August 14, 2023

Mr. Carl Chavez, CHMM
New Mexico Oil Conservation Division (Albuquerque Office)
Energy, Minerals and Natural Resources Department
5200 Oakland Avenue, NE
Albuquerque, NM 87113

RE: FFY 2023 3rd Quarter Injection Report for HF Sinclair UIC Wells WDW-1, WDW-2, WDW-3 and WDW-4

Dear Mr. Chavez,

Enclosed, please find the federal fiscal year 2023 (FFY 2023) third quarter (Q3) report for fluids injected into WDW-1, WDW-2, WDW-3 and WDW-4. This report has been prepared in accordance with Class I Non-Hazardous Waste Injection Well Discharge Permit UICI-8 (approved December 2017) and covers data collection efforts from April 1, 2023 through June 30, 2023. Condition 2.I of the permit requires reporting of the following four items:

Item #1: Physical, chemical and other relevant characteristics of injected fluids (per Condition 2.A)

One sampling event occurred during FFY 2023 Q3 on June 20, 2023. Table 1 presents results for this event; the corresponding lab report is given in Attachment A. For parameters identified as toxic contaminants in 40 CFR 261.24(b) (EPA Hazardous waste No. D004 through D043), all results were less than the Toxicity Characteristic Leaching Procedure (TCLP) regulatory level and do not exhibit the characteristic of toxicity. TCLP parameters were analyzed as total fractions; results were less than the corresponding reporting level (RL).

Item #2: Monthly average, maximum and minimum values for injection pressure, flow rate, injected volume, and annular pressure (per Condition 3.C)

A summary of monthly injection pressure, flow rate, injected volume, and annular pressure for FFY 2023 Q3 is given in Table 2. Statistics for injection pressure, flow rate and annular pressure for each month were calculated from continuous monitoring recorded on an hourly basis. For example, a month containing 31 days would have a total of 744 hourly data results, assuming no issues with signal communication. For injection flowrate, hourly readings reported as 0 gpm were deleted from the database (representative of either a signal communication issue or a well down for maintenance, testing, etc.). Totalized volume is not recorded hourly, therefore the monthly injected volume was calculated as the average monthly flow rate multiplied by the number of days in the corresponding month.

HF Sinclair disposed a total of 1,593,628 barrels of fluid into the four wells during FFY 2023 Q3. The total Q3 volume per well was:

- 141,563 barrels into WDW-1: 30-015-27592
- 138,694 barrels into WDW-2: 30-015-20894
- 351,270 barrels into WDW-3: 30-015-26575
- 962,101 barrels into WDW-4: 30-015-44677

In terms of Discharge Permit UICI-8 compliance, the hourly maximum injection pressures (occurring during FFY 2023 Q3) were within limits given in Condition 3.B as follows:

- WDW-1: max = 1,333 psi (limit = 1,585 psi)
- WDW-2: max = 1,400 psi (limit = 1,514 psi)
- WDW-3: max = 1,351 psi (limit = 1,530 psi)
- WDW-4: max = 377 psi (limit = 2,080 psi)

There were no significant losses as measured from the glycol expansion tanks Well Annulus Monitoring System (WAMS). It should be noted that a drip was noticed on the WDW-1 glycol line in April 2023 during routine inspection. Subsequent efforts to stop the drip temporarily caused a larger leak (into containment). However, shortly thereafter, the leak was successfully repaired and the level transmitter was also repaired. As a follow up, glycol was added at WDW-1 on May 17, 2023; levels have since remained steady.

Item #3: Groundwater monitoring well Information from Condition 2.B

Discharge Permit UICI-8 Condition 2.B requires the installation of at least one downgradient monitoring well in the proximity of each injection well (WDW-1, 2, 3, and 4). These wells have not been installed so characterization data do not exist. HF Sinclair submitted the revised "Work Plan for Monitor Well Installation and Sampling" to OCD on March 31, 2023 detailing planned well installation and monitoring procedures. OCD provided comments on this version of the Work Plan on April 6, 2023 and HF Sinclair agreed to the comments on April 18, 2023. Subsequently, OCD provided formal approval of the Work Plan on April 20, 2023. Installation of the monitoring wells at WDW-2, WDW-3, and WDW-4 has been approved by the Bureau of Land Management (BLM) and discussions are on-going for access to WDW-1 with ConocoPhillips. Once access has been granted, mobilization and installation of all four wells will occur. After completion of well installation, future quarterly reports will include monitoring well data for the list of parameters at a sampling frequency stipulated in the Work Plan.

Item #4: Continuous monitoring charts and information from Permit Condition 3.C

Discharge Permit UICI-8 Condition 3.C requires the use of a continuous monitoring device to measure and record hourly values of injection pressure, injection rate, totalized injection volume, and annular pressure. HF Sinclair uses a digital recording device that can log the results of the above parameters at a user defined-frequency (i.e., can be greater or less than a one-hour interval). This recording/logging system is known as the "PI Historian" system and does not use any pen/chart apparatus described in Condition 3.C. The logged hourly data have been processed graphically and are given for each well in Figures 1 to 3 (April 2023), Figures 4 to 6 (May 2023), and Figures 7 to 9 (June 2023). As mentioned in Item #2 above, "gaps" in charted data reflect periods where signal communication issues occurred or when hourly injection flow was reported as 0 gpm. Archived spreadsheets of the FFY 2023 Q3 data used to generate the graphs are available upon request.

Conclusions and Recommendations

From the observations presented in the Items #1, #2, #3, and #4 above, HF Sinclair concludes that the injection of fluids (i.e., treated wastewater) into UIC Wells WDW-1, WDW-2, WDW-3, and WDW-4 during FFY 2023 Q3 was in compliance with the requirements and limitations given in Discharge Permit UICI-8. Specifically, the injection concentrations did not exhibit toxicity as regulated in Discharge Permit Condition 2.A (per reference of 40 CFR 261.24(b)). Further, injection pressures did not exceed limitations given Discharge Permit Condition 3.B for each well.

Other UIC activities during FFY 2023 Q3 included:

1. Review and OCD approval of the Groundwater Monitoring Well Work Plan as described in Item #3 above. Negotiation of access agreements for WDW-1 with ConocoPhillips continued. BLM provided approval for installation of the groundwater monitoring wells at WDW-2, WDW-3, and WDW-4 on May 4, 2023. A revision of the Request for Proposal (RFP) based on the approved Work Plan was provided to bidders

2. On April 18, 2023, OCD transmitted comments on the March 7, 2023 "Renewable Diesel Unit Pilot Sampling Plan (PSP) Summary Report". HFSNR responded to these comments (in particular, three OCD questions) via email on May 4, 2023. Additional email exchanges between OCD and HFSNR occurred on May 24-25, 2023 whereupon the quarterly monitoring procedures for the remainder of FFY 2023 were documented. This FFY 2023 Q3 report follows the outcome of OCD's review of the PSP.

3. Part I MIT and falloff testing for WDW-1 and WDW-2 were conducted during the weeks of May 8 and July 17, respectively.

4. On April 17, 2023, HFSNR submitted comments to OCD on the four draft (February 17, 2023 version) UICI-8 Discharge Permits. On May 1, 2023, OCD responded to these comments and transmitted another draft (April 28, 2023 version). A conference call between OCD and HFSNR occurred on May 30, 2023 to discuss the draft permits. On June 29, 2023, HFSNR submitted comments (including text redlines) on the April 28, 2023 draft permits.

Planned activities for FFY 2023 Q4 include:

1. Working with OCD to finalize the UICI-8 Discharge Permits. HFSNR is awaiting a response from OCD in regard to the comments submitted on June 29, 2023.

2. Obtaining access from ConocoPhillips for the installation of an OCD-approved groundwater monitoring well at WDW-1, selecting a driller for well installation, and, depending on access and driller schedules, installing all four wells.

3. Part I MIT and falloff testing for WDW-3 and WDW-4 are tentatively planned for the weeks of August 28 and September 4, respectively. Part II MIT (temperature log) for WDW-4 is tentatively planned for the week of September 4.

This report is signed and certified in accordance with NMAC Section 20.6.2.5101.G. If there are any questions or comments, please contact Jason Roberts at 575-748-6733.

Respectfully,

Kawika Tupou
Environmental Manager
HF Sinclair

TABLE 1. FFY 2023 Q3 CONCENTRATIONS OF WASTEWATER INJECTED INTO WELLS WDW-1, WDW-2, WDW-3, AND WDW-4
"<" = value less than the laboratory reporting level (RL)

Parameter	Units	UICI-8 Condition 2.A Regulatory Level	6/20/2023 Concentration
Alkalinity, bicarbonate	mg/L	--	642.8
Alkalinity, carbonate	mg/L	--	<2
Alkalinity, total	mg/L	--	642.8
Conductivity	uS/cm	--	7100
Cyanide (Reactivity)	mg/L	--	0.0716
Flashpoint (Ignitability)	deg F	--	>170
Oxidation Reduction Potential	mV	--	114.0
pH (Corrosivity)	su	--	8.08
Specific Gravity	su	--	1.0040
Sulfide (Reactivity)	mg/L	--	<0.05
Total Dissolved Solids	mg/L	--	5480
Total Suspended Solids	mg/L	--	17
Bromide	mg/L	--	<0.5
Chloride	mg/L	--	300
Fluoride	mg/L	--	57
Nitrate	mg/L	--	0.83
Nitrite	mg/L	--	1.4
Phosphorus, total	mg/L	--	<2.5
Sulfate	mg/L	--	3400
Calcium	mg/L	--	410
Magnesium	mg/L	--	130
Potassium	mg/L	--	200
Sodium	mg/L	--	1100
Arsenic	mg/L	TCLP=5	<5
Barium	mg/L	TCLP=100	<100
Cadmium	mg/L	TCLP=1	<1
Chromium	mg/L	TCLP=5	<5
Lead	mg/L	TCLP=5	<5
Mercury	mg/L	TCLP=0.2	<0.02
Selenium	mg/L	TCLP=1	<1
Silver	mg/L	TCLP=5	<5
Chlordane	mg/L	TCLP=0.03	<0.03
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13
2-Butanone	mg/L	TCLP=200	<200
2-Methylphenol	mg/L	TCLP=200	<200
3+4-Methylphenol	mg/L	TCLP=200	<200
Benzene	mg/L	TCLP=0.5	<0.5
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5
Chlorobenzene	mg/L	TCLP=100	<100
Chloroform	mg/L	TCLP=6	<6
Cresols	mg/L	TCLP=200	<200
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5
Hexachloroethane	mg/L	TCLP=3	<3
Nitrobenzene	mg/L	TCLP=2	<2
Pentachlorophenol	mg/L	TCLP=100	<100
Pyridine	mg/L	TCLP=5	<5
Tetrachloroethene	mg/L	TCLP=0.7	<0.7
Trichloroethene	mg/L	TCLP=0.5	<0.5
Vinyl chloride	mg/L	TCLP=0.2	<0.2

TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)

TABLE 2. FFY 2023 THIRD QUARTER MONTHLY INJECTION PRESSURE, FLOW RATE, ANNULAR PRESSURE, AND VOLUME

Based on continuous monitors that record pressure and flow rate data on an hourly basis (per UICI-8 Condition 3.C)

Month	Injection Pressure			Injection Flowrate			Annular Pressure			Totalized Injected Volume	
	Average (psi)	Maximum (psi)	Minimum (psi)	Average (gpm)	Maximum (gpm)	Minimum (gpm)	Average (psi)	Maximum (psi)	Minimum (psi)	Monthly (barrels)	Cumulative (barrels)
30-015-27592 WDW-1											50,942,954
Apr-23	1,037	1,333	342	63	465	6	476	886	19	65,084	51,008,038
May-23	984	1,313	3	35	101	0.1	691	973	3	36,701	51,044,739
Jun-23	1,041	1,276	911	39	98	0.04	596	886	196	39,777	51,084,516
30-015-20894 WDW-2											31,438,916
Apr-23	1,171	1,358	648	50	203	1	770	1,001	509	51,093	31,490,009
May-23	1,224	1,350	1,000	44	71	2	1,144	1,379	655	47,291	31,537,300
Jun-23	1,154	1,400	912	39	71	0.2	994	1,342	482	40,309	31,577,610
30-015-26575 WDW-3											23,390,637
Apr-23	1,191	1,328	942	111	143	77	773	942	575	114,376	23,505,013
May-23	1,214	1,324	1,003	114	142	88	823	1,190	389	120,811	23,625,824
Jun-23	1,169	1,351	915	113	149	65	512	706	170	116,083	23,741,907
30-015-44677 WDW-4											11,595,332
Apr-23	302	369	189	307	372	72	190	338	38	316,064	11,911,396
May-23	324	377	230	311	371	146	381	468	245	330,603	12,241,999
Jun-23	316	371	144	307	409	40	363	462	71	315,434	12,557,433

Figure 1. FFY 2023 Q3 Injection Pressure - April 2023

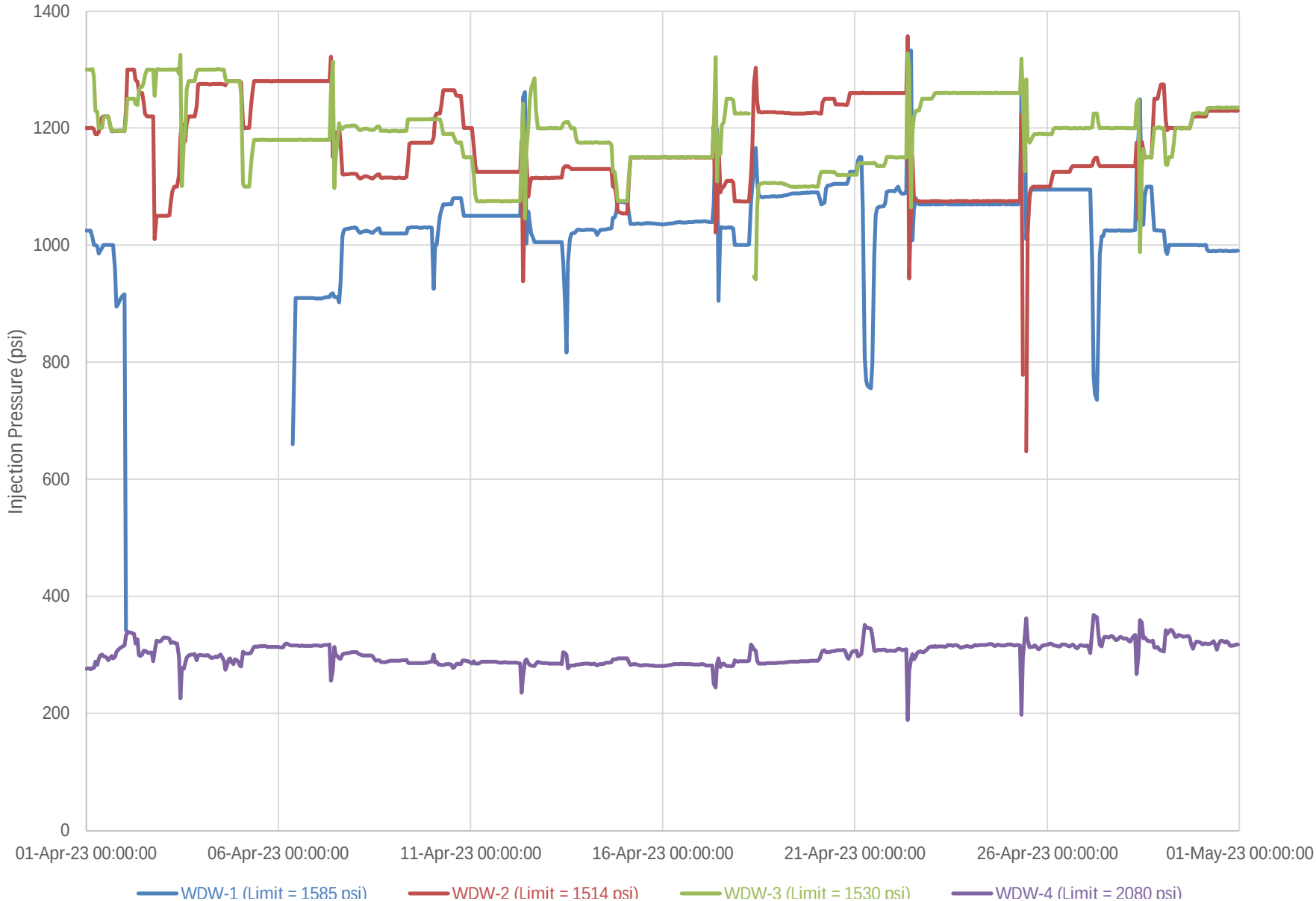


Figure 2. FFY 2023 Q3 Annular Pressure - April 2023

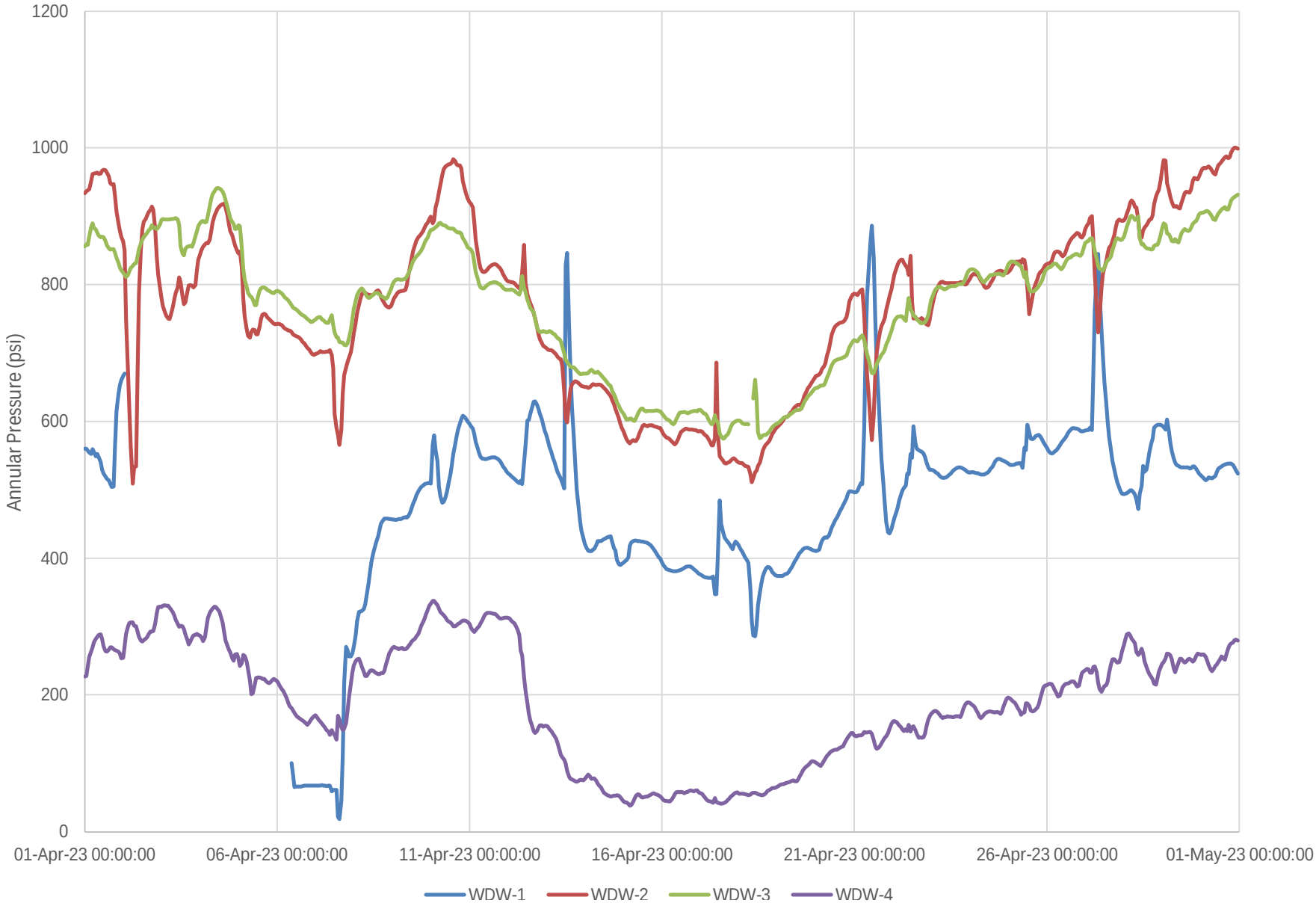


Figure 3. FFY 2023 Q3 Injection Flowrate - April 2023

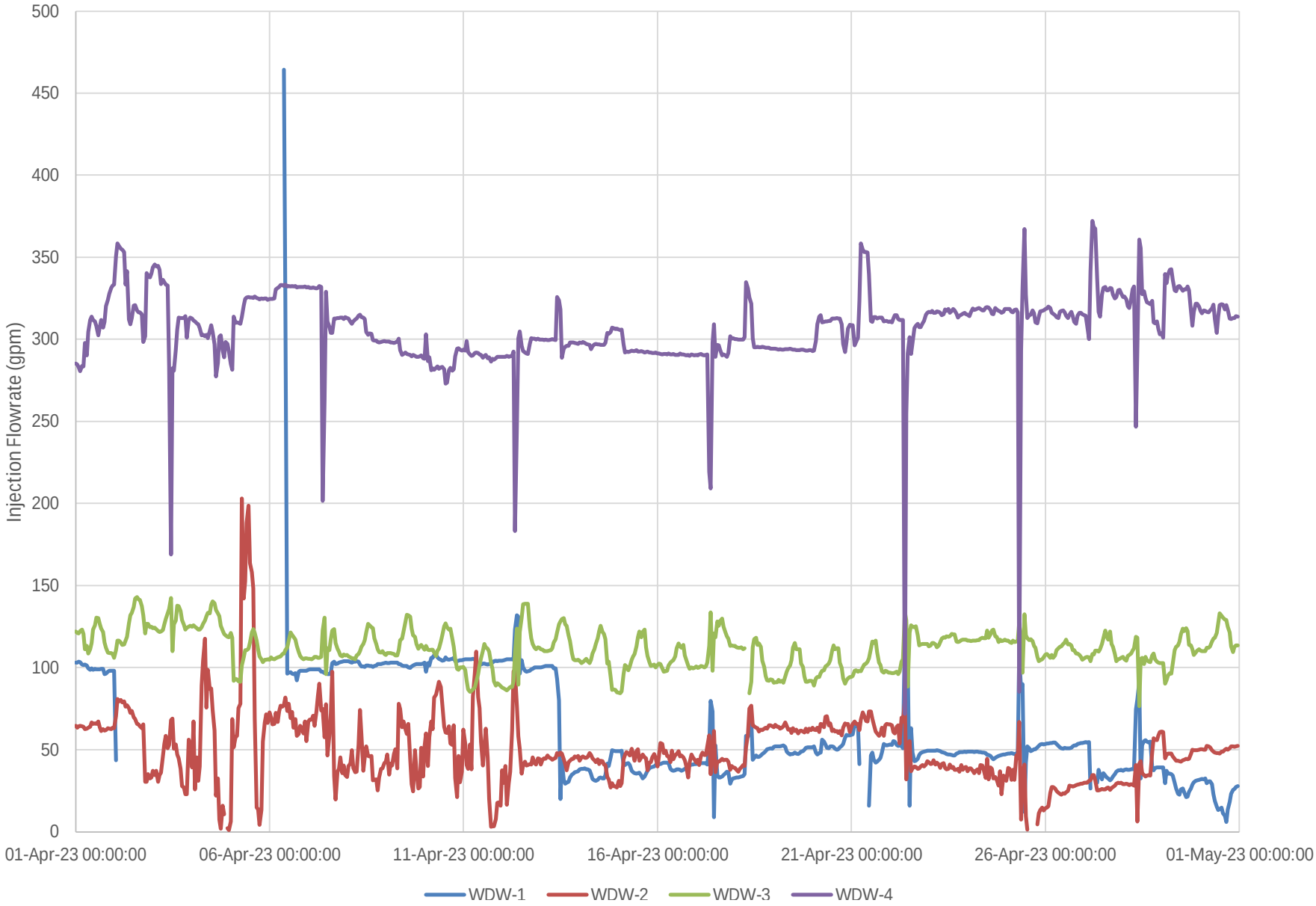
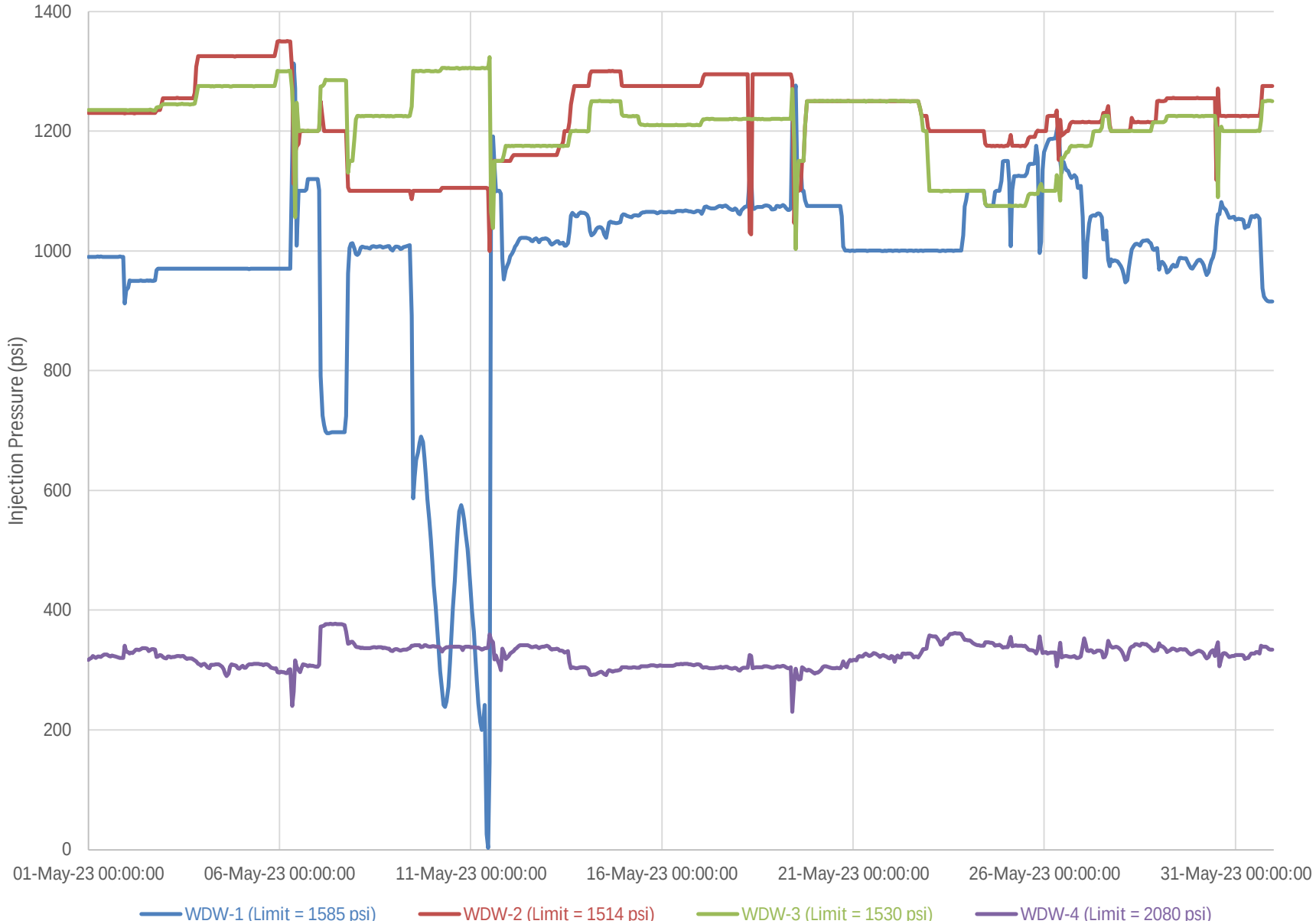


Figure 4. FFY 2023 Q3 Injection Pressure - May 2023



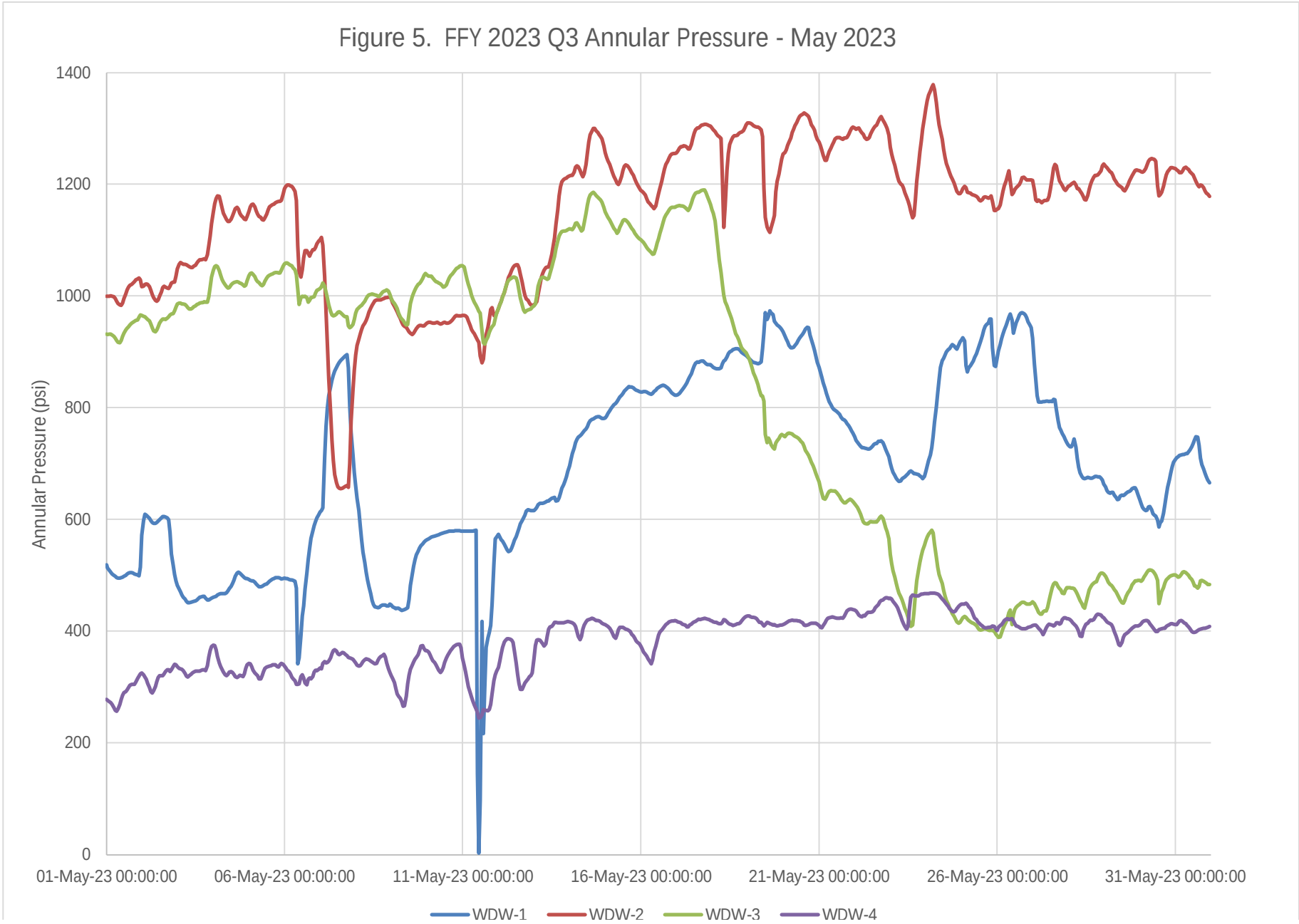


Figure 5. FFY 2023 Q3 Annular Pressure - May 2023
Annular Pressure (psi)
1400
1200
1000
800
600
400
200
0
01-May-23 00:00:00
06-May-23 00:00:00
11-May-23 00:00:00
16-May-23 00:00:00
21-May-23 00:00:00
26-May-23 00:00:00
31-May-23 00:00:00
WDW-1
WDW-2
WDW-3
WDW-4

Figure 6. FFY 2023 Q3 Injection Flowrate - May 2023

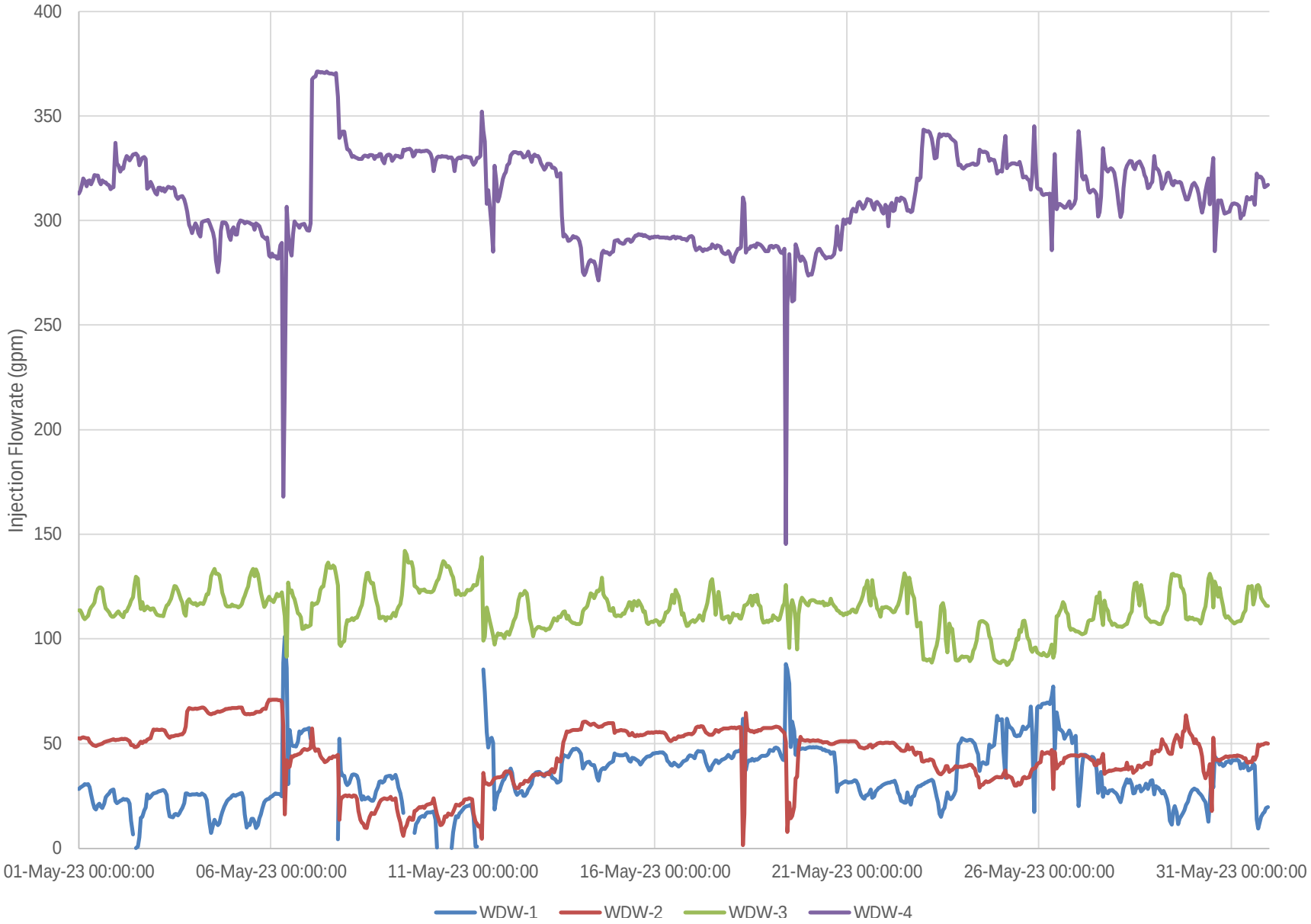


Figure 7. FFY 2023 Q3 Injection Pressure - June 2023

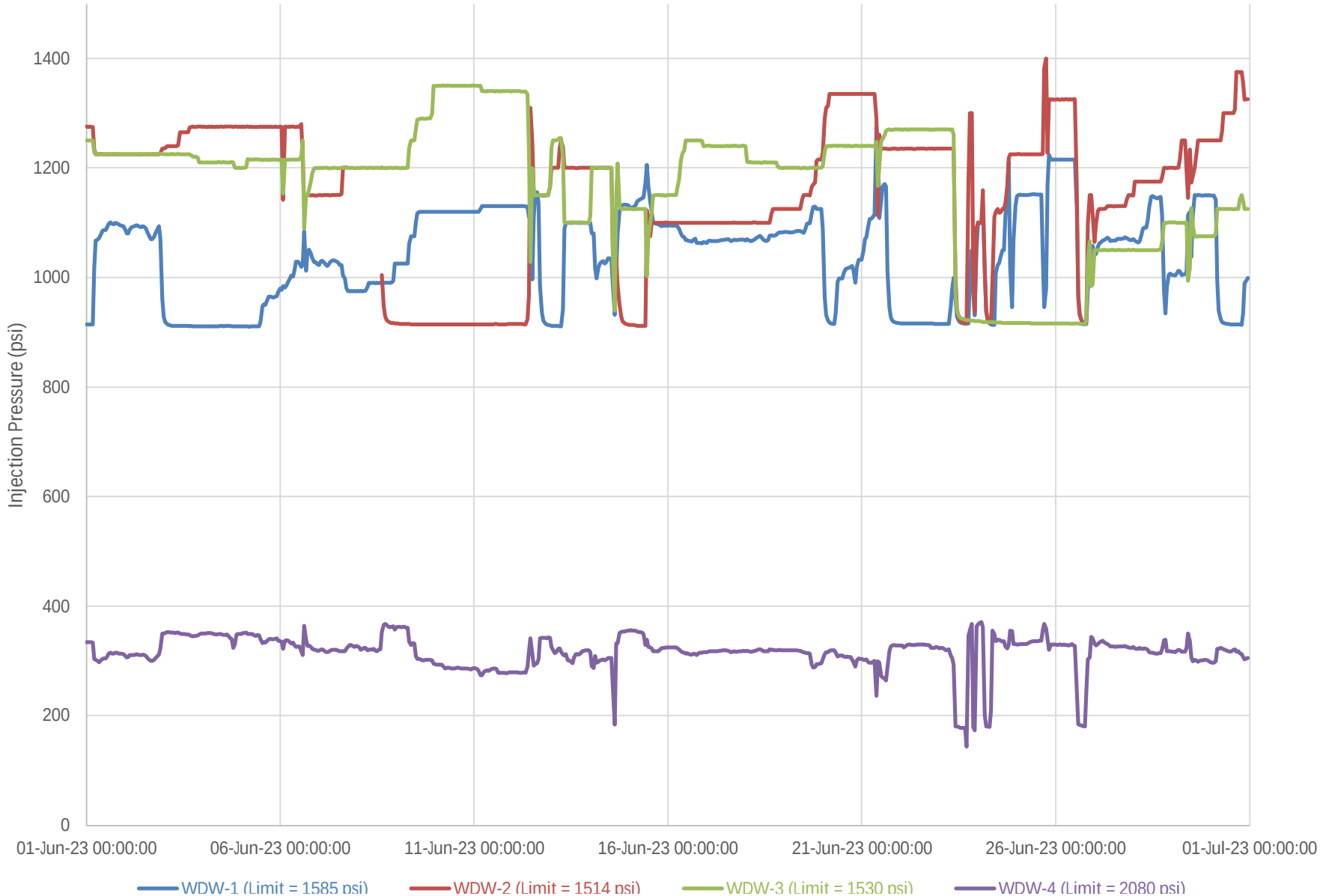


Figure 8. FFY 2023 Q3 Annular Pressure - June 2023

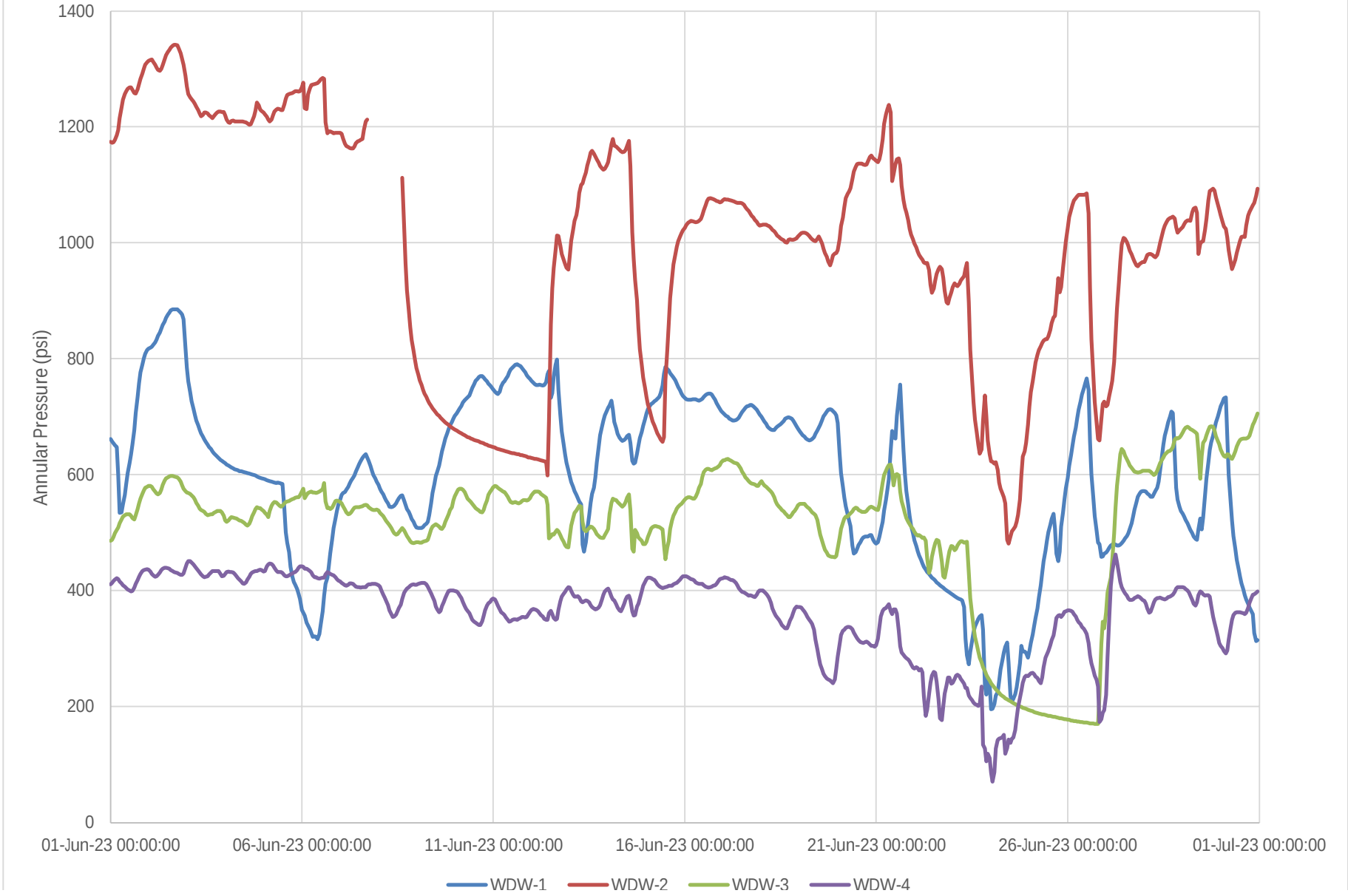
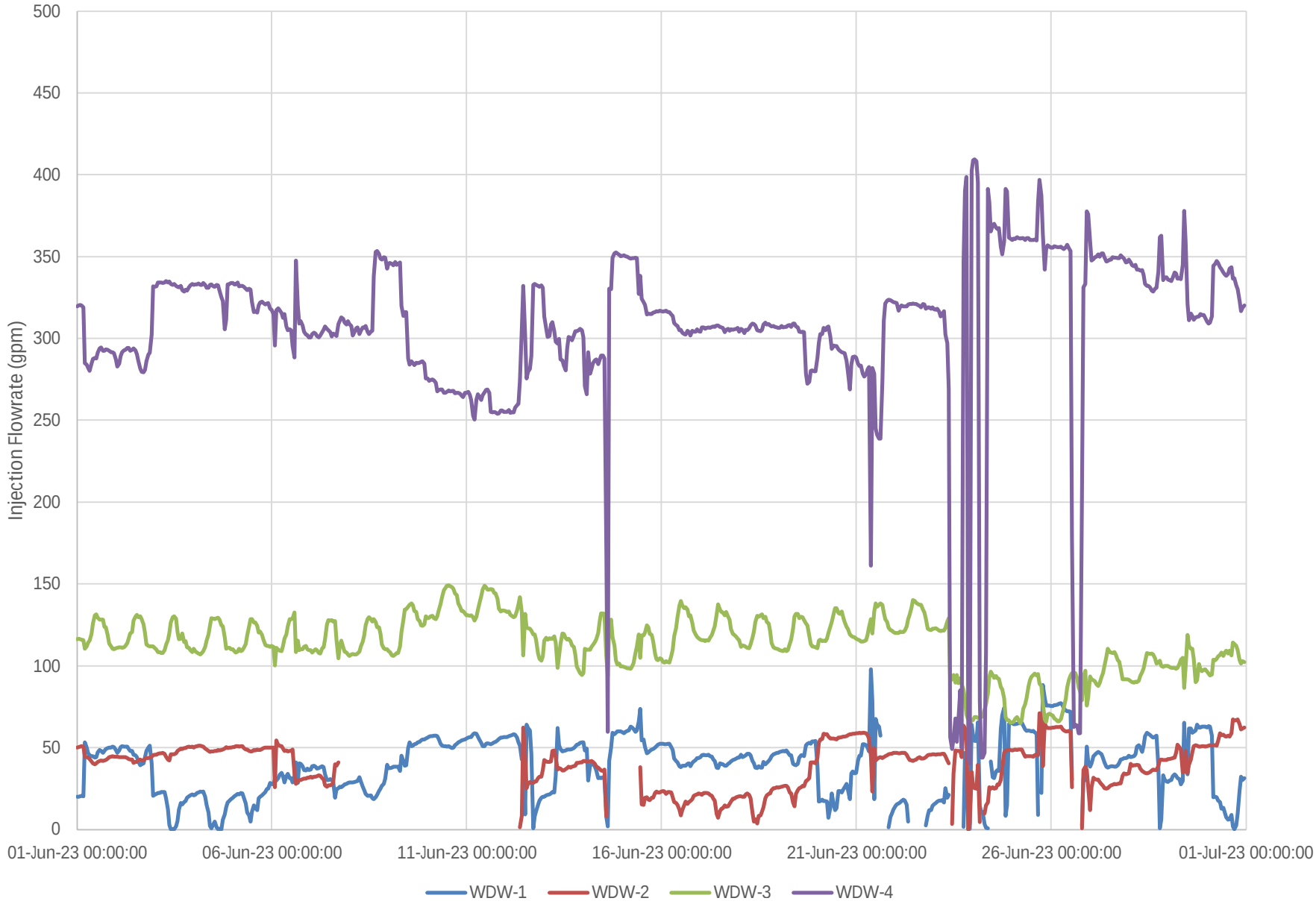


Figure 9. FFY 2023 Q3 Injection Flowrate - June 2023



ATTACHMENT A

Analytical Lab Report(s)

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

August 01, 2023

Jason Roberts
HF Sinclair Asphalt Navajo Refining LLC
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX:

RE: Quarterly WDW 1 2 3 4 Inj Well OrderNo.: 2306A85

Dear Jason Roberts:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/21/2023 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 17, 2023.

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.

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

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

Case Narrative

WO#: **2306A85**
Date: **8/1/2023**

CLIENT: HF Sinclair Asphalt Navajo Refining LLC
Project: Quarterly WDW 1 2 3 4 Inj Well

Analytical Notes:
TCLP parameters were requested for the sample in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2306A85**
Date Reported: **8/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HF Sinclair Asphalt Navajo Refining LL
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 6/20/2023 11:15:00 AM
Lab ID: 2306A85-001 **Matrix:** AQUEOUS **Received Date:** 6/21/2023 8:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **SB**	
Chlordane	ND	0.0010	0.030		mg/L	2	6/29/2023 4:13:10 PM	75850
Surr: Decachlorobiphenyl	69.4	0	40.9-111		%Rec	2	6/29/2023 4:13:10 PM	75850
Surr: Tetrachloro-m-xylene	80.1	0	15-107		%Rec	2	6/29/2023 4:13:10 PM	75850
EPA METHOD 300.0: ANIONS							Analyst: **SNS**	
Fluoride	57	4.6	10	*	mg/L	100	7/5/2023 12:07:41 PM	R97963
Chloride	300	5.0	10	*	mg/L	20	6/21/2023 11:30:23 PM	A97631
Nitrogen, Nitrite (As N)	1.4	0.057	0.50	*	mg/L	5	6/21/2023 11:17:32 PM	A97631
Bromide	ND	0.25	0.50		mg/L	5	6/21/2023 11:17:32 PM	A97631
Nitrogen, Nitrate (As N)	0.83	0.10	0.50		mg/L	5	6/21/2023 11:17:32 PM	A97631
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	6/21/2023 11:17:32 PM	A97631
Sulfate	3400	25	50	*	mg/L	100	7/5/2023 12:07:41 PM	R97963
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.020	0.0025	5.0	J	mg/L	5	7/13/2023 11:42:24 AM	75913
Lead	ND	0.0030	5.0		mg/L	5	7/13/2023 11:42:24 AM	75913
Selenium	0.051	0.0040	1.0	J	mg/L	5	7/13/2023 11:42:24 AM	75913
EPA METHOD 7470A: MERCURY							Analyst: **tem**	
Mercury	0.00012	0.000081	0.020	J	mg/L	1	6/27/2023 1:37:08 PM	75826
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **VP**	
Calcium	410	0.45	5.0		mg/L	5	6/27/2023 1:40:30 PM	A97748
Magnesium	130	0.49	5.0		mg/L	5	6/27/2023 1:40:30 PM	A97748
Potassium	200	0.67	5.0		mg/L	5	6/27/2023 1:40:30 PM	A97748
Sodium	1100	5.9	20		mg/L	20	6/29/2023 2:49:33 PM	A97824
EPA 6010B: TCLP METALS							Analyst: **VP**	
Barium	0.040	0.00044	100	J	mg/L	1	7/3/2023 9:35:56 AM	75913
Cadmium	ND	0.0012	1.0		mg/L	1	7/3/2023 9:35:56 AM	75913
Chromium	ND	0.0012	5.0		mg/L	1	7/3/2023 9:35:56 AM	75913
Silver	0.0082	0.0013	5.0	J	mg/L	1	7/3/2023 9:35:56 AM	75913
EPA METHOD 8270C TCLP							Analyst: **SB**	
2-Methylphenol	ND	0.0050	200		mg/L	1	6/29/2023 2:59:35 PM	75786
3+4-Methylphenol	ND	0.0051	200		mg/L	1	6/29/2023 2:59:35 PM	75786
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	6/29/2023 2:59:35 PM	75786
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	6/29/2023 2:59:35 PM	75786
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	6/29/2023 2:59:35 PM	75786
Hexachloroethane	ND	0.014	3.0		mg/L	1	6/29/2023 2:59:35 PM	75786
Nitrobenzene	ND	0.0049	2.0		mg/L	1	6/29/2023 2:59:35 PM	75786
Pentachlorophenol	ND	0.027	100		mg/L	1	6/29/2023 2:59:35 PM	75786

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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2306A85**
Date Reported: **8/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HF Sinclair Asphalt Navajo Refining LL
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 6/20/2023 11:15:00 AM
Lab ID: 2306A85-001
Matrix: AQUEOUS
Received Date: 6/21/2023 8:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **SB**	
Pyridine	ND	0.014	5.0		mg/L	1	6/29/2023 2:59:35 PM	75786
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	6/29/2023 2:59:35 PM	75786
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	6/29/2023 2:59:35 PM	75786
Cresols, Total	ND	0.027	200		mg/L	1	6/29/2023 2:59:35 PM	75786
Surr: 2-Fluorophenol	70.8	0	20.8-71.9		%Rec	1	6/29/2023 2:59:35 PM	75786
Surr: Phenol-d5	51.9	0	16.2-54.5		%Rec	1	6/29/2023 2:59:35 PM	75786
Surr: 2,4,6-Tribromophenol	81.1	0	18.8-117		%Rec	1	6/29/2023 2:59:35 PM	75786
Surr: Nitrobenzene-d5	75.1	0	33-85.9		%Rec	1	6/29/2023 2:59:35 PM	75786
Surr: 2-Fluorobiphenyl	61.9	0	26.3-79.6		%Rec	1	6/29/2023 2:59:35 PM	75786
Surr: 4-Terphenyl-d14	119	0	53.9-124		%Rec	1	6/29/2023 2:59:35 PM	75786
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.50	0.50		mg/L	200	6/28/2023 10:50:02 PM	T97800
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	6/28/2023 10:50:02 PM	T97800
2-Butanone	ND	200	200		mg/L	200	6/28/2023 10:50:02 PM	T97800
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	6/28/2023 10:50:02 PM	T97800
Chloroform	ND	6.0	6.0		mg/L	200	6/28/2023 10:50:02 PM	T97800
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	6/28/2023 10:50:02 PM	T97800
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	6/28/2023 10:50:02 PM	T97800
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	6/28/2023 10:50:02 PM	T97800
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	6/28/2023 10:50:02 PM	T97800
Vinyl chloride	ND	0.20	0.20		mg/L	200	6/28/2023 10:50:02 PM	T97800
Chlorobenzene	ND	100	100		mg/L	200	6/28/2023 10:50:02 PM	T97800
Surr: 1,2-Dichloroethane-d4	124	0	70-130		%Rec	200	6/28/2023 10:50:02 PM	T97800
Surr: 4-Bromofluorobenzene	86.2	0	70-130		%Rec	200	6/28/2023 10:50:02 PM	T97800
Surr: Dibromofluoromethane	120	0	70-130		%Rec	200	6/28/2023 10:50:02 PM	T97800
Surr: Toluene-d8	97.2	0	70-130		%Rec	200	6/28/2023 10:50:02 PM	T97800
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **RBC**	
Conductivity	7100	10	10		µmhos/c	1	6/23/2023 2:30:22 PM	R97691
SM4500-H+B / 9040C: PH							Analyst: **RBC**	
pH	8.05			H	pH units	1	6/26/2023 1:26:26 PM	R97724
SM2320B: ALKALINITY							Analyst: **RBC**	
Bicarbonate (As CaCO3)	642.8	20.00	20.00		mg/L Ca	1	6/23/2023 2:30:22 PM	R97691
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	6/23/2023 2:30:22 PM	R97691
Total Alkalinity (as CaCO3)	642.8	20.00	20.00		mg/L Ca	1	6/23/2023 2:30:22 PM	R97691
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	1.004	0	0			1	6/26/2023 12:03:00 PM	R97708

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	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A85**
Date Reported: **8/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HF Sinclair Asphalt Navajo Refining LL
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 6/20/2023 11:15:00 AM
Lab ID: 2306A85-001 **Matrix:** AQUEOUS **Received Date:** 6/21/2023 8:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JAG**	
Total Dissolved Solids	5480	250	500	*D	mg/L	1	6/27/2023 2:50:00 PM	75831
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	17	4.0	4.0		mg/L	1	6/26/2023 1:18:00 PM	75803

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	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A85**
Date Reported: **8/1/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HF Sinclair Asphalt Navajo Refining LL **Client Sample ID:** Trip Blank
Project: Quarterly WDW 1 2 3 4 Inj Well **Collection Date:**
Lab ID: 2306A85-002 **Matrix:** TRIP BLANK **Received Date:** 6/21/2023 8:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.50	0.50		mg/L	1	6/28/2023 11:17:27 PM	T97800
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	1	6/28/2023 11:17:27 PM	T97800
2-Butanone	ND	200	200		mg/L	1	6/28/2023 11:17:27 PM	T97800
Carbon Tetrachloride	ND	0.50	0.50		mg/L	1	6/28/2023 11:17:27 PM	T97800
Chloroform	ND	6.0	6.0		mg/L	1	6/28/2023 11:17:27 PM	T97800
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	1	6/28/2023 11:17:27 PM	T97800
1,1-Dichloroethene	ND	0.70	0.70		mg/L	1	6/28/2023 11:17:27 PM	T97800
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	1	6/28/2023 11:17:27 PM	T97800
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	1	6/28/2023 11:17:27 PM	T97800
Vinyl chloride	ND	0.20	0.20		mg/L	1	6/28/2023 11:17:27 PM	T97800
Chlorobenzene	ND	100	100		mg/L	1	6/28/2023 11:17:27 PM	T97800
Surr: 1,2-Dichloroethane-d4	120	0	70-130		%Rec	1	6/28/2023 11:17:27 PM	T97800
Surr: 4-Bromofluorobenzene	85.5	0	70-130		%Rec	1	6/28/2023 11:17:27 PM	T97800
Surr: Dibromofluoromethane	122	0	70-130		%Rec	1	6/28/2023 11:17:27 PM	T97800
Surr: Toluene-d8	95.3	0	70-130		%Rec	1	6/28/2023 11:17:27 PM	T97800

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	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

Pace Analytical®

ANALYTICAL REPORT

June 28, 2023

Hall Environmental Analysis Laboratory

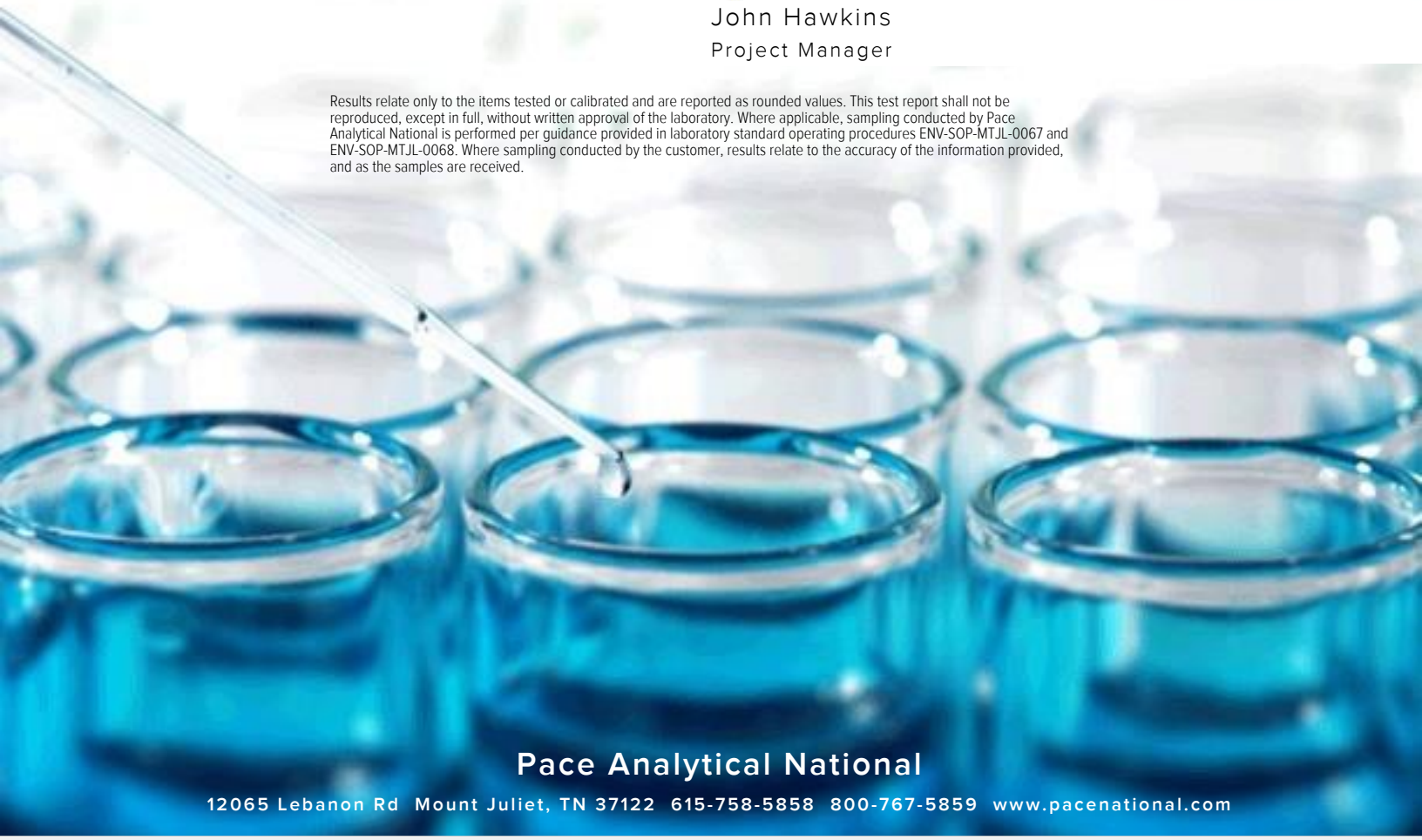
Sample Delivery Group:	L1628671
Samples Received:	06/22/2023
Project Number:	
Description:	

Report To: Andy Freeman
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

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SAMPLE SUMMARY

2306A85-001F WDW-1,2,3 & 4 EFFLUENT L1628671-01 GW

Collected by	Collected date/time	Received date/time
	06/20/23 11:15	06/22/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG2083531	1	06/24/23 15:30	06/24/23 15:30	NTG	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG2083453	1	06/24/23 08:31	06/25/23 19:01	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG2086182	1	06/28/23 15:40	06/28/23 15:40	RTW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG2082740	1	06/23/23 12:26	06/23/23 12:26	MCC	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG2084733	1	06/27/23 02:18	06/27/23 02:18	CRB	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 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	114	T8	1	06/24/2023 15:30	WG2083531

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0716		0.00500	1	06/25/2023 19:01	WG2083453

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND	Q	0.0500	1	06/28/2023 15:40	WG2086182

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	8.08	T8	1	06/23/2023 12:26	WG2082740

Sample Narrative:

L1628671-01 WG2082740: 8.08 at 20.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	06/27/2023 02:18	WG2084733

L1627784-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1627784-01 06/24/23 15:30 • (DUP) R3942016-3 06/24/23 15:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	145	143	1	1.90		20

L1628671-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1628671-01 06/24/23 15:30 • (DUP) R3942016-4 06/24/23 15:30

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	114	112	1	1.40		20

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

(LCS) R3942016-1 06/24/23 15:30 • (LCSD) R3942016-2 06/24/23 15:30

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	98.0	92.6	92.2	94.5	94.1	90.0-110			0.400	20

Method Blank (MB)

(MB) R3941052-1 06/25/23 18:36

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

L1628053-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1628053-03 06/25/23 18:46 • (DUP) R3941052-3 06/25/23 18:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0111	0.0106	1	4.61		20

L1628680-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1628680-01 06/25/23 19:28 • (DUP) R3941052-4 06/25/23 19:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0252	0.0273	1	8.00		20

Laboratory Control Sample (LCS)

(LCS) R3941052-2 06/25/23 18:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0988	98.8	87.1-120	

L1628680-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1628680-02 06/25/23 19:05 • (MS) R3941052-6 06/25/23 19:29 • (MSD) R3941052-5 06/25/23 19:11

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	0.0298	0.127	0.126	97.2	96.2	1	90.0-110			0.791	20

Method Blank (MB)

(MB) R3942442-1 06/28/23 15:40

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) R3942442-2 06/28/23 15:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.483	96.6	85.0-115	

L1628458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1628458-01 06/23/23 12:26 • (DUP) R3940688-2 06/23/23 12:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.92	7.86	1	0.760		1

Sample Narrative:

OS: 7.92 at 20.1C

DUP: 7.86 at 19.9C

L1628696-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1628696-01 06/23/23 12:26 • (DUP) R3940688-3 06/23/23 12:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.77	7.70	1	0.905		1

Sample Narrative:

OS: 7.77 at 20.5C

DUP: 7.7 at 20.6C

Laboratory Control Sample (LCS)

(LCS) R3940688-1 06/23/23 12:26

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

Sample Narrative:

LCS: 10.04 at 19.9C

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

L1629068-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1629068-01 06/27/23 02:18 • (DUP) R3941509-3 06/27/23 02:18

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

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

(LCS) R3941509-1 06/27/23 02:18 • (LCSD) R3941509-2 06/27/23 02:18

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	129	104	102	96.0-104			1.54	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.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

B152

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	2306A85-001F	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	6/20/2023 11:15:00 AM	3	RCI, ORP

L16281671

-01 >12

6426 8360 4289

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	NSA6 5.6 adj= 5.6	
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

PH-10BDH4321 TRC-2513312
CR6-20221V

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: CMC	Date: 6/21/2023	Time: 9:49 AM	Received By: 7 10	Date: 62223	Time: 9:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

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 _____ ℃ Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A97631**	RunNo: **97631**
Prep Date:	Analysis Date: **6/21/2023**	SeqNo: **3550196** Units: **mg/L**

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

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A97631**	RunNo: **97631**
Prep Date:	Analysis Date: **6/21/2023**	SeqNo: **3550197** 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			
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	93.5	90	110			
Bromide	2.4	0.10	2.500	0	96.4	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P)	4.6	0.50	5.000	0	91.9	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R97963**	RunNo: **97963**
Prep Date:	Analysis Date: **7/5/2023**	SeqNo: **3564075** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R97963**	RunNo: **97963**
Prep Date:	Analysis Date: **7/5/2023**	SeqNo: **3564076** 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			
Sulfate	9.8	0.50	10.00	0	98.4	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R97963**	RunNo: **97963**
Prep Date:	Analysis Date: **7/5/2023**	SeqNo: **3564102** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R97963**	RunNo: **97963**
Prep Date:	Analysis Date: **7/5/2023**	SeqNo: **3564103** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	105	90	110			
Sulfate	9.8	0.50	10.00	0	97.7	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75913**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **75913**	RunNo: **97975**
Prep Date: **6/29/2023**	Analysis Date: **7/6/2023**	SeqNo: **3564688** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Sample ID: **MSLCSLL-75913**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **75913**	RunNo: **97975**
Prep Date: **6/29/2023**	Analysis Date: **7/6/2023**	SeqNo: **3564689** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0011	0.0010	0.001000	0	112	70	130			

Sample ID: **MSLCS-75913**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **75913**	RunNo: **97975**
Prep Date: **6/29/2023**	Analysis Date: **7/6/2023**	SeqNo: **3564690** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.047	0.0010	0.05000	0	94.1	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75850** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **PBW** Batch ID: **75850** RunNo: **97850**

Prep Date: **6/27/2023** Analysis Date: **6/29/2023** SeqNo: **3559425** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0020		0.002500		79.4	40.9	111			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		43.2	15	107			

Sample ID: **LCS-75850** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSW** Batch ID: **75850** RunNo: **97850**

Prep Date: **6/27/2023** Analysis Date: **6/29/2023** SeqNo: **3559426** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0020		0.002500		80.3	40.9	111			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		45.5	15	107			

Sample ID: **LCSD-75850** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSS02** Batch ID: **75850** RunNo: **97850**

Prep Date: **6/27/2023** Analysis Date: **6/29/2023** SeqNo: **3559427** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		69.7	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0011		0.002500		42.9	15	107	0	0	

Sample ID: **LCSD-75850** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSS02** Batch ID: **75850** RunNo: **97850**

Prep Date: **6/27/2023** Analysis Date: **6/29/2023** SeqNo: **3559428** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0019		0.002500		75.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		47.9	15	107	0	0	

Sample ID: **LCS-75850** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSW** Batch ID: **75850** RunNo: **97850**

Prep Date: **6/27/2023** Analysis Date: **6/29/2023** SeqNo: **3559429** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0020		0.002500		78.1	40.9	111			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		49.4	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75850**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **75850**	RunNo: **97850**
Prep Date: **6/27/2023**	Analysis Date: **6/29/2023**	SeqNo: **3559430** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Surr: Decachlorobiphenyl	0.0020		0.002500		79.2	40.9	111			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		48.6	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**

Client ID: **LCSW** Batch ID: **T97800** RunNo: **97800**

Prep Date: Analysis Date: **6/28/2023** SeqNo: **3557408** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.025	0.010	0.02000	0	123	70	130			
1,1-Dichloroethene	0.021	0.010	0.02000	0	106	70	130			
Trichloroethene (TCE)	0.023	0.010	0.02000	0	115	70	130			
Chlorobenzene	0.019	0.010	0.02000	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.012		0.01000		118	70	130			
Surr: 4-Bromofluorobenzene	0.0086		0.01000		86.5	70	130			
Surr: Dibromofluoromethane	0.012		0.01000		118	70	130			
Surr: Toluene-d8	0.0094		0.01000		93.9	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**

Client ID: **PBW** Batch ID: **T97800** RunNo: **97800**

Prep Date: Analysis Date: **6/28/2023** SeqNo: **3557411** 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	0.011		0.01000		112	70	130			
Surr: 4-Bromofluorobenzene	0.0085		0.01000		85.4	70	130			
Surr: Dibromofluoromethane	0.011		0.01000		109	70	130			
Surr: Toluene-d8	0.0095		0.01000		94.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **mb-75786** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**

Client ID: **PBW** Batch ID: **75786** RunNo: **97813**

Prep Date: **6/22/2023** Analysis Date: **6/29/2023** SeqNo: **3559002** 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	0.14		0.2000		69.0	20.8	71.9			
Surr: Phenol-d5	0.10		0.2000		49.8	16.2	54.5			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.1	18.8	117			
Surr: Nitrobenzene-d5	0.078		0.1000		77.8	33	85.9			
Surr: 2-Fluorobiphenyl	0.065		0.1000		64.9	26.3	79.6			
Surr: 4-Terphenyl-d14	0.10		0.1000		101	53.9	124			

Sample ID: **lcs-75786** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**

Client ID: **LCSW** Batch ID: **75786** RunNo: **97813**

Prep Date: **6/22/2023** Analysis Date: **6/29/2023** SeqNo: **3559003** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.078	0.00010	0.1000	0	77.8	26.8	92.9			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.8	23.7	100			
2,4-Dinitrotoluene	0.060	0.00010	0.1000	0	60.1	22.3	71.2			
Hexachlorobenzene	0.075	0.00010	0.1000	0	75.4	26.1	91.6			
Hexachlorobutadiene	0.043	0.00010	0.1000	0	43.5	15	74.2			
Hexachloroethane	0.047	0.00010	0.1000	0	47.3	15	85.4			
Nitrobenzene	0.078	0.00010	0.1000	0	77.6	26.1	89.6			
Pentachlorophenol	0.064	0.00010	0.1000	0	64.2	21.7	89.4			
Pyridine	0.055	0.00010	0.1000	0	55.3	15	68.4			
2,4,5-Trichlorophenol	0.077	0.00010	0.1000	0	76.5	27	97.9			
2,4,6-Trichlorophenol	0.080	0.00010	0.1000	0	80.3	27.9	92.6			
Cresols, Total	0.24	0.00010	0.3000	0	79.1	24.8	97.7			
Surr: 2-Fluorophenol	0.13		0.2000		66.1	20.8	71.9			
Surr: Phenol-d5	0.099		0.2000		49.4	16.2	54.5			
Surr: 2,4,6-Tribromophenol	0.16		0.2000		77.9	18.8	117			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **lcs-75786**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **75786**	RunNo: **97813**
Prep Date: **6/22/2023**	Analysis Date: **6/29/2023**	SeqNo: **3559003** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.081		0.1000		80.5	33	85.9			
Surr: 2-Fluorobiphenyl	0.065		0.1000		65.5	26.3	79.6			
Surr: 4-Terphenyl-d14	0.11		0.1000		107	53.9	124			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.3uS eC**	SampType: **LCS**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R97691**	RunNo: **97691**
Prep Date:	Analysis Date: **6/23/2023**	SeqNo: **3552874** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.30	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
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 standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75826**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **75826**	RunNo: **97759**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555003** Units: **mg/L**

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

Sample ID: **LCSLL-75826**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **75826**	RunNo: **97759**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555006** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.00020	0.0001500	0	130	50	150			J

Sample ID: **LCS-75826**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **75826**	RunNo: **97759**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555007** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.7	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A97748**	RunNo: **97748**
Prep Date:	Analysis Date: **6/27/2023**	SeqNo: **3554701** 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								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A97748**	RunNo: **97748**
Prep Date:	Analysis Date: **6/27/2023**	SeqNo: **3554707** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	53	1.0	50.00	0	105	80	120			
Magnesium	52	1.0	50.00	0	104	80	120			
Potassium	51	1.0	50.00	0	102	80	120			

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A97824**	RunNo: **97824**
Prep Date:	Analysis Date: **6/29/2023**	SeqNo: **3558190** Units: **mg/L**

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

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A97824**	RunNo: **97824**
Prep Date:	Analysis Date: **6/29/2023**	SeqNo: **3558192** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	55	1.0	50.00	0	110	80	120			

Sample ID: **LCSD-A**	SampType: **LCSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSS02**	Batch ID: **A97824**	RunNo: **97824**
Prep Date:	Analysis Date: **6/29/2023**	SeqNo: **3558197** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	57	1.0	50.00	0	114	80	120	3.93	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75913**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **75913**	RunNo: **97884**
Prep Date: **6/29/2023**	Analysis Date: **7/3/2023**	SeqNo: **3561023** 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								
Silver	ND	0.0050								

Sample ID: **LCS-75913**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **75913**	RunNo: **97884**
Prep Date: **6/29/2023**	Analysis Date: **7/3/2023**	SeqNo: **3561025** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	101	80	120			
Cadmium	0.50	0.0020	0.5000	0	101	80	120			
Chromium	0.50	0.0060	0.5000	0	100	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R97691**	RunNo: **97691**
Prep Date:	Analysis Date: **6/23/2023**	SeqNo: **3552847** 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: **R97691**	RunNo: **97691**
Prep Date:	Analysis Date: **6/23/2023**	SeqNo: **3552848** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79.28	20.00	80.00	0	99.1	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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75831**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **75831**	RunNo: **97752**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3554775** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	50.0								

Sample ID: **LCS-75831**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **75831**	RunNo: **97752**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3554776** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	50.0	1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A85**

01-Aug-23

Client: HF Sinclair Asphalt Navajo Refining LLC

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-75803**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **75803**	RunNo: **97709**							
Prep Date: **6/22/2023**	Analysis Date: **6/26/2023**	SeqNo: **3553476**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-75803**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **75803**	RunNo: **97709**							
Prep Date: **6/22/2023**	Analysis Date: **6/26/2023**	SeqNo: **3553477**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	98	4.0	91.90	0	107	83.89	119.7			

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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
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: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HF Sinclair Asphalt Navajo Refining LLC
Work Order Number: 2306A85
RcptNo: 1

Received By: Joseph Alderette 6/21/2023 8:30:00 AM
Completed By: Cheyenne Cason 6/21/2023 9:43:25 AM
Reviewed By: 6/21/23

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 ☑

# of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)
Adjusted? NO
Checked by: YU 6/21/23

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 ☐

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	0.2	Good	Not Present	Morty		

Chain-of-Custody Record

Client: HF Sinclair Navajo Refining

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-6733

email or Fax#: Jason.Roberts@HFSinclair.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standard ☐ Rush_____

Project Name:

Quarterly WDW-1, 2, 3 & 4 Inj Well

Project #: PO #251841

Project Manager:

Jason Roberts

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

# of Coolers: 1 (marty)

Cooler Temp(Including CF): 0.3 -0.1 = 0.2°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. 2306A85	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals TCLP	8081 TCLP Chlordane (ONLY)
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	x					
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			x				
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				x			
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					x		
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						x	
6/20/2023	11:15	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							x
			Trip Blank			002						

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
6.20.23	3:15	Brady Hubbard		Fedex	6.21.23	8:30
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks: Dissolved Cations by EPA Method 200.7.
** 1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic

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.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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 251739

COMMENTS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 251739
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

COMMENTS

Created By	Comment	Comment Date
cchavez	Quarterly Report FY23 Q3 Submittal	8/31/2023

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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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

CONDITIONS

Action 251739

CONDITIONS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 251739
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
cchavez	None	8/31/2023