/31/20 13:43

Analyte	Spike Amount mV	LCS Result mV	LCS Rec. %	Rec. Limits %	LCS Qualifier
ORP	92.0	95.0	103	86.0-105	

Method Blank (MB)

(MB) R3514731-1 04/01/20 16:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1203597-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1203597-02 04/01/20 17:01 • (DUP) R3514731-7 04/01/20 17:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

L1203613-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1203613-02 04/01/20 17:04 • (DUP) R3514731-8 04/01/20 17:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3514731-2 04/01/20 16:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.105	105	90.0-110	

L1202333-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1202333-02 04/01/20 16:46 • (MS) R3514731-3 04/01/20 16:47 • (MSD) R3514731-4 04/01/20 16:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.0131	0.115	0.113	102	99.9	1	75.0-125			1.75	20

L1202561-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1202561-02 04/01/20 16:52 • (MS) R3514731-5 04/01/20 16:53 • (MSD) R3514731-6 04/01/20 16:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.104	0.102	101	99.2	1	75.0-125			1.94	20

Method Blank (MB)

(MB) R3514014-1 03/30/20 16:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3514014-2 03/30/20 16:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.496	99.2	85.0-115	

Laboratory Control Sample (LCS)

(LCS) R3514056-1 03/30/20 14:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:

LCS: 9.99 at 20.6C

QUALITY CONTROL SUMMARY

L1203632-01

Wet Chemistry by Method D93/1010A

ONE LAB. NATIONWIDE.

L1200394-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1200394-05 04/01/20 12:32 • (DUP) R3514694-3 04/01/20 12:32

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	139	139	1	0.000		10

Sample Narrative:

OS: This sample was run twice in this WG with the same result each time.

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

(LCS) R3514694-1 04/01/20 12:32 • (LCSD) R3514694-2 04/01/20 12:32

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	82.0	82.9	82.9	101	101	97.0-103			0.000	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

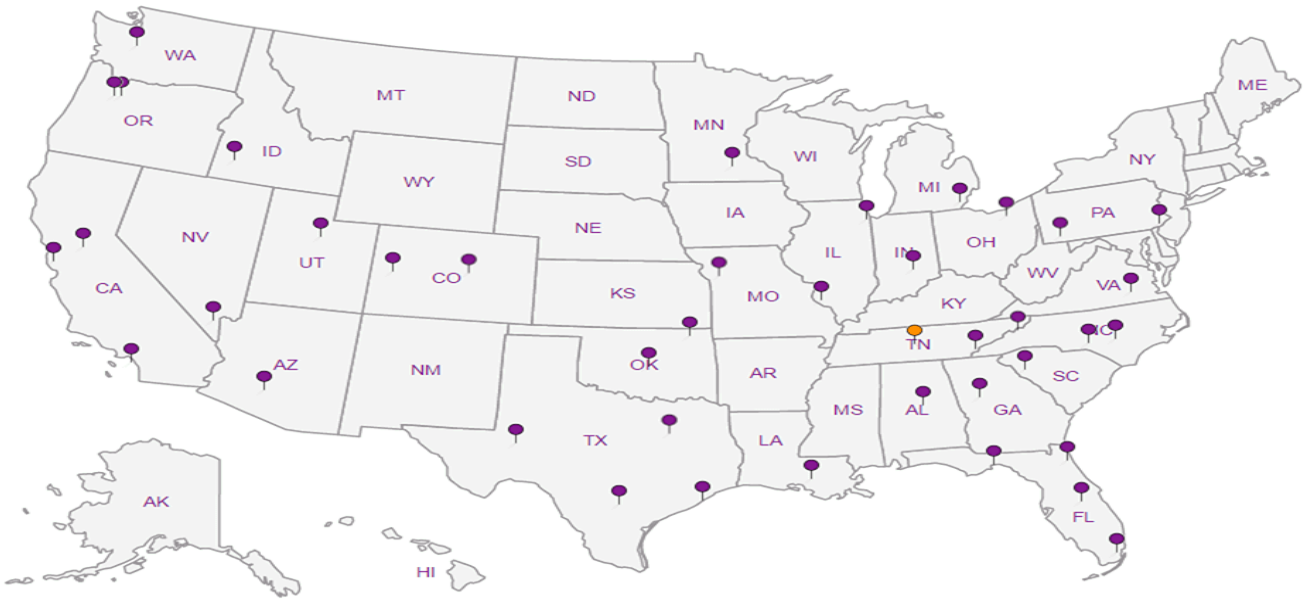
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR:	PACE TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2003C07-001E	Injection Well Water	250HDPE	Aqueous	3/25/2020 11:20:00 AM	1	RCI and Oxidation Reduction Potential 1203632 -01
2	2003C07-001F	Injection Well Water	500PLNAOH ZNAC	Aqueous	3/25/2020 11:20:00 AM	1	RCI 02
3	2003C07-001G	Injection Well Water	500PL-NaOH	Aqueous	3/25/2020 11:20:00 AM	1	RCI 03

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 3/27/2020	Time: 11:53 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 3/27/20	Time: 8:3

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Fedex Track #: 4510 1668 5403

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 0.6+0.1=0.9°C Attempt to Cool ?

Comments: COC Sent RAD SCREEN: <0.5 mR/hr

COC = 3

Received by OCD: 6/2/2021 1:17:05 PM

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVANM

Cooler Received/Opened On: 3 12/21/20

Received By: Monica Ritenour

Signature: [illegible]

Temperature: 0.9? 1203032

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?	✓		

Released to Imaging: 8/19/2021 1:03:56 AM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R67641**	RunNo: **67641**							
Prep Date:	Analysis Date: **3/27/2020**	SeqNo: **2335160**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R67641**	RunNo: **67641**							
Prep Date:	Analysis Date: **3/27/2020**	SeqNo: **2335161**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	101	90	110			
Bromide	2.6	0.10	2.500	0	103	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	104	90	110			
Sulfate	10	0.50	10.00	0	103	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R67807**	RunNo: **67807**							
Prep Date:	Analysis Date: **4/2/2020**	SeqNo: **2342209**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R67807**	RunNo: **67807**							
Prep Date:	Analysis Date: **4/2/2020**	SeqNo: **2342210**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.1	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R67842**	RunNo: **67842**							
Prep Date:	Analysis Date: **4/3/2020**	SeqNo: **2343290**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Phosphorus, Orthophosphate (As P	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R67842**	RunNo: **67842**							
Prep Date:	Analysis Date: **4/3/2020**	SeqNo: **2343292**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	94.2	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	92.1	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB-51482** SampType: **MBLK** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347751** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	1.0								
Surr: Decachlorobiphenyl	2.3		2.500		94.0	38.2	102			
Surr: Tetrachloro-m-xylene	2.0		2.500		79.7	32.3	92.4			

Sample ID: **LCS-51482** SampType: **LCS** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347752** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.1		2.500		43.7	38.2	102			
Surr: Tetrachloro-m-xylene	0.94		2.500		37.7	32.3	92.4			

Sample ID: **LCSD-51482** SampType: **LCSD** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSS02** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347753** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.4		2.500		55.8	38.2	102	0	20	
Surr: Tetrachloro-m-xylene	0.96		2.500		38.5	32.3	92.4	0	20	

Sample ID: **MB-51482** SampType: **MBLK** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **PBW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347762** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	1.0								
Surr: Decachlorobiphenyl	2.6		2.500		102	38.2	102			S
Surr: Tetrachloro-m-xylene	2.1		2.500		82.1	32.3	92.4			

Sample ID: **LCS-51482** SampType: **LCS** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347763** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.2		2.500		47.3	38.2	102			
Surr: Tetrachloro-m-xylene	0.95		2.500		38.2	32.3	92.4			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **LCSD-51482** SampType: **LCSD** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSS02** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347764** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.5		2.500		60.6	38.2	102	0	20	
Surr: Tetrachloro-m-xylene	0.98		2.500		39.3	32.3	92.4	0	20	

Sample ID: **LCS-51482** SampType: **LCS** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347829** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.1		2.500		43.7	38.2	102			
Surr: Tetrachloro-m-xylene	0.92		2.500		36.9	32.3	92.4			

Sample ID: **LCS-51482** SampType: **LCS** TestCode: **EPA Method 8081: PESTICIDES**
Client ID: **LCSW** Batch ID: **51482** RunNo: **67939**
Prep Date: **4/1/2020** Analysis Date: **4/8/2020** SeqNo: **2347830** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	1.2		2.500		47.6	38.2	102			
Surr: Tetrachloro-m-xylene	0.96		2.500		38.3	32.3	92.4			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R67816**	RunNo: **67816**
Prep Date:	Analysis Date: **4/3/2020**	SeqNo: **2343109** 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	97.6	70	130			
Chlorobenzene	19	1.0	20.00	0	95.0	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	112	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R67816**	RunNo: **67816**
Prep Date:	Analysis Date: **4/3/2020**	SeqNo: **2343110** 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 (MTBE)	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)	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								

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R67816** RunNo: **67816**
Prep Date: Analysis Date: **4/3/2020** SeqNo: **2343110** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
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								

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R67816** RunNo: **67816**
Prep Date: Analysis Date: **4/3/2020** SeqNo: **2343110** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		109	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.7		10.00		96.7	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB-51448** SampType: **MBLK** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **PBW** Batch ID: **51448** RunNo: **67871**
Prep Date: **3/31/2020** Analysis Date: **4/5/2020** SeqNo: **2344458** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	ND	10								
2,4-Dinitrotoluene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	20								
Hexachloroethane	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
Nitrobenzene	ND	10								
Pentachlorophenol	ND	20								
Pyridine	ND	30								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	100		200.0		51.9	19.1	74.7			
Surr: Phenol-d5	78		200.0		38.9	19.2	57			
Surr: 2,4,6-Tribromophenol	120		200.0		60.5	31	96.4			
Surr: Nitrobenzene-d5	64		100.0		64.1	46.2	101			
Surr: 2-Fluorobiphenyl	53		100.0		52.9	39.7	98.2			
Surr: 4-Terphenyl-d14	70		100.0		69.9	31.1	102			

Sample ID: **LCS-51448** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **LCSW** Batch ID: **51448** RunNo: **67871**
Prep Date: **3/31/2020** Analysis Date: **4/5/2020** SeqNo: **2344459** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	67	10	100.0	0	67.4	28.6	87.9			
2,4-Dinitrotoluene	57	10	100.0	0	57.4	44	88.3			
Pentachlorophenol	140	20	200.0	0	70.6	30.6	83.6			
Surr: 2-Fluorophenol	170		200.0		85.9	19.1	74.7			S
Surr: Phenol-d5	160		200.0		78.5	19.2	57			S
Surr: 2,4,6-Tribromophenol	160		200.0		81.4	31	96.4			
Surr: Nitrobenzene-d5	87		100.0		87.2	46.2	101			
Surr: 2-Fluorobiphenyl	73		100.0		73.0	39.7	98.2			
Surr: 4-Terphenyl-d14	84		100.0		84.5	31.1	102			

Sample ID: **2003C07-001BMS** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **Injection Well Water** Batch ID: **51448** RunNo: **67871**
Prep Date: **3/31/2020** Analysis Date: **4/5/2020** SeqNo: **2344461** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	21	10	100.0	0	20.9	15	88.6			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **2003C07-001BMS** SampType: **MS** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **Injection Well Water** Batch ID: **51448** RunNo: **67871**
Prep Date: **3/31/2020** Analysis Date: **4/5/2020** SeqNo: **2344461** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	24	10	100.0	0	23.9	15	113			
Pentachlorophenol	64	20	200.0	0	32.1	15	105			
Surr: 2-Fluorophenol	60		200.0		29.9	19.1	74.7			
Surr: Phenol-d5	43		200.0		21.7	19.2	57			
Surr: 2,4,6-Tribromophenol	76		200.0		38.2	31	96.4			
Surr: Nitrobenzene-d5	45		100.0		44.7	46.2	101			S
Surr: 2-Fluorobiphenyl	16		100.0		15.7	39.7	98.2			S
Surr: 4-Terphenyl-d14	16		100.0		16.4	31.1	102			S

Sample ID: **2003C07-001BMSD** SampType: **MSD** TestCode: **EPA Method 8270C: Semivolatiles**
Client ID: **Injection Well Water** Batch ID: **51448** RunNo: **67871**
Prep Date: **3/31/2020** Analysis Date: **4/5/2020** SeqNo: **2344462** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	25	10	100.0	0	24.6	15	88.6	16.6	46.8	
2,4-Dinitrotoluene	31	10	100.0	0	31.0	15	113	26.1	49.8	
Pentachlorophenol	84	20	200.0	0	42.1	15	105	27.0	52	
Surr: 2-Fluorophenol	68		200.0		34.1	19.1	74.7	0	0	
Surr: Phenol-d5	50		200.0		25.0	19.2	57	0	0	
Surr: 2,4,6-Tribromophenol	93		200.0		46.4	31	96.4	0	0	
Surr: Nitrobenzene-d5	51		100.0		51.3	46.2	101	0	0	
Surr: 2-Fluorobiphenyl	19		100.0		18.7	39.7	98.2	0	0	S
Surr: 4-Terphenyl-d14	23		100.0		22.7	31.1	102	0	0	S

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **lcs-1 99.9uS eC** SampType: **lcs** TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW** Batch ID: **R67720** RunNo: **67720**
Prep Date: Analysis Date: **3/31/2020** SeqNo: **2337973** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	99.6	85	115			

Sample ID: **2003C07-001c dup** SampType: **dup** TestCode: **SM2510B: Specific Conductance**
Client ID: **Injection Well Water** Batch ID: **R67720** RunNo: **67720**
Prep Date: Analysis Date: **3/31/2020** SeqNo: **2337985** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	4400	5.0						0.173	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB-51574**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **51574**	RunNo: **67868**							
Prep Date: **4/6/2020**	Analysis Date: **4/6/2020**	SeqNo: **2344284**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-51574**	SampType: **LCSLL**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **BatchQC**	Batch ID: **51574**	RunNo: **67868**							
Prep Date: **4/6/2020**	Analysis Date: **4/6/2020**	SeqNo: **2344285**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	125	50	150			

Sample ID: **LCS-51574**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **51574**	RunNo: **67868**							
Prep Date: **4/6/2020**	Analysis Date: **4/6/2020**	SeqNo: **2344286**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	95.8	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A67781** RunNo: **67781**
Prep Date: Analysis Date: **4/2/2020** SeqNo: **2341007** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A67781** RunNo: **67781**
Prep Date: Analysis Date: **4/2/2020** SeqNo: **2341010** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	50	1.0	50.00	0	100	80	120			
Potassium	48	1.0	50.00	0	96.5	80	120			
Sodium	50	1.0	50.00	0	101	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB-51418** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **51418** RunNo: **67723**
Prep Date: **3/30/2020** Analysis Date: **3/31/2020** SeqNo: **2338029** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.020								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID: **LCS-51418** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **51418** RunNo: **67723**
Prep Date: **3/30/2020** Analysis Date: **3/31/2020** SeqNo: **2338030** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.0	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.6	80	120			
Chromium	0.48	0.0060	0.5000	0	97.0	80	120			
Lead	0.50	0.020	0.5000	0	100	80	120			
Selenium	0.51	0.050	0.5000	0	101	80	120			
Silver	0.098	0.0050	0.1000	0	97.9	80	120			

Sample ID: **MB-51418** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **51418** RunNo: **67723**
Prep Date: **3/30/2020** Analysis Date: **3/31/2020** SeqNo: **2338065** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								

Sample ID: **LCS-51418** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **51418** RunNo: **67723**
Prep Date: **3/30/2020** Analysis Date: **3/31/2020** SeqNo: **2338066** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.030	0.5000	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **mb-1 alk** SampType: **mblk** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R67685** RunNo: **67685**
Prep Date: Analysis Date: **3/30/2020** SeqNo: **2337802** 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 alk** SampType: **lcs** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R67685** RunNo: **67685**
Prep Date: Analysis Date: **3/30/2020** SeqNo: **2337803** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.20	20.00	80.00	0	96.5	90	110			

Sample ID: **2003C07-001c dup** SampType: **dup** TestCode: **SM2320B: Alkalinity**
Client ID: **Injection Well Water** Batch ID: **R67685** RunNo: **67685**
Prep Date: Analysis Date: **3/30/2020** SeqNo: **2337822** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	570.8	20.00						0.316	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2003C07**
15-Apr-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well

Sample ID: **MB-51479** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **51479** RunNo: **67825**
Prep Date: **4/1/2020** Analysis Date: **4/3/2020** SeqNo: **2342586** 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-51479** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **51479** RunNo: **67825**
Prep Date: **4/1/2020** Analysis Date: **4/3/2020** SeqNo: **2342587** Units: **mg/L**

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

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **2003C07** RcptNo: 1

Received By: **Isaiah Ortiz** **3/26/2020 7:50:00 AM** I-OK

Completed By: **Leah Baca** **3/27/2020 8:46:06 AM** Leah SBaca

Reviewed By: DAD 3/27/20

Chain of Custody

1. Is Chain of Custody sufficiently complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Client		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 12

(<2 or >12 unless noted)

Adjusted? NO

Checked by: IO 3/27/20

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good				
2	1.2	Good				

Chain-of-Custody Record

Client: Western Refining Southwest

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4166

email or Fax#: krobinson3@marathonpetroleum.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☒ NELAC ☐ Other

☒ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
WDW #2 Injection Well

Project #:

Project Manager:
Kelly Robinson

Sampler: Eric Carroll
On Ice: ☒ Yes ☐ No
# of Coolers: 2 3.1-0|cf|3.1°C
Cooler Temp(including CF): 1.7-0|cf|1.2°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2003C07	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	See attached Analytical
3/25	1120	water	Injection well water	3-1L Amber	Cool	-001											x
				1-500ml	Cool												x
				1-250ml	HNO_3												x
				1-250ml	Cool												x
				1-RCI Setup	Various												x
↓	↓	↓	↓	3-40ml vial	HCl												x

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
3/25	1411	Eric Carroll	Christin Wall		3/25/20	1411
3/25/20	1811	Christin Walters		Courier	3/26/20	0750

Remarks:
PO #: 4500075481

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.

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

WESTERN REFINING SOUTHWEST, INC. UICI-011 (WDW-2)
WASTE DISPOSAL WELL NO. 2 July 20, 2016

QUARTERLY MONITORING LIST

EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0

D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. **Monitor and Piezometer Wells:** Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 23, 2020

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX:

RE: Injection Well 2 2Q2020 OrderNo.: 2007018

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/1/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2007018**
Date Reported: **7/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 2Q2020 **Collection Date:** 6/30/2020
Lab ID: 2007018-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES TCLP						Analyst:	**JME**
Chlordane	ND	0.20		mg/L	1	7/15/2020 9:21:46 AM	53534
Surr: Decachlorobiphenyl	75.8	38.2-102		%Rec	1	7/15/2020 9:21:46 AM	53534
Surr: Tetrachloro-m-xylene	52.7	32.3-92.4		%Rec	1	7/15/2020 9:21:46 AM	53534
EPA METHOD 8270C TCLP						Analyst:	**DAM**
2-Methylphenol	ND	2000		mg/L	1	7/22/2020 8:27:37 PM	53528
3+4-Methylphenol	ND	2000		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4-Dinitrotoluene	ND	1.3		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachlorobenzene	ND	1.3		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachlorobutadiene	ND	5.0		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachloroethane	ND	30		mg/L	1	7/22/2020 8:27:37 PM	53528
Nitrobenzene	ND	20		mg/L	1	7/22/2020 8:27:37 PM	53528
Pentachlorophenol	ND	1000		mg/L	1	7/22/2020 8:27:37 PM	53528
Pyridine	ND	50		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4,5-Trichlorophenol	ND	4000		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4,6-Trichlorophenol	ND	20		mg/L	1	7/22/2020 8:27:37 PM	53528
Cresols, Total	ND	2000		mg/L	1	7/22/2020 8:27:37 PM	53528
Surr: 2-Fluorophenol	54.9	15-81.1		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: Phenol-d5	45.6	15-61.1		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 2,4,6-Tribromophenol	77.5	17.2-108		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: Nitrobenzene-d5	63.0	18.7-120		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 2-Fluorobiphenyl	47.7	23.6-103		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 4-Terphenyl-d14	94.9	24.1-105		%Rec	1	7/22/2020 8:27:37 PM	53528
SPECIFIC GRAVITY						Analyst:	**CAS**
Specific Gravity	0.9946	0			1	7/1/2020 2:10:00 PM	R70056
EPA METHOD 300.0: ANIONS						Analyst:	**CAS**
Fluoride	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Chloride	1200	50	*	mg/L	100	7/2/2020 4:39:21 PM	R70134
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Bromide	4.0	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	7/1/2020 10:01:06 PM	R70074
Sulfate	78	2.5		mg/L	5	7/1/2020 10:01:06 PM	R70074
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	4500	10		µmhos/c	1	7/7/2020 10:26:38 AM	R70195
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	647.1	20.00		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195

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

Qualifiers:

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

Analytical Report
Lab Order **2007018**
Date Reported: **7/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 2Q2020 **Collection Date:** 6/30/2020
Lab ID: 2007018-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Total Alkalinity (as CaCO3)	647.1	20.00		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2870	200	*D	mg/L	1	7/8/2020 10:16:00 AM	53514
SM4500-H+B / 9040C: PH						Analyst: **JRR**	
pH	7.77		H	pH units	1	7/7/2020 10:26:38 AM	R70195
EPA METHOD 7470: MERCURY						Analyst: **JLF**	
Mercury	ND	0.0010		mg/L	5	7/7/2020 4:27:56 PM	53531
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.030		mg/L	1	7/8/2020 12:41:36 PM	53551
Barium	0.22	0.0020		mg/L	1	7/8/2020 12:41:36 PM	53551
Cadmium	ND	0.0020		mg/L	1	7/8/2020 12:41:36 PM	53551
Calcium	73	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Chromium	ND	0.0060		mg/L	1	7/8/2020 12:41:36 PM	53551
Lead	ND	0.020		mg/L	1	7/8/2020 12:41:36 PM	53551
Magnesium	52	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Potassium	13	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Selenium	ND	0.050		mg/L	1	7/8/2020 12:41:36 PM	53551
Silver	ND	0.0050		mg/L	1	7/8/2020 12:41:36 PM	53551
Sodium	910	10		mg/L	10	7/8/2020 1:06:08 PM	53551
TCLP VOLATILES BY 8260B						Analyst: **CCM**	
Benzene	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
2-Butanone	ND	200		mg/L	200	7/7/2020 12:55:00 AM	T70113
Carbon Tetrachloride	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
Chloroform	ND	6.0		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,4-Dichlorobenzene	ND	7.5		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,1-Dichloroethene	ND	0.70		mg/L	200	7/7/2020 12:55:00 AM	T70113
Tetrachloroethene (PCE)	ND	0.70		mg/L	200	7/7/2020 12:55:00 AM	T70113
Trichloroethene (TCE)	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
Vinyl chloride	ND	0.20		mg/L	200	7/7/2020 12:55:00 AM	T70113
Chlorobenzene	ND	100		mg/L	200	7/7/2020 12:55:00 AM	T70113
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: Dibromofluoromethane	106	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: Toluene-d8	102	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113

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

Qualifiers:

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

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 14, 2020

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1236077
Samples Received:	07/02/2020
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

TABLE OF CONTENTS

2007018-001E INJECTION WELL #2 L1236077-01 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1504658	1	07/07/20 05:39	07/07/20 05:39	AKA	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1503689	1	07/03/20 12:57	07/03/20 12:57	KEG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1506806	1	07/11/20 19:15	07/11/20 19:15	JIC	Mt. Juliet, TN

2007018-001F INJECTION WELL #2 L1236077-02 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9034-9030B	WG1504791	1	07/07/20 15:23	07/07/20 15:23	SL	Mt. Juliet, TN

2007018-001G INJECTION WELL #2 L1236077-03 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2011	WG1507316	1	07/11/20 18:08	07/13/20 15:06	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

SAMPLE RESULTS - 01

Collected date/time: 06/30/20 00:00

L1236077

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	mV				
ORP	37.7	Q	1	07/07/2020 05:39	WG1504658

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
Corrosivity by pH	7.63	T8	1	07/03/2020 12:57	WG1503689

Sample Narrative:

L1236077-01 WG1503689: 7.63 at 21.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	07/11/2020 19:15	WG1506806

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	0.833		0.0500	1	07/07/2020 15:23	WG1504791

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	07/13/2020 15:06	WG1507316

L1236077-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1236077-01 07/07/20 05:39 • (DUP) R3546691-2 07/07/20 05:39

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	37.7	55.8	1	18.1		20

Laboratory Control Sample (LCS)

(LCS) R3546691-1 07/07/20 05:39

Analyte	Spike Amount mV	LCS Result mV	LCS Rec. %	Rec. Limits %	LCS Qualifier
ORP	228	226	99.0	86.0-105	

Method Blank (MB)

(MB) R3548947-1 07/13/20 14:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3548947-3 07/13/20 14:37

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide		ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3548947-2 07/13/20 14:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0984	98.4	90.0-110	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3548947-4 07/13/20 15:04 • (MSD) R3548947-5 07/13/20 15:05

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100		0.106	0.101	106	101	1	75.0-125			4.83	20

Laboratory Control Sample (LCS)

(LCS) R3545989-1 07/03/20 12:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 22.2C

Method Blank (MB)

(MB) R3547698-1 07/07/20 14:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3547698-2 07/07/20 14:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.473	94.6	85.0-115	

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

(LCS) R3548542-1 07/11/20 19:15 • (LCSD) R3548542-2 07/11/20 19:15

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	127	125	101	99.1	96.0-104			1.59	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

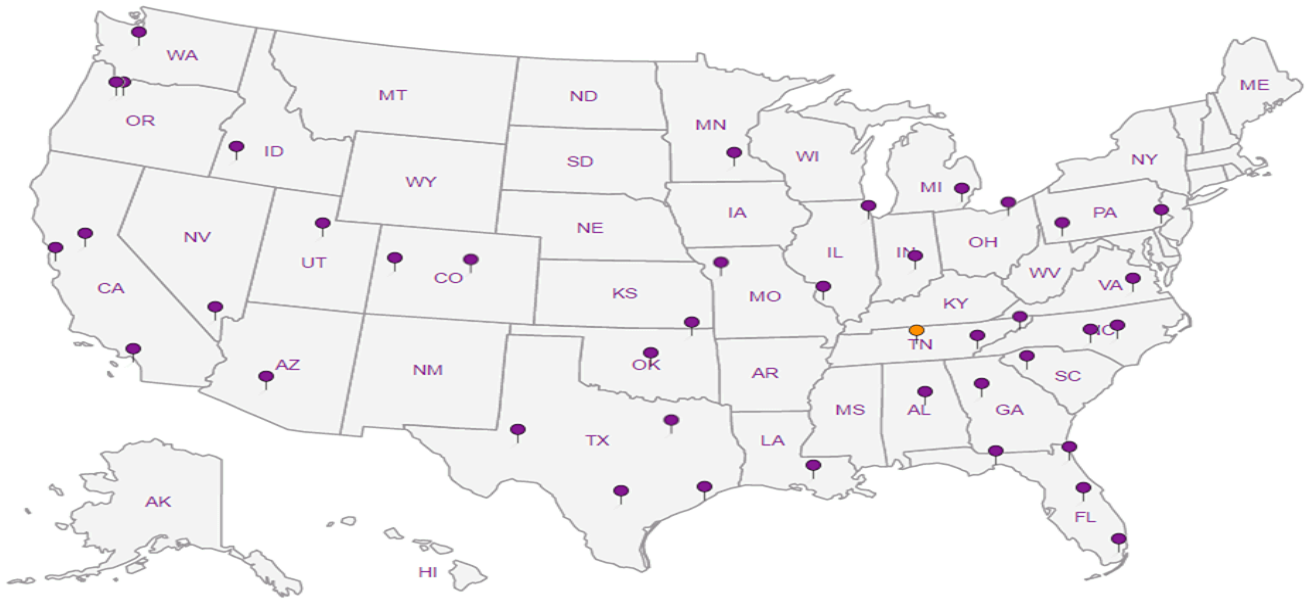
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2007018-001E	Injection Well #2	500HDPE	Aqueous	6/30/2020	1	ORP, Corrosivity, Ignitability	L1236077-01
2	2007018-001F	Injection Well #2	500PLNAOH ZNAC	Aqueous	6/30/2020	1	Reactive Sulfide	02
3	2007018-001G	Injection Well #2	500PL-NaOH	Aqueous	6/30/2020	1	Reactive Cyanide	03

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
EM	7/1/2020	11:19 AM			
			Pecoraso	7/2/20	8:45

TAT: Standard ☐ (circled) RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 5±0=5 AM CA1 Attempt to Cool ? ______

Comments: ______ (02)

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R70074**	RunNo: **70074**
Prep Date:	Analysis Date: **7/1/2020**	SeqNo: **2434415** 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)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R70074**	RunNo: **70074**
Prep Date:	Analysis Date: **7/1/2020**	SeqNo: **2434416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	98.3	90	110			
Bromide	2.5	0.10	2.500	0	101	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.3	90	110			
Sulfate	9.8	0.50	10.00	0	98.0	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R70134**	RunNo: **70134**
Prep Date:	Analysis Date: **7/2/2020**	SeqNo: **2437168** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R70134**	RunNo: **70134**
Prep Date:	Analysis Date: **7/2/2020**	SeqNo: **2437169** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	98.4	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **MB-53534** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **53534** RunNo: **70353**
Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		87.3	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.0	32.3	92.4			

Sample ID: **LCS-53534** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **53534** RunNo: **70353**
Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445442** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0022		0.002500		88.4	38.2	102			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		77.1	32.3	92.4			

Sample ID: **LCSD-53534** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **53534** RunNo: **70353**
Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445443** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0024		0.002500		96.2	38.2	102	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		66.1	32.3	92.4	0	0	

Sample ID: **MB-53534** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **53534** RunNo: **70353**
Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		86.5	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.9	32.3	92.4			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T70113** RunNo: **70113**
Prep Date: Analysis Date: **7/6/2020** SeqNo: **2438829** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.019	0.00023	0.02000	0	95.7	70	130			
1,1-Dichloroethene	0.019	0.00013	0.02000	0	95.1	70	130			
Trichloroethene (TCE)	0.018	0.00020	0.02000	0	88.0	70	130			
Chlorobenzene	0.021	0.00014	0.02000	0	107	70	130			
Surr: 1,2-Dichloroethane-d4	0.0098		0.01000		98.0	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.0096		0.01000		96.4	70	130			
Surr: Toluene-d8	0.010		0.01000		102	70	130			

Sample ID: **MB** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T70113** RunNo: **70113**
Prep Date: Analysis Date: **7/6/2020** SeqNo: **2438830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		102	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		99.5	70	130			
Surr: Toluene-d8	0.010		0.01000		100	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **mb-53528**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **53528**	RunNo: **70542**
Prep Date: **7/7/2020**	Analysis Date: **7/22/2020**	SeqNo: **2453803** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.13		0.2000		67.3	15	81.1			
Surr: Phenol-d5	0.10		0.2000		52.1	15	61.1			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		74.1	17.2	108			
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	18.7	120			
Surr: 2-Fluorobiphenyl	0.059		0.1000		59.0	23.6	103			
Surr: 4-Terphenyl-d14	0.11		0.1000		114	24.1	105			S

Sample ID: **lcs-53528**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **53528**	RunNo: **70542**
Prep Date: **7/7/2020**	Analysis Date: **7/22/2020**	SeqNo: **2453804** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.077	0.0010	0.1000	0	76.5	33.8	121			
3+4-Methylphenol	0.16	0.0010	0.2000	0	81.8	33.6	109			
2,4-Dinitrotoluene	0.055	0.0010	0.1000	0	54.8	50.4	124			
Hexachlorobenzene	0.088	0.0010	0.1000	0	88.1	50.1	120			
Hexachlorobutadiene	0.043	0.0010	0.1000	0	42.5	16.1	103			
Hexachloroethane	0.042	0.0010	0.1000	0	42.3	15	94.2			
Nitrobenzene	0.087	0.0010	0.1000	0	87.4	32.4	125			
Pentachlorophenol	0.080	0.0010	0.1000	0	79.7	44.6	114			
Pyridine	0.011	0.0010	0.1000	0	11.2	15	67			S
2,4,5-Trichlorophenol	0.082	0.0010	0.1000	0	81.9	49.4	118			
2,4,6-Trichlorophenol	0.083	0.0010	0.1000	0	82.6	50.3	116			
Cresols, Total	0.24	0.0010	0.3000	0	80.0	33.8	109			
Surr: 2-Fluorophenol	0.12		0.2000		61.5	15	81.1			
Surr: Phenol-d5	0.092		0.2000		45.8	15	61.1			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		72.4	17.2	108			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **lcs-53528** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **53528** RunNo: **70542**
Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453804** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.080		0.1000		80.5	18.7	120			
Surr: 2-Fluorobiphenyl	0.060		0.1000		59.6	23.6	103			
Surr: 4-Terphenyl-d14	0.11		0.1000		108	24.1	105			S

Sample ID: **2007018-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**
Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453806** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.95	0.010	1.000	0	95.3	30.5	98.2			
3+4-Methylphenol	2.1	0.010	2.000	0	106	27.4	98.6			S
2,4-Dinitrotoluene	0.77	0.010	1.000	0	77.0	34.3	87.4			
Hexachlorobenzene	0.94	0.010	1.000	0	93.8	36.5	100			
Hexachlorobutadiene	0.53	0.010	1.000	0	52.9	15	108			
Hexachloroethane	0.54	0.010	1.000	0	53.6	15	90.7			
Nitrobenzene	0.95	0.010	1.000	0	95.4	39	100			
Pentachlorophenol	0.88	0.010	1.000	0	87.5	15	97.5			
Pyridine	0.10	0.010	1.000	0	10.4	15	65.8			S
2,4,5-Trichlorophenol	0.91	0.010	1.000	0	90.7	36.1	109			
2,4,6-Trichlorophenol	0.95	0.010	1.000	0	94.9	37.8	104			
Cresols, Total	3.1	0.010	3.000	0	102	27.1	99.8			S
Surr: 2-Fluorophenol	1.5		2.000		72.6	15	81.1			
Surr: Phenol-d5	1.1		2.000		54.5	15	61.1			
Surr: 2,4,6-Tribromophenol	1.7		2.000		86.3	17.2	108			
Surr: Nitrobenzene-d5	0.91		1.000		91.2	18.7	120			
Surr: 2-Fluorobiphenyl	0.70		1.000		69.8	23.6	103			
Surr: 4-Terphenyl-d14	1.0		1.000		102	24.1	105			

Sample ID: **2007018-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**
Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453807** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.76	0.010	1.000	0	75.9	30.5	98.2	22.7	44.3	
3+4-Methylphenol	1.6	0.010	2.000	0	79.5	27.4	98.6	28.3	50	
2,4-Dinitrotoluene	0.67	0.010	1.000	0	67.0	34.3	87.4	13.9	45.1	
Hexachlorobenzene	0.82	0.010	1.000	0	81.9	36.5	100	13.6	47.2	
Hexachlorobutadiene	0.39	0.010	1.000	0	39.3	15	108	29.4	43.4	
Hexachloroethane	0.39	0.010	1.000	0	38.9	15	90.7	31.8	39.2	
Nitrobenzene	0.77	0.010	1.000	0	76.6	39	100	21.9	42.1	

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **2007018-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**
Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453807** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.86	0.010	1.000	0	85.6	15	97.5	2.30	50	
Pyridine	ND	0.010	1.000	0	0.0392	15	65.8	200	50	RS
2,4,5-Trichlorophenol	0.86	0.010	1.000	0	85.6	36.1	109	5.85	49.7	
2,4,6-Trichlorophenol	0.80	0.010	1.000	0	80.2	37.8	104	16.8	47	
Cresols, Total	2.3	0.010	3.000	0	78.3	27.1	99.8	26.5	27.4	
Surr: 2-Fluorophenol	1.3		2.000		62.9	15	81.1	0	0	
Surr: Phenol-d5	1.0		2.000		50.9	15	61.1	0	0	
Surr: 2,4,6-Tribromophenol	1.6		2.000		81.5	17.2	108	0	0	
Surr: Nitrobenzene-d5	0.79		1.000		79.4	18.7	120	0	0	
Surr: 2-Fluorobiphenyl	0.60		1.000		59.7	23.6	103	0	0	
Surr: 4-Terphenyl-d14	1.0		1.000		104	24.1	105	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **lcs-1 99.5uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R70195**	RunNo: **70195**
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439134** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.50	0	99.8	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **MB-53531** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437876** Units: **mg/L**

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

Sample ID: **LLLCS-53531** SampType: **LCSLL** TestCode: **EPA Method 7470: Mercury**
Client ID: **BatchQC** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437877** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	96.1	50	150			

Sample ID: **LCS-53531** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.2	80	120			

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well #2** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437885** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0025	0.0010	0.005000	0	49.4	75	125			S

Sample ID: **2007018-001DMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well #2** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437886** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0024	0.0010	0.005000	0	48.5	75	125	1.89	20	S

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **MB-53551** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **53551** RunNo: **70197**
Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439313** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID: **LCS-53551** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **53551** RunNo: **70197**
Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439314** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.030	0.5000	0	89.1	80	120			
Barium	0.47	0.0020	0.5000	0	93.1	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.8	80	120			
Calcium	51	1.0	50.00	0	102	80	120			
Chromium	0.45	0.0060	0.5000	0	89.1	80	120			
Lead	0.45	0.020	0.5000	0	90.6	80	120			
Magnesium	51	1.0	50.00	0	103	80	120			
Potassium	50	1.0	50.00	0	99.2	80	120			
Selenium	0.45	0.050	0.5000	0	90.1	80	120			
Silver	0.095	0.0050	0.1000	0	95.0	80	120			
Sodium	51	1.0	50.00	0	101	80	120			

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**
Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439318** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.32	0.030	0.5000	0	63.1	75	125			S
Barium	0.58	0.0020	0.5000	0.2229	71.2	75	125			S
Cadmium	0.37	0.0020	0.5000	0	73.1	75	125			S
Chromium	0.32	0.0060	0.5000	0	64.2	75	125			S
Lead	0.33	0.020	0.5000	0	65.8	75	125			S
Magnesium	97	1.0	50.00	52.48	88.9	75	125			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**
Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439318** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	60	1.0	50.00	12.98	94.1	75	125			
Selenium	0.32	0.050	0.5000	0	63.5	75	125			S
Silver	0.074	0.0050	0.1000	0	74.0	75	125			S

Sample ID: **2007018-001DMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**
Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439319** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.30	0.030	0.5000	0	59.7	75	125	5.44	20	S
Barium	0.55	0.0020	0.5000	0.2229	65.3	75	125	5.26	20	S
Cadmium	0.35	0.0020	0.5000	0	69.8	75	125	4.61	20	S
Chromium	0.31	0.0060	0.5000	0	61.1	75	125	5.01	20	S
Lead	0.32	0.020	0.5000	0	63.9	75	125	2.92	20	S
Magnesium	91	1.0	50.00	52.48	76.5	75	125	6.58	20	
Potassium	56	1.0	50.00	12.98	85.7	75	125	7.22	20	
Selenium	0.30	0.050	0.5000	0	59.0	75	125	7.36	20	S
Silver	0.070	0.0050	0.1000	0	70.2	75	125	5.21	20	S

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439098**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439099**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.40	20.00	80.00	0	95.5	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439121**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439122**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.32	20.00	80.00	0	96.7	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**
23-Jul-20

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 2Q2020

Sample ID: **MB-53514**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **53514**	RunNo: **70168**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438320** 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-53514**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **53514**	RunNo: **70168**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438321** Units: **mg/L**

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

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2007018** RcptNo: **1**

Received By: **Emily Mocho** **7/1/2020 8:05:00 AM**

Completed By: **Emily Mocho** **7/1/2020 10:48:41 AM**

Reviewed By: SPA 12:40 7.1.20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐	
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐	
5. Sample(s) in proper container(s)?	Yes ☑	No ☐		
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐		
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐		
8. Was preservative added to bottles?	Yes ☐	No ☑ JR 7/1/20	NA ☐	
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐	
10. Were any sample containers received broken?	Yes ☐	No ☑		
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐		
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐		
13. Is it clear what analyses were requested?	Yes ☑	No ☐		
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐		

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

Adjusted? yes

Checked by: JR 7/1/20

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks: 0.5ml of HNO_3 was added to sample 0010 for pH<2. For metals analysis. JR 7/1/20

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	8.05	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield NM 87413

Phone #: (505) 801-5616

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☒ EDD (Type) Excel

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Injection Well #2 - 2Q2020

Project #: PO# 4500183752

Project Manager: K. Robinson

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.0 ±0 = 2.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	See Analytical List
6/30/20		Water	Injection Well #2	~~1-500mL~~ 2 Amber	None												X
				2-500mL	Poly												X
				3-VOA	HCl												X
				1-500mL poly	NaOH												X
				1-500mL Poly	2: Acetate NaOH												X
				~~1~~ 2-250ml	Poly HNO3												X
				1-125mL	Poly H_2SO_4												X
				~~1-500mL~~	~~Poly~~												

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/30/20	1204	Kelly Pederson	Christa Waele		6/30/2020	1204
6/30/20	1820	Christa Waele	Ellen	courier	7/1/20	8:05

Remarks: See Attached Analytical List

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.

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

QUARTERLY MONITORING LIST			
EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0

D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. **Monitor and Piezometer Wells:** Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. **CONTINGENCY PLANS:** The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. **CLOSURE:** Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 14, 2020

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX

RE: WDW 2 Injection Well Quarterly Sampling OrderNo.: 2009B76

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/19/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2009B76**
Date Reported: **10/14/2020**

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well Water
Project: WDW 2 Injection Well Quarterly Sampli
Collection Date: 9/18/2020 3:00:00 PM
Lab ID: 2009B76-001 **Matrix:** AQUEOUS **Received Date:** 9/19/2020 9:18:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES TCLP						Analyst: **JME**	
Chlordane	ND	0.30	D	mg/L	10	10/5/2020 10:38:24 AM	55379
Surr: Decachlorobiphenyl	42.1	38.2-102	D	%Rec	10	10/5/2020 10:38:24 AM	55379
Surr: Tetrachloro-m-xylene	39.7	32.3-92.4	D	%Rec	10	10/5/2020 10:38:24 AM	55379
EPA METHOD 8270C TCLP						Analyst: **DAM**	
2-Methylphenol	ND	200		mg/L	1	9/29/2020 4:56:32 PM	55360
3+4-Methylphenol	ND	200		mg/L	1	9/29/2020 4:56:32 PM	55360
2,4-Dinitrotoluene	ND	0.13		mg/L	1	9/29/2020 4:56:32 PM	55360
Hexachlorobenzene	ND	0.13		mg/L	1	9/29/2020 4:56:32 PM	55360
Hexachlorobutadiene	ND	0.50		mg/L	1	9/29/2020 4:56:32 PM	55360
Hexachloroethane	ND	3.0		mg/L	1	9/29/2020 4:56:32 PM	55360
Nitrobenzene	ND	2.0		mg/L	1	9/29/2020 4:56:32 PM	55360
Pentachlorophenol	ND	100		mg/L	1	9/29/2020 4:56:32 PM	55360
Pyridine	ND	5.0		mg/L	1	9/29/2020 4:56:32 PM	55360
2,4,5-Trichlorophenol	ND	400		mg/L	1	9/29/2020 4:56:32 PM	55360
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	9/29/2020 4:56:32 PM	55360
Cresols, Total	ND	200		mg/L	1	9/29/2020 4:56:32 PM	55360
Surr: 2-Fluorophenol	30.2	15-81.1		%Rec	1	9/29/2020 4:56:32 PM	55360
Surr: Phenol-d5	34.4	15-61.1		%Rec	1	9/29/2020 4:56:32 PM	55360
Surr: 2,4,6-Tribromophenol	60.4	17.2-108		%Rec	1	9/29/2020 4:56:32 PM	55360
Surr: Nitrobenzene-d5	38.2	18.7-120		%Rec	1	9/29/2020 4:56:32 PM	55360
Surr: 2-Fluorobiphenyl	51.5	23.6-103		%Rec	1	9/29/2020 4:56:32 PM	55360
Surr: 4-Terphenyl-d14	76.8	24.1-105		%Rec	1	9/29/2020 4:56:32 PM	55360
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	0.9958	0			1	10/5/2020 8:18:00 AM	R72378
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Fluoride	ND	0.50		mg/L	5	10/8/2020 3:45:21 PM	R72532
Chloride	830	25	*	mg/L	50	10/12/2020 6:46:38 PM	R72608
Bromide	3.2	0.50		mg/L	5	10/8/2020 3:45:21 PM	R72532
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	10/8/2020 3:45:21 PM	R72532
Sulfate	86	2.5		mg/L	5	10/8/2020 3:45:21 PM	R72532
Nitrate+Nitrite as N	ND	1.0		mg/L	5	10/8/2020 9:17:02 PM	R72532
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	3800	10		µmhos/c	1	9/25/2020 10:36:08 AM	R72166
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	626.3	20.00		mg/L Ca	1	9/25/2020 10:36:08 AM	R72166
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	9/25/2020 10:36:08 AM	R72166
Total Alkalinity (as CaCO3)	626.3	20.00		mg/L Ca	1	9/25/2020 10:36:08 AM	R72166

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
PQL	Practical Quanitative Limit
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 Limit

Analytical Report
Lab Order **2009B76**
Date Reported: **10/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Injection Well Water
Project: WDW 2 Injection Well Quarterly Sampli
Collection Date: 9/18/2020 3:00:00 PM
Lab ID: 2009B76-001 **Matrix:** AQUEOUS **Received Date:** 9/19/2020 9:18:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	2190	20.0	*	mg/L	1	9/23/2020 5:56:00 PM	55350
SM4500-H+B / 9040C: PH						Analyst:	**JRR**
pH	7.71		H	pH units	1	9/25/2020 10:36:08 AM	R72166
EPA METHOD 7470: MERCURY						Analyst:	**pmf**
Mercury	ND	0.00020		mg/L	1	10/1/2020 10:50:02 PM	55413
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst:	**pmf**
Arsenic	ND	0.030		mg/L	1	9/29/2020 4:11:00 AM	55452
Barium	0.27	0.0020		mg/L	1	9/29/2020 4:11:00 AM	55452
Cadmium	ND	0.0020		mg/L	1	9/30/2020 5:43:56 AM	55452
Calcium	79	1.0		mg/L	1	9/29/2020 4:11:00 AM	55452
Chromium	ND	0.0060		mg/L	1	9/29/2020 4:11:00 AM	55452
Lead	ND	0.020		mg/L	1	9/29/2020 4:11:00 AM	55452
Magnesium	43	1.0		mg/L	1	9/29/2020 4:11:00 AM	55452
Potassium	13	1.0		mg/L	1	9/29/2020 4:11:00 AM	55452
Selenium	ND	0.050		mg/L	1	9/30/2020 5:43:56 AM	55452
Silver	ND	0.0050		mg/L	1	9/29/2020 4:11:00 AM	55452
Sodium	650	10		mg/L	10	10/2/2020 3:48:41 AM	55452
TCLP VOLATILES BY 8260B						Analyst:	**DJF**
Benzene	ND	0.50		mg/L	1	9/24/2020 4:08:47 PM	C72134
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/24/2020 4:08:47 PM	C72134
2-Butanone	ND	200		mg/L	1	9/24/2020 4:08:47 PM	C72134
Carbon Tetrachloride	ND	0.50		mg/L	1	9/24/2020 4:08:47 PM	C72134
Chloroform	ND	6.0		mg/L	1	9/24/2020 4:08:47 PM	C72134
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/24/2020 4:08:47 PM	C72134
1,1-Dichloroethene	ND	0.70		mg/L	1	9/24/2020 4:08:47 PM	C72134
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/24/2020 4:08:47 PM	C72134
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/24/2020 4:08:47 PM	C72134
Vinyl chloride	ND	0.20		mg/L	1	9/24/2020 4:08:47 PM	C72134
Chlorobenzene	ND	100		mg/L	1	9/24/2020 4:08:47 PM	C72134
Surr: 1,2-Dichloroethane-d4	89.2	70-130		%Rec	1	9/24/2020 4:08:47 PM	C72134
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/24/2020 4:08:47 PM	C72134
Surr: Dibromofluoromethane	112	70-130		%Rec	1	9/24/2020 4:08:47 PM	C72134
Surr: Toluene-d8	96.2	70-130		%Rec	1	9/24/2020 4:08:47 PM	C72134

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

Qualifiers:

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

Analytical Report
Lab Order **2009B76**
Date Reported: **10/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
Project: WDW 2 Injection Well Quarterly Sampli **Collection Date:**
Lab ID: 2009B76-002 **Matrix:** TRIP BLANK **Received Date:** 9/19/2020 9:18:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
TCLP VOLATILES BY 8260B						Analyst: **DJF**	
Benzene	ND	0.50		mg/L	1	9/24/2020 4:37:14 PM	C72134
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/24/2020 4:37:14 PM	C72134
2-Butanone	ND	200		mg/L	1	9/24/2020 4:37:14 PM	C72134
Carbon Tetrachloride	ND	0.50		mg/L	1	9/24/2020 4:37:14 PM	C72134
Chloroform	ND	6.0		mg/L	1	9/24/2020 4:37:14 PM	C72134
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/24/2020 4:37:14 PM	C72134
1,1-Dichloroethene	ND	0.70		mg/L	1	9/24/2020 4:37:14 PM	C72134
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/24/2020 4:37:14 PM	C72134
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/24/2020 4:37:14 PM	C72134
Vinyl chloride	ND	0.20		mg/L	1	9/24/2020 4:37:14 PM	C72134
Chlorobenzene	ND	100		mg/L	1	9/24/2020 4:37:14 PM	C72134
Surr: 1,2-Dichloroethane-d4	93.7	70-130		%Rec	1	9/24/2020 4:37:14 PM	C72134
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/24/2020 4:37:14 PM	C72134
Surr: Dibromofluoromethane	109	70-130		%Rec	1	9/24/2020 4:37:14 PM	C72134
Surr: Toluene-d8	93.7	70-130		%Rec	1	9/24/2020 4:37:14 PM	C72134

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

Qualifiers:

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

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 01, 2020

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1264916
Samples Received:	09/22/2020
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

TABLE OF CONTENTS

2009B76-001E INJECTION WELL WATER L1264916-01 WW

Collected by | Collected date/time 09/18/20 15:00 | Received date/time 09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500H+ B-2011	WG1548240	1	09/24/20 14:00	09/24/20 14:00	SAC	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1551089	1	09/30/20 08:00	09/30/20 08:00	CAT	Mt. Juliet, TN

2009B76-001F INJECTION WELL WATER L1264916-02 WW

Collected by | Collected date/time 09/18/20 15:00 | Received date/time 09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9034-9030B	WG1547883	1	09/23/20 17:33	09/23/20 17:33	MJA	Mt. Juliet, TN

2009B76-001G INJECTION WELL WATER L1264916-03 WW

Collected by | Collected date/time 09/18/20 15:00 | Received date/time 09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2011	WG1551381	1	09/30/20 13:51	10/01/20 00:59	MCG	Mt. Juliet, TN

2009B76-001H INJECTION WELL WATER L1264916-04 GW

Collected by | Collected date/time 09/18/20 15:00 | Received date/time 09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1552078	1	09/30/20 20:30	09/30/20 20:30	JIC	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.82	T8	1	09/24/2020 14:00	WG1548240

Sample Narrative:

L1264916-01 WG1548240: 7.82 at 20.7C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	09/30/2020 08:00	WG1551089

Collected date/time: 09/18/20 15:00

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		0.0500	1	09/23/2020 17:33	WG1547883

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

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	10/01/2020 00:59	WG1551381

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

Collected date/time: 09/18/20 15:00

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	179	T8	1	09/30/2020 20:30	WG1552078

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

L1264912-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1264912-03 09/30/20 20:30 • (DUP) R3576362-3 09/30/20 20:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	202	200	1	2.70		20

L1264912-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1264912-16 09/30/20 20:30 • (DUP) R3576362-4 09/30/20 20:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	198	188	1	9.70		20

L1264916-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1264916-04 09/30/20 20:30 • (DUP) R3576362-5 09/30/20 20:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	179	198	1	18.8		20

L1267162-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1267162-01 09/30/20 20:30 • (DUP) R3576362-6 09/30/20 20:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	171	170	1	1.50		20

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

(LCS) R3576362-1 09/30/20 20:30 • (LCSD) R3576362-2 09/30/20 20:30

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	228	227	226	99.4	99.3	86.0-105			0.300	20

Method Blank (MB)

(MB) R3576510-1 10/01/20 00:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

Laboratory Control Sample (LCS)

(LCS) R3576510-2 10/01/20 00:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0998	99.8	90.0-117	

Laboratory Control Sample (LCS)

(LCS) R3574146-1 09/24/20 14:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.03 at 20.1C

Method Blank (MB)

(MB) R3573725-1 09/23/20 17:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3573725-2 09/23/20 17:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.457	91.4	85.0-115	

L1264816-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264816-01 09/30/20 08:00 • (DUP) R3575980-3 09/30/20 08:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	153	152	1	0.656		10

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

(LCS) R3575980-1 09/30/20 08:00 • (LCSD) R3575980-2 09/30/20 08:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	125	125	99.1	99.1	96.0-104			0.000	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

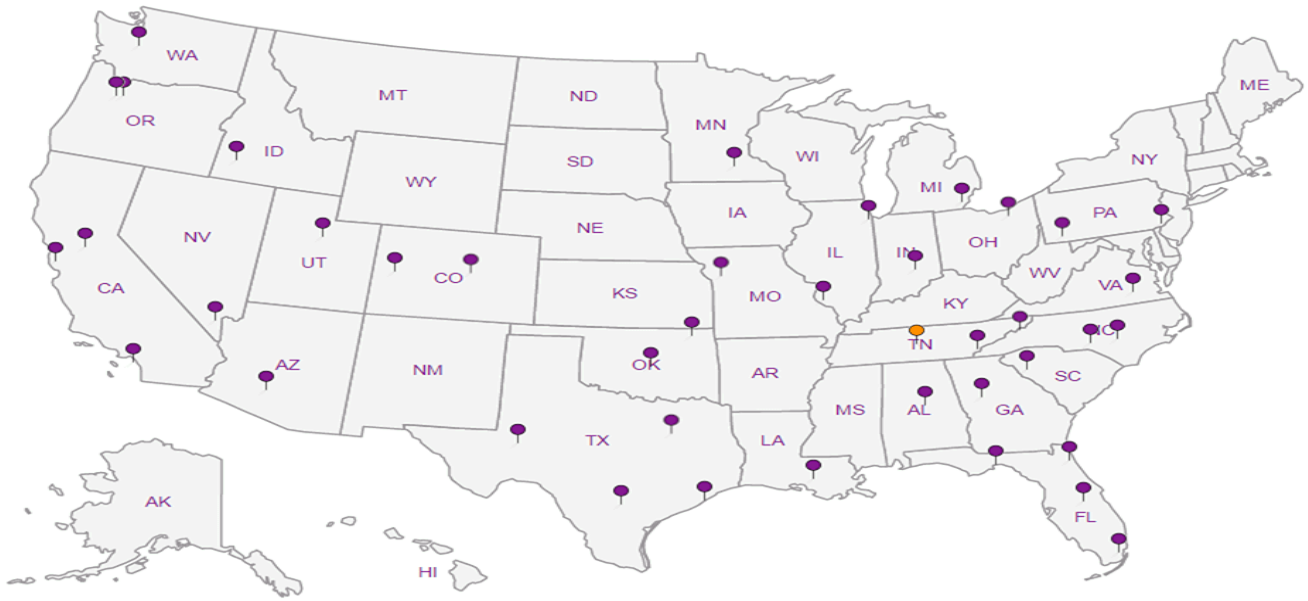
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

L1264916

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

H071

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2009B76-001E	Injection Well Water	500HDPE	Aqueous	9/18/2020 3:00:00 PM	1	Corrosivity, Ignitability -01
2	2009B76-001F	Injection Well Water	500PLNAOH ZNAC	Aqueous	9/18/2020 3:00:00 PM	1	Reactive Sulfide 712 -02
3	2009B76-001G	Injection Well Water	500PL-NaOH	Aqueous	9/18/2020 3:00:00 PM	1	Reactive Cyanide 712 ncw -03
4	2009B76-001H	Injection Well Water	125HDP	Aqueous	9/18/2020 3:00:00 PM	1	ORP -04

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable
COC Signed/Accurate:	Y N	VOA Zero Headspace: Y N
Bottles arrive intact:	Y N	Pres.Correct/Check: Y N
Correct bottles used:	Y N	
Sufficient volume sent:	Y N	
RAD Screen <0.5 mR/hr:	Y N	

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Em	9/19/2020	11:31 AM	[signature]	9:00	9/22/20

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 1.9-2=1.7 °C Attempt to Cool ?

Comments: COCSI

V7 LIQ 9998 5220

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R72532**	RunNo: **72532**							
Prep Date:	Analysis Date: **10/8/2020**	SeqNo: **2545985**	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, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R72532**	RunNo: **72532**							
Prep Date:	Analysis Date: **10/8/2020**	SeqNo: **2545986**	Units: **mg/L**						

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	110	90	110			
Bromide	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	96.6	90	110			
Sulfate	9.9	0.50	10.00	0	99.3	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	101	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBW**	Batch ID: **R72608**	RunNo: **72608**							
Prep Date:	Analysis Date: **10/12/2020**	SeqNo: **2549641**	Units: **mg/L**						

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R72608**	RunNo: **72608**							
Prep Date:	Analysis Date: **10/12/2020**	SeqNo: **2549649**	Units: **mg/L**						

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.5	0.50	5.000	0	90.7	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB-55379**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **55379**	RunNo: **72475**							
Prep Date: **9/23/2020**	Analysis Date: **10/5/2020**	SeqNo: **2549071**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0018		0.002500		72.1	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.2	32.3	92.4			

Sample ID: **MB-55379**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **55379**	RunNo: **72475**							
Prep Date: **9/23/2020**	Analysis Date: **10/5/2020**	SeqNo: **2549408**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0018		0.002500		70.1	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.0	32.3	92.4			

Sample ID: **LCS-55379**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **LCSW**	Batch ID: **55379**	RunNo: **72475**							
Prep Date: **9/23/2020**	Analysis Date: **10/5/2020**	SeqNo: **2549409**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0013		0.002500		51.9	38.2	102			
Surr: Tetrachloro-m-xylene	0.0013		0.002500		51.6	32.3	92.4			

Sample ID: **LCSD-55379**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **LCSS02**	Batch ID: **55379**	RunNo: **72475**							
Prep Date: **9/23/2020**	Analysis Date: **10/5/2020**	SeqNo: **2549410**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0014		0.002500		57.6	38.2	102	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.0	32.3	92.4	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **C72134** RunNo: **72134**
Prep Date: Analysis Date: **9/24/2020** SeqNo: **2528437** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0087		0.01000		87.1	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		104	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		107	70	130			
Surr: Toluene-d8	0.0095		0.01000		95.0	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **C72134** RunNo: **72134**
Prep Date: Analysis Date: **9/24/2020** SeqNo: **2528438** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0.02000	0	96.8	70	130			
1,1-Dichloroethene	ND	0.70	0.02000	0	101	70	130			
Trichloroethene (TCE)	ND	0.50	0.02000	0	93.2	70	130			
Chlorobenzene	ND	100	0.02000	0	95.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.0094		0.01000		93.8	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		103	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		106	70	130			
Surr: Toluene-d8	0.0095		0.01000		95.2	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **mb-55360** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534412** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		58.1	15	81.1			
Surr: Phenol-d5	0.11		0.2000		55.2	15	61.1			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		72.5	17.2	108			
Surr: Nitrobenzene-d5	0.064		0.1000		64.0	18.7	120			
Surr: 2-Fluorobiphenyl	0.067		0.1000		66.6	23.6	103			
Surr: 4-Terphenyl-d14	0.092		0.1000		92.4	24.1	105			

Sample ID: **lcs-55360** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534413** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.046	0.00010	0.1000	0	46.2	33.8	121			
3+4-Methylphenol	0.095	0.00010	0.2000	0	47.7	33.6	109			
2,4-Dinitrotoluene	0.053	0.00010	0.1000	0	52.9	50.4	124			
Hexachlorobenzene	0.089	0.00010	0.1000	0	88.9	50.1	120			
Hexachlorobutadiene	0.030	0.00010	0.1000	0	30.2	16.1	103			
Hexachloroethane	0.027	0.00010	0.1000	0	26.7	15	94.2			
Nitrobenzene	0.047	0.00010	0.1000	0	47.4	32.4	125			
Pentachlorophenol	0.085	0.00010	0.1000	0	84.7	44.6	114			
Pyridine	0.016	0.00010	0.1000	0	15.7	15	67			
2,4,5-Trichlorophenol	0.068	0.00010	0.1000	0	68.4	49.4	118			
2,4,6-Trichlorophenol	0.055	0.00010	0.1000	0	55.4	50.3	116			
Cresols, Total	0.14	0.00010	0.3000	0	47.2	33.8	109			
Surr: 2-Fluorophenol	0.058		0.2000		29.1	15	81.1			
Surr: Phenol-d5	0.052		0.2000		25.9	15	61.1			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		70.7	17.2	108			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **lcs-55360** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534413** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.036		0.1000		36.1	18.7	120			
Surr: 2-Fluorobiphenyl	0.032		0.1000		31.9	23.6	103			
Surr: 4-Terphenyl-d14	0.098		0.1000		98.5	24.1	105			

Sample ID: **2009b76-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well Water** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534415** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.024	0.00010	0.1000	0	23.7	30.5	98.2			S
3+4-Methylphenol	0.052	0.00010	0.2000	0	26.0	27.4	98.6			S
2,4-Dinitrotoluene	0.034	0.00010	0.1000	0	34.4	34.3	87.4			
Hexachlorobenzene	0.049	0.00010	0.1000	0	49.5	36.5	100			
Hexachlorobutadiene	0.017	0.00010	0.1000	0	17.0	15	108			
Hexachloroethane	0.014	0.00010	0.1000	0	14.3	15	90.7			S
Nitrobenzene	0.023	0.00010	0.1000	0	22.9	39	100			S
Pentachlorophenol	0.044	0.00010	0.1000	0	44.1	15	97.5			
Pyridine	0.018	0.00010	0.1000	0	17.9	15	65.8			
2,4,5-Trichlorophenol	0.050	0.00010	0.1000	0	49.5	36.1	109			
2,4,6-Trichlorophenol	0.041	0.00010	0.1000	0	40.9	37.8	104			
Cresols, Total	0.076	0.00010	0.3000	0	25.2	27.1	99.8			S
Surr: 2-Fluorophenol	0.022		0.2000		10.8	15	81.1			S
Surr: Phenol-d5	0.025		0.2000		12.3	15	61.1			S
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.4	17.2	108			
Surr: Nitrobenzene-d5	0.014		0.1000		13.9	18.7	120			S
Surr: 2-Fluorobiphenyl	0.018		0.1000		18.3	23.6	103			S
Surr: 4-Terphenyl-d14	0.080		0.1000		80.3	24.1	105			

Sample ID: **2009b76-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well Water** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.049	0.00010	0.1000	0	49.4	30.5	98.2	70.2	44.3	R
3+4-Methylphenol	0.11	0.00010	0.2000	0	54.5	27.4	98.6	70.8	50	R
2,4-Dinitrotoluene	0.049	0.00010	0.1000	0	48.9	34.3	87.4	34.8	45.1	
Hexachlorobenzene	0.070	0.00010	0.1000	0	69.8	36.5	100	34.1	47.2	
Hexachlorobutadiene	0.027	0.00010	0.1000	0	26.6	15	108	44.0	43.4	R
Hexachloroethane	0.022	0.00010	0.1000	0	21.9	15	90.7	41.7	39.2	R
Nitrobenzene	0.038	0.00010	0.1000	0	38.4	39	100	50.5	42.1	RS

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **2009b76-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **Injection Well Water** Batch ID: **55360** RunNo: **72260**
Prep Date: **9/22/2020** Analysis Date: **9/29/2020** SeqNo: **2534416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.046	0.00010	0.1000	0	45.7	15	97.5	3.73	50	
Pyridine	0.027	0.00010	0.1000	0	26.6	15	65.8	38.8	50	
2,4,5-Trichlorophenol	0.070	0.00010	0.1000	0	70.3	36.1	109	34.7	49.7	
2,4,6-Trichlorophenol	0.065	0.00010	0.1000	0	65.1	37.8	104	45.8	47	
Cresols, Total	0.16	0.00010	0.3000	0	52.8	27.1	99.8	70.6	27.4	R
Surr: 2-Fluorophenol	0.053		0.2000		26.3	15	81.1	0	0	
Surr: Phenol-d5	0.056		0.2000		28.0	15	61.1	0	0	
Surr: 2,4,6-Tribromophenol	0.11		0.2000		57.2	17.2	108	0	0	
Surr: Nitrobenzene-d5	0.029		0.1000		29.4	18.7	120	0	0	
Surr: 2-Fluorobiphenyl	0.039		0.1000		39.3	23.6	103	0	0	
Surr: 4-Terphenyl-d14	0.061		0.1000		61.0	24.1	105	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **lcs-1 99.2uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R72166**		RunNo: **72166**		
Prep Date:	Analysis Date: **9/25/2020**		SeqNo: **2529530**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	98	10	99.20	0	98.8	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**

14-Oct-20

Client: Western Refining Southwest, Inc.

Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB-55413** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**

Client ID: **PBW** Batch ID: **55413** RunNo: **72332**

Prep Date: **10/1/2020** Analysis Date: **10/1/2020** SeqNo: **2536817** Units: **mg/L**

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

Sample ID: **LCSLL-55413** SampType: **LCSLL** TestCode: **EPA Method 7470: Mercury**

Client ID: **BatchQC** Batch ID: **55413** RunNo: **72332**

Prep Date: **10/1/2020** Analysis Date: **10/1/2020** SeqNo: **2536818** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	122	50	150			

Sample ID: **LCS-55413** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**

Client ID: **LCSW** Batch ID: **55413** RunNo: **72332**

Prep Date: **10/1/2020** Analysis Date: **10/1/2020** SeqNo: **2536819** 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	94.9	80	120			

Sample ID: **2009B76-001DMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**

Client ID: **Injection Well Water** Batch ID: **55413** RunNo: **72332**

Prep Date: **10/1/2020** Analysis Date: **10/1/2020** SeqNo: **2536823** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0039	0.00020	0.005000	0	77.3	75	125			

Sample ID: **2009B76-001DMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**

Client ID: **Injection Well Water** Batch ID: **55413** RunNo: **72332**

Prep Date: **10/1/2020** Analysis Date: **10/1/2020** SeqNo: **2536824** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0040	0.00020	0.005000	0	79.9	75	125	3.23	20	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB-55452** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **55452** RunNo: **72243**
Prep Date: **9/25/2020** Analysis Date: **9/29/2020** SeqNo: **2533349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								
Barium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Silver	ND	0.0050								

Sample ID: **LCS-55452** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **55452** RunNo: **72243**
Prep Date: **9/25/2020** Analysis Date: **9/29/2020** SeqNo: **2533351** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.030	0.5000	0	90.4	80	120			
Barium	0.47	0.0020	0.5000	0	94.1	80	120			
Calcium	49	1.0	50.00	0	98.4	80	120			
Chromium	0.46	0.0060	0.5000	0	91.7	80	120			
Lead	0.47	0.020	0.5000	0	94.9	80	120			
Magnesium	49	1.0	50.00	0	98.4	80	120			
Potassium	49	1.0	50.00	0	97.2	80	120			
Silver	0.095	0.0050	0.1000	0	95.4	80	120			

Sample ID: **MB-55452** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **55452** RunNo: **72287**
Prep Date: **9/25/2020** Analysis Date: **9/30/2020** SeqNo: **2535107** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								
Selenium	ND	0.050								

Sample ID: **LCS-55452** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **55452** RunNo: **72287**
Prep Date: **9/25/2020** Analysis Date: **9/30/2020** SeqNo: **2535109** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.45	0.0020	0.5000	0	89.4	80	120			
Selenium	0.47	0.050	0.5000	0	94.0	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB-55452**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **55452**	RunNo: **72373**
Prep Date: **9/25/2020**	Analysis Date: **10/2/2020**	SeqNo: **2538459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: **LCS-55452**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **55452**	RunNo: **72373**
Prep Date: **9/25/2020**	Analysis Date: **10/2/2020**	SeqNo: **2538461** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	95.3	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529582**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529583**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.72	20.00	80.00	0	95.9	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529605**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529606**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.64	20.00	80.00	0	95.8	90	110			

Sample ID: **mb-3 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529628**	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-3 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R72166**	RunNo: **72166**							
Prep Date:	Analysis Date: **9/25/2020**	SeqNo: **2529629**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.64	20.00	80.00	0	97.0	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009B76**
14-Oct-20

Client: Western Refining Southwest, Inc.
Project: WDW 2 Injection Well Quarterly Sampling

Sample ID: **MB-55350**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **55350**	RunNo: **72087**							
Prep Date: **9/22/2020**	Analysis Date: **9/23/2020**	SeqNo: **2525437**	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-55350**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **55350**	RunNo: **72087**							
Prep Date: **9/22/2020**	Analysis Date: **9/23/2020**	SeqNo: **2525438**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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 Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2009B76** RcptNo: **1**

Received By: **Cheyenne Cason** **9/19/2020 9:18:00 AM**

Completed By: **Emily Mocho** **9/19/2020 10:41:58 AM**

Reviewed By: EM 9/18/20

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	FedEx		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 2 2 (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? NO
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: JR 9/19/20

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.1	Good	Not Present			

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: krobinson3@marathonpetroleum.com

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation:
X NELAP ☐ Other_____

X EDD (Type) ____Excel_____

Turn-Around Time:
X Standard ☐ **Rush**_____

Project Name:
WDW #2 Injection Well- Quarterly Sampling

Project #:

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson
On Ice: ☒ Yes ☐ No
Sample Temperature: 0.0 + 0.1 = 0.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2009876	Analysis Request: See Attached Analytical List
9/18/2020	15:00	Water	Injection Well Water	2- 1.0L Amber	None	001	X
		Water		3-500mL Poly	None		X
		Water		3-VOAs	HCl		X
		Water		1-500mL Poly	NaOH		X
		Water		1-500mL Poly	Zn Acetate / NaoH		X
		Water		1-500mL Poly	HNO3		X
		Water		1-125mL Poly	HNO3		X
		Water		1-125mL Poly	H2SO4		X

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/18/20	1700	[signature]	Fed Ex	9/19/20	0918
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

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 analyt

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

QUARTERLY MONITORING LIST			
EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0

D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. **Monitor and Piezometer Wells:** Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

January 07, 2021

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX

RE: Injection Well 2 4Q2020 OrderNo.: 2012A28

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/19/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2012A28**
Date Reported: **1/7/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 4Q2020 **Collection Date:** 12/18/2020 8:00:00 AM
Lab ID: 2012A28-001 **Matrix:** AQUEOUS **Received Date:** 12/19/2020 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES TCLP						Analyst: **LSB**	
Chlordane	ND	0.030		mg/L	1	12/29/2020 3:17:33 PM	57198
Surr: Decachlorobiphenyl	88.7	41.7-129		%Rec	1	12/29/2020 3:17:33 PM	57198
Surr: Tetrachloro-m-xylene	81.4	31.8-88.5		%Rec	1	12/29/2020 3:17:33 PM	57198
EPA METHOD 8270C TCLP						Analyst: **DAM**	
2-Methylphenol	ND	200		mg/L	1	12/28/2020 10:03:35 PM	57174
3+4-Methylphenol	ND	200		mg/L	1	12/28/2020 10:03:35 PM	57174
2,4-Dinitrotoluene	ND	0.13		mg/L	1	12/28/2020 10:03:35 PM	57174
Hexachlorobenzene	ND	0.13		mg/L	1	12/28/2020 10:03:35 PM	57174
Hexachlorobutadiene	ND	0.50		mg/L	1	12/28/2020 10:03:35 PM	57174
Hexachloroethane	ND	3.0		mg/L	1	12/28/2020 10:03:35 PM	57174
Nitrobenzene	ND	2.0		mg/L	1	12/28/2020 10:03:35 PM	57174
Pentachlorophenol	ND	100		mg/L	1	12/28/2020 10:03:35 PM	57174
Pyridine	ND	5.0		mg/L	1	12/28/2020 10:03:35 PM	57174
2,4,5-Trichlorophenol	ND	400		mg/L	1	12/28/2020 10:03:35 PM	57174
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	12/28/2020 10:03:35 PM	57174
Cresols, Total	ND	200		mg/L	1	12/28/2020 10:03:35 PM	57174
Surr: 2-Fluorophenol	47.1	15-81.1		%Rec	1	12/28/2020 10:03:35 PM	57174
Surr: Phenol-d5	37.4	15-61.1		%Rec	1	12/28/2020 10:03:35 PM	57174
Surr: 2,4,6-Tribromophenol	99.5	17.2-108		%Rec	1	12/28/2020 10:03:35 PM	57174
Surr: Nitrobenzene-d5	56.2	18.7-120		%Rec	1	12/28/2020 10:03:35 PM	57174
Surr: 2-Fluorobiphenyl	66.4	23.6-103		%Rec	1	12/28/2020 10:03:35 PM	57174
Surr: 4-Terphenyl-d14	59.1	24.1-105		%Rec	1	12/28/2020 10:03:35 PM	57174
SPECIFIC GRAVITY						Analyst: **JRR**	
Specific Gravity	0.9999	0			1	12/23/2020 9:40:00 AM	R74205
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Fluoride	ND	0.50		mg/L	5	12/30/2020 1:48:35 PM	R74337
Chloride	890	25	*	mg/L	50	12/30/2020 2:13:18 PM	R74337
Bromide	1.6	0.50		mg/L	5	12/21/2020 5:31:57 PM	R74178
Phosphorus, Orthophosphate (As P)	ND	2.5	H	mg/L	5	12/21/2020 5:31:57 PM	R74178
Sulfate	72	2.5		mg/L	5	12/21/2020 5:31:57 PM	R74178
Nitrate+Nitrite as N	ND	1.0		mg/L	5	12/21/2020 10:04:59 PM	R74178
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **MH**	
Conductivity	3400	10		µmhos/c	1	12/28/2020 12:12:40 PM	R74270
SM2320B: ALKALINITY						Analyst: **MH**	
Bicarbonate (As CaCO3)	349.6	20.00		mg/L Ca	1	12/23/2020 4:40:13 PM	R74231
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/23/2020 4:40:13 PM	R74231
Total Alkalinity (as CaCO3)	349.6	20.00		mg/L Ca	1	12/23/2020 4:40:13 PM	R74231

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

Qualifiers:

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

Analytical Report
Lab Order **2012A28**
Date Reported: **1/7/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 4Q2020 **Collection Date:** 12/18/2020 8:00:00 AM
Lab ID: 2012A28-001 **Matrix:** AQUEOUS **Received Date:** 12/19/2020 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **MH**	
Total Dissolved Solids	1950	40.0	*D	mg/L	1	12/23/2020 11:43:00 AM	57191
SM4500-H+B / 9040C: PH						Analyst: **MH**	
pH	7.96		H	pH units	1	12/23/2020 4:40:13 PM	R74231
EPA METHOD 7470: MERCURY						Analyst: **ags**	
Mercury	ND	0.020		mg/L	1	12/23/2020 1:00:53 PM	57168
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Arsenic	ND	5.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Barium	ND	100		mg/L	1	12/22/2020 2:30:37 PM	57149
Cadmium	ND	1.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Calcium	87	1.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Chromium	ND	5.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Lead	ND	5.0		mg/L	1	12/28/2020 3:45:41 PM	57149
Magnesium	22	1.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Potassium	55	1.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Selenium	ND	1.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Silver	ND	5.0		mg/L	1	12/22/2020 2:30:37 PM	57149
Sodium	550	10		mg/L	10	12/22/2020 4:05:31 PM	57149
TCLP VOLATILES BY 8260B						Analyst: **JMR**	
Benzene	ND	0.50		mg/L	1	12/27/2020 5:55:26 PM	T74256
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	12/27/2020 5:55:26 PM	T74256
2-Butanone	ND	200		mg/L	1	12/27/2020 5:55:26 PM	T74256
Carbon Tetrachloride	ND	0.50		mg/L	1	12/27/2020 5:55:26 PM	T74256
Chloroform	ND	6.0		mg/L	1	12/27/2020 5:55:26 PM	T74256
1,4-Dichlorobenzene	ND	7.5		mg/L	1	12/27/2020 5:55:26 PM	T74256
1,1-Dichloroethene	ND	0.70		mg/L	1	12/27/2020 5:55:26 PM	T74256
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	12/27/2020 5:55:26 PM	T74256
Trichloroethene (TCE)	ND	0.50		mg/L	1	12/27/2020 5:55:26 PM	T74256
Vinyl chloride	ND	0.20		mg/L	1	12/27/2020 5:55:26 PM	T74256
Chlorobenzene	ND	100		mg/L	1	12/27/2020 5:55:26 PM	T74256
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	12/27/2020 5:55:26 PM	T74256
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	12/27/2020 5:55:26 PM	T74256
Surr: Dibromofluoromethane	84.1	70-130		%Rec	1	12/27/2020 5:55:26 PM	T74256
Surr: Toluene-d8	94.4	70-130		%Rec	1	12/27/2020 5:55:26 PM	T74256

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

Qualifiers:

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

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 05, 2021

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1299519
Samples Received:	12/22/2020
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2012A28-001E INJECTION WELL #2 L1299519-01 WW

Collected by	Collected date/time	Received date/time
	12/18/20 08:00	12/22/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1597489	1	12/26/20 09:00	12/26/20 09:00	SRG	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1598939	1	12/30/20 15:51	12/30/20 15:51	KPS	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1600697	1	01/04/21 16:00	01/04/21 16:00	CO	Mt. Juliet, TN

2012A28-001F INJECTION WELL #2 L1299519-02 WW

Collected by	Collected date/time	Received date/time
	12/18/20 08:00	12/22/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9034-9030B	WG1595786	1	12/23/20 17:01	12/23/20 17:01	LRP	Mt. Juliet, TN

2012A28-001G INJECTION WELL #2 L1299519-03 WW

Collected by	Collected date/time	Received date/time
	12/18/20 08:00	12/22/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2011	WG1598368	1	12/29/20 09:07	12/29/20 19:20	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	24.0		1	12/26/2020 09:00	WG1597489

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.36	T8	1	12/30/2020 15:51	WG1598939

Sample Narrative:

L1299519-01 WG1598939: 7.36 at 20C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	01/04/2021 16:00	WG1600697

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

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	0.213		0.0500	1	12/23/2020 17:01	WG1595786

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	12/29/2020 19:20	WG1598368

L1298461-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1298461-11 12/26/20 09:00 • (DUP) R3607276-3 12/26/20 09:00

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	13.2	15.2	1	2.00		20

L1298461-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1298461-12 12/26/20 09:00 • (DUP) R3607276-4 12/26/20 09:00

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	61.4	44.8	1	16.6		20

L1298461-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1298461-13 12/26/20 09:00 • (DUP) R3607276-5 12/26/20 09:00

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	131	125	1	6.50		20

L1299519-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1299519-01 12/26/20 09:00 • (DUP) R3607276-6 12/26/20 09:00

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	24.0	28.4	1	4.40		20

L1299906-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1299906-01 12/26/20 09:00 • (DUP) R3607276-7 12/26/20 09:00

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	44.6	53.1	1	8.50		20

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

(LCS) R3607276-1 12/26/20 09:00 • (LCSD) R3607276-2 12/26/20 09:00

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	228	228	212	100	93.2	86.0-105			15.7	20

Method Blank (MB)

(MB) R3608155-1 12/29/20 18:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1299672-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1299672-01 12/29/20 19:25 • (DUP) R3608155-5 12/29/20 19:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1299853-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1299853-02 12/29/20 19:33 • (DUP) R3608155-6 12/29/20 19:34

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0119	0.00636	1	60.7	P1	20

Laboratory Control Sample (LCS)

(LCS) R3608155-2 12/29/20 18:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0963	96.3	90.0-117	

L1299416-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1299416-03 12/29/20 18:52 • (MS) R3608155-3 12/29/20 18:53 • (MSD) R3608155-4 12/29/20 18:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0993	0.0972	97.0	94.9	1	90.0-110			2.14	20

L1300515-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1300515-01 12/29/20 19:38 • (MS) R3608155-7 12/29/20 19:39 • (MSD) R3608155-8 12/29/20 19:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0998	0.0995	95.6	95.3	1	90.0-110			0.301	20

Laboratory Control Sample (LCS)

(LCS) R3608445-1 12/30/20 15:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.04 at 19.3C

Method Blank (MB)

(MB) R3606782-1 12/23/20 16:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3606782-2 12/23/20 16:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.566	113	85.0-115	

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

(LCS) R3609549-1 01/04/21 16:00 • (LCSD) R3609549-2 01/04/21 16:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	131	131	104	104	96.0-104			0.000	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA

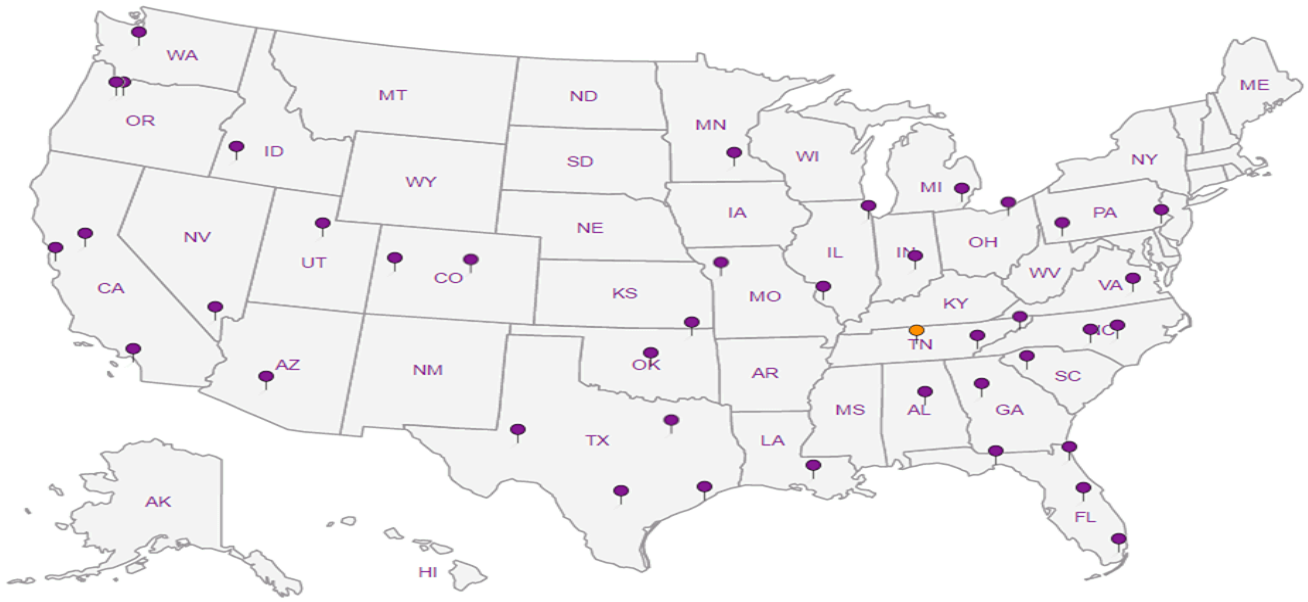
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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



ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

D079

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2012A28-001E	Injection Well #2	500HDPE	Aqueous	12/18/2020 8:00:00 AM	1	ORP, Corrosivity, Ignitability 1299519.01
2	2012A28-001F	Injection Well #2	500PLNAOH ZNAC	Aqueous	12/18/2020 8:00:00 AM	1	Reactive Sulfide 02
3	2012A28-001G	Injection Well #2	500PL-NaOH	Aqueous	12/18/2020 8:00:00 AM	1	Reactive Cyanide 03

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

RAD SCREEN: <0.5 mR/hr

SPECIAL INSTRUCTIONS / COMMENTS:

A2KH 2.0 4.2 2.2

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: DD3	Date: 12/21/2020	Time: 12:17 PM	Received By:	Date: 12/21/20	Time: 0530
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard X RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R74178**	RunNo: **74178**
Prep Date:	Analysis Date: **12/21/2020**	SeqNo: **2618041** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R74178**	RunNo: **74178**
Prep Date:	Analysis Date: **12/21/2020**	SeqNo: **2618042** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	2.5	0.10	2.500	0	98.5	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	96.0	90	110			
Sulfate	9.8	0.50	10.00	0	97.8	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.5	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R74337**	RunNo: **74337**
Prep Date:	Analysis Date: **12/30/2020**	SeqNo: **2624363** 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								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R74337**	RunNo: **74337**
Prep Date:	Analysis Date: **12/30/2020**	SeqNo: **2624364** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	94.3	90	110			
Chloride	4.7	0.50	5.000	0	94.1	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **MB-57198**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **57198**	RunNo: **74305**							
Prep Date: **12/23/2020**	Analysis Date: **12/29/2020**	SeqNo: **2625239**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0012		0.002500		49.7	41.7	129			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.3	31.8	88.5			

Sample ID: **MB-57198**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **57198**	RunNo: **74305**							
Prep Date: **12/23/2020**	Analysis Date: **12/29/2020**	SeqNo: **2625240**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0013		0.002500		53.0	41.7	129			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		63.3	31.8	88.5			

Sample ID: **MB-57230**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **57230**	RunNo: **74305**							
Prep Date: **12/28/2020**	Analysis Date: **12/29/2020**	SeqNo: **2625241**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0021		0.002500		85.8	41.7	129			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		76.0	31.8	88.5			

Sample ID: **MB-57230**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **PBW**	Batch ID: **57230**	RunNo: **74305**							
Prep Date: **12/28/2020**	Analysis Date: **12/29/2020**	SeqNo: **2625242**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0023		0.002500		91.2	41.7	129			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		84.2	31.8	88.5			

Sample ID: **LCS-57198**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**							
Client ID: **LCSW**	Batch ID: **57198**	RunNo: **74305**							
Prep Date: **12/23/2020**	Analysis Date: **12/29/2020**	SeqNo: **2625244**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0022		0.002500		88.8	41.7	129			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		75.7	31.8	88.5			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **LCS-57198** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **57198** RunNo: **74305**
Prep Date: **12/23/2020** Analysis Date: **12/29/2020** SeqNo: **2625246** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0024		0.002500		94.3	41.7	129			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.2	31.8	88.5			

Sample ID: **LCSD-57198** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **57198** RunNo: **74305**
Prep Date: **12/23/2020** Analysis Date: **12/29/2020** SeqNo: **2625247** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0027		0.002500		108	41.7	129	0	0	
Surr: Tetrachloro-m-xylene	0.0023		0.002500		92.4	31.8	88.5	0	0	S

Sample ID: **LCSD-57198** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **57198** RunNo: **74305**
Prep Date: **12/23/2020** Analysis Date: **12/29/2020** SeqNo: **2625248** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0029		0.002500		115	41.7	129	0	0	
Surr: Tetrachloro-m-xylene	0.0025		0.002500		101	31.8	88.5	0	0	S

Sample ID: **LCS-57230** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **57230** RunNo: **74305**
Prep Date: **12/28/2020** Analysis Date: **12/29/2020** SeqNo: **2625249** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		69.5	41.7	129			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.1	31.8	88.5			

Sample ID: **LCS-57230** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **57230** RunNo: **74305**
Prep Date: **12/28/2020** Analysis Date: **12/29/2020** SeqNo: **2625250** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0018		0.002500		73.6	41.7	129			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.3	31.8	88.5			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T74256** RunNo: **74256**
Prep Date: Analysis Date: **12/27/2020** SeqNo: **2621292** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50	0.02000	0	101	70	130			
1,1-Dichloroethene	ND	0.70	0.02000	0	93.4	70	130			
Trichloroethene (TCE)	ND	0.50	0.02000	0	88.9	70	130			
Chlorobenzene	ND	100	0.02000	0	98.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		99.8	70	130			
Surr: Dibromofluoromethane	0.0080		0.01000		80.3	70	130			
Surr: Toluene-d8	0.0094		0.01000		93.6	70	130			

Sample ID: **mb1** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T74256** RunNo: **74256**
Prep Date: Analysis Date: **12/27/2020** SeqNo: **2621293** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.0077		0.01000		76.8	70	130			
Surr: Toluene-d8	0.0095		0.01000		95.4	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **lcs-1 99.5uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**							
Client ID: **LCSW**	Batch ID: **R74270**	RunNo: **74270**							
Prep Date:	Analysis Date: **12/28/2020**	SeqNo: **2621907**	Units: **µmhos/cm**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	95	10	99.50	0	95.1	85	115			

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **MB-57168**	SampType: **MBLK**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **PBW**	Batch ID: **57168**	RunNo: **74214**							
Prep Date: **12/22/2020**	Analysis Date: **12/23/2020**	SeqNo: **2619650**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LLLCS-57168**	SampType: **LCSLL**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **BatchQC**	Batch ID: **57168**	RunNo: **74214**							
Prep Date: **12/22/2020**	Analysis Date: **12/23/2020**	SeqNo: **2619651**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	66.1	50	150			

Sample ID: **LCS-57168**	SampType: **LCS**	TestCode: **EPA Method 7470: Mercury**							
Client ID: **LCSW**	Batch ID: **57168**	RunNo: **74214**							
Prep Date: **12/22/2020**	Analysis Date: **12/23/2020**	SeqNo: **2619652**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	96.8	80	120			

Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **MB-57149**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **57149**	RunNo: **74188**
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618401** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID: **LCS-57149**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **57149**	RunNo: **74188**
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618403** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.030	0.5000	0	100	80	120			
Barium	0.48	0.0020	0.5000	0	96.8	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.2	80	120			
Calcium	48	1.0	50.00	0	96.1	80	120			
Chromium	0.49	0.0060	0.5000	0	97.2	80	120			
Magnesium	48	1.0	50.00	0	96.8	80	120			
Potassium	48	1.0	50.00	0	96.6	80	120			
Selenium	0.49	0.050	0.5000	0	99.0	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			
Sodium	49	1.0	50.00	0	98.2	80	120			

Sample ID: **2012A28-001DMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2**	Batch ID: **57149**	RunNo: **74188**
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618405** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.030	0.5000	0	91.2	75	125			
Barium	0.79	0.0020	0.5000	0.3492	88.3	75	125			
Cadmium	0.47	0.0020	0.5000	0	94.5	75	125			
Chromium	0.45	0.0060	0.5000	0.001590	89.8	75	125			
Magnesium	70	1.0	50.00	22.01	96.0	75	125			
Selenium	0.47	0.050	0.5000	0	93.4	75	125			
Silver	0.11	0.0050	0.1000	0.004336	104	75	125			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **2012A28-001DMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2**	Batch ID: **57149**	RunNo: **74188**
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618406** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.48	0.030	0.5000	0	95.2	75	125	4.34	20	
Barium	0.78	0.0020	0.5000	0.3492	85.4	75	125	1.85	20	
Cadmium	0.47	0.0020	0.5000	0	93.6	75	125	1.02	20	
Chromium	0.44	0.0060	0.5000	0.001590	88.0	75	125	2.00	20	
Magnesium	69	1.0	50.00	22.01	94.6	75	125	1.01	20	
Selenium	0.48	0.050	0.5000	0	97.0	75	125	3.73	20	
Silver	0.11	0.0050	0.1000	0.004336	101	75	125	2.38	20	

Sample ID: **MB-57149**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **57149**	RunNo: **74281**
Prep Date: **12/21/2020**	Analysis Date: **12/28/2020**	SeqNo: **2622252** Units: **mg/L**

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

Sample ID: **LCS-57149**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **57149**	RunNo: **74281**
Prep Date: **12/21/2020**	Analysis Date: **12/28/2020**	SeqNo: **2622254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.020	0.5000	0	97.7	80	120			

Sample ID: **2012A28-001DMS**	SampType: **MS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2**	Batch ID: **57149**	RunNo: **74281**
Prep Date: **12/21/2020**	Analysis Date: **12/28/2020**	SeqNo: **2622256** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.020	0.5000	0	97.2	75	125			

Sample ID: **2012A28-001DMSD**	SampType: **MSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **Injection Well #2**	Batch ID: **57149**	RunNo: **74281**
Prep Date: **12/21/2020**	Analysis Date: **12/28/2020**	SeqNo: **2622257** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.47	0.020	0.5000	0	94.7	75	125	2.62	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R74231**	RunNo: **74231**							
Prep Date:	Analysis Date: **12/23/2020**	SeqNo: **2620308**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R74231**	RunNo: **74231**							
Prep Date:	Analysis Date: **12/23/2020**	SeqNo: **2620310**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80.04	20.00	80.00	0	100	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **2012A28-001CDUP** SampType: **DUP** TestCode: **Specific Gravity**
Client ID: **Injection Well #2** Batch ID: **R74205** RunNo: **74205**
Prep Date: Analysis Date: **12/23/2020** SeqNo: **2619429** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9992	0						0.0700	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A28**
07-Jan-21

Client: Western Refining Southwest, Inc.
Project: Injection Well 2 4Q2020

Sample ID: **MB-57191**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **57191**	RunNo: **74238**
Prep Date: **12/23/2020**	Analysis Date: **12/23/2020**	SeqNo: **2620643** 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-57191**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **57191**	RunNo: **74238**
Prep Date: **12/23/2020**	Analysis Date: **12/23/2020**	SeqNo: **2620644** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	991	20.0	1000	0	99.1	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2012A28** RcptNo: **1**

Received By: **Cheyenne Cason** **12/19/2020 7:30:00 AM**

Completed By: **Desiree Dominguez** **12/21/2020 12:07:22 PM** DD

Reviewed By: SGL 12/21/20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

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

Adjusted? NO

Checked by: JR 12/21/20

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.1	Good	Yes			
2	1.1	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: krobinson3@marathonpetroleum.com

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation:
X NELAP ☐ Other_____
X EDD (Type) ____Excel_____

Turn-Around Time:
X Standard ☐ Rush_____

Project Name:
Injection Well #2 - 4Q2020

Project #:
PO 4500183752

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson
On Ice: ☒ Yes ☐ No
Sample Temperature: See Rmr

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2012A28	See Attached Analytical List	Air Bubbles (Y or N)
12/18/2020	800	Water	Injection Well #2	4-500mL Amber	None	-001	X	
		Water		2-500mL Poly	None		X	
		Water		3-VOAs	HCl		X	
		Water		1-500mL Poly	NaOH		X	
		Water		1-500mL Poly	Zn Acetate / NaoH		X	
		Water		1-250mL Poly	HNO3		X	
		Water		1-125mL Poly	HNO3		X	
		Water		1-125mL Poly	H2SO4		X	

Date	Time	Relinquished by:	Received by:	Date	Time
12/18/20	1700	Kelly Robinson		12/18/2020	1700
12/18/2020	1814	[signature]	[signature]	12/19/20	0730

Remarks:
Analytical List Attached to COC
1.4 - 0.3 = 1.1
1.4 - 0.3 = 1.1

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

WESTERN REFINING SOUTHWEST, INC.
WASTE DISPOSAL WELL NO. 2

UICI-011 (WDW-2)
July 20, 2016

QUARTERLY MONITORING LIST			
EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0

D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. **Monitor and Piezometer Wells:** Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. **CONTINGENCY PLANS:** The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. **CLOSURE:** Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

ATTACHMENT B

2020 Bradenhead Test Report

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-045-35747	
5. Indicate Type of Lease STATE ☐ FEE ☒	
6. State Oil & Gas Lease No.	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	7. Lease Name or Unit Agreement Name
1. Type of Well: Oil Well ☐ Gas Well ☒ Other Wastewater Disposal Well	8. Well Number: WDW #2
2. Name of Operator Western Refining Southwest,,Inc.	9. OGRID Number 267595
3. Address of Operator 50 County Road 4990 (PO Box 159) Bloomfield, NM 87413	10. Pool name or Wildcat Entrada
4. Well Location Unit Letter H : 2028 feet from the North line and East feet from the line Section 27 Township 29N Range 11W NMPM San Juan County	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER ☐		OTHER: ☒ Bradenhead Test Report	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Pursuant to Condition 3.D.1 of the Bloomfield Terminal Injection Well Discharge Permit (UICI-011), Western Refining Southwest, Inc. conducted a pressure test on the Bradenhead and Intermediate casings of WDW #2 on Friday, September 18, 2020. A representative of NMOCD observed the testing via face-time in the field.

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Kelly Robinson TITLE Environmental Supervisor DATE 09/18/2020

Type or print name Kelly Robinson E-mail address: krobinson3@marathonpetroleum.com PHONE: (505) 801-5616

For State Use Only

APPROVED BY: TITLE DATE

Conditions of Approval (if any):

NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE
1000 RIO BRAZOS ROAD
AZTEC NM 87410
(505) 334-6178 FAX: (505) 334-6170
http://emnrd.state.nm.us/ocd/District III/3distric.htm

BRADENHEAD TEST REPORT

(submit 1 copy to above address)

Date of Test 9-18-20 Operator Western Refining Southwest, Inc API #30-045-35747

Property Name Waste Disposal Well Well No. 2 Location: Unit H Section 27 Township 29 Range 11

Well Status(Shut-In or Producing) Initial PSI: Tubing 650 Intermediate Ø Casing Ø Bradenhead 43

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

PRESSURE

Testing	Bradenhead BH	Bradenhead Int	Bradenhead Csg	INTERM Int	INTERM Csg
TIME 5 min	Ø	Ø	Ø	Ø	Ø
10 min	Ø	Ø	Ø	Ø	Ø
15 min	Ø	Ø	Ø	Ø	Ø
20 min					
25 min					
30 min					

Ø = zero

FLOW CHARACTERISTICS

	BRADENHEAD	INTERMEDIATE
Steady Flow		
Surges		
Down to Nothing	✓	✓
Nothing		
Gas	✓	✓
Gas & Water		
Water		

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR_____ FRESH_____ SALTY_____ SULFUR_____ BLACK_____

5 MINUTE SHUT-IN PRESSURE BRADENHEAD Ø (Light puff when opened after 5 minutes) INTERMEDIATE Ø

REMARKS: The intermediate and bradenhead have not been opened prior to testing. Bradenhead pressure to 0psi in 4 seconds. Intermediate to Ø psi in 14 seconds. Intermediate had no puff after 5 minute shut-in.

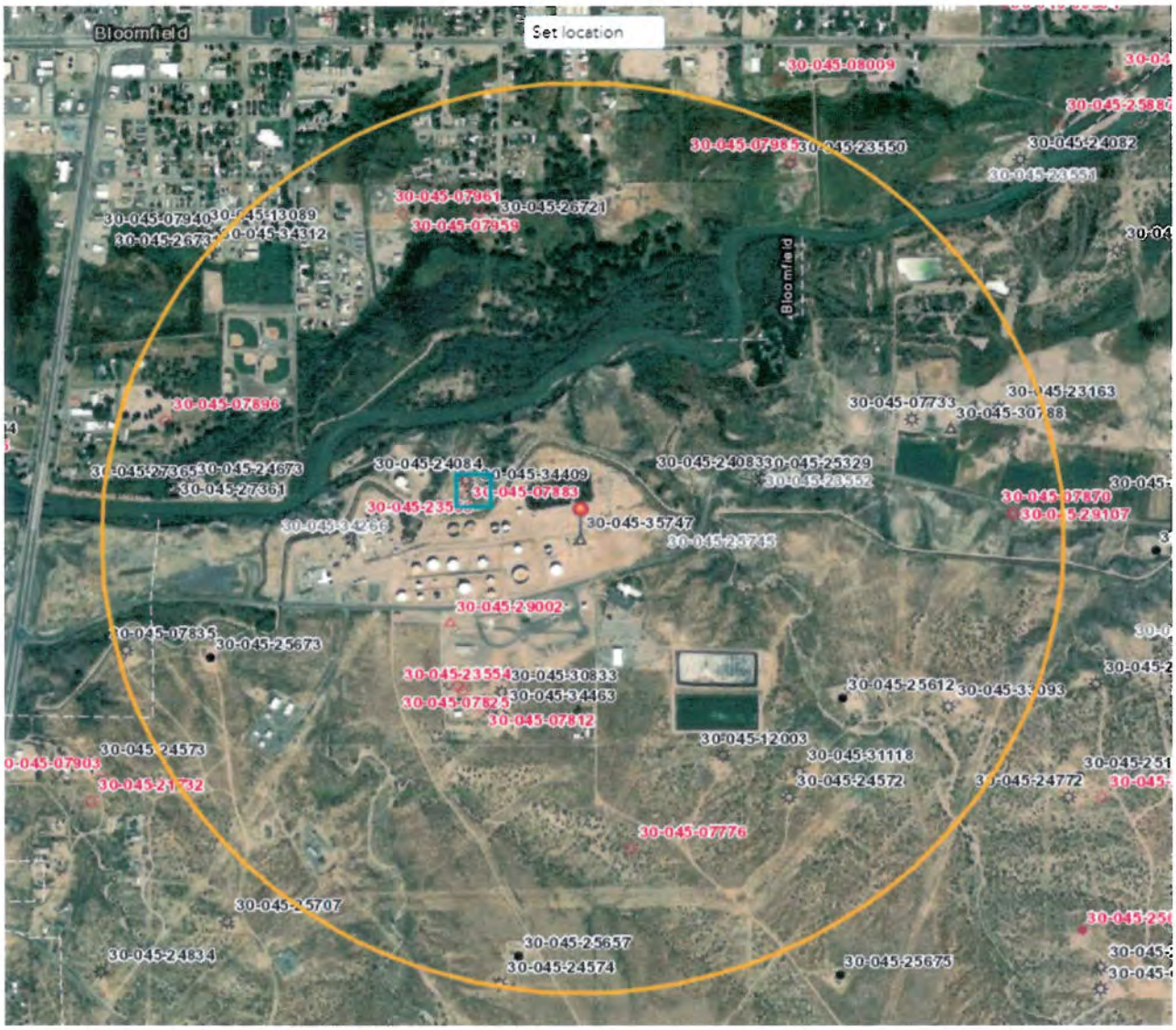
By Kelly Robinson & Frank Dooley Witness Monica Kuehling (Via Face-Time)

WNR Personnel
(Position)

E-mail address Krobinson3@marathonpetroleum.com

ATTACHMENT C

Area of Review



Wells within One-Mile Radius of Bloomfield Terminal Disposal Well WDW-2

Western Refining Southwest, Inc.
Bloomfield Terminal
Waste Disposal Well (WDW) #2
Well List for 1 Mile Area of Review (AOR)

Name	API #	Well Type	Date Drilled	Location (Lat, Long)	Depth(FT)	Record of Completion
PREONGARD WELL #1	30-045-25745	GAS	N/A	36.6985, -107.9679	0	Never Drilled
JACQUE #002	30-045-34409	GAS	9/7/2007	36.6998,-107.9735	1897	Active
PRE-ONGARD WELL #001	30-045-23553	GAS	N/A	36.6998,-107.9738	0	Never Drilled
DAVIS GAS COM F #001E	30-045-24084	GAS	9/7/1980	36.7000,-107.9737	6392	Active
PRE-ONGARD WELL #002	30-045-07883	GAS	N/A	36.7001,-107.9738	0	Never Drilled
DISPOSAL #001	30-045-29002	Salt Water Disposal	12/17/1993	36.6964,-107.9742	3601	Plugged, Site Released
DAVIS GAS COM F #001R	30-045-30833	GAS	11/28/2001	36.6946,-107.9726	6700	Active
DAVIS GAS COM J #001	30-045-25329	GAS	10/29/1982	36.7001,-107.9650	4331	Active
PRE-ONGARD WELL #1	30-045-23552	GAS	N/A	36.7001,-107.9650	0	Never Drilled
SULLIVAN GAS COM D #001E	30-045-24083	GAS	01/19/1980	36.7001,-107.9648	6329	Active
DAVIS GAS COM F #001	30-045-07825	GAS	10/4/1960	36.6948,-107.9740	6365	Plugged, Site Released
DAVIS GAS COM G #001	30-045-23554	GAS	10/11/1979	36.6947,-107.9738	2951	Plugged, Site Released
JACQUE #001	30-045-34463	GAS	10/31/2007	36.6941,-107.9727	1890	Active
PRE-ONGARD WELL #001	30-045-07812	GAS	12/10/1952	36.6943,-107.9733	1804	Plugged, Site Released
CALVIN #001	30-045-12003	GAS	10/24/1962	36.6930,-107.9660	6450	Active
MANGUM #001S	30-045-34266	GAS	N/A	36.6985,-107.9796	0	Never Drilled
CALVIN #003	30-045-25612	OIL	4/29/1983	36.6945,-107.9624	5970	Active
CALVIN #100	30-045-31118	GAS	1/8/2003	36.6926,-107.9637	1970	Active
PRE-ONGARD WELL #001	30-045-07776	GAS	N/A	36.6907,-107.9688	0	Plugged, Site Released
NANCY HARTMAN #002	30-045-26721	GAS	7/26/1986	36.7066,-107.9729	2824	Active
CONGRESS #009	30-045-24572	GAS	3/1/1981	36.6920,-107.9640	2960	Active
SULLIVAN GAS COM D #001	30-045-07733	GAS	11/10/1964	36.7016,-107.9603	6260	Active
HARTMAN #001	30-045-07961	GAS	03/03/1960	36.7068,-107.9734	6310	Plugged, Site Released
GRACE PEARCE #001	30-045-07959	GAS	06/19/1958	36.7068,-107.9756	1620	Plugged, Site Released
ASHCROFT SWD #001	30-045-30788	Salt Water Disposal	12/19/2001	36.7014,-107.9592	7512	Active
CONGRESS #018	30-045-25673	OIL	5/7/1983	36.6955,-107.9815	6150	Active
MANGUM #001E	30-045-24673	GAS	2/27/1981	36.6999,-107.9821	6240	Active
CALVIN #001F	30-045-33093	GAS	10/2/2005	36.6943,-107.9593	6525	Active
MARIAN S #001	30-045-27365	GAS	9/16/1989	36.6998,-107.9826	2840	Active
LAUREN KELLY #001	30-045-27361	GAS	9/14/1989	36.7000,-107.9826	1500	Active
PRE-ONGARD WELL #001X	30-045-29107	GAS	11/1/1953	36.6991,-107.9573	0	Plugged, Site Released
PRE-ONGARD WELL #00X	30-045-07870	GAS	6/14/1953	36.6992,-107.9573	1442	Plugged, Site Released
PRE-ONGARD WELL #001	30-045-07896	GAS	N/A	36.7016,-107.9828	0	Never Drilled
EARL B SULLIVAN #001	30-045-23163	GAS	12/23/1978	36.7019,-107.9577	2861	Active
CONGRESS #016	30-045-25657	OIL	5/7/1983	36.6879,-107.9721	6200	Active
STATE GAS COM BS #001	30-045-23550	GAS	11/11/1979	36.7081,-107.9640	2954	Active
PEARCE GAS COM #001	30-045-07985	GAS	06/19/1965	36.7082,-107.9639	6274	Plugged, Site Released
MANGUM #001	30-045-07835	GAS	12/6/1962	36.6957,-107.9840	6350	Active
MARY JANE #001	30-045-26731	GAS	08/26/1986	36.7057,-107.9815	2845	Active
SUMMIT #009	30-045-24574	GAS	11/06/1980	36.6872,-107.9727	2985	Active
ROYAL FLUSH #001	30-045-34312	GAS	06/12/2007	36.7059,-107.9814	2045	Active

ATTACHMENT D

2020 Fall-Off Test

Submit Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO.
30-045-35747

5. Indicate Type of Lease
STATE ☐ FEE ☒

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name

1. Type of Well: Oil Well ☐ Gas Well ☒ Other Wastewater Disposal Well

8. Well Number: WDW #2

2. Name of Operator
Western Refining Southwest,,Inc.

9. OGRID Number 267595

3. Address of Operator
50 County Road 4990 (PO Box 159) Bloomfield, NM 87413

10. Pool name or Wildcat
Entrada

4. Well Location
Unit Letter H : 2028 feet from the North line and East feet from the line
Section 27 Township 29N Range 11W NMPM San Juan County

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER: Fall Off Test	☐			OTHER: ☒ 2020 Fall-Off Test Report			

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Pursuant to the Bloomfield Terminal Injection Well Discharge Permit (UICI-011), Western Refining Southwest, Inc. ("Western") performed a Fall-Off Test (FOT) on WDW #2. Wester contacted with a third-party for data analysis and interpretation. A copy of the Fall-Off Test Report is attached.

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Kelly Robinson TITLE Environmental Supervisor DATE 11/26/2020

Type or print name Kelly Robinson E-mail address: krobinson3@marathonpetroleum.com PHONE: (505) 632-4166

For State Use Only

APPROVED BY: TITLE DATE
Conditions of Approval (if any):

2020 ANNUAL BOTTOM-HOLE PRESSURE SURVEY AND PRESSURE FALLOFF TEST REPORT WESTERN REFINING SOUTHWEST, INC.

WASTE DISPOSAL WELL NO. 2

Bloomfield, New Mexico

November 2020

Houston, TX

Project No. 192143A

Prepared by Larry McDonald Reviewed by Jeffry Tahtouh

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

WSP USA Inc. (WSP) was contracted by Western Refining Southwest Inc. (Western) to conduct the analysis of the annual bottom-hole pressure survey and pressure falloff test on Western's Waste Disposal Well No. 2 (WDW#2). The test was performed according to New Mexico Oil Conservation Division (OCD) falloff test guidelines (*New Mexico Oil Conservation Division UIC Class I Well Fall-Off Test Guidance, December 3, 2007*).

The test provides the state regulatory agency with the necessary information to access the validity of requested or existing injection well permit conditions and satisfy the permitting objective of protecting the underground sources of drinking water (USDW). Specifically, 40 CFR Part 146 states "the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shutdown of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve" (40 CFR§146.13 for Non-hazardous Class I Wells).

The falloff testing was conducted according to the testing plan submitted to and approved by the NM OCD.

As prescribed by the guidelines, the report discusses supporting and background information in Sections 1 through 9. The one-mile area of review (updated since the 2019 falloff testing) is discussed in Section 10 and geology in Section 11. Information on the offset wells is discussed in Section 12, daily testing activities in Section 13. The pressure falloff testing and analysis results are discussed in Section 14. The OCD required record keeping statement is discussed in Section 15.

1. FACILITY INFORMATION

a. Name: Western Refining Southwest, Inc. (subsidiary of the Marathon Petroleum Company)
b. Facility Location: 50 County Road 4990 (PO Box 159) Bloomfield, New Mexico 87413
c. Operator's Oil and Gas Remittance Identifier (OGRID) Number: 267595

2. WELL INFORMATION

a. OCD UIC Permit Number: UICI-011
b. Well Classification: Class I Non-hazardous
c. Well Name and Number: WDW#2
d. API Number: 30-045-35747
e. Well Legal Location: 2028' FNL and 111' FEL, Unit letter H of Section 27, Township 29 North, Range 11 West

3. CURRENT WELLBORE SCHEMATIC

The WDW#2 wellbore schematic is presented in Figure 1. The schematic contains data, as requested by the guidelines and includes the following:

a. Tubing: 4-1/2-inch, 11.6 pound per foot, API grade L-80, with Internal Plastic Coated (IPC) casing, set at 7230 feet

b. Packer: Baker, 7-inch by 4-1/2-inch set at 7230 feet.

c. Size, Type, and Depth of Casing: There are three casing strings in the well. The information for these casing strings was obtained from OCD records on file with the state and geophysical logs. The casing strings are:

   i. 13-3/8-inch, 48 pound per foot, steel construction, API grade H40, set at a depth of 298 feet. The casing was cemented to the surface with 394 sacks of cement. The casing was set in open hole with a diameter of 17.5 inches.

   ii. 9-5/8-inch, 36 pound per foot, steel construction, API grade J-55, set at a depth of 3500 feet. The casing was cemented to the surface with 857 sacks of cement. The casing was set in open hole with a diameter of 12.25 inches.

   iii. 7-inch, 26 pound per foot and 23 pound per foot, steel construction, API grade L-80, set at a depth of 7525 feet. The casing was cemented to surface with 868 sacks of cement. The casing was set in open hole with a diameter of 8.75 inches.

4. ELECTRIC LOG ENCOMPASSING THE COMPLETED INTERVAL

The dual induction log is presented in Appendix A and encompasses the completed interval between 7200 feet and 7532 feet. The dual induction log was submitted to the OCD with the original permit after the well was drilled.

5. RELEVANT PORTIONS OF THE POROSITY LOG USED TO ESTIMATE FORMATION POROSITY

The porosity log is presented in Appendix B and encompasses the completed interval between 7200 feet and 7532 feet. The neutron density log was submitted to the OCD with the original permit after the well was drilled. The porosity of the formation, 14.9%, and the reservoir thickness, 123 feet, were determined from this log. These values were used in the analysis of the pressure falloff data (Section 15). Additional information concerning the geology of the injection reservoir is discussed in Section 11.

6. PVT DATA OF THE FORMATION AND INJECTION FLUID

The fluid used for the injection test is the terminal treated wastewater (effluent). A current effluent analysis collected on July 13, 2020 and August 17, 2020 is included in Appendix C. A summary of the formation water is also in Appendix C. The formation water analyses taken on January 25, 2017 is included.

7. DAILY RATE HISTORY DATA (MINIMUM OF ONE MONTH PRECEDING THE FALLOFF TEST)

The rate history used in the analysis of the pressure falloff data began on May 28, 2020 and ends when the well was shut-on September 21, 2020. The daily rate history is summarized in Appendix D.

8. CUMULATIVE INJECTION INTO THE FORMATION FROM TEST WELL

The total volume of fluid injected into the WDW#2 was 6,738,018 gallons. The injected volumes were obtained from NMOCD online records.

9. PRESSURE GAUGES

Two (2) downhole pressure gauges were used for the WDW-2 buildup and falloff testing. The downhole pressure gauge was set at 7312 feet, ground level.

a. Describe the type of downhole surface pressure readout gauge used including manufacture and type:

   An MRO pressure gauge was used to monitor the bottom-hole pressure and temperature during the pressure buildup and falloff testing. The gauge was a sapphire crystal gauge with Serial No.240. The gauges are manufactured by Micro-Smart.

b. List the full range, accuracy and resolution of the gauge:

The MRO pressure gauge, Serial No. 240, has a full range of 14.73 psi to 5000 psi and an accuracy of 0.05% of full scale.

c. Provide the manufacturer's recommended frequency of calibration and a calibration certificate showing date the gauge was last calibrated:

The certificates of calibration for the pressure gauge used during the testing are included as Appendix E. The pressure gauge was last calibrated on March 10, 2020 and is within the recommended calibration frequency as recommended by Micro-Smart.

10. ONE MILE AREA OF REVIEW (AOR)

Federal Abstract Company was contracted by WSP to undertake a review of well changes made within a one-mile area of review (AOR) of WDW#2. The current update of the one-mile area of review includes all existing wells within the one-mile AOR and any changes that have occurred to these wells since the 2019 update.

No new freshwater wells were reported within the search area since the submittal of the 2019 report.

a. Identify wells located within the one-mile AOR:

There are 62 wells in the one-mile radius of investigation. Table 1 contains a listing of all wells within the one-mile AOR of WDW#2. Figure 2 is a base map of the area containing the one-mile AOR.

b. Ascertain the status of wells within the one-mile AOR:

Table 1 also contains a listing of all wells within the one-mile AOR, with their current status. Tables 2 through 6 contain a list of all wells within the one-mile AOR that have had modifications to the current permit or have had new drilling and/or completion permits issued since the 2019 pressure falloff report.

Five (5) additional wells were found in the AOR that were not identified in the previous reports. They can be found in the Table 1 and are numbered 58 through 62. Ten (10) wells were found in which the owner had changed. Three (3) wells were found in which the permit was cancelled. Five (5) new wells were plugged and abandoned. No wells were placed in temporarily abandoned status. No wells were found that were returned to production status. No wells were found that had been recompleted.

No new wells were drilled and no permits were issued to drill new wells. All plugged and abandoned wells were successfully plugged and isolated from the WDW#2 injection interval according to current OCD records.

c. Provide details on any offset producers and injectors completed in the same interval:

One of the sixty-two wells in the AOR, Ashcroft SWD #1, penetrates the Entrada injection zone. This well is 0.64 miles from the disposal well and is an active water disposal well. Ashcroft SWD #1 is listed as ID No. 24 in Table 1 and no changes have occurred to this well. No wells are currently producing form the Entrada injection zone within the AOR.

11. GEOLOGY

The injection zone is the Entrada sandstone formation. The formations occur in WDW #2 at the depths shown in the table below. The injection zone is shown in WDW #2 logs in Appendices A and B.

Injection Zone Formation	Waste Disposal Well #2 (KB elev = 5,550 ft)	
	MD below KB (ft)	SS Depth (ft)
Bluff Sandstone	Not completed	7,031
Entrada Sandstone	7,312 to 7,470	7,308

The Jurassic aged Entrada Sandstone is thought to be one of the best water disposal rock units in the San Juan Basin. The Entrada is the basal formation of the San Rafael Group which also includes the Todilto and Wanakah Formations. The Entrada Sandstone is present throughout the basin's subsurface and crops out along its margin as step cliffs. The Entrada unconformably overlies the Chinle Formation. The Todilto Formation made up of limestone and anhydrite in dense and thought to an impermeable barrier or seal and likely seal for the injection zone.

The Entrada Sandstone consists of mottled reddish-brown very fine to medium grained wellsorted, silica cemented quartz sandstone interbedded with thinner reddish-brown siltstones. The sandstone units are assembled in high-angle, large-scale crossbeds indicating eolian environment deposition and with the siltstones representing interdue and sabkha deposition. The crossstratified sandstone is competent, laterally persistent and with homogenous reservoir properties. Entrada Sandstone gross thickness ranges from 60 feet to 330 feet across the basin.

At the WDW #2 location the Entrada is 158 feet thick. Based upon the nearby XTO Energy Ashcroft SWD #1 water disposal well density porosities are up to 18 percent with the most porous interval found in the upper 90 feet of the formation where many of the density porosities are greater than 10 percent. WDW #2 has a density porosity of 12.1 percent. The two intervals with the highest porosity are 20 feet from 7,333 feet to 7,353 feet with 14.1 percent porosity and 26 feet from 7,442 feet to 7,468 feet with 14.9 percent porosity. Permeability for the well as measured by this falloff test is 1.14 md or less.

12. OFFSET WELLS

The offset well is discussed in Section 10.0.

13. CHRONOLOGICAL LISTING OF THE DAILY TESTING ACTIVITIES

a. Date of the testing:

The buildup portion of the testing started on September 18, 2020 at 1334 hours and continued until September 21, 2020 at 1424 hours when WDW-2 was shut-in. The falloff test ended on October 1, 2020 at 0802 hours. Five-minute gradient stops were made at 1000-foot intervals while pulling the pressure gauges out of the well. After the pressure gauges were pulled out of the well, the well was turned over to Western plant operations personnel.

b. Time of the injection period:

The buildup portion of the testing began on September 18, 2020 when the injection rate was set at an average injection rate of approximately 22 gallons per minute (gpm). The bottom-hole pressure and temperature were monitored for 72.83 hours after which time the well was shut in.

c. Type of injection fluid:

The injected fluid was non-hazardous wastewater from the plant. The density of the injection fluid averaged 8.33 pounds per gallon during the test.

d. Final injection pressure and temperature prior to shutting in the well:

The final flowing pressure feet (P_{wf}) and temperature (T_{wf}) were 4479.71 psia and 181.71°F, respectively.

e. Total shut-in time:

WDW-2 was shut-in for 234 hours.

f. Final static pressure and temperature at the end of the fall-off portion of the test:

The final static pressure (P_{static}) and temperature (T_{static}) were 3750.78 psia and 184.46°F, respectively.

14. PRESSURE FALLOFF ANALYSIS

The following discussion of the analysis of the pressure data recorded during the falloff testing of WDW- 2 satisfies Sections 15 through 19 of Section IX, Report Components, of the OCD's falloff test guidelines. Where appropriate, the specific guideline addressed is annotated. Specific parameters used in the equations and discussed previously in this report are also annotated. The plots included with this report are summarized in Table 7. The inclusion of these plots in this report satisfies OCD Guideline Section IX.18.

The pressure data obtained during the falloff test were analyzed using the commercially available pressure transient analysis software program PanSystem©. Appendix F contains the output from this software program. Figure 3 shows the pressure data recorded by the bottom-hole pressure gauge from the time the tool was in place through the 234-hour shut-in period. Figure 4 is a Cartesian plot of the pressure data recorded during the falloff period.

Figure 5 is the derivative log-log diagnostic plot of the falloff data, showing change in pressure and pressure derivative versus elapsed shut-in time. The different flow regimes, wellbore storage, fracture bilinear flow, pseudo-radial flow and change in reservoir characteristics if present, are indicated on the log-log plot and the superposition Horner plot (OCD Guideline Section IX.18.c and IX.18.d).

Wellbore storage begins at 0.036 hours and continues to an elapsed shut in time of 0.052 hours. The bi- linear flow period begins at an elapsed shut-in time of 0.488 and continues until an elapsed shut-in time of 1.10 hours. The linear flow period was not apparent on the 2020 derivative log-log plot as was seen on the 2019 pressure falloff analysis report. Although the pseudo-radial flow period is not fully developed, it gives a good determination of the reservoir permeability. The pseudo-radial flow period begins at an elapsed shut in time of 153.77 hours and continues to an elapsed time of 233.94 hours. (OCD Guideline Section IX.15.b).

The reservoir permeability was determined from the pseudo-radial flow region of the superposition semi-log plot, Figure 6. The superposition time function was used to account for all rate changes during the injection period used in the analysis of the data. The pseudo-radial flow regime begins at a Superposition time of 1.96 and continues to 1.76. Figure 7 shows an expanded view of the pseudo-radial flow regime. The slope of the radial flow period, as calculated by the analysis software, was 482.305 psi/cycle (OCD Guideline Section IX.15.c). The injection rate just prior to shut in was 24 gpm which is equivalent to 882.86 barrels per day (bbls/day).

An estimate of mobility-thickness (transmissibility, OCD Guideline Section IX.15.d), kh/μ, for the reservoir was determined to be 297.64 md-ft/cp using the following equation:

$$\frac{k\,h}{\mu} = 162.6\,\frac{q\,B}{m}$$

where,

kh/μ	=	formation mobility-thickness, millidarcy-feet/centipoise
q	=	rate prior to shut in, bpd
B	=	formation volume factor, reservoir volume/surface volume
m	=	slope of radial flow period, psi/cycle

$$\frac{kh}{\mu} = 162.6 \frac{(882.86)(1.0)}{482.305}$$

$$= 297.64 \text{ md-ft/cp}$$

The permeability-thickness (flow capacity, OCD Guideline Section IX.15.i), kh, was determined to be 138.89 md-ft by multiplying the mobility-thickness, kh/μ, by the viscosity of the reservoir fluid (see Section 6), $\mu_{reservoir}$, of 0.47 centipoise (cp):

$$kh = \frac{(kh)}{\mu} \mu_{reservoir}$$

$$= (297.64)(0.47)$$

$$= 139.89 \text{ md-ft}$$

The reservoir permeability (OCD Guideline Section IX.15.e) using the total thickness (see Section 5 and Section 11) of 123 feet was 1.14 md:

$$k = \frac{kh}{h}$$

$$= \frac{139.89}{123}$$

$$= 1.14 \text{ md}$$

To determine whether the proper viscosity was used in arriving at this permeability, the travel time for a pressure transient to pass beyond the waste front needs to be calculated (OCD Guideline Section VIII.5). The distance to the waste front is determined from the following equation:

$$r_{waste} = \left(\frac{0.13368\, V}{\pi\, h\, \Phi}\right)^{1/2}$$

where,

r_{waste}	=	radius to waste front, feet
V	=	total volume injected into the injection interval, gallons
h	=	formation thickness, feet
ϕ	=	formation porosity, fraction
0.13368	=	constant

A cumulative volume of approximately 6,738,018 gallons of waste has been injected into WDW-2 (see Section 8). The formation has a porosity of 0.149 (see Section 5 and Section 11).

The distance to the waste front was determined to be 125.08 feet:

$$r_{waste} = \left(\frac{(0.13368)(6738018)}{\pi\,(123)(0.149)}\right)^{1/2}$$

$$= 125.08 \text{ feet}$$

The time necessary for a pressure transient to traverse this distance is calculated from the following equation:

$$t_{waste} = 948\frac{\Phi\,\mu_{waste}\,c_t\,r_{waste}^2}{k}$$

where,

t_{waste}	=	time for pressure transient to reach waste front, hours
ϕ	=	formation porosity, fraction
μ_{waste}	=	viscosity of the waste at reservoir conditions, centipoise
r_{waste}	=	radius to waste front, feet
c_t	=	total compressibility of the formation and fluid, psi
k	=	formation permeability, millidarcies
948	=	constant

The pore volume compressibility is 4.44 x 10^{-6} psi^{-1} (see Section 6). The viscosity of the waste fluid is 0.47 cp (see Section 6). The time necessary for a pressure transient to traverse the distance from the wellbore to the leading edge of the waste front would be 4.04 hours:

$$t_{waste} = 948\frac{(0.149)(0.47)(4.44\text{x}10^{-6})(125.08)^2}{1.14}$$

$$= 4.04 \text{ hours}$$

Since the time required to pass through the waste is less than the 153.77 hours required to reach the beginning of the radial flow period, the assumption that the pressure transient was traveling through reservoir fluid during the period of the semi-log straight line was correct.

The near wellbore skin damage (OCD Guideline Section IX.15.f) was determined from the following equation:

$$s = 1.151\left[\frac{p_{wf} - p_{1hr}}{m_1} - \log\left(\frac{k}{\phi\,\mu\,c_t\,r_w^2}\right) + 3.23\right]$$

where,

s	=	formation skin damage, dimensionless
1.151	=	constant
p_{wf}	=	flowing pressure immediately prior to shut in, psi

p_{1hr}	=	pressure determined from extrapolating the first radial flow semi-log line to a Δt of one hour, psi
m_1	=	slope of the first radial flow semi-log line, psi/cycle
k	=	permeability of the formation, md
ϕ	=	porosity of the injection interval, fraction
μ	=	viscosity of the fluid the pressure transient is traveling through, cp
c_t	=	total compressibility of the formation plus fluid, psi^{-1}
r_w	=	radius of the wellbore, feet
3.23	=	constant

The final measured flowing pressure was 4479.71 psia. The pressure determined by extrapolating the radial flow semi-log line to a Δt of one hour, p_{1hr}, was 4522.64 psia (calculated from the analysis software). The wellbore radius, r_w, is 0.3281 feet (completion records). Using these values in addition to the previously discussed parameters results in a skin of -5.05:

$$s = 1.151\left[\frac{4479.71 - 4522.64}{482.305} - \log\left(\frac{1.14}{(0.149)(0.47)(4.44x10^{-6})(0.3281^2)}\right) + 3.23\right]$$

$$= -5.05$$

The change in pressure, Δp_{skin}, in the wellbore associated with the skin factor (OCD Guideline Section IX.15.g) was calculated using the following equation:

$$\Delta p_{skin} = 0.869(m)(s)$$

where,

0.869	=	constant
m	=	slope from superposition plot of the well test, psi/cycle
s	=	skin factor calculated from the well test

The change in pressure, Δp_{skin}, using the previously calculated and defined values was determined to be -2117 psi:

$$\Delta p_{skin} = 0.869(m)(s)$$

$$= 0.869\ (482.305)(-5.05)$$

$$= -2117\ psi$$

The flow efficiency (E, OCD Guideline Section IX.15.h) was determined from the following equation:

$$E = \frac{p_{wf} - \Delta p_{skin} - p_{static}}{p_{wf} - p_{static}}$$

where,

E	=	flow efficiency, fraction
p_{wf}	=	flowing pressure prior to shutting in the well for the fall-off test,
p_{static}	=	final pressure from the pressure falloff test
Δp_{skin}	=	pressure change due to skin damage

Using the previously determined parameters, the flow efficiency was calculated to be 3.91:

$$E = \frac{4479.71 - (-2117) - 3750.78}{4479.40 - 3750.78}$$

$$= 3.91$$

The radius of investigation (OCD Guideline Section IX.15.a) was calculated using the following equation:

$$R_{inv} = 0.029 \sqrt{\frac{k\,\Delta ts}{\phi\,\mu\,Ct}}$$

The radius of investigation, r_{inv}, using the previously defined values was determined to be 849 feet:

$$R_{inv} = 0.029 \sqrt{\frac{(1.14)(234)}{(0.149)(0.47)(4.44 \times 10^{-6})}}$$

$$R_{inv} = 849 \text{ feet}$$

As indicated on Figure 5, the pressure data does not depart the pseudo-radial flow region. No pressure or temperature anomalies were noted on any of the analysis plots (OCD Guideline Section VIII.9 and IX17.b).

Because WDW-2 was shut in approximately 1915 hours prior to the 2020 pressure falloff testing, a current Hall plot (OCD Guideline Section IX.18.h) could not be constructed.

A comparison of the 2020 and 2019 reservoir analysis results are available in Table 8 (OCD Guideline Section IX.19).

On October 1, 2020, a static pressure gradient survey was conducted while pulling the pressure gauges out of the well. Static gradient stops were conducted at 7312 feet, 7000 feet, 6000 feet,

5000 feet, 4000 feet, 3000 feet, 2000 feet, 1000 feet, and at the surface. The bottom-hole pressure and temperature, after 234 hours of shut-in at 7312 feet were 3750.78 psia and 184.46°F, respectively. The gradient survey is summarized in Table 8. The data are graphically depicted in Figure 8.

15. NEW MEXICO OIL CONSERVATION DIVISION THREE YEAR RECORDING KEEPING STATEMENT

Western will keep the raw test data, generated during the testing, on file for a minimum of three years. The raw test data will be made available to OCD upon request.

TABLES

TABLE 1

TABULATION OF WELLS WITHIN ONE MILE AREA OF REVIEW FOR WASTE DISPOSAL WELL NO. 2

Map ID	Distance (ft)	API No	Co	Lease	Well No	Total Depth	ULSTR	Type	Status	Plug Date	Penetrate Injection Zone
0	0	30-045-35747	Western Refining Southwest, Inc.	Waste Disposal Well	2	7525	H-27-29N-11W	SWD	Active		Y
1	1041	30-045-34409	Holcomb Oil & Gas Inc	Jacque	2	1897	H-27-29N-11W	Gas	Active		N
2	1141	30-045-24084	Hilcorp Energy Co	Davis Gas Com F	001E	6392	H-27-29N-11W	Gas	Active		N
3	1170	30-045-07883	Pre-Ongard Well Operator	Pre-Ongard Well	2	0	H-27-29N-11W	Gas	Plugged	12/31/1901	N
4	1380	30-045-29002	San Juan Refining Co	Disposal	1	3601	I-27-29N-11W	SWD	Plugged	10/29/2015	N
5	1582	30-045-30833	Hilcorp Energy Co	Davis Gas Com F	001R	6700	I-27-29N-11W	Gas	Active		N
6	1643	30-045-25329	Holcomb Oil & Gas Inc	Davis Gas Com J	1	4331	F-26-29N-11W	Gas	Active		N
7	1693	30-045-24083	Hilcorp Energy Co	Sullivan Gas Com D	001E	6329	F-26-29N-11W	Gas	Active		N
8	1740	30-045-07825	Bp America Production Co	Davis Gas Com F	1	6365	I-27-29N-11W	Gas	Plugged	1/19/1994	N
9	1742	30-045-23554	XTO Energy, Inc	Davis Gas Com G	1	2951	I-27-29N-11W	Gas	Plugged	11/15/2011	N
10	1756	30-045-34463	Holcomb Oil & Gas Inc	Jacque	1	1890	I-27-29N-11W	Gas	Active		N
11	1793	30-045-07812	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	I-27-29N-11W	Gas	Plugged	11/3/1982	N
12	2376	30-045-12003	Hilcorp Energy Co	Calvin	1	6450	M-26-29N-11W	Gas	Active		N
13	2640	30-045-02133	N/A	Lauren Kelly	1	3028	27-29N-11W	N/A	Inactive		N
14	2640	30-045-02134	N/A	B Garland	1	3028	27-29N-11W	N/A	Inactive		N
15	2713	30-045-34266	Holcomb Oil & Gas Inc	Mangum	001S	0	F-27-29N-11W	Gas	Cancelled	12/31/9999	N
16	2750	30-045-25612	Hilcorp Energy Co	Calvin	3	5970	K-26-29N-11W	Oil	Active		N
17	2904	30-045-31118	Hilcorp Energy Co	Calvin	100	1970	N-26-29N-11W	Gas	Active		N
18	2909	30-045-07776	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	M-26-29N-11W	Gas	Plugged	12/31/1901	N
19	3018	30-045-26721	Manana Gas Inc	Nancy Hartman	2	2824	P-22-29N-11W	Gas	Active		N
20	3025	30-045-24572	Morningstar Operating Llc	Congress	9	2960	N-26-29N-11W	Gas	Active		N
21	3121	30-045-07733	Hilcorp Energy Co	Sullivan Gas Com D	1	6260	B-26-29N-11W	Gas	Active		N
22	3146	30-045-07961	Manana Gas Inc	Hartman	1	6310	P-22-29N-11W	Gas	Plugged	6/14/1999	N
23	3391	30-045-07959	John C Pickett	Grace Pearce	1	1620	O-22-29N-11W	Gas	Plugged	3/2/2000	N
24	3412	30-045-30788	Hilcorp Energy Co	Ashcroft Swd	1	7512	B-26-29N-11W	SWD	Active		Y
25	3451	30-045-25673	Hilcorp Energy Co	Congress	18	6150	K-27-29N-11W	Oil	Active		N
26	3498	30-045-24673	Hilcorp Energy Co	Mangum	001E	6240	F-27-29N-11W	Gas	Active		N
27	3597	30-045-33093	Hilcorp Energy Co	Calvin	001F	6525	J-26-29N-11W	Gas	Active		N

TABLE 1

TABULATION OF WELLS WITHIN ONE MILE AREA OF REVIEW FOR WASTE DISPOSAL WELL NO. 2

Map ID	Distance (ft)	API No	Co	Lease	Well No	Total Depth	ULSTR	Type	Status	Plug Date	Penetrate Injection Zone
28	3645	30-045-27365	Manana Gas Inc	Marian S	1	2840	F-27-29N-11W	Gas	Active		N
29	3654	30-045-27361	Manana Gas Inc	Lauren Kelly	1	1500	F-27-29N-11W	Gas	Active		N
30	3803	30-045-29107	Pre-Ongard Well Operator	Pre-Ongard Well	001X	0	G-26-29N-11W	Gas	Plugged	7/28/1955	N
31	3805	30-045-07870	Pre-Ongard Well Operator	Pre-Ongard Well	00X	0	G-26-29N-11W	Gas	Plugged	7/1/1953	N
32	3836	30-045-07896	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	C-27-29N-11W	Gas	Plugged	11/27/1978	N
33	3874	30-045-23163	Hilcorp Energy Co	Earl B Sullivan	1	2861	B-26-29N-11W	Gas	Active		N
34	3907	30-045-25657	Hilcorp Energy Co	Congress	16	6200	A-34-29N-11W	Oil	Active		N
35	3936	30-045-23550	Holcomb Oil & Gas Inc	State Gas Com Bs	1	2954	K-23-29N-11W	Gas	Active		N
36	3963	30-045-07985	Bp America Production Co	Pearce Gas Com	1	6230	K-23-29N-11W	Gas	Plugged	3/12/1997	N
37	4155	30-045-07835	Holcomb Oil & Gas Inc	Mangum	1	6350	L-27-29N-11W	Gas	Active		N
38	4199	30-045-26731	Manana Gas Inc	Mary Jane	1	2845	N-22-29N-11W	Gas	Active		N
39	4192	30-045-24574	Hilcorp Energy Co	Summit	9	2985	A-34-29N-11W	Gas	Active		N
40	4209	30-045-34312	Manana Gas Inc	Royal Flush	1	2045	N-22-29N-11W	Gas	Active		N
41	4364	30-045-07940	Manana Gas Inc	Cook	1	6305	N-22-29N-11W	Gas	Active		N
42	4391	30-045-13089	Manana Gas Inc	Cook	2	1440	N-22-29N-11W	Gas	Active		N
43	4587	30-045-07868	Holcomb Oil & Gas Inc	Sullivan	2	1478	H-26-29N-11W	Gas	Active		N
44	4583	30-045-08009	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	K-23-29N-11W	Gas	Plugged	8/26/1980	N
45	4649	30-045-25675	Hilcorp Energy Co	Congress	15	6030	C-35-29N-11W	Oil	Active		N
46	4722	30-045-21457	Morningstar Operating Llc	Delo	10	2900	I-26-29N-11W	Gas	Active		N
47	4736	30-045-25707	Morningstar Operating Llc	Summit	15	6216	C-34-29N-11W	Gas	Active		N
48	4773	30-045-07903	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	M-27-29N-11W	Gas	Plugged	7/1/1975	N
49	4816	30-045-24573	Morningstar Operating Llc	Garland	3	2905	M-27-29N-11W	Gas	Active		N
50	4897	30-045-25195	Hilcorp Energy Co	Calvin	2	5950	P-26-29N-11W	Oil	Active		N
51	4908	30-045-24772	Hilcorp Energy Co	Calvin	001E	6500	P-26-29N-11W	Gas	Active		N
52	4983	30-045-21732	Burlington Resources O&G Co Lp	Garland B	001R	1810	M-27-29N-11W	Gas	Plugged	8/9/2010	N
53	5038	30-045-25621	Holcomb Oil & Gas Inc	Earl B Sullivan	2	5751	H-26-29N-11W	Oil	Active		N
54	5056	30-045-24837	Hilcorp Energy Co	Congress	004E	6508	E-35-29N-11W	Gas	Active		N
55	5133	30-045-20752	Chaparral Oil & Gas Co	Lea Ann	1	1900	E-35-29N-11W	Gas	Plugged	12/18/1999	N

TABLE 1

TABULATION OF WELLS WITHIN ONE MILE AREA OF REVIEW FOR WASTE DISPOSAL WELL NO. 2

Map ID	Distance (ft)	API No	Co	Lease	Well No	Total Depth	ULSTR	Type	Status	Plug Date	Penetrate Injection Zone
56	5165	30-045-22639	General Minerals Corp	Delo	11	1945	P-26-29N-11W	Gas	Plugged	7/30/2010	N
57	5221	30-045-24082	Hilcorp Energy Co	Pearce Gas Com	001E	6365	J-23-29N-11W	Gas	Active		N
58	703	30-045-25745	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	E-26-29N-11W	Gas	Cancelled		N
59	1129	30-045-23553	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	H-27-29N-11W	Gas	Plugged		N
60	1658	30-045-23552	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	F-26-29N-11W	Gas	Cancelled		N
61	4766	30-045-23551	Pre-Ongard Well Operator	Pre-Ongard Well	1	0	O-23-29N-11W	Gas	Cancelled		N
62	4894	30-045-25738	Pre-Ongard Well Operator	Pre-Ongard Well	23	0	I-26-29N-11W	Gas	Cancelled		N

TABLE 2

WELL CHANGES IN THE AREA OF REVIEW

Unit	Sect	Twp	Rng	Map ID	Well Name	Operator	Changes	Change of Owner	P&A	T&A	Recomp	New	Cancelled
H	27	29N	11W	2	Davis Gas Com F	Davis Gas Com F	Owner	[X]					
H	27	29N	11W	3	Pre-Ongard Well	Pre-Ongard Well	P&A		[X]				
I	27	29N	11W	5	Davis Gas Com F	Davis Gas Com F	Owner	[X]					
F	26	29N	11W	7	Sullivan Gas Com D	Sullivan Gas Com D	Owner	[X]					
F	27	29N	11W	15	Mangum	Mangum	P&A		[X]				
M	26	29N	11W	18	Pre-Ongard Well	Pre-Ongard Well	P&A		[X]				
B	26	29N	11W	21	Sullivan Gas Com D	Sullivan Gas Com D	Owner	[X]					
B	26	29N	11W	24	Ashcroft Swd	Ashcroft Swd	Owner	[X]					
C	27	29N	11W	32	Pre-Ongard Well	Pre-Ongard Well	P&A		[X]				
B	26	29N	11W	33	Earl B Sullivan	Earl B Sullivan	Owner	[X]					
I	26	29N	11W	46	Delo	Delo	Owner	[X]					
C	34	29N	11W	47	Summit	Summit	Owner	[X]					
M	27	29N	11W	49	Garland	Garland	Owner	[X]					
J	23	29N	11W	57	Pearce Gas Com	Pearce Gas Com	Owner	[X]					
E	26	29N	11W	58	Pre-Ongard Well	Pre-Ongard Well Operator	Cancelled						[X]
H	27	29N	11W	59	Pre-Ongard Well	Pre-Ongard Well Operator	P&A		[X]				
F	26	29N	11W	60	Pre-Ongard Well	Pre-Ongard Well Operator	Cancelled						[X]
O	23	29N	11W	61	Pre-Ongard Well	Pre-Ongard Well Operator	Cancelled						[X]
I	26	29N	11W	62	Pre-Ongard Well	Pre-Ongard Well Operator	Cancelled						[X]

TABLE 3

WELLS THAT HAVE BEEN PLUGGED AND ABANDONED SINE THE 2019 AOR UPDATE

Unit	Sect	Twp	Rng	Map ID	API No	Well Name	Operator	Change of Owner	P&A	T&A	Prod	Recomp	New
H	27	29N	11W	3	30-045-07883	Pre-Ongard Well	Pre-Ongard Well		[X]				
F	27	29N	11W	15	30-045-34266	Mangum	Mangum		[X]				
M	26	29N	11W	18	30-045-07776	Pre-Ongard Well	Pre-Ongard Well		[X]				
C	27	29N	11W	32	30-045-07896	Pre-Ongard Well	Pre-Ongard Well		[X]				
H	27	29N	11W	59	30-045-23553	Pre-Ongard Well	Pre-Ongard Well		[X]				

TABLE 4

WELLS THAT HAVE BEEN TEMPORARILY ABANDONED SINCE THE 2019 AOR UPDATE

Unit	Sect	Twp	Rng	Map ID	API No	Well Name	Operator	Change of Owner	P&A	T&A	Prod	Recomp	New

NO CHANGES

TABLE 5

WELLS THAT HAVE BEEN RECOMPLETED SINCE THE 2019 AOR UPDATE

Unit	Sect	Twp	Rng	Map ID	API No	Well Name	Operator	Change of Owner	P&A	T&A	Prod	Recomp	New

NO CHANGES

TABLE **6**

NEWLY DRILLED WELLS SINCE THE 2019 AOR UPATE

Unit	Sect	Twp	Rng	Map ID	API No	Well Name	Operator	Change of Owner	P&A	T&A	Prod	Recomp	New

NO CHANGES

TABLE 7

FIGURES INCLUDED IN THE REPORT

Figure	Description	OCD Reference
1	Waste Disposal Well #2 Schematic	Section VI.1 and IX.3
2	Map of One Mile Area of Review	n/a
3	Waste Disposal Well #2 Test Overview	Section IX.18.f
4	Waste Disposal Well #2 Cartesian Plot of Data Used in the Analysis	Section IX.18.a
5	Waste Disposal Well #2 Derivative Log-Log Plot	Section IX.18.c
6	Waste Disposal Well #2 Superposition Horner (Semi-Log) Plot	Section IX.18.d
7	Waste Disposal Well #2 Expanded Superposition Horner (Semi-Log) Plot	Section IX.18.d
8	Waste Disposal Well #2 Static Pressure Gradient Survey	n/a

Table 7 Figures Included in the Report.xlsx

TABLE 8

Waste Disposal Well #2
Comparison of Permeability, Transmissibility, Skin, False Extrapolated Pressure, and Fill Depth

Date of Test	Permeability (k)	Mobility-Thickness (kh/u)	Skin (s)	False Extrapolated Pressure (p*)
September 21 to October 1, 2020	1.14 md	297.64 md-ft/cp	-5.05	3632.37 psia
April 15 – 30, 2019	1.73 md	451 md-ft/cp	-3.80	3809.70 psia

TABLE 9

STATIC PRESSURE GRADIENT SURVEY
WASTE DISPOSAL WELL No. 2
OCTOBER 1, 2020

Memory Gauge Serial No. 1243			
Depth (feet)	Pressure (psig)	Pressure Gradient (psi/ft)	Temperature (ºF)
0	587.92	-	65.86
1000	1024.54	0.437	75.71
2000	1437.63	0.413	95.25
3000	1888.65	0.451	112.31
4000	2319.81	0.431	131.73
5000	2749.02	0.429	149.61
6000	3176.71	0.428	177.27
7000	3603.32	0.427	187.23
7312	3736.08	0.426	184.46

FIGURES

FIGURE 1

Well/Facility:	SWD #2	Well Status:	Current
Operator:	Western Refinery	Orig Oper:	
Lease/Op Agmt:		Inj Interval:	
Field:	Entrada	API #:	
County:	San Juan	GR/KB:	14.5'
State:	NM	TD:	7525' KB
Spud:	8/15/2016	PBTD:	7490' KB
Comp. Date:		WI:	
1st Prod:		NRI:	
Xmas tree:			
Surface Loc:	2028' fnl & 111' fel		
Sec-Twn-Rge:	Sec 27/T29N/11W		
Comments:	9/7/2017 - Started Injection/Water Disposal Operations		

Date Drawn: October 2016

WALSH ENGINEERING FARMINGTON, NM

17-1/2" Hole

13-3/8", 48#, H40 at 298' KB

DV Tool at 2543' KB
ACP at 2545' KB

12-1/4" Hole

9-5/8", 36#, J55 at 3500' KB

DV tool at 5172' KB
ACP at 5174' KB

Injection String:
4-1/2", L80, 11.6, IPC Casing

8-3/4" Hole

Packer at 7230' (see packer drawing for details)

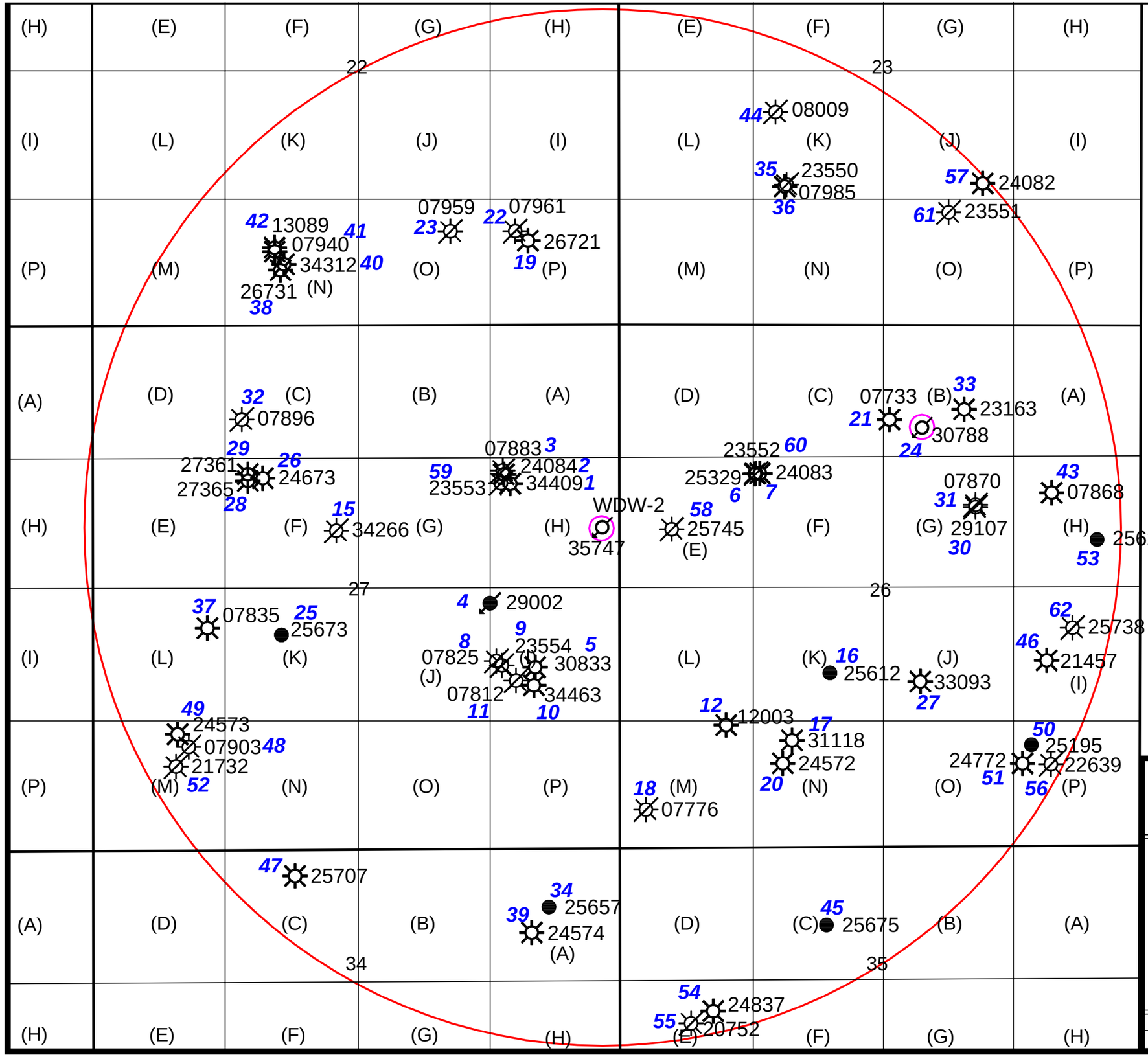
Entrada Injection Zone: 7312' - 7470'
7312' – 7331' (19' at 4 spf)(90° PHASING) – 76 holes.
7331' – 7351' (20' at 4 spf)(90° PHASING) – 80 holes.
7358' – 7368' (10' at 4 spf)(90° PHASING) – 40 holes.
7376' – 7390' (14' at 4 spf)(90° PHASING) – 48 holes.
7394' – 7424' (30' at 4 spf)(90° PHASING) – 120 holes.
7440' – 7470' (30' at 4 spf)(90° PHASING) – 120 holes.
Total of 123' of net formation, total of 492 holes (EHD: 0.41" with 45.89" penetration)

7", 23#, L80

TD: 7525' KB
7" Casing at 7525'
PBTD: 7490'

Note: 7" packer f/ 7458'-7476', fill f/ 7476'-7490'

Geologic Markers	
MD	Formation
Surface	Quaternary Alluv
10'	Nacimiento
515'	Ojo Alamo
625'	Kirtland
1203'	Fruitland
1718'	Pictured Cliffs
1850'	Lewis
2660'	Huerfanito Bentonite
2688'	Chacra
2877'	Lower Lewis
3337'	Cliff House
3389'	Menefee
4045'	Point Lookout
4432'	Mancos Shale
5301'	Niobrara A
5400'	Niobrara B
5526'	Niobrara C
5606'	Gallup
5848'	Juana Lopez
5966'	Carlile
6055'	Greenhorn
6117'	Graneros
6161'	Dakota
6357'	Burro Canyon
6417'	Morrison
7031'	Bluff Sandstone
7150'	Wanakah
7276'	Todilto
7308'	Entrada
7470'	Chinle
7525'	TD



WSP USA Inc.
16200 Park Row, Ste 200
Houston TX 77084
TEL: (281) 589-5900

FIGURE 2

WESTERN REFINING SOUTHWEST
BLOOMFIELD, NEW MEXICO

AREA OF REVIEW MAP

DATE: 11/12/2020	CHECKED BY: JT	JOB NO: 192143A
DRAWN BY: WDD	APPROVED BY: JT	DWG NO:

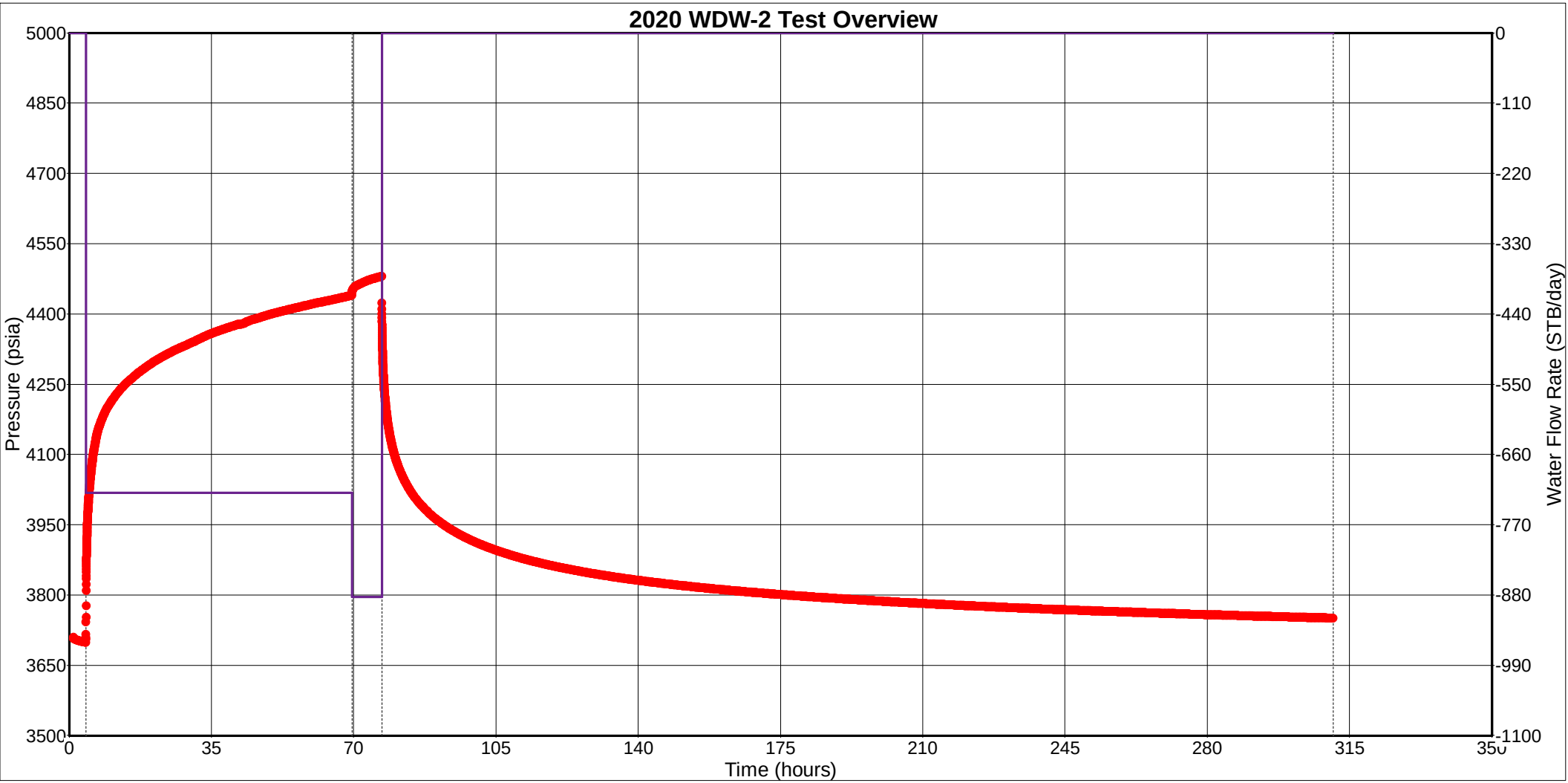

2020 WDW-2 Test Overview
Pressure (psia)
Water Flow Rate (STB/day)
Time (hours)
5000
4850
4700
4550
4400
4250
4100
3950
3800
3650
3500
0
-110
-220
-330
-440
-550
-660
-770
-880
-990
-1100
0
35
70
105
140
175
210
245
280
315
350

FIGURE 3

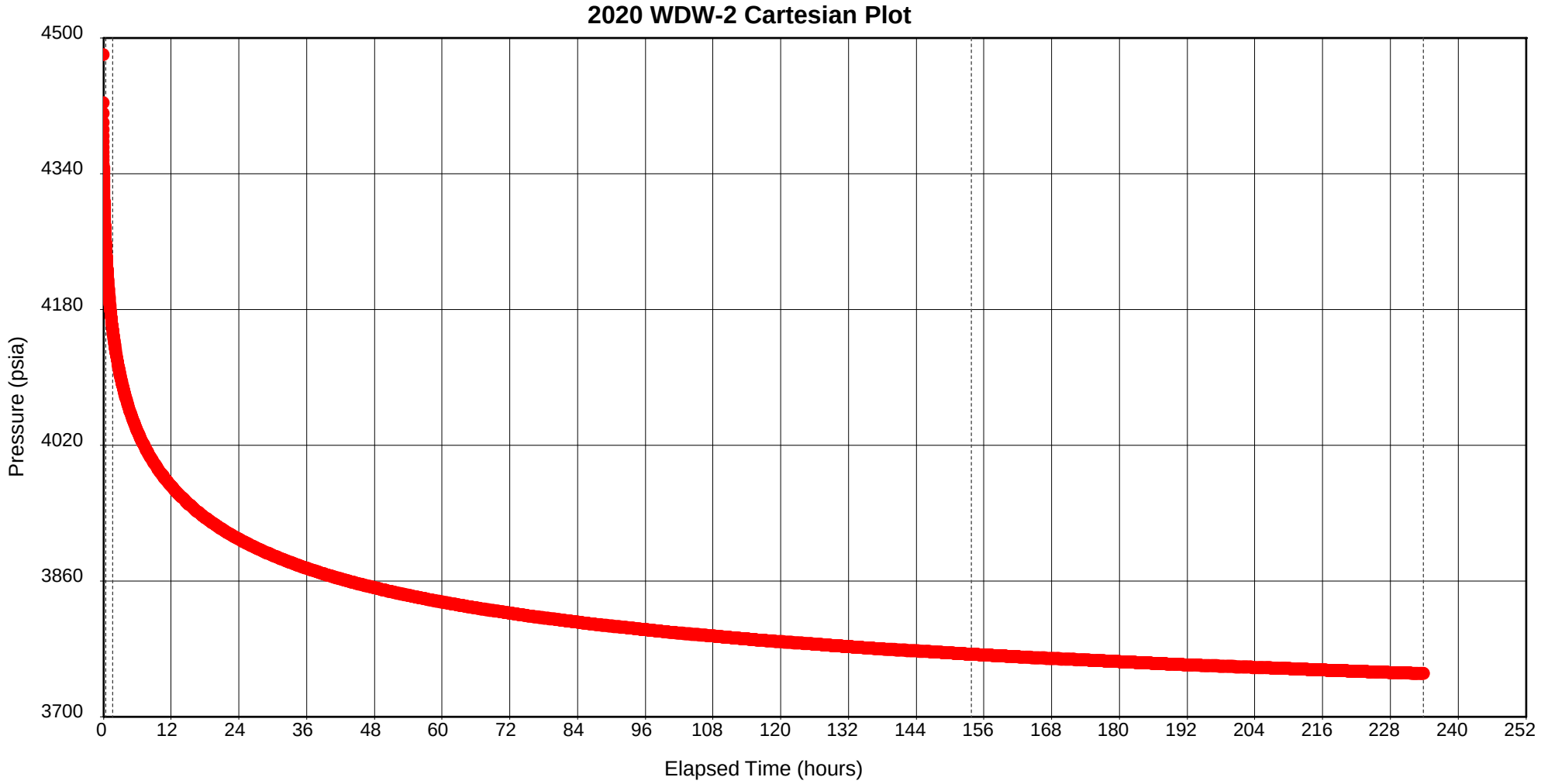

2020 WDW-2 Cartesian Plot
Pressure (psia)
4500
4340
4180
4020
3860
3700
0
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
192
204
216
228
240
252
Elapsed Time (hours)

FIGURE 4

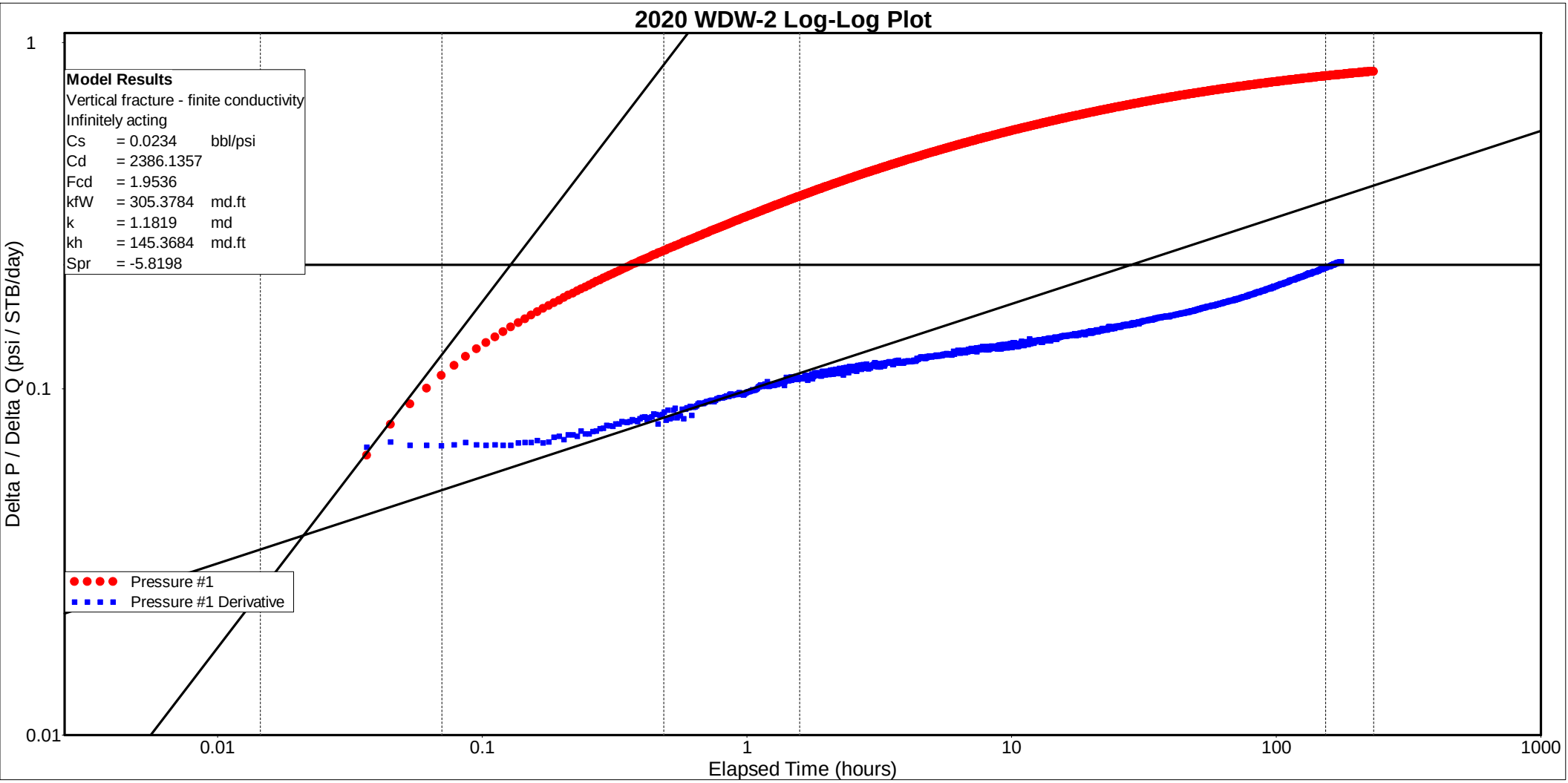

2020 WDW-2 Log-Log Plot
Model Results
Vertical fracture - finite conductivity
Infinitely acting
Cs = 0.0234 bbl/psi
Cd = 2386.1357
Fcd = 1.9536
kfW = 305.3784 md.ft
k = 1.1819 md
kh = 145.3684 md.ft
Spr = -5.8198
Pressure #1
Pressure #1 Derivative
Delta P / Delta Q (psi / STB/day)
1
0.1
0.01
0.01
0.1
1
10
100
1000
Elapsed Time (hours)

FIGURE 5

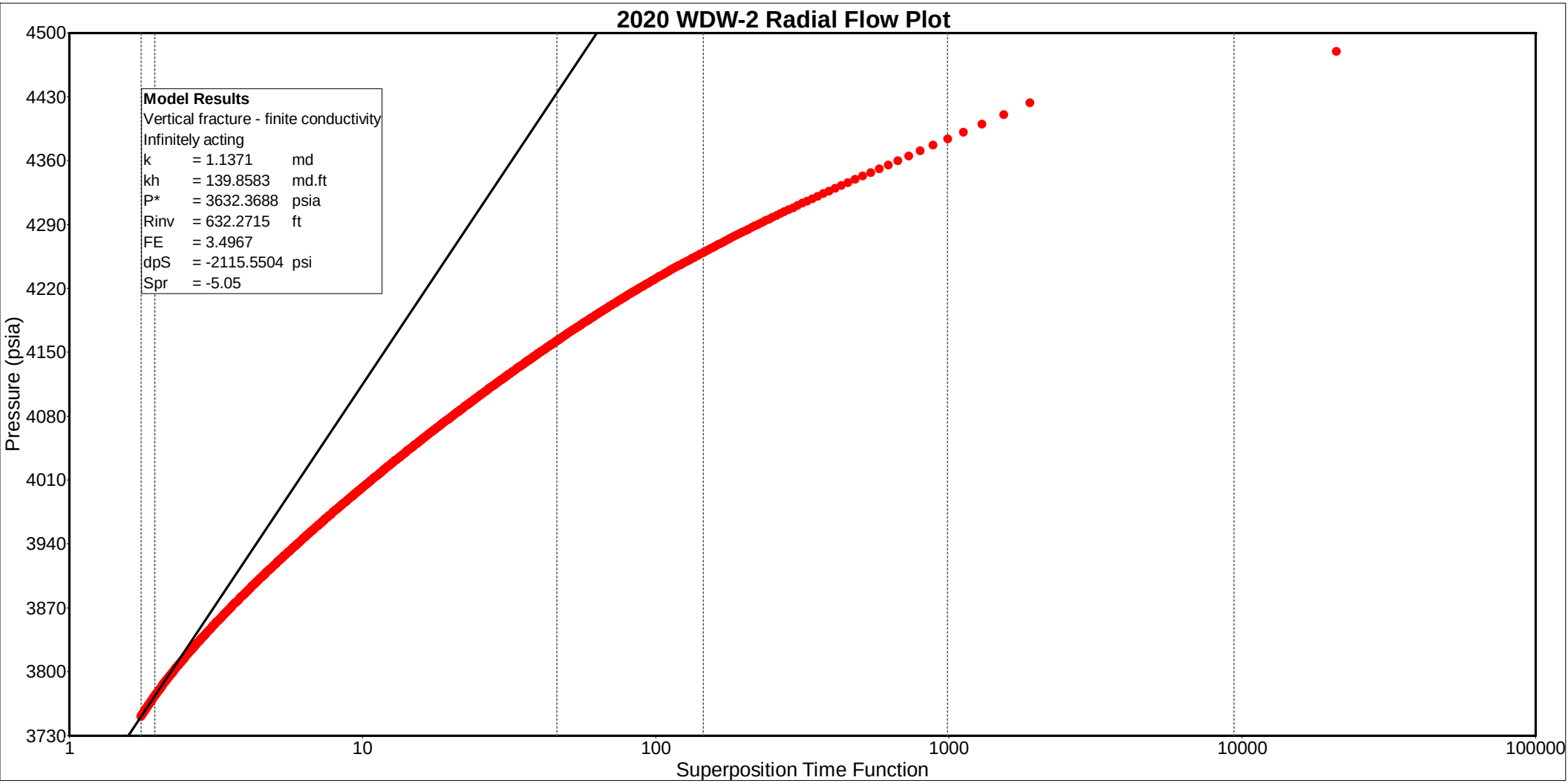

2020 WDW-2 Radial Flow Plot
Model Results
Vertical fracture - finite conductivity
Infinitely acting
k = 1.1371 md
kh = 139.8583 md.ft
P* = 3632.3688 psia
Rinv = 632.2715 ft
FE = 3.4967
dpS = -2115.5504 psi
Spr = -5.05
Pressure (psia)
4500
4430
4360
4290
4220
4150
4080
4010
3940
3870
3800
3730
1
10
100
1000
10000
100000
Superposition Time Function

FIGURE 6

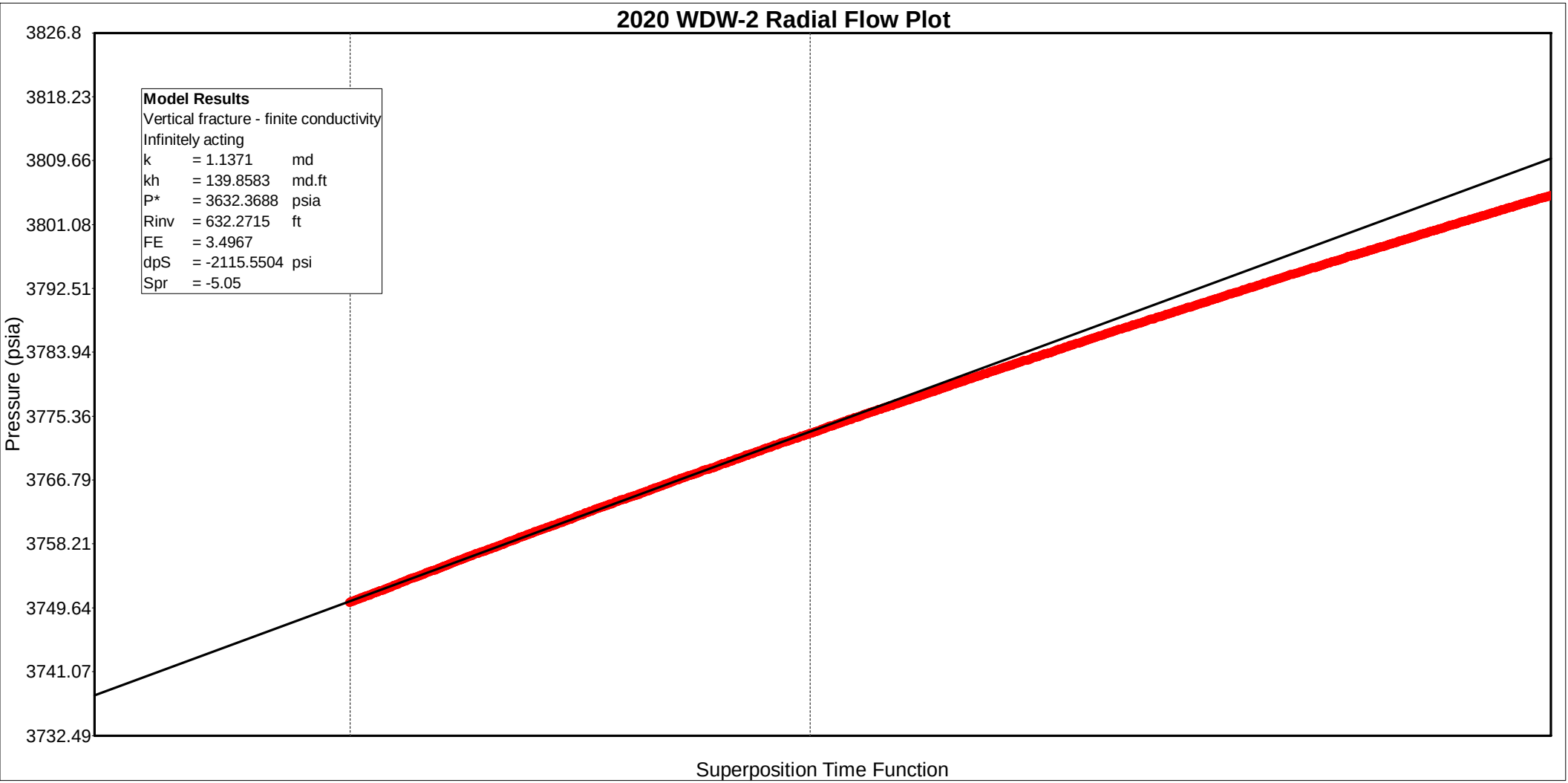

2020 WDW-2 Radial Flow Plot
Model Results
Vertical fracture - finite conductivity
Infinitely acting
k = 1.1371 md
kh = 139.8583 md.ft
P* = 3632.3688 psia
Rinv = 632.2715 ft
FE = 3.4967
dpS = -2115.5504 psi
Spr = -5.05
3826.8
3818.23
3809.66
3801.08
3792.51
3783.94
3775.36
3766.79
3758.21
3749.64
3741.07
3732.49
Pressure (psia)
Superposition Time Function

FIGURE 7

STATIC PRESSURE GRADIENT SURVEY
WASTE DISPOSAL WELL No. 2
OCTOBER 1, 2020

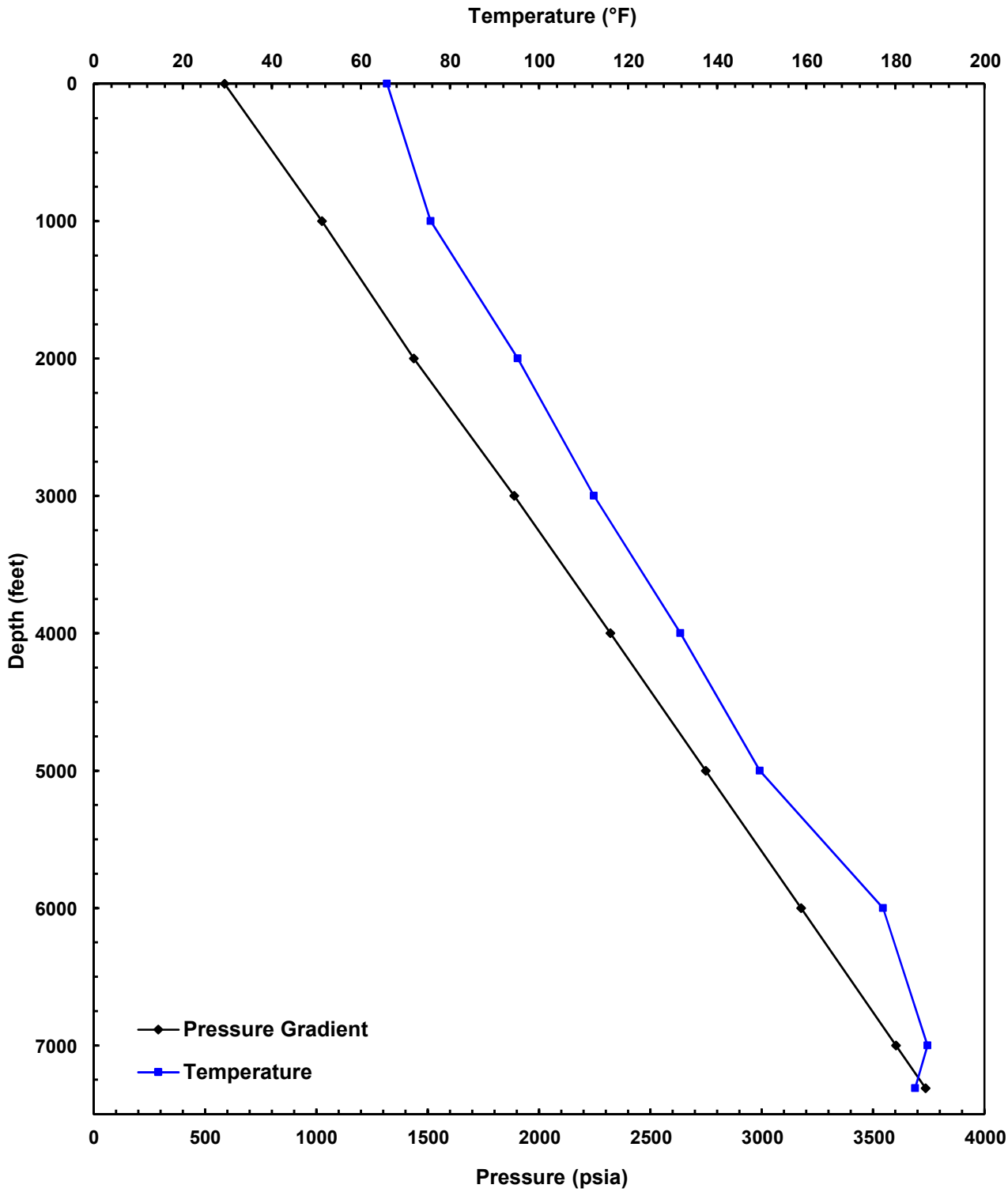


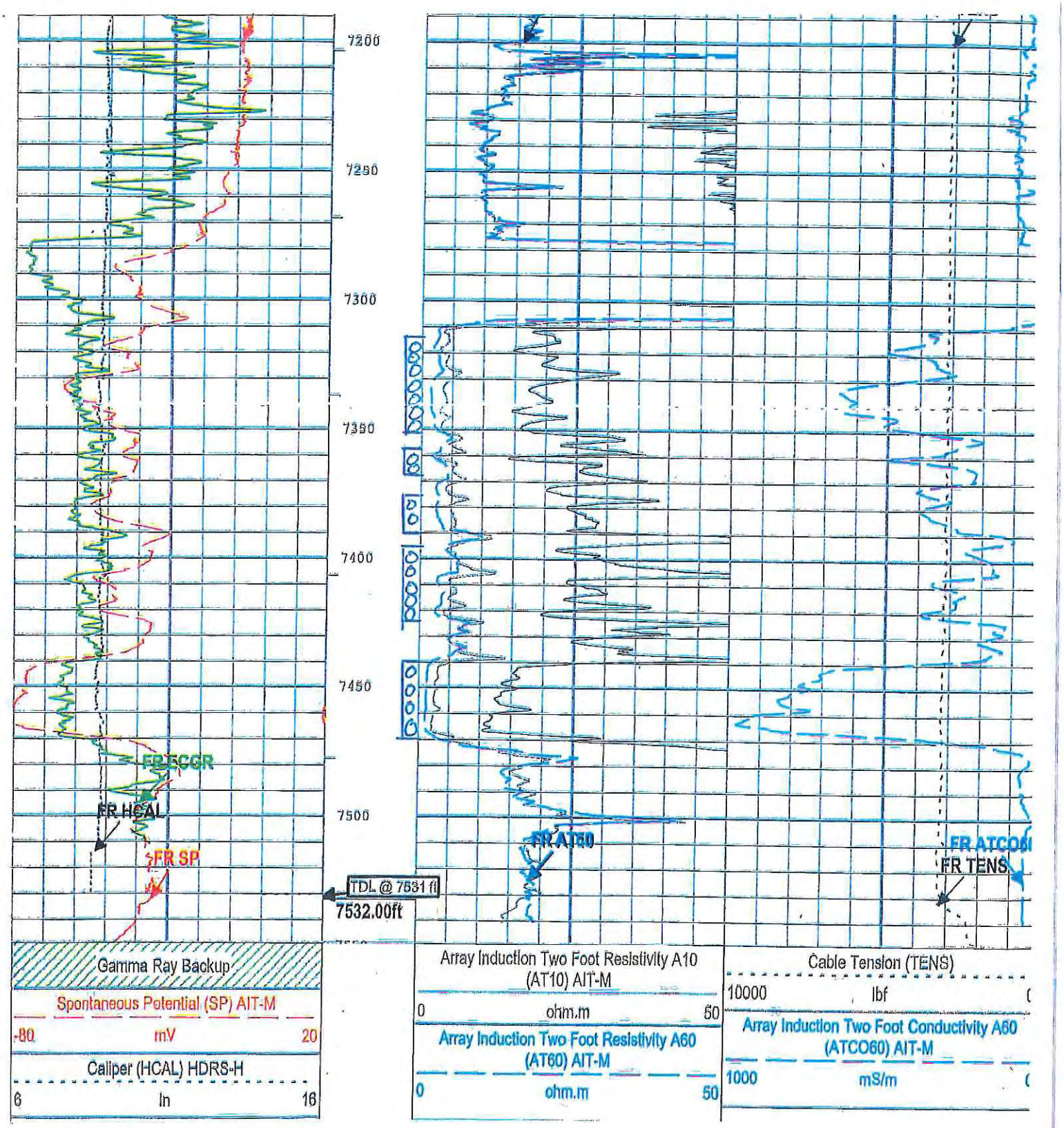
FIGURE 8

APPENDICES

APPENDIX A

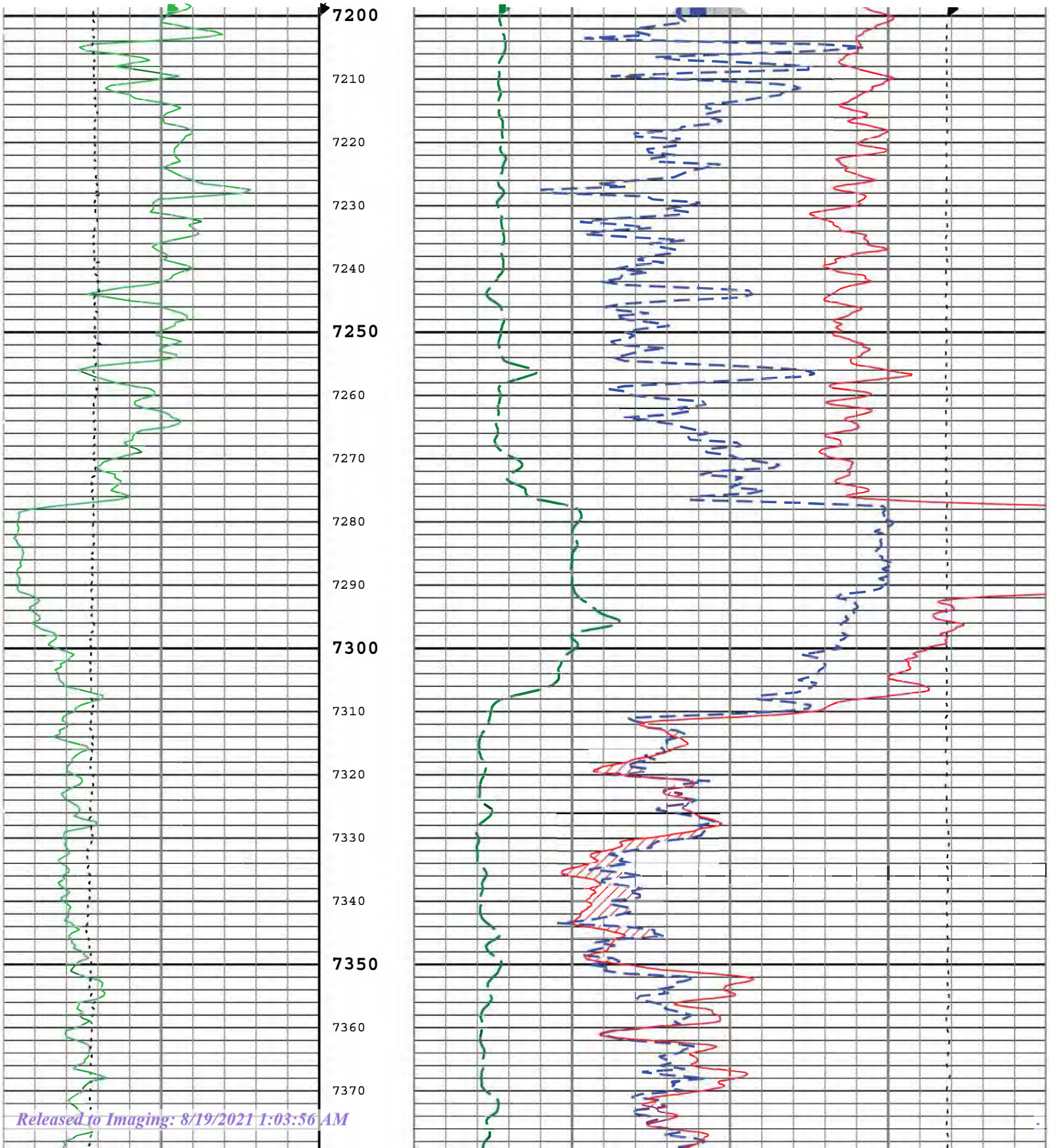
DUAL INDUCTION LOG SECTIONS FROM 7200 FEET TO 7532 FEET

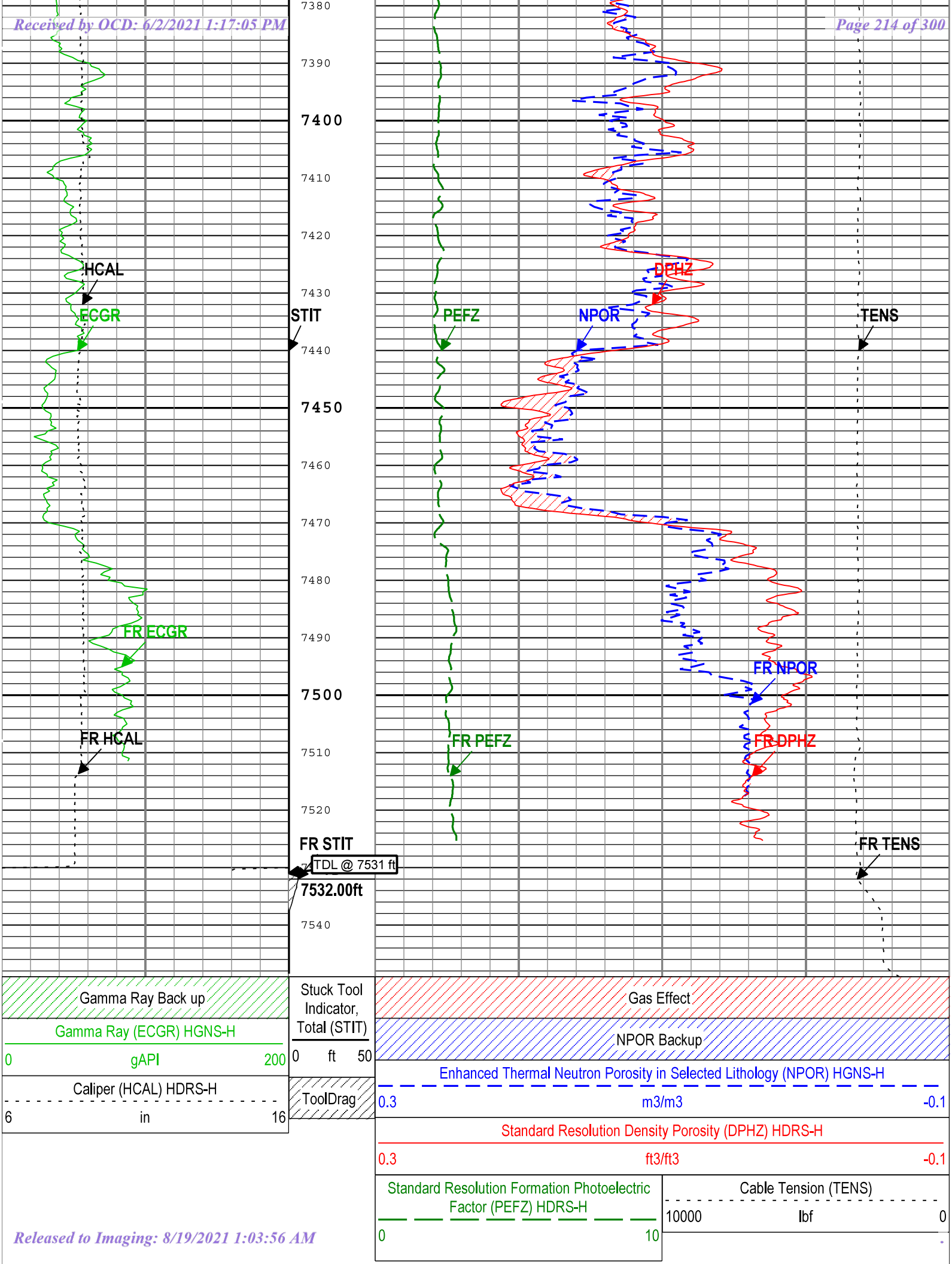
Table 1: A copy of the well log showing the Entrada interval to be tested.



APPENDIX B

POROSITY LOG SECTIONS FROM 7200 FEET TO 7532 FEET


7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370



APPENDIX C

INJECTION AND FORMATION FLUID ANALYSIS

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

February 01, 2017

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: DWD #2 OrderNo.: 1701A75

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/26/2017 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1701A75**
Date Reported: **2/1/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Project: DWD #2
Lab ID: 1701A75-001 **Matrix:** AQUEOUS

Client Sample ID: DWD 2 Formation Water
Collection Date: 1/25/2017 11:00:00 AM
Received Date: 1/26/2017 7:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	ND	2.0		mg/L	20	1/26/2017 6:37:17 PM	R40335
Chloride	23000	2500	*	mg/L	5E	1/27/2017 7:20:01 PM	R40361
Bromide	ND	2.0		mg/L	20	1/26/2017 6:37:17 PM	R40335
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	1/26/2017 6:37:17 PM	R40335
Sulfate	910	25	*	mg/L	50	1/27/2017 7:07:36 PM	R40361
Nitrate+Nitrite as N	ND	20		mg/L	100	1/27/2017 7:32:26 PM	R40361
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	94000	50		µmhos/cm	50	1/30/2017 1:40:54 PM	R40366
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	255.3	20.00		mg/L CaCO3	1	1/30/2017 11:39:53 AM	R40366
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	1/30/2017 11:39:53 AM	R40366
Total Alkalinity (as CaCO3)	255.3	20.00		mg/L CaCO3	1	1/30/2017 11:39:53 AM	R40366
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	48900	2000	*D	mg/L	1	2/1/2017 3:56:00 PM	29970
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **pmf**	
Calcium	1700	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Magnesium	200	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Potassium	450	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Sodium	16000	500		mg/L	500	1/30/2017 11:06:12 AM	29930

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

Qualifiers:

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

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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B17011690-001
Client Sample ID: 1701A75-001C DWD 2 Formation Water

Report Date: 01/27/17
Collection Date: 01/25/17 11:00
DateReceived: 01/27/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
CORROSIVITY							
pH	6.46	s.u.		0.10		SW9040C	01/27/17 10:54 / jmg

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated

Report Date: 01/27/17
Work Order: B17011690

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW9040C							Analytical Run: ORION 720A HZW_170127A		
Lab ID: ICV	Initial Calibration Verification Standard								01/27/17 10:54
pH	8.11	s.u.	0.10	101	98	102			
Method: SW9040C									Batch: R273874
Lab ID: B17011690-001ADUP	Sample Duplicate				Run: ORION 720A HZW_170127A				01/27/17 10:54
pH	8.49	s.u.	0.10				0.5	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75
01-Feb-17

Client: Western Refining Southwest, Inc.
Project: DWD #2

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R40335**	RunNo: **40335**
Prep Date:	Analysis Date: **1/26/2017**	SeqNo: **1264291** 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, Orthophosphate (As P	ND	0.50								

Sample ID **LCSb**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R40335**	RunNo: **40335**
Prep Date:	Analysis Date: **1/26/2017**	SeqNo: **1264293** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Bromide	2.4	0.10	2.500	0	96.4	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	96.7	90	110			

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R40361**	RunNo: **40361**
Prep Date:	Analysis Date: **1/27/2017**	SeqNo: **1265117** 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								
Nitrate+Nitrite as N	ND	0.20								

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R40361**	RunNo: **40361**
Prep Date:	Analysis Date: **1/27/2017**	SeqNo: **1265118** 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	95.5	90	110			
Sulfate	9.7	0.50	10.00	0	97.2	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	98.8	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75
01-Feb-17

Client: Western Refining Southwest, Inc.
Project: DWD #2

Sample ID	MB-29930	SampType:	MBLK	TestCode:	EPA 6010B: Total Recoverable Metals					
Client ID:	PBW	Batch ID:	29930	RunNo:	40375					
Prep Date:	1/27/2017	Analysis Date:	1/30/2017	SeqNo:	1265583	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID	LCS-29930	SampType:	LCS	TestCode:	EPA 6010B: Total Recoverable Metals					
Client ID:	LCSW	Batch ID:	29930	RunNo:	40375					
Prep Date:	1/27/2017	Analysis Date:	1/30/2017	SeqNo:	1265584	Units:	mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	98.3	80	120			
Magnesium	49	1.0	50.00	0	97.3	80	120			
Potassium	47	1.0	50.00	0	94.9	80	120			
Sodium	48	1.0	50.00	0	95.4	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75
01-Feb-17

Client: Western Refining Southwest, Inc.
Project: DWD #2

Sample ID **mb-1**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R40366**	RunNo: **40366**							
Prep Date:	Analysis Date: **1/30/2017**	SeqNo: **1266120**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R40366**	RunNo: **40366**							
Prep Date:	Analysis Date: **1/30/2017**	SeqNo: **1266121**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low limit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.04	20.00	80.00	0	97.6	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75
01-Feb-17

Client: Western Refining Southwest, Inc.
Project: DWD #2

Sample ID	MB-29970	SampType:	MBLK		TestCode:	SM2540C MOD: Total Dissolved Solids				
Client ID:	PBW	Batch ID:	29970		RunNo:	40436				
Prep Date:	1/31/2017	Analysis Date:	2/1/2017		SeqNo:	1267368	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-29970	SampType:	LCS		TestCode:	SM2540C MOD: Total Dissolved Solids				
Client ID:	LCSW	Batch ID:	29970		RunNo:	40436				
Prep Date:	1/31/2017	Analysis Date:	2/1/2017		SeqNo:	1267369	Units:	mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

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

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: Western Refining Southw Work Order Number: 1701A75 RcptNo: 1

Received by/date: AT 01/26/17

Logged By: Anne Thorne 1/26/2017 7:05:00 AM Anne Thorne

Completed By: Anne Thorne 1/26/2017 9:13:16 AM Anne Thorne

Reviewed By: 1/26/17

Chain of Custody

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

Log In

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

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

Adjusted? NO

Checked by: LG

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

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

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4169

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 2-day

Project Name:
DWD#2

Project #:
PO-1261903I-2

Project Manager:
Kelly Robinson

Sampler: Matt Kraklow

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1701A15	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attachment				Air Bubbles (Y or N)
1-25-17	11:00	H_2O	DWD2 Formation Water	1-500ml	Poly	001												X				
				1-500ml	HNO_3	001												X				
				1-125ml	H_2SO_4	001												X				

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/25/17	1447			1/25/17	1447
1/25/17	1804			01/26/17	0705

Remarks:

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.

All Anions	EPA Method 300.0	1-500ml unpreserved plastic 1-125 ml H2SO4 plastic
Alkalinity	SM2320 B	Volume will come from the 500ml unpreserved plastic
eC	SM 2510B	Volume will come from the 500ml unpreserved plastic
TDS	SM 2540 C	Volume will come from the 500ml unpreserved plastic
Cations	EPA Method 200.7	1-500ml HNO3 Plastic
pH	EPA Method 9040	Volume will come from the 500ml unpreserved plastic

SM = Standard Methods
EPA Methods 310.1, 150.1, 160.1, 320.1 and 120.1 have been withdrawn by EPA. Most labs ha
We are accredited for all of the tests listed above and we perform these methods regularly for

We will ship out one bottle set today as listed below. Fill all bottles to the neck and keep the sa
We can rush this work on a 1-2 business day TAT.
1-500ml unpreserved plastic
1-125ml H2SO4 Plastic
1-500ml HNO3 plastic

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 17, 2020

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX:

RE: Injection Well 2 2Q2020 OrderNo.: 2007018

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/1/2020 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 23, 2020.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. 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 Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2007018**
Date Reported: **8/17/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 2Q2020 **Collection Date:** 6/30/2020
Lab ID: 2007018-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8081: PESTICIDES TCLP						Analyst: **JME**	
Chlordane	ND	0.20		mg/L	1	7/15/2020 9:21:46 AM	53534
Surr: Decachlorobiphenyl	75.8	38.2-102		%Rec	1	7/15/2020 9:21:46 AM	53534
Surr: Tetrachloro-m-xylene	52.7	32.3-92.4		%Rec	1	7/15/2020 9:21:46 AM	53534
EPA METHOD 8270C TCLP						Analyst: **DAM**	
2-Methylphenol	ND	200		mg/L	1	7/22/2020 8:27:37 PM	53528
3+4-Methylphenol	ND	200		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachlorobenzene	ND	0.13		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachlorobutadiene	ND	0.50		mg/L	1	7/22/2020 8:27:37 PM	53528
Hexachloroethane	ND	3.0		mg/L	1	7/22/2020 8:27:37 PM	53528
Nitrobenzene	ND	2.0		mg/L	1	7/22/2020 8:27:37 PM	53528
Pentachlorophenol	ND	100		mg/L	1	7/22/2020 8:27:37 PM	53528
Pyridine	ND	5.0		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/22/2020 8:27:37 PM	53528
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/22/2020 8:27:37 PM	53528
Cresols, Total	ND	200		mg/L	1	7/22/2020 8:27:37 PM	53528
Surr: 2-Fluorophenol	54.9	15-81.1		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: Phenol-d5	45.6	15-61.1		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 2,4,6-Tribromophenol	77.5	17.2-108		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: Nitrobenzene-d5	63.0	18.7-120		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 2-Fluorobiphenyl	47.7	23.6-103		%Rec	1	7/22/2020 8:27:37 PM	53528
Surr: 4-Terphenyl-d14	94.9	24.1-105		%Rec	1	7/22/2020 8:27:37 PM	53528
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	0.9946	0			1	7/1/2020 2:10:00 PM	R70056
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Fluoride	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Chloride	1200	50	*	mg/L	100	7/2/2020 4:39:21 PM	R70134
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Bromide	4.0	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	7/1/2020 10:01:06 PM	R70074
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	7/1/2020 10:01:06 PM	R70074
Sulfate	78	2.5		mg/L	5	7/1/2020 10:01:06 PM	R70074
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	4500	10		µmhos/c	1	7/7/2020 10:26:38 AM	R70195
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	647.1	20.00		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195

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

Qualifiers:

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

Analytical Report
Lab Order **2007018**
Date Reported: **8/17/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Injection Well #2
Project: Injection Well 2 2Q2020 **Collection Date:** 6/30/2020
Lab ID: 2007018-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2320B: ALKALINITY						Analyst: **JRR**	
Total Alkalinity (as CaCO3)	647.1	20.00		mg/L Ca	1	7/7/2020 10:26:38 AM	R70195
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2870	200	*D	mg/L	1	7/8/2020 10:16:00 AM	53514
SM4500-H+B / 9040C: PH						Analyst: **JRR**	
pH	7.77		H	pH units	1	7/7/2020 10:26:38 AM	R70195
EPA METHOD 7470: MERCURY						Analyst: **JLF**	
Mercury	ND	0.0010		mg/L	5	7/7/2020 4:27:56 PM	53531
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ELS**	
Arsenic	ND	0.030		mg/L	1	7/8/2020 12:41:36 PM	53551
Barium	0.22	0.0020		mg/L	1	7/8/2020 12:41:36 PM	53551
Cadmium	ND	0.0020		mg/L	1	7/8/2020 12:41:36 PM	53551
Calcium	73	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Chromium	ND	0.0060		mg/L	1	7/8/2020 12:41:36 PM	53551
Lead	ND	0.020		mg/L	1	7/8/2020 12:41:36 PM	53551
Magnesium	52	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Potassium	13	1.0		mg/L	1	7/8/2020 12:41:36 PM	53551
Selenium	ND	0.050		mg/L	1	7/8/2020 12:41:36 PM	53551
Silver	ND	0.0050		mg/L	1	7/8/2020 12:41:36 PM	53551
Sodium	910	10		mg/L	10	7/8/2020 1:06:08 PM	53551
TCLP VOLATILES BY 8260B						Analyst: **CCM**	
Benzene	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
2-Butanone	ND	200		mg/L	200	7/7/2020 12:55:00 AM	T70113
Carbon Tetrachloride	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
Chloroform	ND	6.0		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,4-Dichlorobenzene	ND	7.5		mg/L	200	7/7/2020 12:55:00 AM	T70113
1,1-Dichloroethene	ND	0.70		mg/L	200	7/7/2020 12:55:00 AM	T70113
Tetrachloroethene (PCE)	ND	0.70		mg/L	200	7/7/2020 12:55:00 AM	T70113
Trichloroethene (TCE)	ND	0.50		mg/L	200	7/7/2020 12:55:00 AM	T70113
Vinyl chloride	ND	0.20		mg/L	200	7/7/2020 12:55:00 AM	T70113
Chlorobenzene	ND	100		mg/L	200	7/7/2020 12:55:00 AM	T70113
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: Dibromofluoromethane	106	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113
Surr: Toluene-d8	102	70-130		%Rec	200	7/7/2020 12:55:00 AM	T70113

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

Qualifiers:

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

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 14, 2020

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1236077
Samples Received:	07/02/2020
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By: John V Hawkins

John Hawkins
Project Manager

TABLE OF CONTENTS

2007018-001E INJECTION WELL #2 L1236077-01 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1504658	1	07/07/20 05:39	07/07/20 05:39	AKA	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1503689	1	07/03/20 12:57	07/03/20 12:57	KEG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1506806	1	07/11/20 19:15	07/11/20 19:15	JIC	Mt. Juliet, TN

2007018-001F INJECTION WELL #2 L1236077-02 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9034-9030B	WG1504791	1	07/07/20 15:23	07/07/20 15:23	SL	Mt. Juliet, TN

2007018-001G INJECTION WELL #2 L1236077-03 WW

			Collected by	Collected date/time	Received date/time	
				06/30/20 00:00	07/02/20 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2011	WG1507316	1	07/11/20 18:08	07/13/20 15:06	JER	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

Wet Chemistry by Method 2580

Analyte	Result mV	Qualifier	Dilution	Analysis date / time	Batch
ORP	37.7	Q	1	07/07/2020 05:39	WG1504658

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.63	T8	1	07/03/2020 12:57	WG1503689

Sample Narrative:

L1236077-01 WG1503689: 7.63 at 21.1C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	07/11/2020 19:15	WG1506806

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	0.833		0.0500	1	07/07/2020 15:23	WG1504791

Wet Chemistry by Method 4500 CN E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	07/13/2020 15:06	WG1507316

L1236077-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1236077-01 07/07/20 05:39 • (DUP) R3546691-2 07/07/20 05:39

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	37.7	55.8	1	18.1		20

Laboratory Control Sample (LCS)

(LCS) R3546691-1 07/07/20 05:39

Analyte	Spike Amount mV	LCS Result mV	LCS Rec. %	Rec. Limits %	LCS Qualifier
ORP	228	226	99.0	86.0-105	

Method Blank (MB)

(MB) R3548947-1 07/13/20 14:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3548947-3 07/13/20 14:37

Analyte	Original Result	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide		ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3548947-2 07/13/20 14:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0984	98.4	90.0-110	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3548947-4 07/13/20 15:04 • (MSD) R3548947-5 07/13/20 15:05

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100		0.106	0.101	106	101	1	75.0-125			4.83	20

Laboratory Control Sample (LCS)

(LCS) R3545989-1 07/03/20 12:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 22.2C

Method Blank (MB)

(MB) R3547698-1 07/07/20 14:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.00650	0.0500

Laboratory Control Sample (LCS)

(LCS) R3547698-2 07/07/20 14:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.473	94.6	85.0-115	

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

(LCS) R3548542-1 07/11/20 19:15 • (LCSD) R3548542-2 07/11/20 19:15

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	127	125	101	99.1	96.0-104			1.59	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

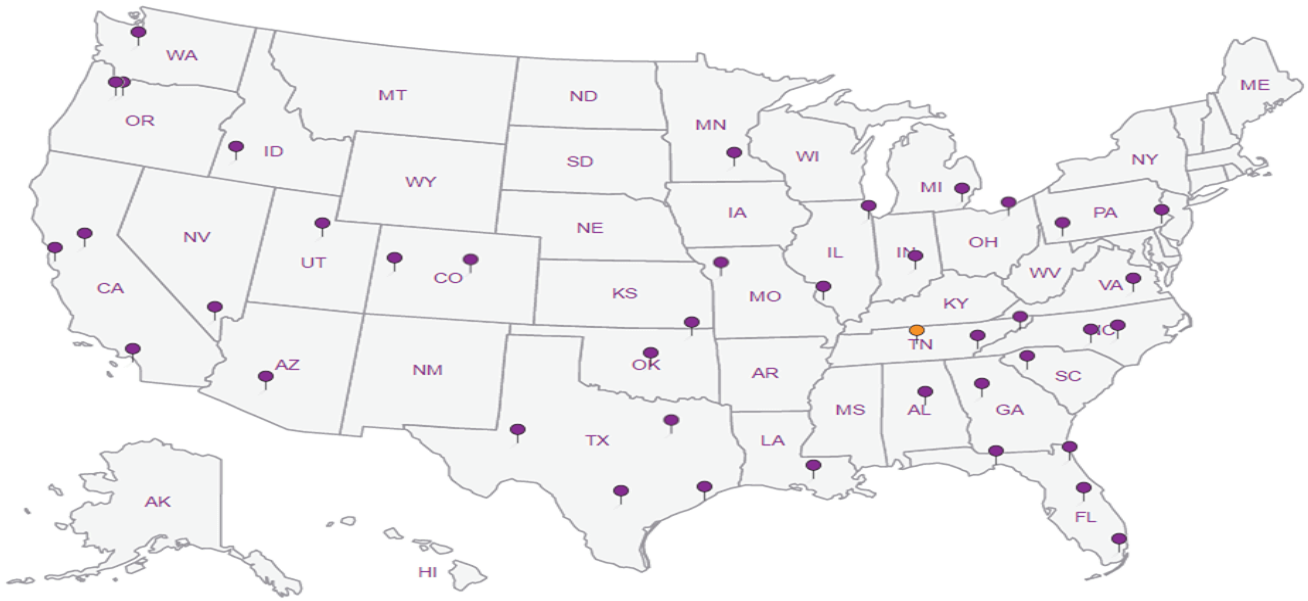
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

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



HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2007018-001E	Injection Well #2	500HDPE	Aqueous	6/30/2020	1	ORP, Corrosivity, Ignitability L1236077-01
2	2007018-001F	Injection Well #2	500PLNAOH ZNAC	Aqueous	6/30/2020	1	Reactive Sulfide 02
3	2007018-001G	Injection Well #2	500PL-NaOH	Aqueous	6/30/2020	1	Reactive Cyanide 03

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: EM	Date: 7/1/2020	Time: 11:19 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: Pecorso	Date: 7/2/20	Time: 8:45

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 5.1+0.5 °C AT Attempt to Cool ? _____
Comments: _____ (02)

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R70074**	RunNo: **70074**
Prep Date:	Analysis Date: **7/1/2020**	SeqNo: **2434415** 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)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R70074**	RunNo: **70074**
Prep Date:	Analysis Date: **7/1/2020**	SeqNo: **2434416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	98.3	90	110			
Bromide	2.5	0.10	2.500	0	101	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.3	90	110			
Sulfate	9.8	0.50	10.00	0	98.0	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R70134**	RunNo: **70134**
Prep Date:	Analysis Date: **7/2/2020**	SeqNo: **2437168** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R70134**	RunNo: **70134**
Prep Date:	Analysis Date: **7/2/2020**	SeqNo: **2437169** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	98.4	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **MB-53534** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **PBW** Batch ID: **53534** RunNo: **70353**

Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		87.3	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.0	32.3	92.4			

Sample ID: **LCS-53534** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSW** Batch ID: **53534** RunNo: **70353**

Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445442** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0022		0.002500		88.4	38.2	102			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		77.1	32.3	92.4			

Sample ID: **LCSD-53534** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSS02** Batch ID: **53534** RunNo: **70353**

Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445443** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0024		0.002500		96.2	38.2	102	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		66.1	32.3	92.4	0	0	

Sample ID: **MB-53534** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **PBW** Batch ID: **53534** RunNo: **70353**

Prep Date: **7/7/2020** Analysis Date: **7/15/2020** SeqNo: **2445445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0022		0.002500		86.5	38.2	102			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.9	32.3	92.4			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**

Client ID: **LCSW** Batch ID: **T70113** RunNo: **70113**

Prep Date: Analysis Date: **7/6/2020** SeqNo: **2438829** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.019	0.00023	0.02000	0	95.7	70	130			
1,1-Dichloroethene	0.019	0.00013	0.02000	0	95.1	70	130			
Trichloroethene (TCE)	0.018	0.00020	0.02000	0	88.0	70	130			
Chlorobenzene	0.021	0.00014	0.02000	0	107	70	130			
Surr: 1,2-Dichloroethane-d4	0.0098		0.01000		98.0	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.0096		0.01000		96.4	70	130			
Surr: Toluene-d8	0.010		0.01000		102	70	130			

Sample ID: **MB** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**

Client ID: **PBW** Batch ID: **T70113** RunNo: **70113**

Prep Date: Analysis Date: **7/6/2020** SeqNo: **2438830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		102	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		99.5	70	130			
Surr: Toluene-d8	0.010		0.01000		100	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **mb-53528** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**

Client ID: **PBW** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453803** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.13		0.2000		67.3	15	81.1			
Surr: Phenol-d5	0.10		0.2000		52.1	15	61.1			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		74.1	17.2	108			
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	18.7	120			
Surr: 2-Fluorobiphenyl	0.059		0.1000		59.0	23.6	103			
Surr: 4-Terphenyl-d14	0.11		0.1000		114	24.1	105			S

Sample ID: **lcs-53528** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**

Client ID: **LCSW** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453804** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.077	0.0010	0.1000	0	76.5	33.8	121			
3+4-Methylphenol	0.16	0.0010	0.2000	0	81.8	33.6	109			
2,4-Dinitrotoluene	0.055	0.0010	0.1000	0	54.8	50.4	124			
Hexachlorobenzene	0.088	0.0010	0.1000	0	88.1	50.1	120			
Hexachlorobutadiene	0.043	0.0010	0.1000	0	42.5	16.1	103			
Hexachloroethane	0.042	0.0010	0.1000	0	42.3	15	94.2			
Nitrobenzene	0.087	0.0010	0.1000	0	87.4	32.4	125			
Pentachlorophenol	0.080	0.0010	0.1000	0	79.7	44.6	114			
Pyridine	0.011	0.0010	0.1000	0	11.2	15	67			S
2,4,5-Trichlorophenol	0.082	0.0010	0.1000	0	81.9	49.4	118			
2,4,6-Trichlorophenol	0.083	0.0010	0.1000	0	82.6	50.3	116			
Cresols, Total	0.24	0.0010	0.3000	0	80.0	33.8	109			
Surr: 2-Fluorophenol	0.12		0.2000		61.5	15	81.1			
Surr: Phenol-d5	0.092		0.2000		45.8	15	61.1			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		72.4	17.2	108			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **lcs-53528** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**

Client ID: **LCSW** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453804** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.080		0.1000		80.5	18.7	120			
Surr: 2-Fluorobiphenyl	0.060		0.1000		59.6	23.6	103			
Surr: 4-Terphenyl-d14	0.11		0.1000		108	24.1	105			S

Sample ID: **2007018-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**

Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453806** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.095	0.0010	0.1000	0	95.3	30.5	98.2			
3+4-Methylphenol	0.21	0.0010	0.2000	0	106	27.4	98.6			S
2,4-Dinitrotoluene	0.077	0.0010	0.1000	0	77.0	34.3	87.4			
Hexachlorobenzene	0.094	0.0010	0.1000	0	93.8	36.5	100			
Hexachlorobutadiene	0.053	0.0010	0.1000	0	52.9	15	108			
Hexachloroethane	0.054	0.0010	0.1000	0	53.6	15	90.7			
Nitrobenzene	0.095	0.0010	0.1000	0	95.4	39	100			
Pentachlorophenol	0.088	0.0010	0.1000	0	87.5	15	97.5			
Pyridine	0.010	0.0010	0.1000	0	10.4	15	65.8			S
2,4,5-Trichlorophenol	0.091	0.0010	0.1000	0	90.7	36.1	109			
2,4,6-Trichlorophenol	0.095	0.0010	0.1000	0	94.9	37.8	104			
Cresols, Total	0.31	0.0010	0.3000	0	102	27.1	99.8			S
Surr: 2-Fluorophenol	0.15		0.2000		72.6	15	81.1			
Surr: Phenol-d5	0.11		0.2000		54.5	15	61.1			
Surr: 2,4,6-Tribromophenol	0.17		0.2000		86.3	17.2	108			
Surr: Nitrobenzene-d5	0.091		0.1000		91.2	18.7	120			
Surr: 2-Fluorobiphenyl	0.070		0.1000		69.8	23.6	103			
Surr: 4-Terphenyl-d14	0.10		0.1000		102	24.1	105			

Sample ID: **2007018-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**

Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453807** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.076	0.0010	0.1000	0	75.9	30.5	98.2	22.7	44.3	
3+4-Methylphenol	0.16	0.0010	0.2000	0	79.5	27.4	98.6	28.3	50	
2,4-Dinitrotoluene	0.067	0.0010	0.1000	0	67.0	34.3	87.4	13.9	45.1	
Hexachlorobenzene	0.082	0.0010	0.1000	0	81.9	36.5	100	13.6	47.2	
Hexachlorobutadiene	0.039	0.0010	0.1000	0	39.3	15	108	29.4	43.4	
Hexachloroethane	0.039	0.0010	0.1000	0	38.9	15	90.7	31.8	39.2	
Nitrobenzene	0.077	0.0010	0.1000	0	76.6	39	100	21.9	42.1	

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **2007018-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**

Client ID: **Injection Well #2** Batch ID: **53528** RunNo: **70542**

Prep Date: **7/7/2020** Analysis Date: **7/22/2020** SeqNo: **2453807** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.086	0.0010	0.1000	0	85.6	15	97.5	2.30	50	
Pyridine	ND	0.0010	0.1000	0	0.0392	15	65.8	200	50	RS
2,4,5-Trichlorophenol	0.086	0.0010	0.1000	0	85.6	36.1	109	5.85	49.7	
2,4,6-Trichlorophenol	0.080	0.0010	0.1000	0	80.2	37.8	104	16.8	47	
Cresols, Total	0.23	0.0010	0.3000	0	78.3	27.1	99.8	26.5	27.4	
Surr: 2-Fluorophenol	0.13		0.2000		62.9	15	81.1	0	0	
Surr: Phenol-d5	0.10		0.2000		50.9	15	61.1	0	0	
Surr: 2,4,6-Tribromophenol	0.16		0.2000		81.5	17.2	108	0	0	
Surr: Nitrobenzene-d5	0.079		0.1000		79.4	18.7	120	0	0	
Surr: 2-Fluorobiphenyl	0.060		0.1000		59.7	23.6	103	0	0	
Surr: 4-Terphenyl-d14	0.10		0.1000		104	24.1	105	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **lcs-1 99.5uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R70195**		RunNo: **70195**		
Prep Date:	Analysis Date: **7/7/2020**		SeqNo: **2439134**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.50	0	99.8	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **MB-53531** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437876** Units: **mg/L**

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

Sample ID: **LLLCS-53531** SampType: **LCSLL** TestCode: **EPA Method 7470: Mercury**
Client ID: **BatchQC** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437877** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020	0.0001500	0	96.1	50	150			

Sample ID: **LCS-53531** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.2	80	120			

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well #2** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437885** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0025	0.0010	0.005000	0	49.4	75	125			S

Sample ID: **2007018-001DMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**
Client ID: **Injection Well #2** Batch ID: **53531** RunNo: **70152**
Prep Date: **7/7/2020** Analysis Date: **7/7/2020** SeqNo: **2437886** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0024	0.0010	0.005000	0	48.5	75	125	1.89	20	S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **MB-53551** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **PBW** Batch ID: **53551** RunNo: **70197**

Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439313** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.030								
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Lead	ND	0.020								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Sodium	ND	1.0								

Sample ID: **LCS-53551** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **LCSW** Batch ID: **53551** RunNo: **70197**

Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439314** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.030	0.5000	0	89.1	80	120			
Barium	0.47	0.0020	0.5000	0	93.1	80	120			
Cadmium	0.46	0.0020	0.5000	0	92.8	80	120			
Calcium	51	1.0	50.00	0	102	80	120			
Chromium	0.45	0.0060	0.5000	0	89.1	80	120			
Lead	0.45	0.020	0.5000	0	90.6	80	120			
Magnesium	51	1.0	50.00	0	103	80	120			
Potassium	50	1.0	50.00	0	99.2	80	120			
Selenium	0.45	0.050	0.5000	0	90.1	80	120			
Silver	0.095	0.0050	0.1000	0	95.0	80	120			
Sodium	51	1.0	50.00	0	101	80	120			

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**

Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439318** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.32	0.030	0.5000	0	63.1	75	125			S
Barium	0.58	0.0020	0.5000	0.2229	71.2	75	125			S
Cadmium	0.37	0.0020	0.5000	0	73.1	75	125			S
Chromium	0.32	0.0060	0.5000	0	64.2	75	125			S
Lead	0.33	0.020	0.5000	0	65.8	75	125			S
Magnesium	97	1.0	50.00	52.48	88.9	75	125			

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **2007018-001DMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**

Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439318** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	60	1.0	50.00	12.98	94.1	75	125			
Selenium	0.32	0.050	0.5000	0	63.5	75	125			S
Silver	0.074	0.0050	0.1000	0	74.0	75	125			S

Sample ID: **2007018-001DMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**

Client ID: **Injection Well #2** Batch ID: **53551** RunNo: **70197**

Prep Date: **7/7/2020** Analysis Date: **7/8/2020** SeqNo: **2439319** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.30	0.030	0.5000	0	59.7	75	125	5.44	20	S
Barium	0.55	0.0020	0.5000	0.2229	65.3	75	125	5.26	20	S
Cadmium	0.35	0.0020	0.5000	0	69.8	75	125	4.61	20	S
Chromium	0.31	0.0060	0.5000	0	61.1	75	125	5.01	20	S
Lead	0.32	0.020	0.5000	0	63.9	75	125	2.92	20	S
Magnesium	91	1.0	50.00	52.48	76.5	75	125	6.58	20	
Potassium	56	1.0	50.00	12.98	85.7	75	125	7.22	20	
Selenium	0.30	0.050	0.5000	0	59.0	75	125	7.36	20	S
Silver	0.070	0.0050	0.1000	0	70.2	75	125	5.21	20	S

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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **mb-1 alk** SampType: **mblk** TestCode: **SM2320B: Alkalinity**

Client ID: **PBW** Batch ID: **R70195** RunNo: **70195**

Prep Date: Analysis Date: **7/7/2020** SeqNo: **2439098** 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 alk** SampType: **lcs** TestCode: **SM2320B: Alkalinity**

Client ID: **LCSW** Batch ID: **R70195** RunNo: **70195**

Prep Date: Analysis Date: **7/7/2020** SeqNo: **2439099** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.40	20.00	80.00	0	95.5	90	110			

Sample ID: **mb-2 alk** SampType: **mblk** TestCode: **SM2320B: Alkalinity**

Client ID: **PBW** Batch ID: **R70195** RunNo: **70195**

Prep Date: Analysis Date: **7/7/2020** SeqNo: **2439121** 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 alk** SampType: **lcs** TestCode: **SM2320B: Alkalinity**

Client ID: **LCSW** Batch ID: **R70195** RunNo: **70195**

Prep Date: Analysis Date: **7/7/2020** SeqNo: **2439122** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.32	20.00	80.00	0	96.7	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007018**

17-Aug-20

Client: Western Refining Southwest, Inc.

Project: Injection Well 2 2Q2020

Sample ID: **MB-53514**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **53514**	RunNo: **70168**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438320** 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-53514**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **53514**	RunNo: **70168**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438321** Units: **mg/L**

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

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2007018** RcptNo: 1

Received By: **Emily Mocho** **7/1/2020 8:05:00 AM**

Completed By: **Emily Mocho** **7/1/2020 10:48:41 AM**

Reviewed By: SPA 12:40 7-1-20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ JR 7/1/20 NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 2 1 (<2 or >12 unless noted)
Adjusted? yes
Checked by: JR 7/1/20

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks: 0.5ml of HNO_3 was added to sample 0010 for pH<2. For metals analysis. JR 7/1/20

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	8.05	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield NM 87413

Phone #: (505) 801-5616

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☒ EDD (Type) Excel

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Injection Well #2 - 2Q2020

Project #: PO# 4500183752

Project Manager: K. Robinson

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.0 ±0 = 2.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	See Analytical List
6/30/20		Water	Injection Well #2	~~1~~ 2-500mL Amber	None												X
				2-500mL	Poly												X
				3-VOA	HCl												X
				1-500mL poly	NaOH												X
				1-500mL Poly	Zn Acetate NaOH												X
				~~1~~ 2-250ml	Poly HNO3												X
				1-125mL	Poly H_2SO_4												X
				~~1-500mL~~	~~Poly~~												X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6/30/20	1204	Kelly Pedersen	Christa Waele		6/30/2020	1204
6/30/20	1820	Christa Waele	Ellen	courier	7/1/20	8:05

Remarks: See Attached Analytical List

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.

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: The Permittee shall properly conduct waste management injection operations at its facility by injecting only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids. Injected waste fluids shall not exhibit the RCRA characteristics, i.e., ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-2, based upon environmental analytical laboratory testing. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- Major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (ASTM Methods); Corrosivity (SW-846) and Reactivity (determined through Permittee's application of knowledge or generating process).

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

QUARTERLY MONITORING LIST			
EPA HW No.	Contaminant	SW-846 Methods	Regulatory Level (mg/L)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A 7471B	0.2
D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0

D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.
If metals (dissolved), the EPA 1311 TCLP Laboratory Method is required with the exception of Mercury (total).

1. **Monitor and Piezometer Wells:** Groundwater with a total dissolved solids concentration of less than 10,000 mg/L occurs at an estimated depth of approximately 10 - 30 ft. below ground surface at the WDW-2 well (hereafter, "uppermost water-bearing unit"). Groundwater monitoring well (MW) with GW sampling capability shall be installed proximal to and hydrogeologically downgradient from WDW-2 in order to monitor the uppermost water-bearing unit. The MW shall be screened (15 ft. screen with top of screen positioned 5 ft. above water table) into the uppermost water-bearing unit. The Permittee shall propose a monitoring frequency with chemical monitoring parameters in order to detect potential groundwater contamination either associated with or not associated with WDW-2.

2.B. **CONTINGENCY PLANS:** The Permittee shall implement its proposed contingency plan(s) included in its application to cope with failure of a system(s) in the Discharge Permit.

2.C. **CLOSURE:** Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of WDW-2. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information in the pre-closure notification specified in Permit Condition 2.C.1:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 13, 2020

Kelly Robinson

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: Evaporation Ponds OrderNo.: 2007061

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/1/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2007061**
Date Reported: **7/13/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Evap Pond South
Project: Evaporation Ponds **Collection Date:** 6/30/2020 7:45:00 AM
Lab ID: 2007061-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst:	**JME**
Diesel Range Organics (DRO)	0.54	0.40		mg/L	1	7/7/2020 10:40:40 AM	53522
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	7/7/2020 10:40:40 AM	53522
Surr: DNOP	113	81.5-152		%Rec	1	7/7/2020 10:40:40 AM	53522
SM2340B: HARDNESS						Analyst:	**ags**
Hardness (As CaCO3)	390	6.6		mg/L	1	7/7/2020 12:58:00 PM	R70149
EPA METHOD 300.0: ANIONS						Analyst:	**CJS**
Fluoride	ND	1.0		mg/L	10	7/6/2020 6:28:24 PM	R70144
Chloride	1100	50	*	mg/L	100	7/6/2020 6:41:15 PM	R70144
Bromide	3.7	1.0		mg/L	10	7/6/2020 6:28:24 PM	R70144
Phosphorus, Orthophosphate (As P)	ND	5.0	H	mg/L	10	7/6/2020 6:28:24 PM	R70144
Sulfate	79	5.0		mg/L	10	7/6/2020 6:28:24 PM	R70144
Nitrate+Nitrite as N	ND	2.0		mg/L	10	7/6/2020 6:54:07 PM	R70144
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	4600	10		µmhos/c	1	7/7/2020 1:18:10 PM	R70195
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	653.3	20.00		mg/L Ca	1	7/7/2020 1:18:10 PM	R70195
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	7/7/2020 1:18:10 PM	R70195
Total Alkalinity (as CaCO3)	653.3	20.00		mg/L Ca	1	7/7/2020 1:18:10 PM	R70195
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	2660	200	*D	mg/L	1	7/8/2020 6:10:00 PM	53532
EPA METHOD 200.7: METALS						Analyst:	**ags**
Calcium	72	1.0		mg/L	1	7/7/2020 2:19:40 PM	53509
Iron	1.7	0.25	*	mg/L	5	7/7/2020 2:21:25 PM	53509
Magnesium	52	1.0		mg/L	1	7/7/2020 2:19:40 PM	53509
Manganese	0.20	0.0020	*	mg/L	1	7/7/2020 2:19:40 PM	53509
Potassium	13	1.0		mg/L	1	7/7/2020 2:19:40 PM	53509
Sodium	840	10		mg/L	10	7/7/2020 3:10:25 PM	53509
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**DJF**
Gasoline Range Organics (GRO)	0.11	0.10		mg/L	2	7/9/2020 2:37:38 PM	GW7022
Surr: BFB	104	70-130		%Rec	2	7/9/2020 2:37:38 PM	GW7022
EPA METHOD 8260B: VOLATILES						Analyst:	**DJF**
Benzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Toluene	12	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Ethylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228

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
PQL	Practical Quanitative Limit
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 Limit

Analytical Report
Lab Order **2007061**
Date Reported: **7/13/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Evap Pond South
Project: Evaporation Ponds **Collection Date:** 6/30/2020 7:45:00 AM
Lab ID: 2007061-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Naphthalene	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1-Methylnaphthalene	ND	8.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
2-Methylnaphthalene	ND	8.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Acetone	120	20		µg/L	2	7/9/2020 2:37:38 PM	W70228
Bromobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Bromodichloromethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Bromoform	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Bromomethane	ND	6.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
2-Butanone	ND	20		µg/L	2	7/9/2020 2:37:38 PM	W70228
Carbon disulfide	ND	20		µg/L	2	7/9/2020 2:37:38 PM	W70228
Carbon Tetrachloride	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Chlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Chloroethane	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Chloroform	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Chloromethane	ND	6.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
2-Chlorotoluene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
4-Chlorotoluene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
cis-1,2-DCE	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Dibromochloromethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Dibromomethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2-Dichlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,3-Dichlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,4-Dichlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Dichlorodifluoromethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1-Dichloroethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1-Dichloroethene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2-Dichloropropane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,3-Dichloropropane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
2,2-Dichloropropane	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1-Dichloropropene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Hexachlorobutadiene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
2-Hexanone	ND	20		µg/L	2	7/9/2020 2:37:38 PM	W70228
Isopropylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228

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

Qualifiers:

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

Analytical Report
Lab Order **2007061**
Date Reported: **7/13/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Evap Pond South
Project: Evaporation Ponds **Collection Date:** 6/30/2020 7:45:00 AM
Lab ID: 2007061-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
4-Isopropyltoluene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
4-Methyl-2-pentanone	ND	20		µg/L	2	7/9/2020 2:37:38 PM	W70228
Methylene Chloride	ND	6.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
n-Butylbenzene	ND	6.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
n-Propylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
sec-Butylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Styrene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
tert-Butylbenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
trans-1,2-DCE	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1,1-Trichloroethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,1,2-Trichloroethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Trichloroethene (TCE)	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Trichlorofluoromethane	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
1,2,3-Trichloropropane	ND	4.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Vinyl chloride	ND	2.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Xylenes, Total	9.6	3.0		µg/L	2	7/9/2020 2:37:38 PM	W70228
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	2	7/9/2020 2:37:38 PM	W70228
Surr: 4-Bromofluorobenzene	91.6	70-130		%Rec	2	7/9/2020 2:37:38 PM	W70228
Surr: Dibromofluoromethane	101	70-130		%Rec	2	7/9/2020 2:37:38 PM	W70228
Surr: Toluene-d8	99.8	70-130		%Rec	2	7/9/2020 2:37:38 PM	W70228

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **MBLK-53509** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**

Client ID: **PBW** Batch ID: **53509** RunNo: **70149**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437613** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Iron	ND	0.050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLLCS-53509** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**

Client ID: **BatchQC** Batch ID: **53509** RunNo: **70149**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437614** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	110	50	150			
Iron	ND	0.050	0.02000	0	111	50	150			
Magnesium	ND	1.0	0.5000	0	106	50	150			
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Potassium	ND	1.0	0.5000	0	78.7	50	150			
Sodium	ND	1.0	0.5000	0	134	50	150			

Sample ID: **LCS-53509** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**

Client ID: **LCSW** Batch ID: **53509** RunNo: **70149**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437615** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.3	85	115			
Iron	0.47	0.050	0.5000	0	93.7	85	115			
Magnesium	49	1.0	50.00	0	98.2	85	115			
Manganese	0.46	0.0020	0.5000	0	91.1	85	115			
Potassium	48	1.0	50.00	0	95.7	85	115			
Sodium	49	1.0	50.00	0	98.8	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R70144** RunNo: **70144**

Prep Date: Analysis Date: **7/6/2020** SeqNo: **2437459** 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								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R70144** RunNo: **70144**

Prep Date: Analysis Date: **7/6/2020** SeqNo: **2437460** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.46	0.10	0.5000	0	91.4	90	110			
Chloride	4.8	0.50	5.000	0	95.5	90	110			
Bromide	2.4	0.10	2.500	0	97.2	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	93.0	90	110			
Sulfate	9.6	0.50	10.00	0	96.4	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	95.9	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **MB-53522** SampType: **MBLK** TestCode: **EPA Method 8015D: Diesel Range**

Client ID: **PBW** Batch ID: **53522** RunNo: **70147**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437591** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.51		0.5000		101	81.5	152			

Sample ID: **LCS-53522** SampType: **LCS** TestCode: **EPA Method 8015D: Diesel Range**

Client ID: **LCSW** Batch ID: **53522** RunNo: **70147**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437592** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	0.40	2.500	0	123	82	138			
Surr: DNOP	0.25		0.2500		99.2	81.5	152			

Sample ID: **2007061-001BMS** SampType: **MS** TestCode: **EPA Method 8015D: Diesel Range**

Client ID: **Evap Pond South** Batch ID: **53522** RunNo: **70147**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437594** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.5	0.40	2.500	0.5436	118	70.1	159			
Surr: DNOP	0.30		0.2500		120	81.5	152			

Sample ID: **2007061-001BMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Diesel Range**

Client ID: **Evap Pond South** Batch ID: **53522** RunNo: **70147**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2437595** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4	0.40	2.500	0.5436	115	70.1	159	1.96	20	
Surr: DNOP	0.30		0.2500		119	81.5	152	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **mb1** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **PBW** Batch ID: **W70228** RunNo: **70228**

Prep Date: Analysis Date: **7/9/2020** SeqNo: **2440715** 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 (MTBE)	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)	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	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **mb1**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440715** 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-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.4	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440716** 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	21	1.0	20.00	0	106	70	130			
Chlorobenzene	20	1.0	20.00	0	101	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **W70228** RunNo: **70228**

Prep Date: Analysis Date: **7/9/2020** SeqNo: **2440716** 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	109	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.2	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		92.8	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.7		10.00		97.4	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **lcs-1 99.5uS eC** SampType: **lcs** TestCode: **SM2510B: Specific Conductance**

Client ID: **LCSW** Batch ID: **R70195** RunNo: **70195**

Prep Date: Analysis Date: **7/7/2020** SeqNo: **2439134** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.50	0	99.8	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **mb1**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **GW70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440763** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	11		10.00		105	70	130			

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **GW70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440764** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0	96.7	70	130			
Surr: BFB	10		10.00		102	70	130			

Sample ID: **2007061-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Evap Pond South**	Batch ID: **GW70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440766** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.1	0.10	1.000	0.1140	99.4	70	130			
Surr: BFB	21		20.00		104	70	130			

Sample ID: **2007061-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Evap Pond South**	Batch ID: **GW70228**	RunNo: **70228**
Prep Date:	Analysis Date: **7/9/2020**	SeqNo: **2440767** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.1	0.10	1.000	0.1140	95.2	70	130	3.86	20	
Surr: BFB	21		20.00		103	70	130	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439098**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439099**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.40	20.00	80.00	0	95.5	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439121**	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 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R70195**	RunNo: **70195**							
Prep Date:	Analysis Date: **7/7/2020**	SeqNo: **2439122**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.32	20.00	80.00	0	96.7	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
PQL	Practical Quanitative Limit
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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007061**

13-Jul-20

Client: Western Refining Southwest, Inc.

Project: Evaporation Ponds

Sample ID: **MB-53532**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **53532**	RunNo: **70189**
Prep Date: **7/7/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438885** 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-53532**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **53532**	RunNo: **70189**
Prep Date: **7/7/2020**	Analysis Date: **7/8/2020**	SeqNo: **2438886** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	995	20.0	1000	0	99.5	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Southwest, Inc. Work Order Number: 2007061 RcptNo: 1

Received By: **Emily Mocho** 7/1/2020 8:05:00 AM

Completed By: **John Caldwell** 7/1/2020 2:33:35 PM John Caldwell

Reviewed By: SPA 7.2.20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 2 (<2 or >12 unless noted)
Adjusted? no
Checked by: EM 7/2/20

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.0	Good				

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining
Mailing Address: 50 CR 4990, Bloomfield, NM 87413
Phone #: (505) 801-5616
email or Fax#:
QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other
☒ EDD (Type) Excel

Turn-Around Time: ☒ Standard ☐ Rush
Project Name: Evaporation Ponds
Project #: PO# 4500193752
Project Manager: R. Robinson
Sampler:
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 2.0 (°C)

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2007061	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Gen Chem - See attached
6/30/20	7:45	Water	Evap Pond-South	5 VOAs	HCl	-001		X						X			
				(1) 250mL Amber	—			X									
				(2) Poly 500mL	—												X
				(1) Poly 125mL	Sulfuric Acid												X
				(1) Poly 250mL	HNO_3												X
	~~8:15~~		~~Evap Pond-North~~	~~5 VOA~~	~~HCl~~			~~X~~						~~X~~			
~~6/30/20~~	~~8:15~~	~~Water~~	~~Evap Pond-North~~	~~(1) 250mL Amber~~	~~—~~			~~X~~									
				~~(2) Poly 500mL~~	~~—~~												~~X~~
				~~(1) Poly 125mL~~	~~H_2SO_4~~												~~X~~
				~~(1) Poly 250~~	~~HNO_3~~												~~X~~

Date	Time	Relinquished by	Received by	Via	Date	Time
6/30/20	1710	Kelly Robinson	Christ Waltz		6/30/2020	1710
6/30/2020	1826	Christ Waltz	EKM	courier	7/1/20	8:05

Remarks: No North Sample.

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.

GWC		
pH	SM 4500-H+B	1 - 500ml (non preserved)
EC	SM 2510B	
TDS	SM 2540C MOD	
alkalinity	SM 2320B	
hardness	SM 2340B	
ANIONS	EPA Method 300.0	
	nitrate nitrite	1 - 250ml H2SO4
	bromide	1 - 500ml HNO3
	chloride	
	sulfate	
	phosporus	
	fluoride	
CATIONS / METALS	EPA Method 200.7	
	calcium	
	iron	
	magnesium	
	manganese	
	potassium	
	sodium	
Metals	EPA Method 200.7	1 - 500ml HNO3
	barium	
	beryllium	
	cadmium	
	chromium	
	silver	
	lead	
	nickel	
	EPA 200.8	
	copper	
	zinc	
	antimony	
	arsenic	
	selenium	
	thallium	
	Epa Method 245.1	
	mercury	

General Chemistry

APPENDIX D

DAILY RATE HISTORY

APPENDIX D

WDW#2
Daily Injection Rates and Pressures

Date/Time	WDW#2 Daily Rates (gpm)	WDW#2 Pressure (psig)
05/28/20 00:00	0	595
05/29/20 00:00	27	1233
05/30/20 00:00	26	1316
05/31/20 00:00	0	984
06/01/20 00:00	0	791
06/02/20 00:00	0	740
06/03/20 00:00	0	713
06/04/20 00:00	0	694
06/05/20 00:00	0	681
06/06/20 00:00	0	670
06/07/20 00:00	0	661
06/08/20 00:00	0	653
06/09/20 00:00	0	647
06/10/20 00:00	0	641
06/11/20 00:00	0	636
06/12/20 00:00	0	631
06/13/20 00:00	0	627
06/14/20 00:00	0	623
06/15/20 00:00	0	619
06/16/20 00:00	0	616
06/17/20 00:00	0	613
06/18/20 00:00	0	610
06/19/20 00:00	0	607
06/20/20 00:00	0	605
06/21/20 00:00	0	602
06/22/20 00:00	0	600
06/23/20 00:00	0	597
06/24/20 00:00	0	772
06/25/20 00:00	0	636
06/26/20 00:00	0	618
06/27/20 00:00	0	610
06/28/20 00:00	0	605
06/29/20 00:00	0	601
06/30/20 00:00	33	1252
07/01/20 00:00	0	919
07/02/20 00:00	0	733
07/03/20 00:00	0	690
07/04/20 00:00	0	669
07/05/20 00:00	0	655
07/06/20 00:00	0	644
07/07/20 00:00	0	636

APPENDIX D

WDW#2
Daily Injection Rates and Pressures

Date/Time	WDW#2 Daily Rates (gpm)	WDW#2 Pressure (psig)
07/08/20 00:00	0	629
07/09/20 00:00	0	624
07/10/20 00:00	0	618
07/11/20 00:00	0	614
07/12/20 00:00	0	610
07/13/20 00:00	0	607
07/14/20 00:00	0	603
07/15/20 00:00	0	600
07/16/20 00:00	0	597
07/17/20 00:00	0	595
07/18/20 00:00	0	592
07/19/20 00:00	0	590
07/20/20 00:00	0	588
07/21/20 00:00	0	586
07/22/20 00:00	0	584
07/23/20 00:00	0	582
07/24/20 00:00	0	580
07/25/20 00:00	0	578
07/26/20 00:00	0	576
07/27/20 00:00	0	575
07/28/20 00:00	0	573
07/29/20 00:00	0	572
07/30/20 00:00	0	570
07/31/20 00:00	0	569
08/01/20 00:00	0	567
08/02/20 00:00	0	566
08/03/20 00:00	0	565
08/04/20 00:00	0	563
08/05/20 00:00	0	562
08/06/20 00:00	0	561
08/07/20 00:00	0	560
08/08/20 00:00	0	559
08/09/20 00:00	0	557
08/10/20 00:00	0	556
08/11/20 00:00	0	555
08/12/20 00:00	0	554
08/13/20 00:00	0	553
08/14/20 00:00	0	552
08/15/20 00:00	0	551
08/16/20 00:00	0	550
08/17/20 00:00	0	549

APPENDIX D

WDW#2
Daily Injection Rates and Pressures

Date/Time	WDW#2 Daily Rates (gpm)	WDW#2 Pressure (psig)
08/18/20 00:00	0	548
08/19/20 00:00	0	547
08/20/20 00:00	0	546
08/21/20 00:00	0	545
08/22/20 00:00	0	544
08/23/20 00:00	0	544
08/24/20 00:00	0	543
08/25/20 00:00	0	542
08/26/20 00:00	0	541
08/27/20 00:00	0	540
08/28/20 00:00	0	540
08/29/20 00:00	0	539
08/30/20 00:00	0	538
08/31/20 00:00	0	537
09/01/20 00:00	0	536
09/02/20 00:00	0	535
09/03/20 00:00	0	535
09/04/20 00:00	0	534
09/05/20 00:00	0	533
09/06/20 00:00	0	533
09/07/20 00:00	0	532
09/08/20 00:00	0	531
09/09/20 00:00	0	531
09/10/20 00:00	0	530
09/11/20 00:00	0	529
09/12/20 00:00	0	528
09/13/20 00:00	0	528
09/14/20 00:00	0	527
09/15/20 00:00	0	527
09/16/20 00:00	0	526
09/17/20 00:00	0	525
09/18/20 00:00	0	534
09/19/20 00:00	23	1064
09/20/20 00:00	22	1180
09/21/20 14:24	22	1291

APPENDIX E

GAUGE CALIBRATION CERTIFICATES

ACCURACY VERIFICATION

10-March-2020

Gauge Model	**SP-2000**	Pressure Range	**5 K**
Gauge S/N	**240**	Accuracy 0.05%	Full Scale

Applied Pressure psig	Recorded Pressure psig	Difference psi	Difference Percent (%)
0.01	0.01	0.00	0.0000%
774.08	772.99	-1.09	-0.0218%
1498.24	1496.97	-1.27	-0.0254%
2222.36	2221.20	-1.16	-0.0232%
2946.53	2945.44	-1.09	-0.0218%
3670.66	3669.59	-1.07	-0.0214%
4394.87	4393.80	-1.07	-0.0214%
5119.00	5118.01	-0.99	-0.0198%
4394.87	4393.83	-1.04	-0.0208%
3670.66	3669.56	-1.10	-0.0220%
2946.53	2945.51	-1.02	-0.0204%
2222.36	2221.22	-1.14	-0.0228%
1498.24	1496.99	-1.25	-0.0250%
774.08	772.81	-1.27	-0.0254%
0.01	0.01	0.00	0.0000%

Oven Temperature: **218.7** °F Probe Temperature: **218.6** °F

Smart Gauge Calibration accuracy is confirmed.

Calibrated with RUSKA Pressure Standard, model # 2451-700-00
Serial #26618, Mass Set Serial #25608
Compensated to local acceleration due to gravity

Verified by: CM

ACCURACY VERIFICATION

10-March-2020

Gauge Model	**SP-2000**	Pressure Range	**5 K**
Gauge S/N	**240**	Accuracy 0.05%	Full Scale

Applied Pressure psig	Recorded Pressure psig	Difference psi	Difference Percent (%)
0.01	2.38	2.37	0.0474%
774.08	776.30	2.22	0.0444%
1498.24	1500.18	1.94	0.0388%
2222.36	2224.29	1.93	0.0386%
2946.53	2948.24	1.71	0.0342%
3670.66	3672.19	1.53	0.0306%
4394.87	4396.25	1.38	0.0276%
5119.00	5120.28	1.28	0.0256%
4394.87	4396.11	1.24	0.0248%
3670.66	3671.87	1.21	0.0242%
2946.53	2947.80	1.27	0.0254%
2222.36	2223.58	1.22	0.0244%
1498.24	1499.16	0.92	0.0184%
774.08	775.38	1.30	0.0260%
0.01	1.82	1.81	0.0362%

Oven Temperature: **254.1** °F Probe Temperature: **253.4** °F

Smart Gauge Calibration accuracy is confirmed.

Calibrated with RUSKA Pressure Standard, model # 2451-700-00
Serial #26618, Mass Set Serial #25608
Compensated to local acceleration due to gravity

Verified by: CM

ACCURACY VERIFICATION

10-March-2020

Gauge Model	**SP-2000**	Pressure Range	**5 K**
Gauge S/N	**262**	Accuracy 0.05%	Full Scale

Applied Pressure psig	Recorded Pressure psig	Difference psi	Difference Percent (%)
0.01	1.00	0.99	0.0198%
774.08	774.85	0.77	0.0154%
1498.24	1499.96	1.72	0.0344%
2222.36	2222.84	0.48	0.0096%
2946.53	2947.01	0.48	0.0096%
3670.66	3671.21	0.55	0.0110%
4394.87	4395.43	0.56	0.0112%
5119.00	5119.62	0.62	0.0124%
4394.87	4395.86	0.99	0.0198%
3670.66	3671.85	1.19	0.0238%
2946.53	2947.85	1.32	0.0264%
2222.36	2223.50	1.14	0.0228%
1498.24	1499.51	1.27	0.0254%
774.08	775.37	1.29	0.0258%
0.01	1.52	1.51	0.0302%

Oven Temperature: **218.9** °F Probe Temperature: **218.6** °F

Smart Gauge Calibration accuracy is confirmed.

Calibrated with RUSKA Pressure Standard, model # 2451-700-00
Serial #26618, Mass Set Serial #25608
Compensated to local acceleration due to gravity

Verified by: CM

ACCURACY VERIFICATION

10-March-2020

Gauge Model	**SP-2000**	Pressure Range	**5 K**
Gauge S/N	**262**	Accuracy 0.05%	Full Scale

Applied Pressure psig	Recorded Pressure psig	Difference psi	Difference Percent (%)
0.01	1.40	1.39	0.0278%
774.08	774.85	0.77	0.0154%
1498.24	1499.96	1.72	0.0344%
2222.36	2222.84	0.48	0.0096%
2946.53	2947.01	0.48	0.0096%
3670.66	3671.51	0.85	0.0170%
4394.87	4395.43	0.56	0.0112%
5119.00	5119.62	0.62	0.0124%
4394.87	4395.86	0.99	0.0198%
3670.66	3671.85	1.19	0.0238%
2946.53	2947.80	1.27	0.0254%
2222.36	2223.52	1.16	0.0232%
1498.24	1499.51	1.27	0.0254%
774.08	775.37	1.29	0.0258%
0.01	1.52	1.51	0.0302%

Oven Temperature: **254.1** °F Probe Temperature: **253.4** °F

Smart Gauge Calibration accuracy is confirmed.

Calibrated with RUSKA Pressure Standard, model # 2451-700-00
Serial #26618, Mass Set Serial #25608
Compensated to local acceleration due to gravity

Verified by: CM

APPENDIX F

PANSYSTEM© ANALYSIS OUTPUT

WSP USA	Report File:	LKM 2020 PanSystem WDW-2.pa

PanSystem Version 3.5

Well Test Analysis Report

Company	Western Refining Company
Well	Waste Disposal Well No. 2
Location	Bloomfield, New Mexico
Test	Pressure Buildup/Falloff Test
Date	
Gauge Depth	7312
Gauge Type/Serial Number	Micro-Smart Systems/SP2000/#240
Analyst	LKM
WSP USA Project No.	N/A

Reservoir Description

Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Entrada Sandstone
Formation thickness	123.0000 ft
Average formation porosity	0.1490
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	4.4400e-6 psi-1
Layer pressure	3632.369000 psia
Temperature	181.710000 deg F

Well Parameters Data

	WDW-2
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.02338 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.000000 bbl/psi
Time Change for Second Storage	0.000000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Entrada Sandstone
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3698.530000 psia
Check Temperature	181.710000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3

Fluid Parameters Data (cont)

	Entrada Sandstone
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	62.1852 lb/ft3
Water viscosity	0.470 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	2.9753e-6 psi-1

Entrada Sandstone Correlations

Not Used

Entrada Sandstone Model Data

Entrada Sandstone Model Type : Vertical fracture - finite conductivity

	Entrada Sandstone
Permeability	1.13706 md
Fracture face skin	0.0000
Fracture half-length	137.4750 ft
Dimensionless fracture conductivity	1.091280

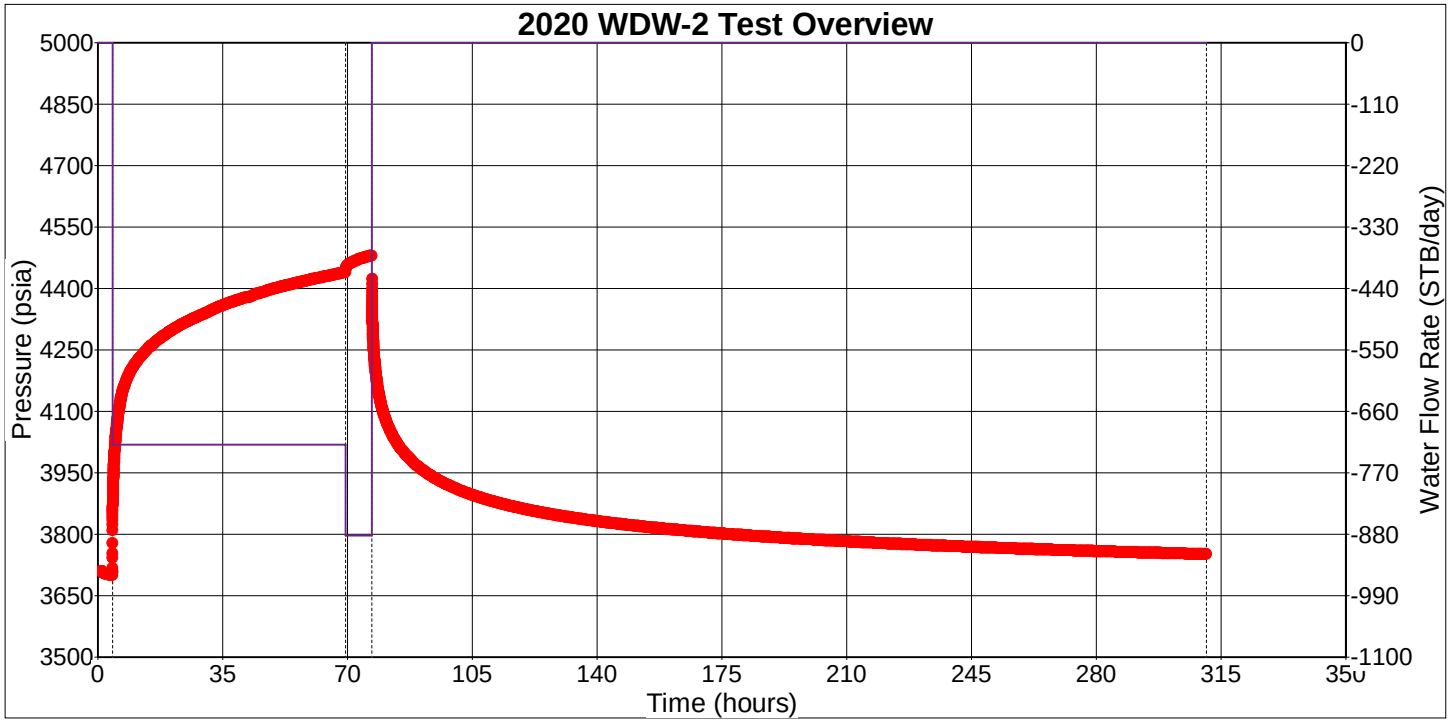
Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-2745.566670	0.000000	-922.520000
-2682.566670	0.000000	0.000000
-1970.566670	0.000000	-1095.880000
4.133330	3698.530000	0.000000
69.596255	4439.165000	-720.000000
76.963378	4479.706000	-882.860000
310.999696	3750.402000	0.000000

WSP USA | Report File: LKM 2020 PanSystem WDW-2.pa

PanSystem Version 3.5

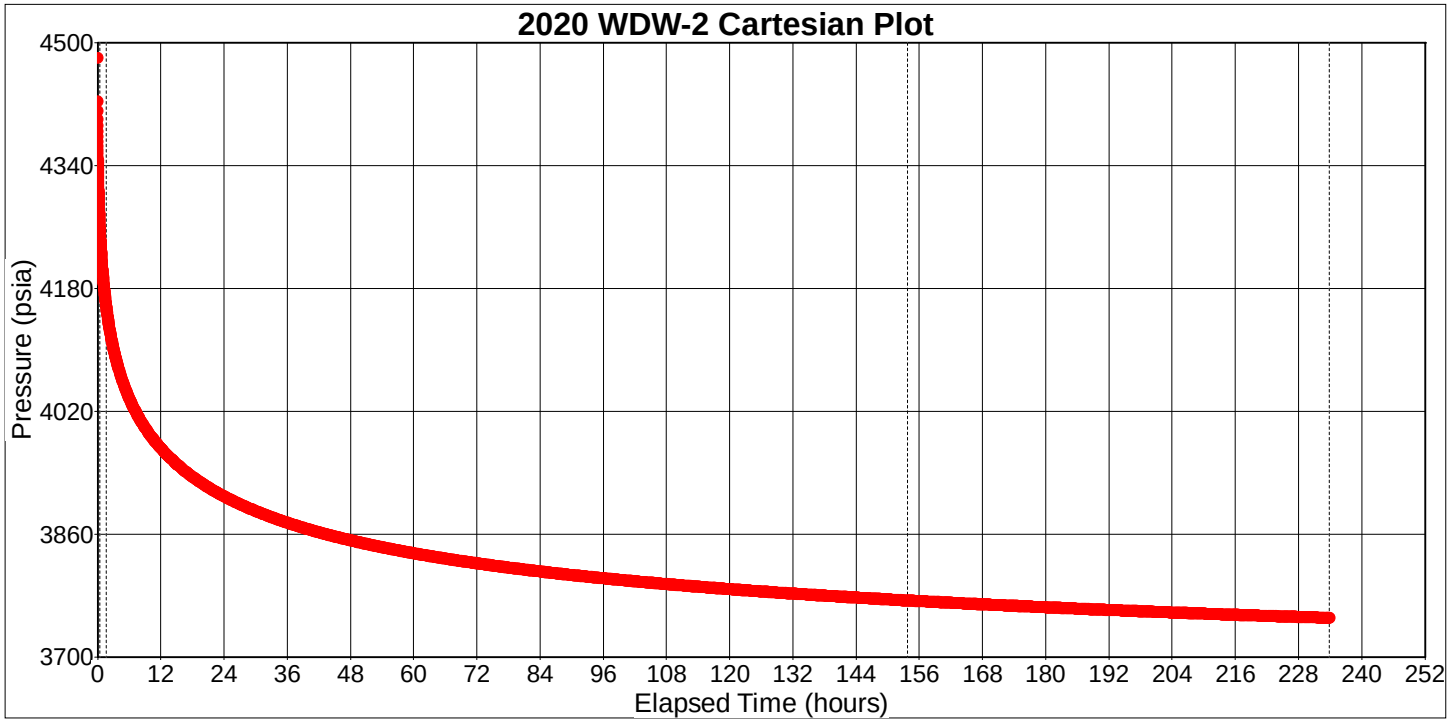
Well Test Analysis Report

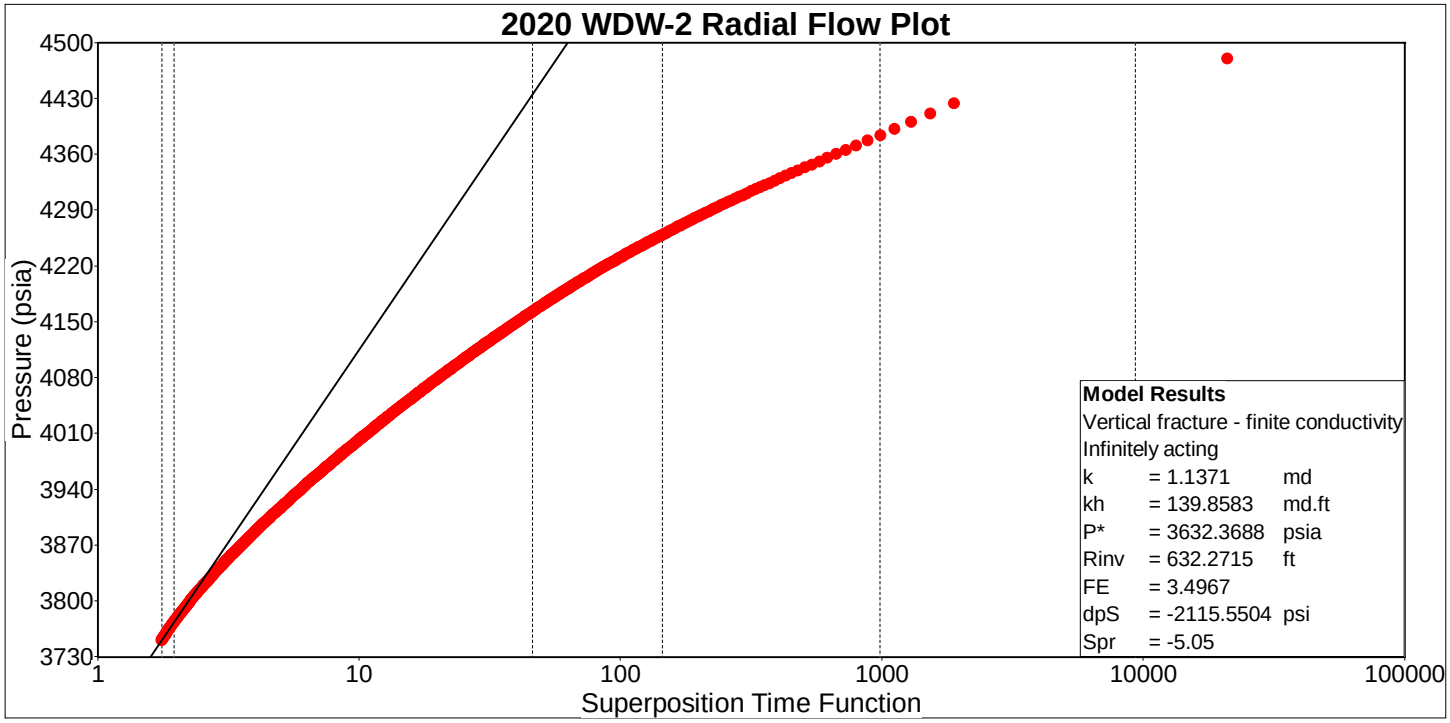


WSP USA | Report File: LKM 2020 PanSystem WDW-2.pa

PanSystem Version 3.5

Well Test Analysis Report





2020 WDW-2 Radial Flow Plot Model Results
Vertical fracture - finite conductivity - Infinitely acting

Classic Wellbore Storage

	Value
Permeability	1.13706 md
Permeability-thickness	139.858329 md.ft
Extrapolated pressure	3632.368779 psia
Radius of investigation	632.271493 ft
Flow efficiency	3.496704
dP skin (constant rate)	-2115.550411 psi
Pseudo-radial skin factor	-5.049953

2020 WDW-2 Radial Flow Plot Line Details
Line type : Pseudo-radial flow
Slope : 482.305
Intercept : 3632.37
Coefficient of Determination : 0.999736

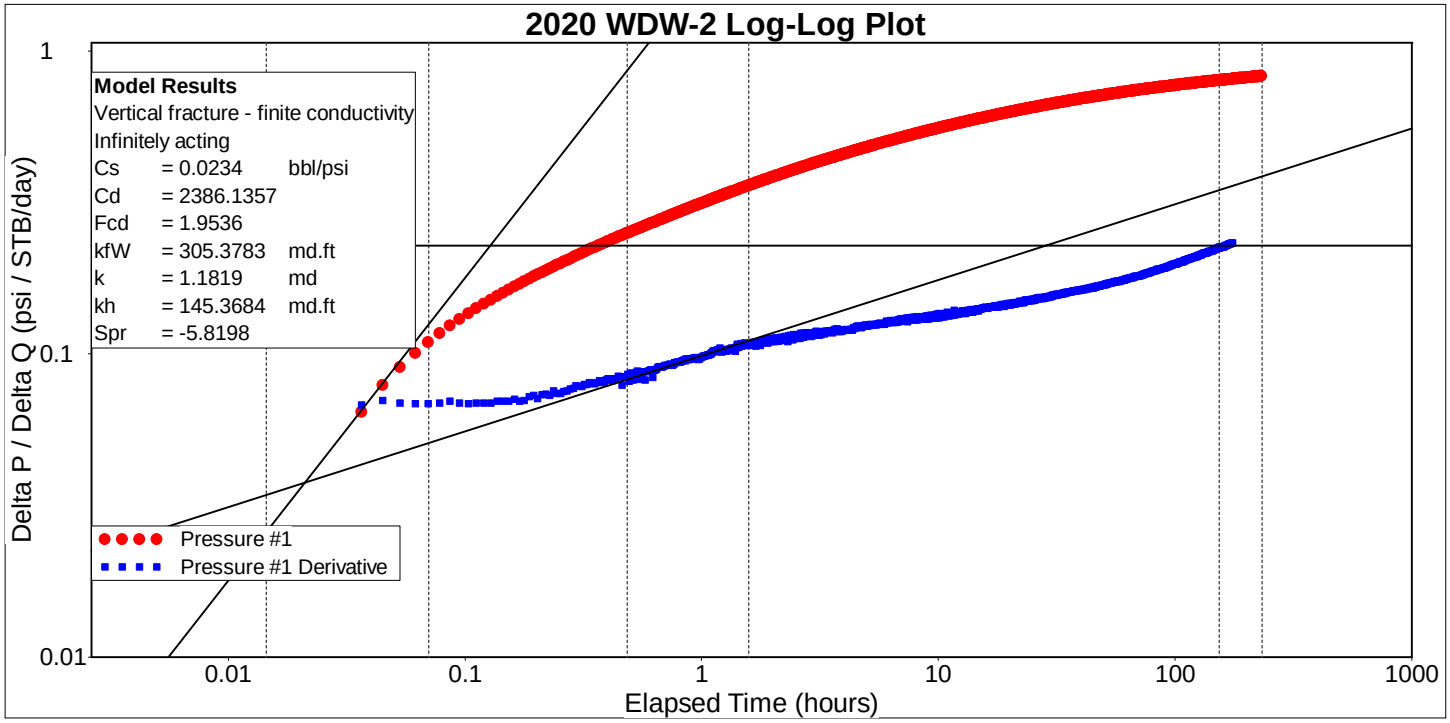
	Pseudo-radial flow
Extrapolated pressure	3632.368779 psia
Pressure at dt = 1 hour	4522.643982 psia

Number of Intersections = 0

WSP USA | Report File: LKM 2020 PanSystem WDW-2.pa

PanSystem Version 3.5

Well Test Analysis Report



2020 WDW-2 Log-Log Plot Model Results

Vertical fracture - finite conductivity - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.02338 bbl/psi
Dimensionless wellbore storage	2386.135683
Dimensionless fracture conductivity	1.953579
Fracture conductivity	305.378305 md.ft
Permeability	1.181857 md
Permeability-thickness	145.368424 md.ft
Pseudo-radial skin factor	-5.819792

2020 WDW-2 Log-Log Plot Line Details

Line type : Wellbore storage
Slope : 1
Intercept : 1.78215
Coefficient of Determination : Not Used

Line type : Fracture bilinear flow
Slope : 0.25
Intercept : 0.0988643
Coefficient of Determination : Not Used

Line type : Pseudo-radial flow
Slope : 0
Intercept : 0.228261
Coefficient of Determination : Not Used

Number of Intersections = 0

with plugging and abandonment of WDW-2, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective action(s).

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances per Permit Condition 5.B. herein, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding or financial assurance requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein.

2.I. REPORTING:

1. Quarterly Reports: The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD's Environmental Bureau no later than 45 days following the end of each calendar quarter. The quarterly reports shall include the following:

a. Physical, chemical and other relevant characteristics of injection fluids;

b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure with any exceedances identified; and

c. Results of monitoring prescribed under Section 20.6.2.5207B NMAC with any exceedances of Permit Condition 2.A.

d. Piezometer and monitor well information from Permit Condition 2.A.1.

e. Continuous monitoring chart(s) and information from Permit Condition 3.C.

2. Annual Report: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well (WDW-2), Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;

- Summary of Class I non-hazardous waste injection well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Copy of Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- Copy of the quarterly chemical analyses shall be included with data summary and all QA/QC and DQO associated information;
- Copy of any mechanical integrity test (MIT) chart(s), including the type of test, *i.e.*, duration, gauge pressure, etc. unless OCD has approved Monthly Continuous Monitoring Charts for MITs in lieu of individual MITs;
- Copy of Fall-Off Test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports (include any C-141 reports);
- Area of Review (AOR) annual update summary with any new wells penetrating the injection zone within a 1-mile radius from WDW-2;
- Summary with interpretation of MITs, Fall-Off Tests, Bradenhead Tests, *etc.*, with conclusion(s) and recommendation(s);
- Summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- Summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that WDW-2 is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall cease operations until proper

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
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Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 29242

COMMENTS

Operator: WESTERN REFINING SOUTHWEST, INC. 123 W Mills Avenue El Paso, TX 79901	OGRID: 267595
	Action Number: 29242
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

COMMENTS

Created By	Comment	Comment Date
cchavez	DP Annual Report 2020	6/8/2021

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CONDITIONS

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CONDITIONS

Created By	Condition	Condition Date
cchavez	Conditions of Approval for future submittals are: 1) Setup report contents consistent with Permit Annual Report Specifications; 2) Include summaries; 3) Do not reference separate GW-1 Report to address "injection well" specific spill and remedial reporting requirements; and 4) Include any "Conclusions and Recommendations" with each report.	6/8/2021