



2019 Groundwater and Surface Water
Monitoring

PACCAR Renton Site **Renton, Washington**

Prepared for
PACCAR

February 5, 2020
1639-75



HARTCROWSER

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2019 Groundwater and Surface Water Monitoring

PACCAR Renton Site

Renton, Washington

This report provides the 2019 groundwater and surface water monitoring results for the PACCAR Renton National Priorities List (NPL) Site. This monitoring report contains the elements described in the Confirmational Monitoring and Inspection Plan (CMIP; DOF 1997) and the Periodic Review (Ecology 2014) and presents the results of the groundwater, surface water, and structural fill cover monitoring conducted at the site in June 2019.

This report is divided into three sections:

- **Section 1.** Groundwater Monitoring
- **Section 2.** Surface Water Monitoring
- **Section 3.** PACCAR Structural Fill Cover Monitoring Field Inspection and Observation Form

The information in these sections is supplemented by tables and figures presented at the end of the respective sections. In addition, Appendices A and B presents the chemical data quality review for groundwater and surface water, respectively. Appendix C provides the laboratory report, and Appendix D presents groundwater quality summary charts.

SECTION 1

Groundwater Monitoring

SECTION 1

GROUNDWATER MONITORING

Introduction

This section presents the results of the groundwater monitoring event conducted in June 2019. Specifically, it includes a tabulation of water level and groundwater quality data, groundwater flow maps, and an assessment of results relative to cleanup levels (CULs) for developing sampling and analysis recommendations consistent with the CMIP and Periodic Review (Ecology 2014).

Groundwater Monitoring

Groundwater monitoring was completed on June 20 and 21, 2019, in accordance with the planned elements described by the Periodic Review (Ecology 2014). The groundwater elevation and chemical test results obtained from this event are compiled in this section.

The CMIP provides compound-specific CULs and hot spot action levels (HSALs) for comparison with the site data. The CULs represent the groundwater remediation goals at the site, while HSALs for groundwater are based on drinking water standards. Planned actions described in this report are based on an interpretation of the updated data relative to the decision-making processes outlined in the CMIP.

Data presented in this report are organized as follows:

- **Monitoring Summary.** An overview of the data collected from each monitoring well is given in Table 1-1. This table lists the wells sampled and identifies the chemicals analyzed in each well.
- **Groundwater Elevation.** Groundwater elevation measurements are compiled in Table 1-2 and contoured on Figures 1-1 and 1-2 for the Upper Sand and Lower Sand units, respectively.
- **Chemical Result Summary.** A summary of groundwater analytical results is provided in Table 1-3. All groundwater samples were analyzed for arsenic and/or vinyl chloride (Table 1-1). Field parameter measurements including turbidity, temperature, pH, dissolved oxygen, redox potential, and conductivity are also included in Table 1-3.
- **Purge Water Sampling.** Groundwater collected during well purging (before sampling) was analyzed for arsenic, chromium, lead, diesel- and heavy-oil-range hydrocarbons, and volatile organic compounds (VOCs). These data are necessary for future disposal documentation and are presented in Table A-2.
- **Chemical Data Compilation.** Appendix A includes a data validation summary for the groundwater quality results and a compilation of the June 2019 groundwater data (Table A-1) and purge water data (Table A-2). The laboratory report is provided in Appendix C.

- **Groundwater Quality Summary Charts.** Appendix D includes groundwater quality summary charts for each well sampled as part of the June 2019 sampling program. The charts summarize the historical sampling results for these wells.

Future Monitoring

The Periodic Review establishes the groundwater sampling program (Table 1-4) for the site, which consists of:

- Sample groundwater in 2020 for arsenic in wells CW-1D, LW-6D, LW-9D, CW-1S, LW-9S, SC-1S, SC-2S and MW-3I. Groundwater elevations and field parameters will also be measured in these wells.
- Sample groundwater in 2020 for vinyl chloride in wells CW-1S, , and LW-9D.
- Groundwater elevations will be measured in the PACCAR monitoring well network in 2020.

Electronic Groundwater Quality Data

An electronic copy of the complete groundwater quality database is submitted on CD-ROM with this report for reference and further evaluation, if warranted. The CD contains a Microsoft Access data file in addition to a program that can be used as a viewer to create monitoring summary reports for any well or analyte. Instructions for viewing the data and generating the monitoring summary reports follow.

Instructions for Printing “Monitoring Summary Report” from PACCAR Database.

1. Open ACCESS 2000

2. Select File

Open database

CD Drive:\PACCAR Jun-19.mdb

3. The message, “The database ‘PACCAR Jun-19’ is read-only” will appear. Click the OK button.

4. The Reports Menu will appear.

5. Double click on “Monitoring Summary”

6. The Enter Parameter Value box will appear with the prompt, “Enter Well”

Type in the well name (such as LW-09D).

7. Another Parameter Value box will appear with the prompt, “Enter CAS or Analyte Code”

Type in analyte name (such as Vinyl Chloride).

8. The report will be displayed on screen.

9. To print, select the print icon.

If an error message appears, you may have entered a well location or analyte name that doesn't exist in the database. Click OK, select "Well Water Level Analyte Summary" and re-enter the well name and analyte name as indicated above.

References

Dalton, Olmstead & Fluglevand. 1997. Confirmational Monitoring and Inspections Plans, Former PACCAR Defense Systems Site, Renton, Washington. November 1997.

Washington State Department of Ecology. 2014. Periodic Review. PACCAR, Facility Site ID#: 2065, ISIS Cleanup Site ID# 788. July 2014.

Table 1-1 – Groundwater Monitoring Program for 2019

		2019	
	Well	VOC^a	Arsenic
Confirmation Lower Sand/Delta Deposits			
	CW-1D		X
	LW-6D		X
	LW-9D	X	X
Confirmation Upper Sand/Aquitard Wells			
	CW-1S	X	X
	LW-9S		X
	MW-3I		X
Stabilized Cell Wells			
	SC-1S	X	
	SC-2S	X	
Quality Control Samples			
		X	X
Purge Water Samples			
		X	X

^a VOC is vinyl chloride.

^b Samples will also be analyzed for lead and total chromium

Water elevations will be measured at approximately 33 wells.

All wells with samples submitted for laboratory analysis will have the following parameters measured:

temperature, pH, conductivity, turbidity, dissolved oxygen, and redox potential.

Purge water samples will be analyzed for VOCs, arsenic, lead, total chromium, and TPH.

Table 1-2 – Groundwater Elevation Data, June 2019

Well	Depth to Water in Feet	Reference Elevation in Feet	Water Elevation in Feet
CW-1D	4.37	26.18	21.81
CW-1S	4.35	26.14	21.79
CW-3D	10.55	31.39	20.84
CW-3S	8.23	32.04	23.81
DM-2D	6.33	28.40	22.07
DM-5D	7.51	40.13	32.62
LW-14S	22.30	45.37	23.07
LW-1D	3.89	25.98	22.09
LW-1S	3.13	25.84	22.71
LW-2D	4.78	28.78	24.00
LW-2S	5.07	28.98	23.91
LW-4S	7.30	39.87	32.57
LW-6D	8.19	30.58	22.39
LW-6S	7.27	29.70	22.43
LW-7S	5.80	33.74	27.94
LW-9D	11.08	31.95	20.87
LW-9S	9.91	32.12	22.21
MW-1S(N)	4.45	26.56	22.11
MW-2D(R)	6.38	29.43	23.05
MW-2S(W)	Dry	28.85	Dry
MW-3I(N)	10.52	34.39	23.87
MW-3S(S)		34.39	Dry
OSP-10D	13.90	40.74	26.84
OSP-1D	12.41	41.51	29.10
OSP-1S	9.86	41.44	31.58
OW-4D	22.22	43.48	21.26
OW-4S		43.49	43.49
R-10D	8.84	35.15	26.31
R-10S	10.56	36.24	25.68
SC-1S	5.35	37.78	32.43
SC-2S	14.24	40.52	26.28
U-1D	11.45	30.29	18.84
U-1S	7.50	29.86	22.36

NL = Not located.

NM = Not measured.

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 1 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Confirmation Lower Sand/Delta Deposits																		
CW-01D	3/24/98	4.1	-	-	0.5 U	0.13 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/20/98	2 U	-	-	0.5 U	0.12 J	-	-	0.24 U	0.48 U	-	-	-	-	-	-	-	-
	3/4/99	3.2 +	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	6.3	1 U	10 U	0.5 U	0.2	-	-	0.24 U	0.71 U	-	14	6.8	-	580	-	-	-
	5/18/00	6	-	-	0.2 U	0.4	-	-	0.25 U	0.5 U	-	14	6.8	-	560	-	-	-
	3/19/01	5.8	-	-	0.2 U	0.2	-	-	0.25 U	0.5 U	-	-	-	-	-	-	-	-
	3/25/02	7.9	-	-	0.2 U	0.6	-	-	0.25 U	0.5 U	-	12	7.1	-	780	-	0.08	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.8	6.7	-	760	-	0.18	-
	4/2/03	6.7	1 U	1 U	0.2 U	0.2	0.15 U	-	0.25 U	0.5 U	4	13.2	6.8	1.18	442	-	28	-
	3/31/04	8.2	-	-	0.2 U	0.3	-	-	-	-	55.5	13.4	6.2	0.01	496	-34	12	74.5
	4/13/05	6.1	-	-	-	-	-	-	-	-	46.4	14.4	6.5	0.1	283	18	0	31.5
	3/28/06	5.1	-	-	-	-	-	-	-	-	52.5	13.9	6.2	0.26	448	25	0	51.9
	3/27/07	6.2	-	-	-	-	-	-	-	-	45.2	13.3	5.2	0.11	417	62	0	31.6
	4/1/10	5.6	-	-	-	-	-	-	-	-	52	13.1	7.1	0.26	-	-100	293	54.4
	3/29/11	5.7	-	-	-	-	-	-	-	-	43.8	12.8	6.4	<0.01	270	-	10	48.2
	3/22/12	5.5	-	-	-	-	-	-	-	-	46.4	12.9	6.1	<0.01	727	-165	16.3	40
	11/15/12	-	-	-	-	0.14	-	-	-	-	48.4	13.9	6.3	1.15	332	-132	21	85.4
	3/12/13	5.4	0.3	1 U	0.02 U	0.1	0.2 U	0.25 U	0.1 U	0.2 U	55	13.1	9.9	<0.01	423	-13	24.9	80
	4/2/14	5.8	-	-	-	0.1	-	-	-	-	49.8	12.91	6.3	<0.01	410	-80	76.2	76.2
	4/15/15	5.4	-	-	-	-	-	-	-	-	-	13.99	6.2	<0.01	433	-88	13.9	-
	3/10/16	0.4	-	-	-	0.02 U	-	-	-	-	-	13.61	6.6	0.01	797	-8	1.4	-
	4/11/17	6.29	-	-	-	-	-	-	-	-	-	13.55	6.2	<0.01	°	-79	21	-
	4/17/18	5.16	-	-	-	-	-	-	-	-	-	13.6	5.99	0.09	477.1	0	220	-
	6/21/19	1.47	-	-	-	-	-	-	-	-	-	15.6	6.36	0.48	165.5	-25	42.4	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 2 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-06D	3/26/98	11	-	-	0.5 U	0.13 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/22/98	12	-	-	0.5 U	0.08 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/5/99	3.1	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	10	1 U	10 U	0.5 U	0.099 J	-	-	0.24 U	0.71 U	-	14.1	6.4	-	530	-	-	-
	5/23/00	9	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.2	-	690	-	-	-
	3/16/01	10.8	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	14	7.1	-	900	-	0.14	-
	3/21/02	8.8	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.1	-	860	-	0.08	-
	4/3/03	3.3	1 U	1	0.2 U	0.2 U	0.15 U	-	0.25 U	0.5 U	4	11.4	6.9	1.25	454	-	18	-
	3/31/04	14.2	-	-	-	-	-	-	-	-	56.0	13.0	6.1	0.02	524	-2	27	93.0
	4/12/05	10.2	-	-	-	-	-	-	-	-	59.5	13.2	6.3	0.08	548	-15	0	38.9
	3/31/06	11.2	-	-	-	-	-	-	-	-	62.5	13.7	6.2	0.16	459	-10	0	20.3
	3/29/07	11.1	-	-	-	-	-	-	-	-	58.0	14.0	5.8	0.11	554	107	0	40.8
	3/26/08	9.8	-	-	-	-	-	-	-	-	49.6	11.1	6.7	0.52	436	-35	0	-
	3/26/09	10.4	-	-	-	-	-	-	-	-	63	13.36	5.6	2.64	764	-118	32	55
	4/2/10	10.4	-	-	-	-	-	-	-	-	62	12.5	7.1	<0.01	445	-83	160	58.4
	3/31/11	9.7	-	-	-	-	-	-	-	-	63	13	6.1	0.05	382	-61	10	70
	3/23/12	9.1	-	-	-	-	-	-	-	-	61.5	13.3	6.0	<0.01	724	-160	6.2	54.2
	3/13/13	9.1	0.1 U	1 U	0.025	0.14	0.2 U	-	0.1 U	0.2 U	65	13.18	8.6	<0.01	508	57	9.9	67.8
	4/2/14	7.8	-	-	-	-	-	-	-	-	56.5	14.01	6.3	0.01	527	-102	115.5	34.6
	4/15/15	7.8	-	-	-	-	-	-	-	-	-	14.05	6.2	<0.01	529	-189	25.4	-
	3/10/16	8.0	-	-	-	0.24	-	-	-	-	-	13.72	6.2	<0.01	533.9	-11	10.9	-
	4/11/17	10.0	-	-	-	-	-	-	-	-	-	13.71	6.1	<0.01	^c	-101	4.0	-
	4/17/18	9.2	-	-	-	-	-	-	-	-	-	13.7	6.21	0.14	682	0	378	-
	6/21/19	4.57	-	-	-	-	-	-	-	-	-	14.6	6.25	0.68	542	-62.6	32.2	-

Table 1-3 - Summary of Groundwater Analytical Data

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-09D	3/26/98	9.5	-	-	0.5 U	0.97 J	-	0.82 U	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/21/98	7.6	-	-	0.5 U	0.7 J	-	0.8 U	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/7/99	7.9	-	-	0.5 U	0.86	-	0.9 U	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	3.3	1 U	10 U	0.5 U	0.4 J	-	-	0.32	0.71 U	-	14.6	7.4	-	450	-	-	-
	5/24/00	9	-	-	0.2 U	0.3	-	-	0.25 U	0.5 U	-	14	6.7	-	740	-	-	-
	10/12/00	-	-	-	0.2 U	0.9	-	-	-	-	-	14	7.2	-	640	-	-	-
	3/15/01	9.4	-	-	0.2 U	0.9	-	-	0.25 U	0.5 U	-	14	6.8	-	590	-	0.14	-
	10/31/01	-	-	-	0.2 U	0.5	-	-	-	-	-	14	6.8	-	560	-	0.14	-
	3/20/02	11.4	-	-	0.2 U	1.6	-	-	0.25 U	0.5 U	-	13	8.0	-	910	-	0.11	-
	10/16/02	-	-	-	0.2 U	0.9	-	-	-	-	5.8	14.1	6.9	1.1	510	-	0.14	-
	4/4/03	0.9	1 U	1 U	0.2 U	0.2 U	0.15 U	0.25 U	0.25 U	0.5 U	3.4	12.6	7.3	0.71	389	-	12	-
	10/7/03	-	-	-	0.2 U	0.7	-	-	-	-	-	13	7.3	-	680	-	0.18	-
	3/31/04	12.2	-	-	0.2 U	1.1	-	-	-	-	54.5	12.2	6.2	0.22	523	-22	13	77.5
	10/20/04	-	-	-	0.2 U	1.0	-	-	-	-	52	12.6	6.2	0	528	-28	0	41.5
	4/12/05	8	-	-	0.2 U	1.3 J	-	-	-	-	54	12.5	6.4	0.05	540	-24	1	37.5
	11/3/05	-	-	-	0.2 U	0.8	-	-	-	-	52	12	6.7	0.32	517	-42	7	33.4
	3/31/06	7.7	-	-	0.2 U	0.8	-	-	-	-	53.5	12.6	6.3	0.12	433	-20	0	18.2
	3/27/07	8.5	-	-	0.2 U	0.9	-	-	-	-	-	12.2	6.0	0.19	541	54	0	-
	3/26/08	8.3	-	-	-	1.2	-	-	-	-	46.7	11.7	6.8	0.48	427	-15	0	-
	3/26/09	8.4	-	-	-	1.2	-	-	-	-	55.5	12.24	5.7	2.56	729	-129	48	36.4
	10/27/09	8	-	-	-	0.71	-	-	-	-	52.7	12.44	9.3	3.33	617	-146	20	51.1
	4/2/10	8.4	-	-	-	0.5	-	-	-	-	55	11.5	7.2	0	428	-90	242	41.2
	3/29/11	8.5	-	-	-	0.5	-	-	-	-	51.5	12	6.4	0.11	441	-	10	54.8
	3/23/12	7.5	-	-	-	0.32	-	-	-	-	51	11.9	6.0	0	666	-155	2.9	40
	3/15/13	8	0.1 U	0.7	0.02 U	0.41	0.2 U	0.25 U	0.1 U	0.2 U	54	12.31	7.2	0.02	491	235	59.8	62.2
	4/2/14	8.2	-	-	-	0.41	-	-	-	-	63	12.16	6.3	0.01	499.8	-65	27.6	27.7
	4/15/15	7.7	-	-	-	0.7	-	-	-	-	-	12.41	6.2	0.07	481	-192	164.8	-
	3/10/16	9.0	-	-	-	0.44	-	-	-	-	-	12.42	6.2	<0.01	478	-50	6	-
	4/11/17	8.5	-	-	-	0.35	-	-	-	-	-	12.45	6.2	<0.01	°	-73	17.4	-
	4/17/18	9.16	-	-	-	0.35	-	-	-	-	-	12.5	6.26	0.14	639	0	-	-
	6/20/19	9.12	-	-	-	0.52	-	-	-	-	-	12.9	6.32	0.29	574	-71	116.6	-

Table 1-3 - Summary of Groundwater Analytical Data

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Confirmation Upper Sand/Aquitard Wells																		
CW-01S	3/24/98	8.7	-	-	0.5 U	0.38 J	-	-	0.3	0.71 U	-	-	-	-	-	-	-	-
	10/20/98	6.6	-	-	0.62	0.86 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/4/99	4.9	-	-	0.5 U	0.53	-	-	0.24 U	0.72 U	-	-	-	-	-	-	-	-
	10/19/99	7.1	1 U	10 U	0.53	0.63 J	-	-	0.24 U	0.71 U	-	14.9	6.6	-	550	-	-	-
	5/18/00	9	-	-	0.6	0.9	-	-	0.25 U	0.5 U	-	15	7.0	-	810	-	-	-
	3/19/01	8.7	-	-	0.7	1.3	-	-	0.25 U	0.5 U	-	-	-	-	-	-	-	-
	3/25/02	11.5	-	-	0.7	2.4	-	-	0.27	0.5 U	-	12	7.1	-	820	-	0.06	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	16.1	6.6	-	580	-	0.14	-
	4/2/03	8.7	1 U	1	0.4	0.9	0.26 U	-	0.25 U	0.5 U	4	13.9	6.8	1.51	408	-	29	-
	10/7/03	-	-	-	0.2 U	0.6	-	-	-	-	-	14	6.9	-	770	-	0.09	-
	3/31/04	12.0	-	-	0.2	0.9	-	-	-	-	48.2	13.5	6.2	0.06	484	-7	30	72.5
	4/13/05	8.7	-	-	0.2 U	0.9	-	-	-	-	48.4	14.8	6.4	0.1	480	5	2	34.4
	3/28/06	8.1	-	-	0.2 U	0.9	-	-	-	-	46.6	14.2	6.5	0.2	524	9	0	33.5
	3/27/07	8.2	-	-	0.2 U	0.7	-	-	-	-	46.2	13.1	5.8	0.02	398	72	0	32.8
	3/27/08	8.1	-	-	-	0.63	-	-	-	-	37.6	12.3	6.6	0.67	379	-7	0	-
	3/24/09	8	-	-	-	0.54	-	-	-	-	0.999	12.83	5.8	2.2	665	-135	10	40.7
	4/1/10	8.1	-	-	0.2 U	0.4	-	-	-	-	49.7	13.1	7.0	<0.01	-	-94	333	69.6
	3/29/11	8.1	-	-	-	0.64	-	-	-	-	50.5	13.2	6.4	<0.01	440	-	10	48.7
	3/22/12	4.7	-	-	-	0.3	-	-	-	-	22.6	13.3	6.0	<0.01	441	-113	4.6	13.7
	3/12/13	7	0.2	1 U	0.023	0.62	0.2 U	-	0.16	0.2 U	52.5	13.01	9.9	0.01	464.3	3	1.2	48.3
	4/2/14	1.8	-	-	-	0.11	-	-	-	-	5.95	12.99	6.1	0.08	95.65	36	18	7
	4/15/15	3.6	-	-	-	0.46	-	-	-	-	-	14.4	5.9	0.08	237.5	-117	42.4	-
	3/10/16	0.4	-	-	-	0.02 U	-	-	-	-	-	13.13	6.6	6.4	163	71	18.1	-
	4/11/17	4.39	-	-	-	0.244	-	-	-	-	-	13.96	5.9	<0.01	374.9	7	3.6	-
	4/17/18	0.884	-	-	-	0.0243 J	-	-	-	-	-	13.8	5.69	1.83	37.3	321	10	-
	6/21/19	1.67	-	-	-	0.2 U	-	-	-	-	-	18.2	6.54	6.24	59.7	82.6	29.4	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 5 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-09S	3/26/98	21	-	-	0.5 U	0.13 U	-	-	0.32	0.71 U	-	-	-	-	-	-	-	-
	10/21/98	17	-	-	0.5 U	0.31 J	-	-	0.36	0.47 U	-	-	-	-	-	-	-	-
	3/7/99	10 S	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	18	1 U	10 U	0.5 U	0.22 J	-	-	0.56	0.71 U	-	13.6	6.7	-	810	-	-	-
	5/24/00	14	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.2	-	860	-	-	-
	3/15/01	19.2	-	-	0.2 U	0.2 U	-	-	0.25	0.5 U	-	14	6.3	-	720	-	0.11	-
	3/20/02	19.9	-	-	0.2 U	0.2 U	-	-	0.38	0.5 U	-	13	7.4	-	660	-	0.08	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	14.1	7.0	-	600	-	0.1	-
	4/4/03	13.4	1 U	2	0.2 U	0.2 U	0.15 U	-	0.4	0.5 U	3.8	11.5	7.5	1.12	268	-	16	-
	3/30/04	17.7	-	-	-	-	-	-	-	-	61.5	11.1	5.9	0.39	420	-12	49	89.0
	4/12/05	11.6	-	-	-	-	-	-	-	-	48.8	11.4	6.6	0.07	418	-37	10	48.4
	3/30/06	8.5	-	-	-	-	-	-	-	-	36.2	11.9	6.5	0.3	299	-15	0	43.6
	3/28/07	14.8	-	-	-	-	-	-	-	-	61	10.7	6.6	0.03	367	92	46	68.2
	3/25/08	12.8	-	-	-	-	-	-	-	-	39	10	6.4	1.08	343	-140	62	-
	3/26/09	13.3	-	-	-	-	-	-	-	-	57.5	11.86	6.0	2.4	612	-127	81	46.7
	4/2/10	18.3	-	-	-	-	-	-	-	-	65	10.4	7.6	<0.01	361	-124	77	56.4
	3/31/11	17.3	-	-	-	-	-	-	-	-	61	10.6	6.4	<0.01	322	-152	10	76 J
	3/23/12	14.1	-	-	-	-	-	-	-	-	54	10.5	6.2	<0.01	570	-190	9.2	68.1
	3/15/13	13.6	0.1 U	1.8	0.02 U	0.039	0.2 U	-	0.2	0.25	50	11.46	7.5	0.03	360.1	201	42	79.3
	4/2/14	14.6	-	-	-	-	-	-	-	-	61	11.03	6.7	0.07	417	-118	33.1	76.5
	4/15/15	19.2	-	-	-	-	-	-	-	-	-	11.72	6.5	0.01	410.5	-95	47.3	-
	3/10/16	14.8	-	-	-	0.027	-	-	-	-	-	11.59	6.4	<0.01	421.6	-74	27.6	-
	4/11/17	15.3	-	-	-	-	-	-	-	-	-	11.45	6.5	<0.01	--	-111	26.8	-
	4/17/18	7.31	-	-	-	-	-	-	-	-	-	11.3	6.49	0.16	523	0	57.2	-
	6/20/19	6.1	-	-	-	-	-	-	-	-	-	12.4	6.73	0.62	428.7	-81.2	36.5	-

Table 1-3 - Summary of Groundwater Analytical Data

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW-031	3/27/98	17	-	-	0.5 U	0.13 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/22/98	15	-	-	0.5 U	0.15 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/5/99	10	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/20/99	19	1 U	10 U	0.5 U	0.14 J	-	-	0.34	0.71 U	-	15.7	7.3	-	430	-	-	-
	5/23/00	14	-	-	0.2 U	0.2	-	-	0.25 U	0.5 U	-	13	7.1	-	620	-	-	-
	3/16/01	18	-	-	0.2 U	0.3	-	-	0.25 U	0.5 U	-	14	7.1	-	810	-	0.19	-
	3/25/02	19.4	-	-	0.2 U	0.5	-	-	0.28	0.5 U	-	13	7.4	-	940	-	0.13	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.4	6.9	-	410	-	0.08	-
	4/1/03	37.4	1 U	1	0.2 U	0.2 U	0.15 U	-	0.29	0.5 U	5.5	13.2	6.9	0.86	268	-	35	-
	3/30/04	18.2	-	-	0.2 U	0.2 J	-	-	-	-	49.9	13	6.0	0.35	382	-33	19	79.5
	10/20/04	19.4	-	-	-	-	-	-	-	-	50.5	15.4	6.4	0.01	404	-26	1	43.5
	4/12/05	14.9	-	-	-	-	-	-	-	-	50.5	12.8	6.5	0.16	386	-41	0	35.2
	11/2/05	17.5	-	-	-	-	-	-	-	-	49.3	15	6.9	0.36	449	-40	7	30
	3/30/06	12.8	-	-	-	-	-	-	-	-	51.5	13.8	6.3	0.14	316	-11	0	51.4
	3/28/07	12.9	1 U	1 U	0.2 U	0.2 U	0.1 U	0.25 U	0.25 U	0.5 U	46	12.6	5.7	0.1	339	103	0	47.7
	3/25/08	18.6	-	-	-	-	-	-	-	-	37	11.1	6.9	0.8	320	-31	0	-
	3/26/09	13	-	-	-	-	-	-	-	-	48	11.94	5.8	2.11	504	-119	12	27.2
	4/2/10	13.8	-	-	-	-	-	-	-	-	50	11.5	7.4	0.15	320	-92	33	60.5
	3/31/11	14.9	-	-	-	-	-	-	-	-	51	12.2	6.2	0.08	265	-	10	98.8
	3/23/12	14.7	-	-	-	-	-	-	-	-	54.5	12	6.0	<0.01	547	-148	3	45.1
	11/15/12	-	-	-	-	0.029	-	-	-	-	46.2 J	12.9	6.3	2.29	284	-105	2.6	54
	3/14/13	10.9	0.1 U	0.5	0.02 U	0.066	0.2 U	-	0.1 U	0.2 U	52.0	12.35	8.4	<0.01	343	77	7.1	58
	4/2/14	13.2	-	-	-	-	-	-	-	-	56.0	12.53	6.5	0.02	407.5	-100	3.9	33.4
	4/15/15	13.5	-	-	-	-	-	-	-	-	-	12.6	6.4	0.1	388.6	-85	5.6	-
	3/10/16	16.9	-	-	-	0.077	-	-	-	-	-	11.72	6.4	<0.01	385.3	-36	9.2	-
	4/11/17	14.7	-	-	-	-	-	-	-	-	-	12.59	6.3	<0.01	°	-67	8.1	-
	4/17/18	13.9	-	-	-	-	-	-	-	-	-	12.2	6.38	0.14	501	0	30	-
	6/20/19	13.7	-	-	-	-	-	-	-	-	-	13.1	6.51	0.26	504	-68.5	23.8	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 7 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Stabilized Cell Wells																		
SC-01S	3/25/98	4.4	2.2	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/98	3.4	1.4	5 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/99	4.7	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/19/99	5.8	1 U	10 U	-	-	-	-	-	-	-	17.2	8.2	-	190	-	-	-
	5/24/00	5	1 U	0.5 U	-	-	-	-	-	-	-	13	7.0	-	740	-	-	-
	3/15/01	5.2	1 U	0.5 U	-	-	-	-	-	-	-	13	6.8	-	620	-	0.13	-
	3/20/02	5.8	1 U	0.5 U	-	-	-	-	-	-	-	12	7.2	-	860	-	0.15	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.1	7.1	-	610	-	0.11	-
	4/4/03	4.9	1 U	0.5 U	-	-	-	-	-	-	0.6	13.8	8.1	2.6	107	-	26	-
	4/1/04	5.4	-	-	-	-	-	-	-	-	0.043	12.4	8.2	0.19	119	162	13	4.9
	4/12/05	5.1	-	-	-	-	-	-	-	-	0.04 U	12.7	8.0	0.15	123	-42	1	1.9
	3/29/06	4.7	-	-	-	-	-	-	-	-	0.04 U	12.8	7.7	0.32	97	-49	0	1.8
	3/29/07	4.6	-	-	-	-	-	-	-	-	0.04 U	12.9	7.1	0.2	118	93	0	2.9
	3/13/13	4.6	0.1 U	1 U	-	-	-	-	-	-	0.046	11.72	8.7	0.09	105.7	70	9.3	3.3
	6/20/19	-	-	-	-	0.2 U	-	-	-	-	-	16.2	7.86	9.64	131.6	166.3	3	-
SC-02S	3/26/98	4.5	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/98	4	1 U	5 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/99	2.6	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/19/99	4.7	1 U	10 U	-	-	-	-	-	-	-	16.5	-	-	-	-	-	-
	5/24/00	4	1 U	2 U	-	-	-	-	-	-	-	14	7.1	-	610	-	-	-
	3/15/01	4.1	1 U	2	-	-	-	-	-	-	-	13	6.3	-	810	-	0.17	-
	3/20/02	5.7	1 U	3.9	-	-	-	-	-	-	-	12	6.7	-	790	-	0.13	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	13.4	6.5	-	560	-	0.09	-
	4/4/03	3.2	1 U	2	-	-	-	-	-	-	4.2	13	7.3	1.04	340	-	21	-
	4/1/04	4.9	-	-	-	-	-	-	-	-	36.5	12.7	6.2	0.03	386	66	18	23.2
	3/13/13	3.3	0.1 U	2	-	-	-	-	-	-	34.8	12.85	8.6	0.05	361	115	22.5	1.4
	6/21/19	-	-	-	-	0.2 U	-	-	-	-	-	13.5	6.15	0.67	476.7	-103	9.4	-

Notes:

^a cPAHs are benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene (WAC 173-340-200). Total cPAH values presented are based on toxicity equivalency quotient (TEQ) calculation.

^b Ferrous iron collected in October 2002 and April 2003 were field measurements using HACH kit. Other samples were analyzed in the laboratory using EPA Method SM 3500.

^c Instrument error - no data

* PCP = Pentachlorophenol

- = Sample not analyzed for specific analyte.

NE = Not established.

J = Estimated value.

U = Not selected at the detection limit noted.

See pages A-3 explanation of data qualifiers.

Hart Crowser

L:\Notebooks\163975_PACCAR_2019_GW_SW_Monitoring\Deliverables\Reports\2019 GW Monitoring\Final\Table 1-3.xlsx

Table 1-4 – Groundwater Monitoring Program for 2020

		2020	
	Well	VOC ^a	Arsenic
Confirmation Lower Sand/Delta Deposits			
	CW-1D		X
	LW-6D		X
	LW-9D	X	X
Confirmation Upper Sand/Aquitard Wells			
	CW-1S	X	X
	LW-9S		X
	MW-3I		X
Stabilized Cell Wells			
	SC-1S		X
	SC-2S		X
Quality Control Samples			
		X	X
Purge Water Samples			
		X	X

^a VOC is vinyl chloride.

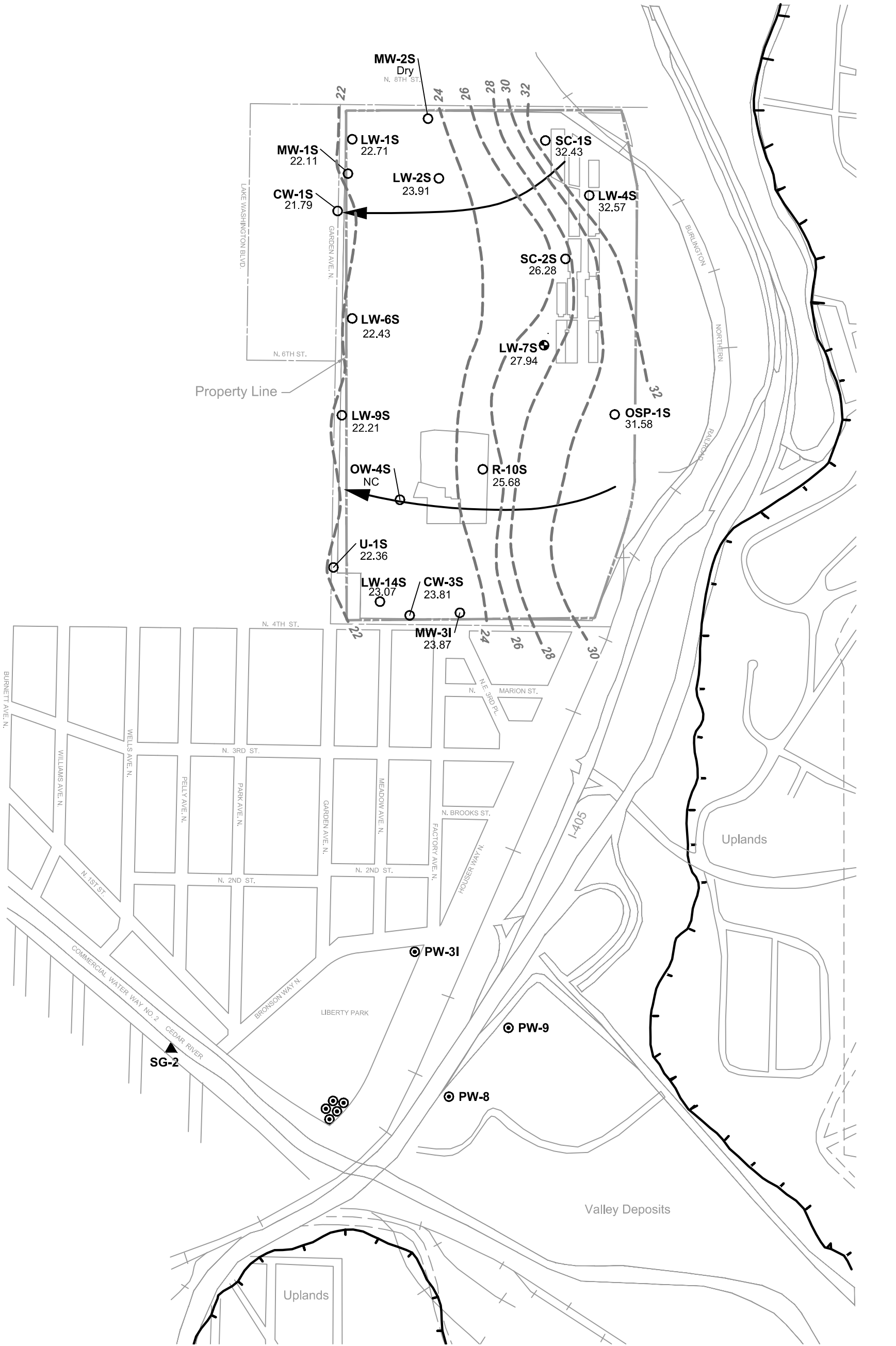
^b Samples will also be analyzed for lead and total chromium

Water elevations will be measured at approximately 33 wells.

All wells with samples submitted for laboratory analysis will have the following parameters measured:

temperature, pH, conductivity, turbidity, dissolved oxygen, and redox potential.

Purge water samples will be analyzed for VOCs, arsenic, lead, total chromium, and TPH.



Note: Base map prepared from drawing provided by Dodds Engineering titled "Monitoring Wells PACCAR Renton Site", dated April 10, 1998.

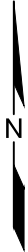


Legend

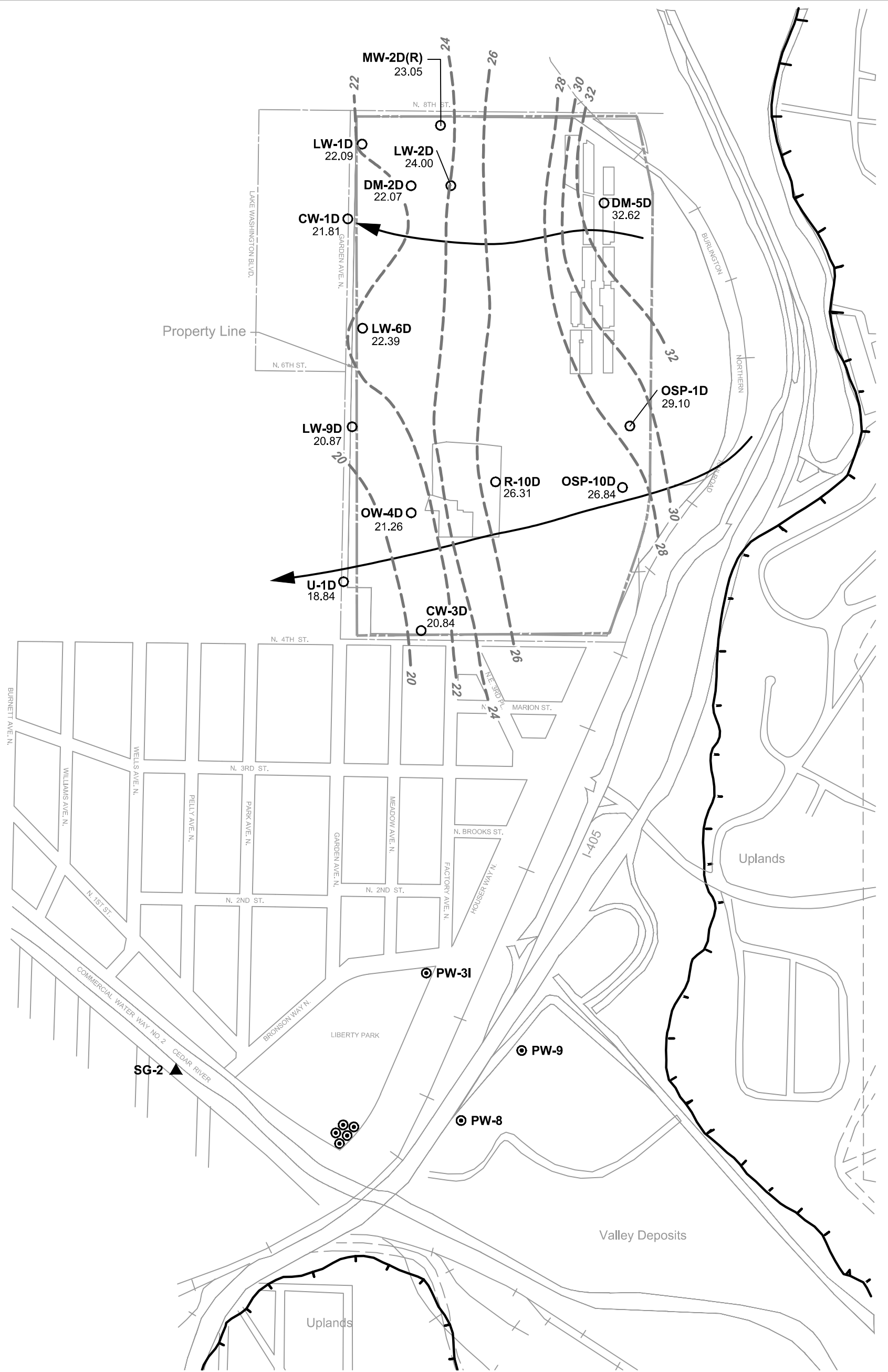
- LW-7S Monitoring Well
- OW-4S Piezometer
- PW-8 City of Renton Production Well
- SG-2 River Staff Gage

*Groundwater elevation for MW-2S and OW-4s were not used in developing contours. See report for details.

- Groundwater Elevation Contour in Feet
- Groundwater Elevation in Feet
- Not Measured
- Not Calculated
- Groundwater Flow Direction
- Upland Boundary



PACCAR Renton, Washington	
Groundwater Elevation Contour Map Shallow Wells - June 2019	
1639-75	10/19
	Figure 1-1



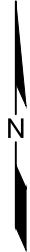
Note: Base map prepared from drawing provided by Dodds Engineering titled "Monitoring Wells PACCAR Renton Site", dated April 10, 1998.



Legend

- LW-7S Monitoring Well
- OW-4S Piezometer
- PW-8 City of Renton Production Well
- SG-2 River Staff Gage

- Groundwater Elevation Contour in Feet
- Groundwater Elevation in Feet
- Not Measured
- Not Calculated
- Groundwater Flow Direction
- Upland Boundary



PACCAR Renton, Washington	
Groundwater Elevation Contour Map Lower Sand Unit - June 2019	
1639-75	10/19
	Figure 1-2

SECTION 2

Surface Water Monitoring

SECTION 2

SURFACE WATER MONITORING

This section presents the results of the surface water monitoring event conducted in accordance with the CMIP and the Periodic Review. Samples were collected from five storm sewer manholes on June 20 & 21, 2019. Chemical test results are compiled in Table 2-1, and the sampling locations are shown with the generalized storm sewer configuration on Figure 2-1. The data quality review and laboratory report are provided in Appendices B and C, respectively.

The Periodic Review specifies annual surface water monitoring. Surface water monitoring was conducted in June 20 and 21, 2019 for metals (total copper, lead and zinc, and hexavalent chromium) at the five locations identified in the CMIP to assess whether any long-term changes are occurring.

The following notes apply to this monitoring event:

- **Off-Site Conditions.** Monitoring point SW-MH was used to evaluate the quality of stormwater generated off site and upstream of the PACCAR site. As summarized in Table 2-1, metal concentrations detected in the sample from SW-MH are higher or similar to those detected in the sample from SW-3, which is the PACCAR property discharge point located downstream of SW-MH (Figure 2-1).
- **Cleanup Level Compliance at SW-5.** The CMIP specifies that water quality from SW-5 will be compared with CULs for compliance purposes. . The detected lead (0.00152 mg/L) concentration in the sample from SW-5 slightly exceeded the CUL (0.001 mg/L). The detected copper (0.00528 mg/L) and zinc (0.0401 mg/L) concentrations in the sample from SW-5 did not exceed the CULs.

Table 2-1 – Analytical Results for Surface Water Samples, June 2019

Sample ID		SW-3	SW-5	SW-6	SW-DP	SW-MD	SW-MH
Sample Date	CUL ^a	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19
Total Metals in mg/L							
Copper	0.007	0.00247	0.00528	0.00375	0.00273	0.043	0.0447
Hexavalent chromium	0.011	0.015	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U
Lead	0.001	0.00121	0.00152	0.000356	0.000255	0.0011	0.00105
Zinc	0.047	0.0722	0.0401	0.00872	0.0349	0.0682	0.0685

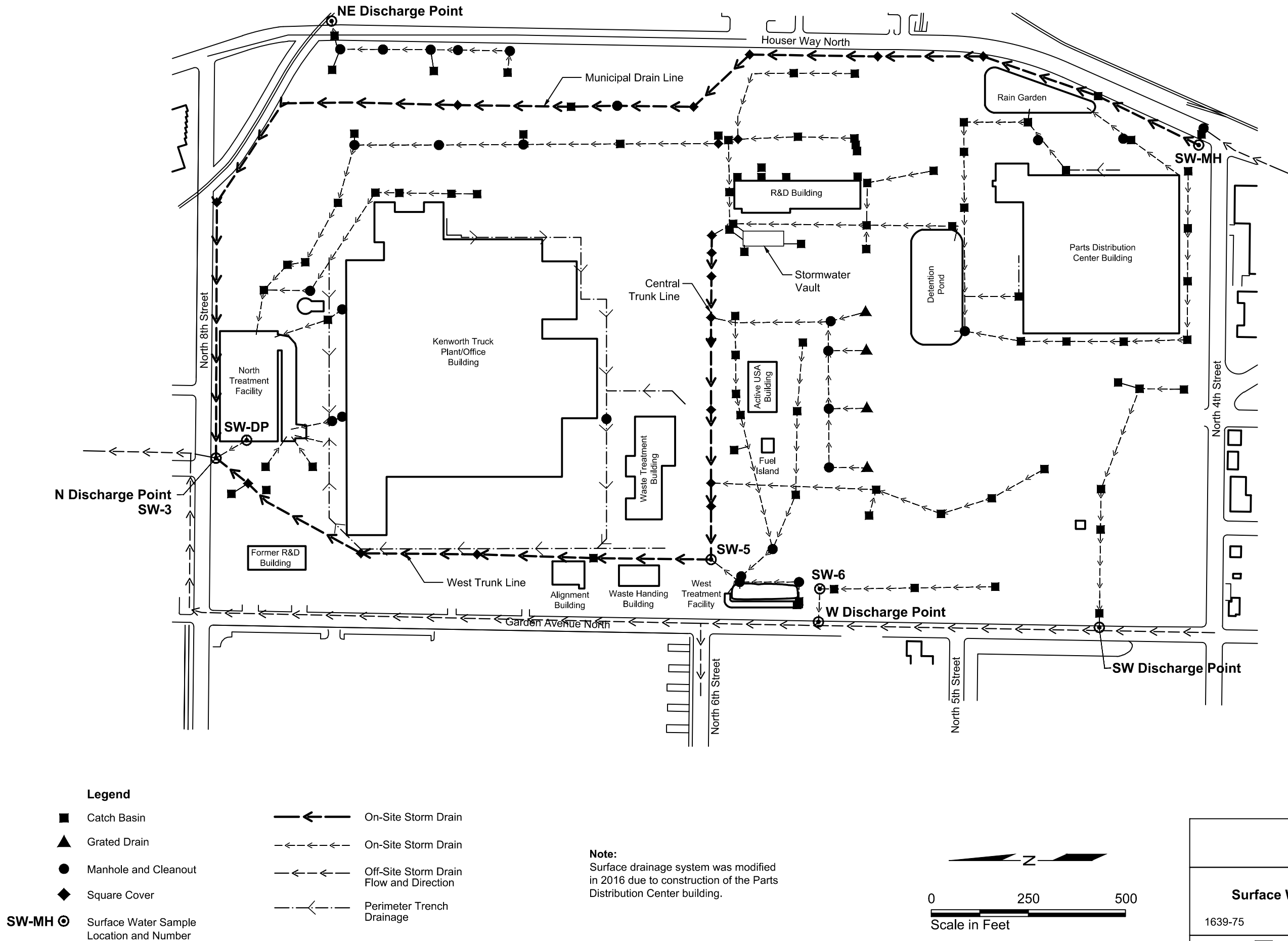
^a Cleanup levels from CMIP (DOF 1997).

Notes:

See page B-3 for definition of data qualifiers.

SW-MD is a duplicate sample of SW-MH.

File: L:\Notebooks\163975_PACCAR_2019_GW_SW_Monitoring\CAD\163975-003 (SPlan).dwg Layout:SurfWatSamp Date: 10-17-2019 Author: melissaschweitzer



PACCAR Renton, Washington	
Surface Water Sampling Location Plan	
1639-75	10/19
	Figure 2-1

SECTION 3
PACCAR Structural Fill Cover Monitoring
Field Inspection and Observation Form

SECTION 3

PACCAR STRUCTURAL FILL COVER MONITORING FIELD INSPECTION AND OBSERVATION FORM

The structural fill and pavement covers are monitored annually to document their condition and note areas where repair or maintenance is necessary. An engineer or technician conducted a site walk to observe and document the following:

- Conditions of paved area (settlement, ruts, cracks, other) and
- Disturbance in areas of planted cover (erosion, excavation, vegetation, other).

Field Inspection Observations

Date of Field Inspection: June 20 & 21, 2019

Weather Conditions: _____

Inspection Personnel: Mike Shaljian

Senior Staff Hydrogeologist

Construction was completed and a new building and soil stockpiles are present. Areas around the building appear to be in good condition, with no obvious signs of settlement or cracking in asphalt cover. The new stockpile area has a planted cover with good development of grass and show no signs of settlement or erosion.

Recommended Actions and Follow-Up

Areas Needing Repair

Review site conditions in 2020.

Documentation of Repair Completion

None.

APPENDIX A

Data Validation Summary for Groundwater Samples

APPENDIX A

DATA VALIDATION SUMMARY FOR GROUNDWATER SAMPLES

Summary of Data Validation Effort

This appendix provides the quality assurance (QA) review of eight groundwater samples, one purge water sample, and one field duplicate collected in accordance with the PACCAR CMIP (DOF 1997) and Periodic Review (Ecology 2014) for the 2019 sampling event. The samples were submitted to Analytical Resources, Inc., (ARI) in Tukwila, Washington, for chemical analysis. The laboratory reported results as ARI Job No. 19F0304 and 19F0329 (See Appendix C). The samples were analyzed for one or more of the following:

- Diesel and heavy oil by Ecology Method NWTPH-Dx;
- Total metals (arsenic, chromium, and lead) by EPA Method 200.8; and
- Vinyl chloride by EPA Method 8260C-SIM; and volatile organic compounds (VOCs) by EPA Method 8260C.

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews of laboratory procedures. Hart Crowser performed the data review, using laboratory quality control results summary sheets, to check that the data met data quality objectives for the project. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries and relative percent differences (RPDs);
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and RPDs;
- Laboratory and field duplicate RPDs;
- Calibration criteria (if reported); and
- Reporting limits (RL).

Overall Data Quality

The overall data quality objectives (DQOs) as set forth in the quality assurance project plan (QAPP) were met, and the data for this site are acceptable for use as qualified. The completeness for the associated data is 100 percent. Detailed discussions are presented in the following pages.

Quality Assurance Objectives

Precision. Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Precision is generally evaluated using LCS/LCSD, MS/MSD, lab duplicate results,

and field duplicate results. The LCS/LCSD, MS/MSD, and lab duplicate results provide information on laboratory (only) precision, while field duplicates provide information on field and laboratory precision combined.

Analytical precision is generally measured through LCS/LCSD and MS/MSD samples for organic analysis, and through laboratory duplicate samples for metals and other inorganic analysis. Analytical precision is quantitatively expressed as the RPD between the LCS/LCSD, MS/MSD, or laboratory duplicates. Analytical precision measurements were carried out on project groundwater samples at a minimum frequency of one in 20 samples. The analytical precision for all analytes was acceptable.

Accuracy. Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results was assessed by analyzing standard reference materials or by "spiking" samples with known standards (surrogates, LCS, and/or MS) and measuring the percent recovery.

Accuracy measurements for all fractions were carried out in accordance with method requirements for organic and inorganic analyses and at a minimum frequency of one in 20 samples. The analytical accuracy for analytes was acceptable.

Completeness. Completeness is defined as the percentage of measurements made that are judged to be valid measurements. The completeness of the data is the ratio of acceptable data points to the total number of data points (expressed as a percent). The target completeness goal for this work was 100 percent. The completeness of the data for this project was 100 percent.

Comparability. Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Because standard techniques were used for both sample collection and laboratory analysis, the data collected from the same sampling locations and depths should be comparable to both internal data and other data generated.

No Major Problems Encountered

No major problems were encountered.

Minor Problems Encountered

No problems were encountered.

Data Qualifier Definitions

The following data qualifiers are used in the text and tables according to a quality assurance review of the laboratory procedures and results:

- U** Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

- UJ** Indicates the compound or analyte was analyzed for and not detected. Because of quality control deficiencies identified during data validation, the value reported may not accurately reflect the sample quantitation limit.
- J** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated, but the data are usable for decision making processes.

Table A-1 – Compilation of Chemical Analytical Data for Groundwater Samples

Sample ID Sampling Date	Cleanup Level	CW-1D 6/21/2019	CW-1S 6/21/2019	CW-100S 6/21/2019	LW-6D 6/21/2019	LW-9D 6/20/2019	LW-9S 6/20/2019	MW-3I 6/20/2019	SC-1S 6/20/2019	SC-2S 6/21/2019
Metals in mg/L										
Arsenic	0.005 ^a	0.00147	0.00167	0.00204	0.00457	0.00912	0.0061	0.0137		
Volatiles in µg/L										
Vinyl chloride	0.4 ^b		0.2 U	0.2 U		0.52			0.2 U	0.2 U

Notes:

^a HSAL for arsenic is 0.05 mg/L.

^b HSAL for vinyl chloride is 2 µg/L.

Blank indicates sample not analyzed for specific analyte.

See page A-3 for explanation of data qualifiers.

CW-100S is a duplicate sample from CW-1S.

Table A-2 – Analytical Results for Purge Water

Sample ID Sampling Date	KW Tank 6/21/2019
Metals in µg/L	
Arsenic	4.17
Chromium	0.823
Chromium, Hexavalent	13 U
Copper	1.87
Lead	1.15
Zinc	15.7
TPH in mg/L	
Diesel Range Organics	0.1 U
Lube Oil	0.2 U
Volatiles in µg/L	
1,1,1,2-Tetrachloroethane	0.2 U
1,1,1-Trichloroethane	0.2 U
1,1,2,2-Tetrachloroethane	0.2 U
1,1,2-Trichloroethane	0.2 U
1,1-Dichloroethane	0.2 U
1,1-Dichloroethene	0.2 U
1,1-Dichloropropene	0.2 U
1,2,3-Trichlorobenzene	0.5 U
1,2,3-Trichloropropane	0.5 U
1,2,4-Trichlorobenzene	0.5 U
1,2,4-Trimethylbenzene	0.2 U
1,2-Dibromo-3-Chloropropane	0.5 U
1,2-Dichlorobenzene	0.2 U
1,2-Dichloroethane	0.2 U
1,2-Dichloropropane	0.2 U
1,3,5-Trimethylbenzene	0.2 U
1,3-Dichlorobenzene	0.2 U
1,3-Dichloropropane	0.2 U
1,4-Dichlorobenzene	0.2 U
2,2-Dichloropropane	0.2 U
2-Chloroethyl vinyl ether	1 U
2-Chlorotoluene	0.2 U
2-Hexanone	5 U
2-Pentanone	5 U
4-Chlorotoluene	0.2 U
4-Isopropyl Toluene	0.2 U
Acetone	4.11 J
Acrolein	5 U
Acrylonitrile	1 U
Benzene	0.2 U
Bromobenzene	0.2 U
Bromochloromethane	0.2 U
Bromoethane	0.2 U
Bromoform	0.2 U
Bromomethane	1 U
Carbon Disulfide	0.2 U
Carbon Tetrachloride	0.2 U

Sample ID Sampling Date	KW Tank 6/21/2019
Volatiles in µg/L	
CFC-11	0.2 U
CFC-113	0.2 U
Chlorobenzene	0.2 U
Chlorodibromomethane	0.2 U
Chloroethane	0.2 U
Chloroform	0.06 J
Chloromethane	0.5 U
Cis-1,2-Dichloroethene	0.2 U
Cis-1,3-Dichloropropene	0.2 U
Dibromomethane	0.2 U
Dichlorobromomethane	0.2 U
Dichlorodifluoromethane	0.2 U
Ethylbenzene	0.2 U
Ethylene Dibromide	0.2 U
Hexachlorobutadiene	0.5 U
Iodomethane	1 U
Isopropyl Benzene	0.2 U
m, p-Xylene	0.4 U
methyl ethyl ketone	5 U
Methyl isobutyl ketone	5 U
Methyl t-butyl ether	0.5 U
Methylene Chloride	1 U
Naphthalene	0.5 U
n-Butylbenzene	0.2 U
n-Propylbenzene	0.2 U
o-Xylene	0.2 U
Sec-Butylbenzene	0.2 U
Styrene	0.2 U
tert-butylbenzene	0.2 U
Tetrachloroethene	0.2 U
Toluene	0.2 U
Total Xylenes	0.6 U
Trans-1,2-Dichloroethene	0.2 U
Trans-1,3-Dichloropropene	0.2 U
Trans-1,4-Dichloro-2-butene	1 U
Trichloroethene	0.2 U
Vinyl Acetate	0.2 U
Vinyl Chloride	0.2 U

See page A-3 for explanation of data qualifiers.

Hart Crowser

APPENDIX B

Data Validation Summary for Surface Water Samples

APPENDIX B

DATA VALIDATION SUMMARY FOR SURFACE WATER SAMPLES

Summary of Data Validation Effort

This appendix provides the quality assurance (QA) review of five surface water samples and one field duplicate, collected in accordance with the PACCAR CMIP (DOF 1997) and Periodic Review (Ecology 2014) for the 2019 sampling event. The samples were submitted to Analytical Resources, Inc., (ARI) in Tukwila, Washington, for chemical analysis. The laboratory reported results as ARI Job No. 19F0304 and 19F0329 (See Appendix C). The samples were analyzed for the following:

- Total metals (copper, lead, and zinc) by EPA Method 200.8; and
- Hexavalent chromium by SM 3500-Cr B.

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews of laboratory procedures. Hart Crowser performed the data review using laboratory quality control results summary sheets to ensure the data met data quality objectives for the project. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Laboratory control sample (LCS) recoveries;
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPDs);
- Standard reference material (SRM) recoveries;
- Laboratory and field duplicate RPDs; and
- Reporting limits (RL).

Overall Data Quality

The overall data quality objectives (DQOs) as set forth in the quality assurance project plan (QAPP) were met, and the data for this site are acceptable for use as qualified. The completeness for the associated data is 100 percent. Detailed discussions are presented in the following pages.

Quality Assurance Objectives

Precision. Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Precision is generally evaluated using LCS/LCSD, MS/MSD, lab duplicate, and field duplicate results. The LCS/LCSD, MS/MSD, and lab duplicate results provide information on laboratory (only) precision, while field duplicates provide information on field and laboratory precision combined.

Analytical precision is generally measured through LCS/LCSD and MS/MSD samples for organic analysis, and through lab duplicate samples for metals and other inorganic analysis. Analytical precision is quantitatively expressed as the RPD between the MS/MSD or duplicates. Analytical

precision measurements were carried out on project surface water samples at a minimum frequency of one in 20 samples. The analytical precision for all analytes was acceptable or not applicable when the sample and duplicate results were less than five times the RL.

Accuracy. Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results was assessed by analyzing standard reference materials or by "spiking" samples with known standards (surrogates, LCS, SRM, and/or MS) and measuring the percent recovery.

Accuracy measurements for all fractions were carried out in accordance with method requirements for organic and inorganic analyses and at a minimum frequency of one in 20 samples. The analytical accuracy for all analytes was acceptable.

Completeness. Completeness is defined as the percentage of measurements made that are judged to be valid measurements. The completeness of the data is the ratio of acceptable data points to the total number of data points (expressed as a percent). The target completeness goal for this work was 100 percent. The completeness of the data for this project was 100 percent.

Comparability. Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Because standard techniques were used for both sample collection and laboratory analysis, the data collected from the same sampling locations and depths should be comparable to both internal and other data generated.

No Major Problems Encountered

No major problems were encountered.

Minor Problems Encountered

No minor problems were encountered.

Data Qualifier Definitions

The following data qualifiers are used in the text and tables according to a quality assurance review of the laboratory procedures and results:

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- UJ** Indicates the compound or analyte was analyzed for and not detected. Because of quality control deficiencies identified during data validation, the value reported may not accurately reflect the sample quantitation limit.

APPENDIX C
LABORATORY REPORT
Analytical Resources, Incorporated



Analytical Resources, Incorporated
Analytical Chemists and Consultants

02 July 2019

Roy Jensen
Hart Crowser
3131 Elliott Ave Suite 600
Seattle, WA 98121

RE: Paccar

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
19F0304

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19F0304		Turn-around Requested: -24-hr for Hex-Cr, or same day. Std. on other analytes		Page: 1 of 1	
ARI Client Company:		Phone: (206) 953-4822		Date: 6/21/19	Ice Present? NO
Client Contact: Roy Jensen				No. of Coolers: 1	Cooler Temps: 7.3°C
Client Project Name: PACCAR				Analysis Requested	
Client Project #: 163175		Samplers:		Notes/Comments	
Sample ID	Date	Time	Matrix	No. Containers	
✓ SC-15-062019	6/20/19	11:05	Water	3	X
✓ MW-3I-062019	↓	13:25	↓	1	X
✓ LW-9D-062019	↓	14:25	↓	4	X
✓ LW-9S-062019	↓	15:25	↓	1	X
✓ SW-6-062019	↓	17:50	↓	2	X
✓ SW-M5-062019	↓	16:20	↓	2	X
✓ SW-MD-062019	↓	15:55	↓	2	X
SW-3-062019	↓	17:00	↓	2	X
✓ SW-DP-062019	↓	17:20	↓	2	X
SW-MH-062019	↓	15:50	↓	2	X
Comments/Special Instructions		Relinquished by: [Signature]		Received by: [Signature]	
		(Signature)		(Signature)	
		Printed Name: Mike Staljian		Printed Name: Jacob Walter	
		Company: Hart Crowser		Company: ARI	
		Date & Time: 6/21/19 10:08		Date & Time: 06/21/19 1008	



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SC-1S-062019	19F0304-01	Water	20-Jun-2019 11:05	21-Jun-2019 10:08
MW-3I-062019	19F0304-02	Water	20-Jun-2019 11:25	21-Jun-2019 10:08
LW-9D-062019	19F0304-03	Water	20-Jun-2019 14:25	21-Jun-2019 10:08
LW-9S-062019	19F0304-04	Water	20-Jun-2019 15:25	21-Jun-2019 10:08
SW-6-062019	19F0304-05	Water	20-Jun-2019 17:50	21-Jun-2019 10:08
SW-M5-062019	19F0304-06	Water	20-Jun-2019 16:20	21-Jun-2019 10:08
SW-MD-062019	19F0304-07	Water	20-Jun-2019 15:55	21-Jun-2019 10:08
SW-3-062019	19F0304-08	Water	20-Jun-2019 17:00	21-Jun-2019 10:08
SW-DP-062019	19F0304-09	Water	20-Jun-2019 17:20	21-Jun-2019 10:08
SW-MH-062019	19F0304-10	Water	20-Jun-2019 15:50	21-Jun-2019 10:08



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Total Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Select samples were not analyzed for hexavalent chromium as unpreserved sample volume was not submitted.



WORK ORDER

19F0304

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Report To:

Hart Crowser
Roy Jensen
3131 Elliott Ave Suite 600
Seattle, WA 98121
Phone: (206) 324-9530
Fax: -

Invoice To:

Hart Crowser
Accounts Payable
3131 Elliott Ave Suite 600
Seattle, WA 98121
Phone : (206) 324-9530
Fax: -

Date Due: 08-Jul-2019 18:00 (10 day TAT)

Received By: Jacob Walter

Date Received: 21-Jun-2019 10:08

Logged In By: Jacob Walter

Date Logged In: 21-Jun-2019 10:54

Samples Received at: 7.3°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....No
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....Yes
Correct bottles used for the requested analyses.....No
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes
Sample split at ARI.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... No
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... Yes
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes



WORK ORDER

19F0304

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Analysis	Due	TAT	Expires	Comments
19F0304-01 SC-1S-062019 [Water] Sampled 20-Jun-2019 11:05				
8260C VOA	07/08/2019	10	7/4/2019	
19F0304-02 MW-3I-062019 [Water] Sampled 20-Jun-2019 11:25				
Met 200.8 - As UCT	07/08/2019	10	12/17/2019	
19F0304-03 LW-9D-062019 [Water] Sampled 20-Jun-2019 14:25				
8260C VOA	07/08/2019	10	7/4/2019	
Met 200.8 - As UCT	07/08/2019	10	12/17/2019	
19F0304-04 LW-9S-062019 [Water] Sampled 20-Jun-2019 15:25				
Met 200.8 - As UCT	07/08/2019	10	12/17/2019	
19F0304-05 SW-6-062019 [Water] Sampled 20-Jun-2019 17:50				
Chromium, Hexavalent, SM 3500-Cr B-09	07/08/2019	10	6/21/2019	
Met 200.8 - Cu UCT	07/08/2019	10	12/17/2019	
Met 200.8 - Pb	07/08/2019	10	12/17/2019	
Met 200.8 - Zn UCT	07/08/2019	10	12/17/2019	
Filter 0.45 micron (Cr+6)	07/08/2019	10	6/22/2019	
19F0304-06 SW-M5-062019 [Water] Sampled 20-Jun-2019 16:20				
Hold Sample	07/08/2019	10	6/19/2020	
19F0304-07 SW-MD-062019 [Water] Sampled 20-Jun-2019 15:55				
Hold Sample	07/08/2019	10	6/19/2020	
19F0304-08 SW-3-062019 [Water] Sampled 20-Jun-2019 17:00				
Filter 0.45 micron (Cr+6)	07/08/2019	10	6/22/2019	
Chromium, Hexavalent, SM 3500-Cr B-09	07/08/2019	10	6/21/2019	
Met 200.8 - Cu UCT	07/08/2019	10	12/17/2019	
Met 200.8 - Pb	07/08/2019	10	12/17/2019	
Met 200.8 - Zn UCT	07/08/2019	10	12/17/2019	
19F0304-09 SW-DP-062019 [Water] Sampled 20-Jun-2019 17:20				
Chromium, Hexavalent, SM 3500-Cr B-09	07/08/2019	10	6/21/2019	
Filter 0.45 micron (Cr+6)	07/08/2019	10	6/22/2019	
Met 200.8 - Cu UCT	07/08/2019	10	12/17/2019	
Met 200.8 - Pb	07/08/2019	10	12/17/2019	
Met 200.8 - Zn UCT	07/08/2019	10	12/17/2019	
19F0304-10 SW-MH-062019 [Water] Sampled 20-Jun-2019 15:50				
Hold Sample	07/08/2019	10	6/19/2020	



WORK ORDER

19F0304

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Preservation Confirmation

Container ID	Container Type	pH	
19F0304-01 A	VOA Vial, Clear, 40 mL, HCL		
19F0304-01 B	VOA Vial, Clear, 40 mL, HCL		
19F0304-01 C	VOA Vial, Clear, 40 mL, HCL		
19F0304-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-03 B	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0304-03 C	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0304-03 D	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0304-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-05 B	HDPE NM, 500 mL		
19F0304-06 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-06 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-07 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-07 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-08 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-08 B	HDPE NM, 500 mL		
19F0304-09 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-09 B	HDPE NM, 500 mL		
19F0304-10 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0304-10 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass

Jan

Preservation Confirmed By

06/21/19

Date



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Hart Crouse

Project Name: PACCAR

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19F0304

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1008 7.3°C

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO5206

Cooler Accepted by: JSW Date: 06/21/19 Time: 1008

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES (NO)

How were bottles sealed in plastic bags? Individually Grouped (Not)

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES (NO)

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? JSW YES (NO)

Was sufficient amount of sample sent in each bottle? JSW YES NO

Date VOC Trip Blank was made at ARI: _____ (NA)

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JSW Date: 06/21/19 Time: 1053 Labels checked by: JSW

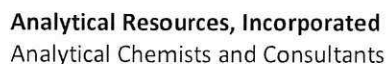
**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

no unpreserved volume received to Run Hex-Cr for Samples SW-MS-062019, SW-MD-062019, and SW-MH-062019. vials w/air bubbles marked as pres sheet. Lab to determine sizes.

By: JSW Date: 06/20/19



Cooler Temperature Compliance Form

Completed by: JSW Date: 06/21/19 Time: 1008

Cooler Temperature Compliance Form

Version 000
3/3/09



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

SC-1S-062019
19F0304-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 11:05

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:32

Sample Preparation:

Preparation Method: EPA 5030 (Purge and Trap)

Extract ID: 19F0304-01 C

Preparation Batch: BHF0610

Sample Size: 10 mL

Prepared: 25-Jun-2019

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.87	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

SC-1S-062019
19F0304-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 11:05

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:32

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.04	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

SC-1S-062019
19F0304-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 11:05

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:32

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	101	%	
Surrogate: Toluene-d8		80-120 %	98.7	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	97.6	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	98.7	%	



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3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

MW-3I-062019
19F0304-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 11:25
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:14
Sample Preparation:	Extract ID: 19F0304-02 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	13.7	ug/L	



Hart Crowser
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Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

LW-9D-062019
19F0304-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 14:25

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:59

Sample Preparation:

Preparation Method: EPA 5030 (Purge and Trap)

Extract ID: 19F0304-03 D

Preparation Batch: BHF0610

Sample Size: 10 mL

Prepared: 25-Jun-2019

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	0.52	ug/L	
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	3.79	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

LW-9D-062019
19F0304-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 14:25

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:59

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.03	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

LW-9D-062019
19F0304-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/20/2019 14:25

Instrument: NT3 Analyst: PKC

Analyzed: 06/25/2019 17:59

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	96.3	%	
Surrogate: Toluene-d8		80-120 %	100	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	100	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	102	%	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

LW-9D-062019
19F0304-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/20/2019 14:25

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:19

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0304-03 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	9.12	ug/L	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

LW-9S-062019
19F0304-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 15:25
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:24
Sample Preparation:	Extract ID: 19F0304-04 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	6.10	ug/L	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-6-062019
19F0304-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8	Sampled: 06/20/2019 17:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:28
Sample Preparation:	Extract ID: 19F0304-05 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Lead	7439-92-1	1	0.0680	0.100	0.356	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-6-062019
19F0304-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 17:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:28
Sample Preparation:	Extract ID: 19F0304-05 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.340	0.500	3.75	ug/L	
Zinc	7440-66-6	1	0.820	4.00	8.72	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-6-062019
19F0304-05 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09
Instrument: UV1800-2 Analyst: CDE

Sampled: 06/20/2019 17:50

Analyzed: 06/21/2019 14:31

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BHF0528 Sample Size: 40 mL
Prepared: 21-Jun-2019 Final Volume: 50 mL

Extract ID: 19F0304-05 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Project Manager: Roy Jensen

Reported:
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SW-M5-062019
19F0304-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/20/2019 16:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:33

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0304-06 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0680	0.100	1.52	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-M5-062019
19F0304-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 16:20
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:33
Sample Preparation:	Extract ID: 19F0304-06 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.340	0.500	5.28	ug/L	
Zinc	7440-66-6	1	0.820	4.00	40.1	ug/L	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-MD-062019

19F0304-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/20/2019 15:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:37

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0304-07 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0680	0.100	1.10	ug/L	



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Project Manager: Roy Jensen

Reported:
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SW-MD-062019

19F0304-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/20/2019 15:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:37

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 19F0304-07 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Copper	7440-50-8	1	0.340	0.500	43.0	ug/L	
Zinc	7440-66-6	1	0.820	4.00	68.2	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-3-062019
19F0304-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/20/2019 17:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:42

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0304-08 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0680	0.100	1.21	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-3-062019
19F0304-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 17:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:42
Sample Preparation:	Extract ID: 19F0304-08 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.340	0.500	2.47	ug/L	
Zinc	7440-66-6	1	0.940	4.00	72.2	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-3-062019
19F0304-08 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09
Instrument: UV1800-2 Analyst: CDE

Sampled: 06/20/2019 17:00

Analyzed: 06/21/2019 14:32

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BHF0528 Sample Size: 40 mL
Prepared: 21-Jun-2019 Final Volume: 50 mL

Extract ID: 19F0304-08 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	0.015	mg/L	D



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-DP-062019
19F0304-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8	Sampled: 06/20/2019 17:20
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:47
Sample Preparation:	Extract ID: 19F0304-09 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0680	0.100	0.255	ug/L	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-DP-062019
19F0304-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/20/2019 17:20
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 18:47
Sample Preparation:	Extract ID: 19F0304-09 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0686	Sample Size: 25 mL
Prepared: 27-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Copper	7440-50-8	1	0.340	0.500	2.73	ug/L	
Zinc	7440-66-6	1	0.820	4.00	34.9	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-DP-062019
19F0304-09 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09
Instrument: UV1800-2 Analyst: CDE

Sampled: 06/20/2019 17:20

Analyzed: 06/21/2019 14:36

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BHF0528 Sample Size: 40 mL
Prepared: 21-Jun-2019 Final Volume: 50 mL

Extract ID: 19F0304-09 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-MH-062019

19F0304-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/20/2019 15:50

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:51

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0304-10 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Lead	7439-92-1	1	0.0680	0.100	1.05	ug/L	



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Project Number: [none]
Project Manager: Roy Jensen

Reported:
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SW-MH-062019

19F0304-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/20/2019 15:50

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 18:51

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 19F0304-10 A 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Copper	7440-50-8	1	0.340	0.500	44.7	ug/L	
Zinc	7440-66-6	1	0.820	4.00	68.5	ug/L	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0610-BLK1)						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 12:40					
Chloromethane	ND	0.09	0.50	ug/L							U
Vinyl Chloride	ND	0.06	0.20	ug/L							U
Bromomethane	ND	0.25	1.00	ug/L							U
Chloroethane	ND	0.09	0.20	ug/L							U
Trichlorofluoromethane	ND	0.04	0.20	ug/L							U
Acrolein	ND	2.48	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.04	0.20	ug/L							U
Acetone	ND	2.06	5.00	ug/L							U
1,1-Dichloroethene	ND	0.05	0.20	ug/L							U
Bromoethane	ND	0.04	0.20	ug/L							U
Iodomethane	ND	0.23	1.00	ug/L							U
Methylene Chloride	ND	0.49	1.00	ug/L							U
Acrylonitrile	ND	0.60	1.00	ug/L							U
Carbon Disulfide	ND	0.04	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.05	0.20	ug/L							U
Vinyl Acetate	ND	0.07	0.20	ug/L							U
1,1-Dichloroethane	ND	0.05	0.20	ug/L							U
2-Butanone	ND	0.81	5.00	ug/L							U
2,2-Dichloropropane	ND	0.05	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.04	0.20	ug/L							U
Chloroform	ND	0.03	0.20	ug/L							U
Bromochloromethane	ND	0.06	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.04	0.20	ug/L							U
1,1-Dichloropropene	ND	0.03	0.20	ug/L							U
Carbon tetrachloride	ND	0.04	0.20	ug/L							U
1,2-Dichloroethane	ND	0.07	0.20	ug/L							U
Benzene	ND	0.03	0.20	ug/L							U
Trichloroethene	ND	0.05	0.20	ug/L							U
1,2-Dichloropropane	ND	0.04	0.20	ug/L							U
Bromodichloromethane	ND	0.05	0.20	ug/L							U
Dibromomethane	ND	0.15	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.25	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	0.97	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.06	0.20	ug/L							U
Toluene	ND	0.04	0.20	ug/L							U



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0610-BLK1)						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 12:40					
trans-1,3-Dichloropropene	ND	0.08	0.20	ug/L							U
2-Hexanone	ND	0.90	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.13	0.20	ug/L							U
1,3-Dichloropropane	ND	0.06	0.20	ug/L							U
Tetrachloroethene	ND	0.05	0.20	ug/L							U
Dibromochloromethane	ND	0.05	0.20	ug/L							U
1,2-Dibromoethane	ND	0.07	0.20	ug/L							U
Chlorobenzene	ND	0.02	0.20	ug/L							U
Ethylbenzene	ND	0.04	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.04	0.20	ug/L							U
m,p-Xylene	ND	0.05	0.40	ug/L							U
o-Xylene	ND	0.03	0.20	ug/L							U
Xylenes, total	ND	0.09	0.60	ug/L							U
Styrene	ND	0.05	0.20	ug/L							U
Bromoform	ND	0.06	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.06	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.13	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.32	1.00	ug/L							U
n-Propylbenzene	ND	0.02	0.20	ug/L							U
Bromobenzene	ND	0.06	0.20	ug/L							U
Isopropyl Benzene	ND	0.02	0.20	ug/L							U
2-Chlorotoluene	ND	0.02	0.20	ug/L							U
4-Chlorotoluene	ND	0.02	0.20	ug/L							U
t-Butylbenzene	ND	0.03	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene	0.04	0.02	0.20	ug/L							J
s-Butylbenzene	ND	0.02	0.20	ug/L							U
4-Isopropyl Toluene	0.03	0.03	0.20	ug/L							J
1,3-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.04	0.20	ug/L							U
n-Butylbenzene	0.03	0.02	0.20	ug/L							J
1,2-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.37	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.11	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.07	0.50	ug/L							U



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0610-BLK1)											
						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 12:40					
Naphthalene	0.24	0.12	0.50	ug/L							J
1,2,3-Trichlorobenzene	0.16	0.11	0.50	ug/L							J
Dichlorodifluoromethane	ND	0.05	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.07	0.50	ug/L							U
2-Pentanone	ND	5.00	5.00	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.01			ug/L	5.00		100	80-129			
Surrogate: Toluene-d8	4.85			ug/L	5.00		97.0	80-120			
Surrogate: 4-Bromofluorobenzene	5.01			ug/L	5.00		100	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.10			ug/L	5.00		102	80-120			
LCS (BHF0610-BS1)											
						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:26					
Chloromethane	10.0	0.09	0.50	ug/L	10.0		100	60-138			
Vinyl Chloride	10.1	0.06	0.20	ug/L	10.0		101	66-133			
Bromomethane	10.5	0.25	1.00	ug/L	10.0		105	72-131			
Chloroethane	9.83	0.09	0.20	ug/L	10.0		98.3	60-155			
Trichlorofluoromethane	10.3	0.04	0.20	ug/L	10.0		103	80-129			
Acrolein	48.1	2.48	5.00	ug/L	50.0		96.1	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.6	0.04	0.20	ug/L	10.0		106	76-129			
Acetone	48.4	2.06	5.00	ug/L	50.0		96.8	58-142			
1,1-Dichloroethene	10.1	0.05	0.20	ug/L	10.0		101	69-135			
Bromoethane	10.5	0.04	0.20	ug/L	10.0		105	78-128			
Iodomethane	10.2	0.23	1.00	ug/L	10.0		102	56-147			
Methylene Chloride	9.35	0.49	1.00	ug/L	10.0		93.5	65-135			
Acrylonitrile	8.49	0.60	1.00	ug/L	10.0		84.9	64-134			
Carbon Disulfide	10.2	0.04	0.20	ug/L	10.0		102	78-125			
trans-1,2-Dichloroethene	10.4	0.05	0.20	ug/L	10.0		104	78-128			
Vinyl Acetate	9.47	0.07	0.20	ug/L	10.0		94.7	55-138			
1,1-Dichloroethane	10.4	0.05	0.20	ug/L	10.0		104	76-124			
2-Butanone	42.0	0.81	5.00	ug/L	50.0		84.0	61-140			
2,2-Dichloropropane	10.8	0.05	0.20	ug/L	10.0		108	78-125			
cis-1,2-Dichloroethene	10.1	0.04	0.20	ug/L	10.0		101	80-121			
Chloroform	10.0	0.03	0.20	ug/L	10.0		100	80-122			
Bromochloromethane	10.5	0.06	0.20	ug/L	10.0		105	80-121			
1,1,1-Trichloroethane	10.5	0.04	0.20	ug/L	10.0		105	79-123			
1,1-Dichloropropene	9.87	0.03	0.20	ug/L	10.0		98.7	80-120			



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHF0610-BS1)						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:26					
Carbon tetrachloride	12.0	0.04	0.20	ug/L	10.0		120	53-137			
1,2-Dichloroethane	9.52	0.07	0.20	ug/L	10.0		95.2	75-123			
Benzene	9.90	0.03	0.20	ug/L	10.0		99.0	80-120			
Trichloroethene	10.0	0.05	0.20	ug/L	10.0		100	80-120			
1,2-Dichloropropane	9.95	0.04	0.20	ug/L	10.0		99.5	80-120			
Bromodichloromethane	9.81	0.05	0.20	ug/L	10.0		98.1	80-121			
Dibromomethane	9.91	0.15	0.20	ug/L	10.0		99.1	80-120			
2-Chloroethyl vinyl ether	9.63	0.25	1.00	ug/L	10.0		96.3	74-127			
4-Methyl-2-Pentanone	43.7	0.97	5.00	ug/L	50.0		87.4	67-133			
cis-1,3-Dichloropropene	10.4	0.06	0.20	ug/L	10.0		104	80-124			
Toluene	10.3	0.04	0.20	ug/L	10.0		103	80-120			
trans-1,3-Dichloropropene	10.2	0.08	0.20	ug/L	10.0		102	71-127			
2-Hexanone	41.4	0.90	5.00	ug/L	50.0		82.7	69-133			
1,1,2-Trichloroethane	9.59	0.13	0.20	ug/L	10.0		95.9	80-121			
1,3-Dichloropropane	9.14	0.06	0.20	ug/L	10.0		91.4	80-120			
Tetrachloroethene	9.91	0.05	0.20	ug/L	10.0		99.1	80-120			
Dibromochloromethane	9.15	0.05	0.20	ug/L	10.0		91.5	65-135			
1,2-Dibromoethane	9.54	0.07	0.20	ug/L	10.0		95.4	80-121			
Chlorobenzene	9.43	0.02	0.20	ug/L	10.0		94.3	80-120			
Ethylbenzene	9.92	0.04	0.20	ug/L	10.0		99.2	80-120			
1,1,1,2-Tetrachloroethane	9.99	0.04	0.20	ug/L	10.0		99.9	80-120			
m,p-Xylene	19.8	0.05	0.40	ug/L	20.0		99.2	80-121			
o-Xylene	10.0	0.03	0.20	ug/L	10.0		100	80-121			
Xylenes, total	29.8	0.09	0.60	ug/L	30.0		99.5	76-127			
Styrene	10.5	0.05	0.20	ug/L	10.0		105	80-124			
Bromoform	8.90	0.06	0.20	ug/L	10.0		89.0	51-134			
1,1,2,2-Tetrachloroethane	8.29	0.06	0.20	ug/L	10.0		82.9	77-123			
1,2,3-Trichloropropane	8.68	0.13	0.50	ug/L	10.0		86.8	76-125			
trans-1,4-Dichloro 2-Butene	7.39	0.32	1.00	ug/L	10.0		73.9	55-129			Q
n-Propylbenzene	9.97	0.02	0.20	ug/L	10.0		99.7	78-130			
Bromobenzene	9.40	0.06	0.20	ug/L	10.0		94.0	80-120			
Isopropyl Benzene	9.75	0.02	0.20	ug/L	10.0		97.5	80-128			
2-Chlorotoluene	9.56	0.02	0.20	ug/L	10.0		95.6	78-122			
4-Chlorotoluene	9.74	0.02	0.20	ug/L	10.0		97.4	80-121			
t-Butylbenzene	9.74	0.03	0.20	ug/L	10.0		97.4	78-125			



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
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Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHF0610-BS1)											
						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:26					
1,3,5-Trimethylbenzene	9.92	0.02	0.20	ug/L	10.0		99.2	80-129			
1,2,4-Trimethylbenzene	10.0	0.02	0.20	ug/L	10.0		100	80-127			
s-Butylbenzene	9.83	0.02	0.20	ug/L	10.0		98.3	78-129			
4-Isopropyl Toluene	9.96	0.03	0.20	ug/L	10.0		99.6	79-130			
1,3-Dichlorobenzene	9.52	0.04	0.20	ug/L	10.0		95.2	80-120			
1,4-Dichlorobenzene	9.28	0.04	0.20	ug/L	10.0		92.8	80-120			
n-Butylbenzene	10.1	0.02	0.20	ug/L	10.0		101	74-129			
1,2-Dichlorobenzene	9.36	0.04	0.20	ug/L	10.0		93.6	80-120			
1,2-Dibromo-3-chloropropane	8.89	0.37	0.50	ug/L	10.0		88.9	62-123			
1,2,4-Trichlorobenzene	9.02	0.11	0.50	ug/L	10.0		90.2	64-124			
Hexachloro-1,3-Butadiene	10.5	0.07	0.50	ug/L	10.0		105	58-123			
Naphthalene	10.3	0.12	0.50	ug/L	10.0		103	50-134			
1,2,3-Trichlorobenzene	8.68	0.11	0.50	ug/L	10.0		86.8	49-133			
Dichlorodifluoromethane	9.68	0.05	0.20	ug/L	10.0		96.8	48-147			
Methyl tert-butyl Ether	9.51	0.07	0.50	ug/L	10.0		95.1	71-132			
2-Pentanone	42.9	5.00	5.00	ug/L	50.0		85.8	69-134			
Surrogate: 1,2-Dichloroethane-d4	4.90			ug/L	5.00		97.9	80-129			
Surrogate: Toluene-d8	5.21			ug/L	5.00		104	80-120			
Surrogate: 4-Bromofluorobenzene	5.17			ug/L	5.00		103	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.92			ug/L	5.00		98.4	80-120			
LCS Dup (BHF0610-BSD1)											
						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:53					
Chloromethane	10.2	0.09	0.50	ug/L	10.0		102	60-138	1.99	30	
Vinyl Chloride	11.0	0.06	0.20	ug/L	10.0		110	66-133	8.84	30	
Bromomethane	10.5	0.25	1.00	ug/L	10.0		105	72-131	0.68	30	
Chloroethane	9.96	0.09	0.20	ug/L	10.0		99.6	60-155	1.30	30	
Trichlorofluoromethane	10.7	0.04	0.20	ug/L	10.0		107	80-129	3.41	30	
Acrolein	50.3	2.48	5.00	ug/L	50.0		101	52-144	4.58	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.9	0.04	0.20	ug/L	10.0		109	76-129	2.22	30	
Acetone	52.9	2.06	5.00	ug/L	50.0		106	58-142	8.76	30	
1,1-Dichloroethene	10.6	0.05	0.20	ug/L	10.0		106	69-135	4.81	30	
Bromoethane	10.9	0.04	0.20	ug/L	10.0		109	78-128	3.87	30	
Iodomethane	10.9	0.23	1.00	ug/L	10.0		109	56-147	6.62	30	
Methylene Chloride	9.81	0.49	1.00	ug/L	10.0		98.1	65-135	4.81	30	
Acrylonitrile	10.1	0.60	1.00	ug/L	10.0		101	64-134	17.20	30	



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Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHF0610-BSD1)						Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:53					
Carbon Disulfide	10.7	0.04	0.20	ug/L	10.0		107	78-125	5.22	30	
trans-1,2-Dichloroethene	10.7	0.05	0.20	ug/L	10.0		107	78-128	3.25	30	
Vinyl Acetate	10.7	0.07	0.20	ug/L	10.0		107	55-138	12.00	30	
1,1-Dichloroethane	11.0	0.05	0.20	ug/L	10.0		110	76-124	5.53	30	
2-Butanone	47.5	0.81	5.00	ug/L	50.0		95.1	61-140	12.40	30	
2,2-Dichloropropane	11.4	0.05	0.20	ug/L	10.0		114	78-125	5.57	30	
cis-1,2-Dichloroethene	10.8	0.04	0.20	ug/L	10.0		108	80-121	6.10	30	
Chloroform	10.3	0.03	0.20	ug/L	10.0		103	80-122	2.91	30	
Bromochloromethane	10.9	0.06	0.20	ug/L	10.0		109	80-121	3.54	30	
1,1,1-Trichloroethane	10.7	0.04	0.20	ug/L	10.0		107	79-123	1.60	30	
1,1-Dichloropropene	10.5	0.03	0.20	ug/L	10.0		105	80-120	6.32	30	
Carbon tetrachloride	12.3	0.04	0.20	ug/L	10.0		123	53-137	2.59	30	
1,2-Dichloroethane	10.3	0.07	0.20	ug/L	10.0		103	75-123	8.02	30	
Benzene	10.3	0.03	0.20	ug/L	10.0		103	80-120	4.36	30	
Trichloroethene	10.5	0.05	0.20	ug/L	10.0		105	80-120	4.60	30	
1,2-Dichloropropane	10.2	0.04	0.20	ug/L	10.0		102	80-120	2.82	30	
Bromodichloromethane	10.2	0.05	0.20	ug/L	10.0		102	80-121	4.27	30	
Dibromomethane	10.7	0.15	0.20	ug/L	10.0		107	80-120	7.63	30	
2-Chloroethyl vinyl ether	10.7	0.25	1.00	ug/L	10.0		107	74-127	10.80	30	
4-Methyl-2-Pentanone	48.8	0.97	5.00	ug/L	50.0		97.7	67-133	11.10	30	
cis-1,3-Dichloropropene	10.9	0.06	0.20	ug/L	10.0		109	80-124	4.39	30	
Toluene	10.5	0.04	0.20	ug/L	10.0		105	80-120	2.48	30	
trans-1,3-Dichloropropene	11.1	0.08	0.20	ug/L	10.0		111	71-127	8.79	30	
2-Hexanone	45.9	0.90	5.00	ug/L	50.0		91.9	69-133	10.50	30	
1,1,2-Trichloroethane	10.5	0.13	0.20	ug/L	10.0		105	80-121	9.44	30	
1,3-Dichloropropane	9.78	0.06	0.20	ug/L	10.0		97.8	80-120	6.74	30	
Tetrachloroethene	10.1	0.05	0.20	ug/L	10.0		101	80-120	1.58	30	
Dibromochloromethane	9.76	0.05	0.20	ug/L	10.0		97.6	65-135	6.49	30	
1,2-Dibromoethane	10.3	0.07	0.20	ug/L	10.0		103	80-121	7.34	30	
Chlorobenzene	9.95	0.02	0.20	ug/L	10.0		99.5	80-120	5.40	30	
Ethylbenzene	10.2	0.04	0.20	ug/L	10.0		102	80-120	2.62	30	
1,1,1,2-Tetrachloroethane	10.3	0.04	0.20	ug/L	10.0		103	80-120	3.46	30	
m,p-Xylene	20.3	0.05	0.40	ug/L	20.0		102	80-121	2.48	30	
o-Xylene	10.2	0.03	0.20	ug/L	10.0		102	80-121	1.97	30	
Xylenes, total	30.5	0.09	0.60	ug/L	30.0		102	76-127	2.31	30	



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Volatile Organic Compounds - Quality Control

Batch BHF0610 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHF0610-BSD1)					Prepared: 25-Jun-2019 Analyzed: 25-Jun-2019 10:53						
Styrene	10.6	0.05	0.20	ug/L	10.0		106	80-124	1.60	30	
Bromoform	10.2	0.06	0.20	ug/L	10.0		102	51-134	13.50	30	
1,1,2,2-Tetrachloroethane	8.89	0.06	0.20	ug/L	10.0		88.9	77-123	6.99	30	
1,2,3-Trichloropropane	9.21	0.13	0.50	ug/L	10.0		92.1	76-125	5.93	30	
trans-1,4-Dichloro 2-Butene	7.84	0.32	1.00	ug/L	10.0		78.4	55-129	5.79	30	Q
n-Propylbenzene	10.2	0.02	0.20	ug/L	10.0		102	78-130	2.28	30	
Bromobenzene	9.87	0.06	0.20	ug/L	10.0		98.7	80-120	4.83	30	
Isopropyl Benzene	9.97	0.02	0.20	ug/L	10.0		99.7	80-128	2.26	30	
2-Chlorotoluene	9.98	0.02	0.20	ug/L	10.0		99.8	78-122	4.30	30	
4-Chlorotoluene	9.93	0.02	0.20	ug/L	10.0		99.3	80-121	1.94	30	
t-Butylbenzene	10.0	0.03	0.20	ug/L	10.0		100	78-125	2.81	30	
1,3,5-Trimethylbenzene	10.1	0.02	0.20	ug/L	10.0		101	80-129	1.51	30	
1,2,4-Trimethylbenzene	10.2	0.02	0.20	ug/L	10.0		102	80-127	1.27	30	
s-Butylbenzene	10.1	0.02	0.20	ug/L	10.0		101	78-129	3.08	30	
4-Isopropyl Toluene	10.1	0.03	0.20	ug/L	10.0		101	79-130	1.83	30	
1,3-Dichlorobenzene	9.92	0.04	0.20	ug/L	10.0		99.2	80-120	4.20	30	
1,4-Dichlorobenzene	9.80	0.04	0.20	ug/L	10.0		98.0	80-120	5.39	30	
n-Butylbenzene	10.5	0.02	0.20	ug/L	10.0		105	74-129	3.47	30	
1,2-Dichlorobenzene	9.80	0.04	0.20	ug/L	10.0		98.0	80-120	4.56	30	
1,2-Dibromo-3-chloropropane	11.1	0.37	0.50	ug/L	10.0		111	62-123	22.30	30	
1,2,4-Trichlorobenzene	10.1	0.11	0.50	ug/L	10.0		101	64-124	11.50	30	
Hexachloro-1,3-Butadiene	11.7	0.07	0.50	ug/L	10.0		117	58-123	10.70	30	
Naphthalene	11.7	0.12	0.50	ug/L	10.0		117	50-134	12.60	30	
1,2,3-Trichlorobenzene	10.3	0.11	0.50	ug/L	10.0		103	49-133	16.70	30	
Dichlorodifluoromethane	9.96	0.05	0.20	ug/L	10.0		99.6	48-147	2.85	30	
Methyl tert-butyl Ether	10.3	0.07	0.50	ug/L	10.0		103	71-132	8.43	30	
2-Pentanone	46.4	5.00	5.00	ug/L	50.0		92.8	69-134	7.82	30	
Surrogate: 1,2-Dichloroethane-d4	5.07			ug/L	5.00		101	80-129			
Surrogate: Toluene-d8	5.00			ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.15			ug/L	5.00		103	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.99			ug/L	5.00		99.8	80-120			



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Metals and Metallic Compounds - Quality Control

Batch BHF0686 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0686-BLK1)						Prepared: 27-Jun-2019 Analyzed: 27-Jun-2019 16:27						
Lead	208	ND	0.0680	0.100	ug/L							U
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Zinc	66	1.27	0.820	4.00	ug/L							J
Zinc	67	1.46	0.940	4.00	ug/L							J
LCS (BHF0686-BS1)						Prepared: 27-Jun-2019 Analyzed: 27-Jun-2019 16:22						
Lead	208	26.1	0.0680	0.100	ug/L	25.0		104	80-120			
Arsenic	75a	25.0	0.0220	0.200	ug/L	25.0		100	80-120			
Copper	63	25.3	0.340	0.500	ug/L	25.0		101	80-120			
Copper	65	25.1	0.350	0.500	ug/L	25.0		100	80-120			
Zinc	66	81.9	0.820	4.00	ug/L	80.0		102	80-120			
Zinc	67	76.2	0.940	4.00	ug/L	80.0		95.2	80-120			



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Wet Chemistry - Quality Control

Batch BHF0528 - No Prep Wet Chem

Instrument: UV1800-2 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0528-BLK1)										
					Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 14:15					
Hexavalent Chromium	ND	0.013	0.013	mg/L						U
LCS (BHF0528-BS1)										
					Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 14:16					
Hexavalent Chromium	0.623	0.013	0.013	mg/L	0.625		99.8 85-115			D



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Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-67	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE



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Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE



Hart Crowser

3131 Elliott Ave Suite 600

Seattle WA, 98121

Project: Paccar

Project Number: [none]

Project Manager: Roy Jensen

Reported:

02-Jul-2019 15:04

1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

SM 3500-Cr B-09 in Water

Hexavalent Chromium	WADOE,NELAP
---------------------	-------------

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
02-Jul-2019 15:04

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
Y1	Raised reporting limit due to interference
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



08 July 2019

Roy Jensen
Hart Crowser
3131 Elliott Ave Suite 600
Seattle, WA 98121

RE: Paccar

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
19F0329

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

DRAFT REPORT

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19F0329		Turn-around Requested: 24-hr TAT on CR-6 analytes, Standard TAT on others		Page: 1 of 1										
ARI Client Company: HC		Phone: 206-953-4822		Date: 6/21/19	Ice Present? Yes									
Client Contact: Roy Jensen		No. of Coolers: 1		Cooler Temps: 7.1°F										
Client Project Name: PACCAR		Analysis Requested				Notes/Comments								
Client Project #: 163975							Samplers: M. Shaljian							
Sample ID	Date	Time	Matrix	No. Containers	CR-6	VOCs	8260B	Total Arsenic						
SW-MA	6/21/19	17:30	Water	1	X									Resubmission for 6/20/19
SW-MD		17:31			X									" "
SW-S		17:45			X									↓
CW-15		13:45		4		X	X							
CW-1005		13:46		2		X	X							(1) VOC only
LW-60		15:05		1			X							
CW-1D		13:58		1			X							
SC-25		12:00		3		X								
Comments/Special Instructions					Relinquished by: (Signature) [Signature]		Received by: (Signature) [Signature]		Relinquished by: (Signature)		Received by: (Signature)			
					Printed Name: Mike Shaljian		Printed Name: Jacob Walker		Printed Name:		Printed Name:			
					Company: HC		Company: ARI		Company:		Company:			
					Date & Time: 6/21/19 18:17		Date & Time: 06/21/19 1817		Date & Time:		Date & Time:			



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Sample Custody Record

Samples Shipped to: ARI



Hart Crowser, Inc.
3131 Elliott Avenue, Suite 600
Seattle, Washington 98121
Office: 206.324.9530 • Fax 206.328.5581

[illegible]

White to Lab Yellow to Project Manager Pink to Sample Custodian



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-MH	19F0329-01	Water	21-Jun-2019 17:30	21-Jun-2019 18:17
SW-MD	19F0329-02	Water	21-Jun-2019 17:31	21-Jun-2019 18:17
SW-5	19F0329-03	Water	21-Jun-2019 17:45	21-Jun-2019 18:17
CW-1S	19F0329-04	Water	21-Jun-2019 13:45	21-Jun-2019 18:17
CW-100S	19F0329-05	Water	21-Jun-2019 13:46	21-Jun-2019 18:17
LW-6D	19F0329-06	Water	21-Jun-2019 15:05	21-Jun-2019 18:17
CW-1D	19F0329-07	Water	21-Jun-2019 13:58	21-Jun-2019 18:17
5C-2S	19F0329-08	Water	21-Jun-2019 12:00	21-Jun-2019 18:17
Trip Blank	19F0329-09	Water	21-Jun-2019 12:00	21-Jun-2019 18:17
Purge-062119	19F0329-10	Water	21-Jun-2019 12:00	21-Jun-2019 18:17

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Missing Case Narrative!



WORK ORDER

19F0329

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Report To:

Hart Crowser
Roy Jensen
3131 Elliott Ave Suite 600
Seattle, WA 98121
Phone: (206) 324-9530
Fax: -

Invoice To:

Hart Crowser
Accounts Payable
3131 Elliott Ave Suite 600
Seattle, WA 98121
Phone : (206) 324-9530
Fax: -

Date Due: 09-Jul-2019 18:00 (10 day TAT)

Received By: Jacob Walter

Date Received: 21-Jun-2019 18:17

Logged In By: Jacob Walter

Date Logged In: 21-Jun-2019 18:30

Samples Received at: 7.1°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....No
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....No
Correct bottles used for the requested analyses.....Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes
Sample split at ARI.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... No
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... No
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes



WORK ORDER

19F0329

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Analysis	Due	TAT	Expires	Comments
19F0329-01 SW-MH [Water] Sampled 21-Jun-2019 17:30				
Chromium, Hexavalent, SM 3500-Cr B-09	07/09/2019	10	6/22/2019	
Filter 0.45 micron (Cr+6)	07/09/2019	10	6/22/2019	
19F0329-02 SW-MD [Water] Sampled 21-Jun-2019 17:31				
Chromium, Hexavalent, SM 3500-Cr B-09	07/09/2019	10	6/22/2019	
Filter 0.45 micron (Cr+6)	07/09/2019	10	6/22/2019	
19F0329-03 SW-5 [Water] Sampled 21-Jun-2019 17:45				
Chromium, Hexavalent, SM 3500-Cr B-09	07/09/2019	10	6/22/2019	
Filter 0.45 micron (Cr+6)	07/09/2019	10	6/22/2019	
19F0329-04 CW-1S [Water] Sampled 21-Jun-2019 13:45				
Met 200.8 - As UCT	07/09/2019	10	12/18/2019	
8260C VOA	07/09/2019	10	7/5/2019	
19F0329-05 CW-100S [Water] Sampled 21-Jun-2019 13:46				
8260C VOA	07/09/2019	10	7/5/2019	
Met 200.8 - As UCT	07/09/2019	10	12/18/2019	
19F0329-06 LW-6D [Water] Sampled 21-Jun-2019 15:05				
Met 200.8 - As UCT	07/09/2019	10	12/18/2019	
19F0329-07 CW-1D [Water] Sampled 21-Jun-2019 13:58				
Met 200.8 - As UCT	07/09/2019	10	12/18/2019	
19F0329-08 5C-2S [Water] Sampled 21-Jun-2019 12:00				
8260C VOA	07/09/2019	10	7/5/2019	
19F0329-09 Trip Blank [Water] Sampled 21-Jun-2019 12:00				
8260C VOA	07/09/2019	10	7/5/2019	
19F0329-10 Purge-062119 [Water] Sampled 21-Jun-2019 12:00				
Chromium, Hexavalent, SM 3500-Cr B-09	07/09/2019	10	6/22/2019	
Filter 0.45 micron (Cr+6)	07/09/2019	10	6/22/2019	
Hold Sample	07/09/2019	10	6/20/2020	



WORK ORDER

19F0329

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: [none]

Preservation Confirmation

Container ID	Container Type	pH	
19F0329-01 A	HDPE NM, 500 mL		
19F0329-02 A	HDPE NM, 500 mL		
19F0329-03 A	HDPE NM, 500 mL		
19F0329-04 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	fail
19F0329-04 B	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0329-04 C	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0329-04 D	VOA Vial, Clear, 40 mL, HCL		
19F0329-05 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	fail
19F0329-05 B	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0329-06 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	fail
19F0329-07 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	pass
19F0329-08 A	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0329-08 B	VOA Vial, Clear, 40 mL, HCL	Bubble	
19F0329-08 C	VOA Vial, Clear, 40 mL, HCL		
19F0329-09 A	VOA Vial, Clear, 40 mL, HCL		
19F0329-09 B	VOA Vial, Clear, 40 mL, HCL		
19F0329-10 A	HDPE NM, 500 mL		
19F0329-10 B	HDPE NM, 500 mL, 1:1 HNO3	7.2	pass
19F0329-10 C	Glass NM, Amber, 500 mL		
19F0329-10 D	Glass NM, Amber, 500 mL		
19F0329-10 E	VOA Vial, Clear, 40 mL, HCL		
19F0329-10 F	VOA Vial, Clear, 40 mL, HCL		
19F0329-10 G	VOA Vial, Clear, 40 mL, HCL		

Preservation Confirmed By

Date



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Hart Crumser
COC No(s): _____ NA
Assigned ARI Job No: 19F0329

Project Name: PACCAR
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1817 21°C
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5206

Cooler Accepted by: JSW Date: 06/21/19 Time: 1817

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
Was sufficient ice used (if appropriate)? NA YES NO
How were bottles sealed in plastic bags? Individually Grouped Not
Did all bottles arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did the number of containers listed on COC match with the number of containers received? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
Were all VOC vials free of air bubbles? NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO
Date VOC Trip Blank was made at ARI: NA 6/18/19
Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JSW Date: 06/21/19 Time: 1828 Labels checked by: JSW

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>Purge - 06/21/19</u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
Additional Notes, Discrepancies, & Resolutions: <u>above sample and TB's were not listed on client's COC. Hex-Cr sample for Purge was logged in so it doesn't go out of holding. other analyses were left off until contact with client can be made.</u>			
By: <u>JSW</u>	Date: <u>06/21/19</u>		



Cooler Temperature Compliance Form

Version 000
3/3/09



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

SW-MH
19F0329-01 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09	Sampled: 06/21/2019 17:30
Instrument: UV1800-2 Analyst: BF	Analyzed: 06/21/2019 19:29
Sample Preparation:	Extract ID: 19F0329-01 A 01
Preparation Method: SM 5310 A-00, 0.45um filtration	
Preparation Batch: BHF0550	Sample Size: 40 mL
Prepared: 21-Jun-2019	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

SW-MD
19F0329-02 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09	Sampled: 06/21/2019 17:31
Instrument: UV1800-2 Analyst: BF	Analyzed: 06/21/2019 19:31
Sample Preparation:	Extract ID: 19F0329-02 A 01
Preparation Method: SM 5310 A-00, 0.45um filtration	
Preparation Batch: BHF0550	Sample Size: 40 mL
Prepared: 21-Jun-2019	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

SW-5
19F0329-03 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 06/21/2019 17:45

Instrument: UV1800-2 Analyst: BF

Analyzed: 06/21/2019 19:32

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 19F0329-03 A 01

Preparation Batch: BHF0550

Sample Size: 40 mL

Prepared: 21-Jun-2019

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-1S
19F0329-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 13:45

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:16

Sample Preparation:

Preparation Method: EPA 5030 (Purge and Trap)

Extract ID: 19F0329-04 B

Preparation Batch: BHF0638

Sample Size: 10 mL

Prepared: 26-Jun-2019

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-1S
19F0329-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 13:45

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:16

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-1S
19F0329-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 13:45

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:16

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	99.8	%	
Surrogate: Toluene-d8		80-120 %	92.9	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	92.3	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	105	%	



Hart Crowser
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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-1S
19F0329-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/21/2019 13:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 21:29

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0329-04 A 01

Preparation Batch: BHF0730

Sample Size: 25 mL

Prepared: 28-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	1.67	ug/L	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-100S
19F0329-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2 Analyst: PKC

Sampled: 06/21/2019 13:46

Analyzed: 06/26/2019 17:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BHF0638 Sample Size: 10 mL
Prepared: 26-Jun-2019 Final Volume: 10 mL

Extract ID: 19F0329-05 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-100S
19F0329-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 13:46

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:36

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-100S
19F0329-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 13:46

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:36

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	101	%	
Surrogate: Toluene-d8		80-120 %	93.2	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	93.3	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-100S
19F0329-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/21/2019 13:46

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 21:33

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0329-05 A 01

Preparation Batch: BHF0730

Sample Size: 25 mL

Prepared: 28-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	2.04	ug/L	



Hart Crowser
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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

LW-6D
19F0329-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED	Sampled: 06/21/2019 15:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 06/28/2019 21:38
Sample Preparation:	Extract ID: 19F0329-06 A 01
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix	
Preparation Batch: BHF0730	Sample Size: 25 mL
Prepared: 28-Jun-2019	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	4.57	ug/L	



Hart Crowser
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Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

CW-1D
19F0329-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/21/2019 13:58

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/28/2019 21:42

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0329-07 A 01

Preparation Batch: BHF0730

Sample Size: 25 mL

Prepared: 28-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	1.47	ug/L	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

5C-2S
19F0329-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2 Analyst: PKC
Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BHF0638 Sample Size: 10 mL
Prepared: 26-Jun-2019 Final Volume: 10 mL
Extract ID: 19F0329-08 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	3.04	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

5C-2S
19F0329-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:57

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

5C-2S
19F0329-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 17:57

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	103	%	
Surrogate: Toluene-d8		80-120 %	92.4	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	89.7	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Trip Blank
19F0329-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C	Sampled: 06/21/2019 12:00
Instrument: NT2 Analyst: PKC	Analyzed: 06/26/2019 13:19
Sample Preparation:	Preparation Method: EPA 5030 (Purge and Trap)
	Preparation Batch: BHF0638
	Sample Size: 10 mL
	Final Volume: 10 mL
	Extract ID: 19F0329-09 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	8.68	ug/L	
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Trip Blank
19F0329-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 13:19

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Trip Blank
19F0329-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 13:19

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	99.5	%	
Surrogate: Toluene-d8		80-120 %	94.0	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	94.6	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	101	%	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Purge-062119
19F0329-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C
Instrument: NT2 Analyst: PKC
Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)
Preparation Batch: BHF0638 Sample Size: 10 mL
Prepared: 26-Jun-2019 Final Volume: 10 mL
Extract ID: 19F0329-10 F

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	4.11	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	0.06	ug/L	J
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Purge-062119
19F0329-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 18:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Purge-062119
19F0329-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C

Sampled: 06/21/2019 12:00

Instrument: NT2 Analyst: PKC

Analyzed: 06/26/2019 18:17

Analyte	CAS Number	Recovery	Recovery	Units	Notes
		Limits			
Surrogate: 1,2-Dichloroethane-d4		80-129 %	102	%	
Surrogate: Toluene-d8		80-120 %	94.5	%	
Surrogate: 4-Bromofluorobenzene		80-120 %	88.6	%	
Surrogate: 1,2-Dichlorobenzene-d4		80-120 %	103	%	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Purge-062119
19F0329-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx

Sampled: 06/21/2019 12:00

Instrument: FID4 Analyst: WMT/JGR

Analyzed: 06/26/2019 23:24

Sample Preparation:

Preparation Method: EPA 3510C SepF

Extract ID: 19F0329-10 C 01

Preparation Batch: BHF0558

Sample Size: 500 mL

Prepared: 25-Jun-2019

Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			50-150 %	91.9	%	

DRAFT REPORT

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Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Purge-062119
19F0329-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 06/21/2019 12:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/27/2019 18:06

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix

Extract ID: 19F0329-10 B 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	1	0.130	0.500	0.823	ug/L	
Lead	7439-92-1	1	0.0680	0.100	1.15	ug/L	



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Purge-062119
19F0329-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 06/21/2019 12:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/27/2019 18:06

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 19F0329-10 B 01

Preparation Batch: BHF0686

Sample Size: 25 mL

Prepared: 27-Jun-2019

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	4.17	ug/L	
Copper	7440-50-8	1	0.340	0.500	1.87	ug/L	
Zinc	7440-66-6	1	0.820	4.00	15.7	ug/L	



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Purge-062119
19F0329-10 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09	Sampled: 06/21/2019 12:00
Instrument: UV1800-2 Analyst: BF	Analyzed: 06/21/2019 19:33
Sample Preparation:	Extract ID: 19F0329-10 A 01
Preparation Method: SM 5310 A-00, 0.45um filtration	
Preparation Batch: BHF0550	Sample Size: 40 mL
Prepared: 21-Jun-2019	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0638-BLK1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 12:58					
Chloromethane	ND	0.09	0.50	ug/L							U
Vinyl Chloride	ND	0.06	0.20	ug/L							U
Bromomethane	ND	0.25	1.00	ug/L							U
Chloroethane	ND	0.09	0.20	ug/L							U
Trichlorofluoromethane	ND	0.04	0.20	ug/L							U
Acrolein	ND	2.48	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.04	0.20	ug/L							U
Acetone	ND	2.06	5.00	ug/L							U
1,1-Dichloroethene	ND	0.05	0.20	ug/L							U
Bromoethane	ND	0.04	0.20	ug/L							U
Iodomethane	ND	0.23	1.00	ug/L							U
Methylene Chloride	ND	0.49	1.00	ug/L							U
Acrylonitrile	ND	0.60	1.00	ug/L							U
Carbon Disulfide	ND	0.04	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.05	0.20	ug/L							U
Vinyl Acetate	ND	0.07	0.20	ug/L							U
1,1-Dichloroethane	ND	0.05	0.20	ug/L							U
2-Butanone	ND	0.81	5.00	ug/L							U
2,2-Dichloropropane	ND	0.05	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.04	0.20	ug/L							U
Chloroform	ND	0.03	0.20	ug/L							U
Bromochloromethane	ND	0.06	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.04	0.20	ug/L							U
1,1-Dichloropropene	ND	0.03	0.20	ug/L							U
Carbon tetrachloride	ND	0.04	0.20	ug/L							U
1,2-Dichloroethane	ND	0.07	0.20	ug/L							U
Benzene	ND	0.03	0.20	ug/L							U
Trichloroethene	ND	0.05	0.20	ug/L							U
1,2-Dichloropropane	ND	0.04	0.20	ug/L							U
Bromodichloromethane	ND	0.05	0.20	ug/L							U
Dibromomethane	ND	0.15	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.25	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	0.97	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.06	0.20	ug/L							U
Toluene	ND	0.04	0.20	ug/L							U

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Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0638-BLK1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 12:58					
trans-1,3-Dichloropropene	ND	0.08	0.20	ug/L							U
2-Hexanone	ND	0.90	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.13	0.20	ug/L							U
1,3-Dichloropropane	ND	0.06	0.20	ug/L							U
Tetrachloroethene	ND	0.05	0.20	ug/L							U
Dibromochloromethane	ND	0.05	0.20	ug/L							U
1,2-Dibromoethane	ND	0.07	0.20	ug/L							U
Chlorobenzene	ND	0.02	0.20	ug/L							U
Ethylbenzene	ND	0.04	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.04	0.20	ug/L							U
m,p-Xylene	ND	0.05	0.40	ug/L							U
o-Xylene	ND	0.03	0.20	ug/L							U
Xylenes, total	ND	0.09	0.60	ug/L							U
Styrene	ND	0.05	0.20	ug/L							U
Bromoform	ND	0.06	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.06	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.13	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.32	1.00	ug/L							U
n-Propylbenzene	ND	0.02	0.20	ug/L							U
Bromobenzene	ND	0.06	0.20	ug/L							U
Isopropyl Benzene	ND	0.02	0.20	ug/L							U
2-Chlorotoluene	ND	0.02	0.20	ug/L							U
4-Chlorotoluene	ND	0.02	0.20	ug/L							U
t-Butylbenzene	ND	0.03	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.02	0.20	ug/L							U
s-Butylbenzene	ND	0.02	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.03	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.04	0.20	ug/L							U
n-Butylbenzene	ND	0.02	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.04	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.37	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.11	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.07	0.50	ug/L							U

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Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0638-BLK1)											
						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 12:58					
Naphthalene	ND	0.12	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.11	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.05	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.07	0.50	ug/L							U
2-Pentanone	ND	5.00	5.00	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.95			ug/L	5.00		99.1	80-129			
Surrogate: Toluene-d8	4.72			ug/L	5.00		94.4	80-120			
Surrogate: 4-Bromofluorobenzene	4.71			ug/L	5.00		94.2	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.06			ug/L	5.00		101	80-120			
LCS (BHF0638-BS1)											
						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:09					
Chloromethane	9.08	0.09	0.50	ug/L	10.0		90.8	60-138			
Vinyl Chloride	8.69	0.06	0.20	ug/L	10.0		86.9	66-133			
Bromomethane	8.64	0.25	1.00	ug/L	10.0		86.4	72-131			
Chloroethane	8.10	0.09	0.20	ug/L	10.0		81.0	60-155			
Trichlorofluoromethane	7.85	0.04	0.20	ug/L	10.0		78.5	80-129			*, Q
Acrolein	43.1	2.48	5.00	ug/L	50.0		86.2	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.73	0.04	0.20	ug/L	10.0		97.3	76-129			
Acetone	41.1	2.06	5.00	ug/L	50.0		82.2	58-142			
1,1-Dichloroethene	8.46	0.05	0.20	ug/L	10.0		84.6	69-135			
Bromoethane	9.45	0.04	0.20	ug/L	10.0		94.5	78-128			
Iodomethane	9.65	0.23	1.00	ug/L	10.0		96.5	56-147			
Methylene Chloride	9.27	0.49	1.00	ug/L	10.0		92.7	65-135			
Acrylonitrile	9.07	0.60	1.00	ug/L	10.0		90.7	64-134			
Carbon Disulfide	9.37	0.04	0.20	ug/L	10.0		93.7	78-125			
trans-1,2-Dichloroethene	8.65	0.05	0.20	ug/L	10.0		86.5	78-128			
Vinyl Acetate	8.37	0.07	0.20	ug/L	10.0		83.7	55-138			
1,1-Dichloroethane	9.21	0.05	0.20	ug/L	10.0		92.1	76-124			
2-Butanone	45.4	0.81	5.00	ug/L	50.0		90.9	61-140			
2,2-Dichloropropane	11.2	0.05	0.20	ug/L	10.0		112	78-125			
cis-1,2-Dichloroethene	9.74	0.04	0.20	ug/L	10.0		97.4	80-121			
Chloroform	9.60	0.03	0.20	ug/L	10.0		96.0	80-122			
Bromochloromethane	10.1	0.06	0.20	ug/L	10.0		101	80-121			
1,1,1-Trichloroethane	10.4	0.04	0.20	ug/L	10.0		104	79-123			
1,1-Dichloropropene	10.3	0.03	0.20	ug/L	10.0		103	80-120			

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Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHF0638-BS1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:09					
Carbon tetrachloride	9.05	0.04	0.20	ug/L	10.0		90.5	53-137			
1,2-Dichloroethane	9.56	0.07	0.20	ug/L	10.0		95.6	75-123			
Benzene	10.2	0.03	0.20	ug/L	10.0		102	80-120			
Trichloroethene	10.6	0.05	0.20	ug/L	10.0		106	80-120			
1,2-Dichloropropane	9.73	0.04	0.20	ug/L	10.0		97.3	80-120			
Bromodichloromethane	10.6	0.05	0.20	ug/L	10.0		106	80-121			
Dibromomethane	10.1	0.15	0.20	ug/L	10.0		101	80-120			
2-Chloroethyl vinyl ether	9.91	0.25	1.00	ug/L	10.0		99.1	74-127			
4-Methyl-2-Pentanone	49.7	0.97	5.00	ug/L	50.0		99.5	67-133			
cis-1,3-Dichloropropene	9.39	0.06	0.20	ug/L	10.0		93.9	80-124			
Toluene	10.0	0.04	0.20	ug/L	10.0		100	80-120			
trans-1,3-Dichloropropene	8.98	0.08	0.20	ug/L	10.0		89.8	71-127			
2-Hexanone	49.9	0.90	5.00	ug/L	50.0		99.8	69-133			
1,1,2-Trichloroethane	9.97	0.13	0.20	ug/L	10.0		99.7	80-121			
1,3-Dichloropropane	9.91	0.06	0.20	ug/L	10.0		99.1	80-120			
Tetrachloroethene	10.9	0.05	0.20	ug/L	10.0		109	80-120			
Dibromochloromethane	8.76	0.05	0.20	ug/L	10.0		87.6	65-135			
1,2-Dibromoethane	10.7	0.07	0.20	ug/L	10.0		107	80-121			
Chlorobenzene	10.2	0.02	0.20	ug/L	10.0		102	80-120			
Ethylbenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120			
1,1,1,2-Tetrachloroethane	9.54	0.04	0.20	ug/L	10.0		95.4	80-120			
m,p-Xylene	20.7	0.05	0.40	ug/L	20.0		103	80-121			
o-Xylene	10.6	0.03	0.20	ug/L	10.0		106	80-121			
Xylenes, total	31.3	0.09	0.60	ug/L	30.0		104	76-127			
Styrene	11.0	0.05	0.20	ug/L	10.0		110	80-124			
Bromoform	7.80	0.06	0.20	ug/L	10.0		78.0	51-134			Q
1,1,2,2-Tetrachloroethane	9.84	0.06	0.20	ug/L	10.0		98.4	77-123			
1,2,3-Trichloropropane	10.0	0.13	0.50	ug/L	10.0		100	76-125			
trans-1,4-Dichloro 2-Butene	8.53	0.32	1.00	ug/L	10.0		85.3	55-129			
n-Propylbenzene	10.6	0.02	0.20	ug/L	10.0		106	78-130			
Bromobenzene	10.5	0.06	0.20	ug/L	10.0		105	80-120			
Isopropyl Benzene	11.2	0.02	0.20	ug/L	10.0		112	80-128			
2-Chlorotoluene	10.3	0.02	0.20	ug/L	10.0		103	78-122			
4-Chlorotoluene	10.4	0.02	0.20	ug/L	10.0		104	80-121			
t-Butylbenzene	11.0	0.03	0.20	ug/L	10.0		110	78-125			

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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHF0638-BS1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:09					
1,3,5-Trimethylbenzene	10.8	0.02	0.20	ug/L	10.0		108	80-129			
1,2,4-Trimethylbenzene	10.2	0.02	0.20	ug/L	10.0		102	80-127			
s-Butylbenzene	10.9	0.02	0.20	ug/L	10.0		109	78-129			
4-Isopropyl Toluene	11.3	0.03	0.20	ug/L	10.0		113	79-130			
1,3-Dichlorobenzene	10.5	0.04	0.20	ug/L	10.0		105	80-120			
1,4-Dichlorobenzene	10.2	0.04	0.20	ug/L	10.0		102	80-120			
n-Butylbenzene	10.7	0.02	0.20	ug/L	10.0		107	74-129			
1,2-Dichlorobenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120			
1,2-Dibromo-3-chloropropane	7.96	0.37	0.50	ug/L	10.0		79.6	62-123			Q
1,2,4-Trichlorobenzene	10.8	0.11	0.50	ug/L	10.0		108	64-124			
Hexachloro-1,3-Butadiene	11.2	0.07	0.50	ug/L	10.0		112	58-123			
Naphthalene	10.9	0.12	0.50	ug/L	10.0		109	50-134			
1,2,3-Trichlorobenzene	10.8	0.11	0.50	ug/L	10.0		108	49-133			
Dichlorodifluoromethane	9.76	0.05	0.20	ug/L	10.0		97.6	48-147			
Methyl tert-butyl Ether	8.97	0.07	0.50	ug/L	10.0		89.7	71-132			
2-Pentanone	49.7	5.00	5.00	ug/L	50.0		99.3	69-134			
Surrogate: 1,2-Dichloroethane-d4	4.50			ug/L	5.00		90.0	80-129			
Surrogate: Toluene-d8	4.95			ug/L	5.00		99.0	80-120			
Surrogate: 4-Bromofluorobenzene	5.11			ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.05			ug/L	5.00		101	80-120			
LCS Dup (BHF0638-BS1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:29					
Chloromethane	9.07	0.09	0.50	ug/L	10.0		90.7	60-138	0.07	30	
Vinyl Chloride	8.83	0.06	0.20	ug/L	10.0		88.3	66-133	1.59	30	
Bromomethane	8.73	0.25	1.00	ug/L	10.0		87.3	72-131	1.01	30	
Chloroethane	8.06	0.09	0.20	ug/L	10.0		80.6	60-155	0.55	30	
Trichlorofluoromethane	7.81	0.04	0.20	ug/L	10.0		78.1	80-129	0.61	30	*, Q
Acrolein	43.0	2.48	5.00	ug/L	50.0		86.1	52-144	0.07	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.99	0.04	0.20	ug/L	10.0		99.9	76-129	2.63	30	
Acetone	41.6	2.06	5.00	ug/L	50.0		83.2	58-142	1.26	30	
1,1-Dichloroethene	8.48	0.05	0.20	ug/L	10.0		84.8	69-135	0.16	30	
Bromoethane	9.46	0.04	0.20	ug/L	10.0		94.6	78-128	0.13	30	
Iodomethane	9.63	0.23	1.00	ug/L	10.0		96.3	56-147	0.25	30	
Methylene Chloride	9.24	0.49	1.00	ug/L	10.0		92.4	65-135	0.38	30	
Acrylonitrile	9.13	0.60	1.00	ug/L	10.0		91.3	64-134	0.66	30	

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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHF0638-BS1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:29					
Carbon Disulfide	9.41	0.04	0.20	ug/L	10.0		94.1	78-125	0.35	30	
trans-1,2-Dichloroethene	8.68	0.05	0.20	ug/L	10.0		86.8	78-128	0.39	30	
Vinyl Acetate	8.54	0.07	0.20	ug/L	10.0		85.4	55-138	1.96	30	
1,1-Dichloroethane	9.09	0.05	0.20	ug/L	10.0		90.9	76-124	1.31	30	
2-Butanone	45.2	0.81	5.00	ug/L	50.0		90.5	61-140	0.46	30	
2,2-Dichloropropane	11.7	0.05	0.20	ug/L	10.0		117	78-125	4.55	30	
cis-1,2-Dichloroethene	9.71	0.04	0.20	ug/L	10.0		97.1	80-121	0.23	30	
Chloroform	9.55	0.03	0.20	ug/L	10.0		95.5	80-122	0.44	30	
Bromochloromethane	10.2	0.06	0.20	ug/L	10.0		102	80-121	0.68	30	
1,1,1-Trichloroethane	10.5	0.04	0.20	ug/L	10.0		105	79-123	0.78	30	
1,1-Dichloropropene	10.3	0.03	0.20	ug/L	10.0		103	80-120	0.38	30	
Carbon tetrachloride	9.19	0.04	0.20	ug/L	10.0		91.9	53-137	1.49	30	
1,2-Dichloroethane	9.45	0.07	0.20	ug/L	10.0		94.5	75-123	1.13	30	
Benzene	10.1	0.03	0.20	ug/L	10.0		101	80-120	0.37	30	
Trichloroethene	10.5	0.05	0.20	ug/L	10.0		105	80-120	0.41	30	
1,2-Dichloropropane	9.67	0.04	0.20	ug/L	10.0		96.7	80-120	0.69	30	
Bromodichloromethane	10.4	0.05	0.20	ug/L	10.0		104	80-121	1.78	30	
Dibromomethane	10.2	0.15	0.20	ug/L	10.0		102	80-120	0.76	30	
2-Chloroethyl vinyl ether	9.61	0.25	1.00	ug/L	10.0		96.1	74-127	3.04	30	
4-Methyl-2-Pentanone	48.8	0.97	5.00	ug/L	50.0		97.6	67-133	1.94	30	
cis-1,3-Dichloropropene	9.36	0.06	0.20	ug/L	10.0		93.6	80-124	0.29	30	
Toluene	9.90	0.04	0.20	ug/L	10.0		99.0	80-120	0.94	30	
trans-1,3-Dichloropropene	9.14	0.08	0.20	ug/L	10.0		91.4	71-127	1.76	30	
2-Hexanone	50.2	0.90	5.00	ug/L	50.0		100	69-133	0.51	30	
1,1,2-Trichloroethane	9.94	0.13	0.20	ug/L	10.0		99.4	80-121	0.35	30	
1,3-Dichloropropane	9.97	0.06	0.20	ug/L	10.0		99.7	80-120	0.57	30	
Tetrachloroethene	11.1	0.05	0.20	ug/L	10.0		111	80-120	2.16	30	
Dibromochloromethane	8.90	0.05	0.20	ug/L	10.0		89.0	65-135	1.69	30	
1,2-Dibromoethane	10.7	0.07	0.20	ug/L	10.0		107	80-121	0.46	30	
Chlorobenzene	10.3	0.02	0.20	ug/L	10.0		103	80-120	1.05	30	
Ethylbenzene	10.4	0.04	0.20	ug/L	10.0		104	80-120	0.94	30	
1,1,1,2-Tetrachloroethane	9.70	0.04	0.20	ug/L	10.0		97.0	80-120	1.70	30	
m,p-Xylene	20.9	0.05	0.40	ug/L	20.0		105	80-121	1.27	30	
o-Xylene	10.7	0.03	0.20	ug/L	10.0		107	80-121	0.98	30	
Xylenes, total	31.6	0.09	0.60	ug/L	30.0		105	76-127	1.17	30	

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3131 Elliott Ave Suite 600
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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Volatile Organic Compounds - Quality Control

Batch BHF0638 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHF0638-BS1)						Prepared: 26-Jun-2019 Analyzed: 26-Jun-2019 11:29					
Styrene	11.1	0.05	0.20	ug/L	10.0		111	80-124	0.98	30	
Bromoform	7.84	0.06	0.20	ug/L	10.0		78.4	51-134	0.58	30	Q
1,1,2,2-Tetrachloroethane	9.63	0.06	0.20	ug/L	10.0		96.3	77-123	2.16	30	
1,2,3-Trichloropropane	9.98	0.13	0.50	ug/L	10.0		99.8	76-125	0.60	30	
trans-1,4-Dichloro 2-Butene	8.30	0.32	1.00	ug/L	10.0		83.0	55-129	2.74	30	
n-Propylbenzene	10.7	0.02	0.20	ug/L	10.0		107	78-130	1.05	30	
Bromobenzene	10.5	0.06	0.20	ug/L	10.0		105	80-120	0.42	30	
Isopropyl Benzene	11.1	0.02	0.20	ug/L	10.0		111	80-128	0.70	30	
2-Chlorotoluene	10.3	0.02	0.20	ug/L	10.0		103	78-122	0.28	30	
4-Chlorotoluene	10.5	0.02	0.20	ug/L	10.0		105	80-121	0.75	30	
t-Butylbenzene	11.1	0.03	0.20	ug/L	10.0		111	78-125	0.70	30	
1,3,5-Trimethylbenzene	10.8	0.02	0.20	ug/L	10.0		108	80-129	0.16	30	
1,2,4-Trimethylbenzene	10.2	0.02	0.20	ug/L	10.0		102	80-127	0.32	30	
s-Butylbenzene	11.0	0.02	0.20	ug/L	10.0		110	78-129	1.49	30	
4-Isopropyl Toluene	11.6	0.03	0.20	ug/L	10.0		116	79-130	2.59	30	
1,3-Dichlorobenzene	10.5	0.04	0.20	ug/L	10.0		105	80-120	0.63	30	
1,4-Dichlorobenzene	10.2	0.04	0.20	ug/L	10.0		102	80-120	0.06	30	
n-Butylbenzene	11.0	0.02	0.20	ug/L	10.0		110	74-129	3.04	30	
1,2-Dichlorobenzene	10.3	0.04	0.20	ug/L	10.0		103	80-120	0.47	30	
1,2-Dibromo-3-chloropropane	7.93	0.37	0.50	ug/L	10.0		79.3	62-123	0.40	30	Q
1,2,4-Trichlorobenzene	11.2	0.11	0.50	ug/L	10.0		112	64-124	3.39	30	
Hexachloro-1,3-Butadiene	12.5	0.07	0.50	ug/L	10.0		125	58-123	11.20	30	*
Naphthalene	10.8	0.12	0.50	ug/L	10.0		108	50-134	0.58	30	
1,2,3-Trichlorobenzene	11.0	0.11	0.50	ug/L	10.0		110	49-133	2.02	30	
Dichlorodifluoromethane	10.0	0.05	0.20	ug/L	10.0		100	48-147	2.64	30	
Methyl tert-butyl Ether	8.99	0.07	0.50	ug/L	10.0		89.9	71-132	0.30	30	
2-Pentanone	48.7	5.00	5.00	ug/L	50.0		97.3	69-134	2.05	30	
Surrogate: 1,2-Dichloroethane-d4	4.49			ug/L	5.00		89.9	80-129			
Surrogate: Toluene-d8	4.93			ug/L	5.00		98.7	80-120			
Surrogate: 4-Bromofluorobenzene	5.17			ug/L	5.00		103	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.00			ug/L	5.00		99.9	80-120			

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Hart Crowser
3131 Elliott Ave Suite 600
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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Petroleum Hydrocarbons - Quality Control

Batch BHF0558 - EPA 3510C SepF

Instrument: FID4 Analyst: WMT/JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0558-BLK1) Prepared: 25-Jun-2019 Analyzed: 26-Jun-2019 22:03									
Diesel Range Organics (C12-C24)	ND	0.100	mg/L						U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L						U
Surrogate: o-Terphenyl	0.176		mg/L	0.225	78.3	50-150			
LCS (BHF0558-BS1) Prepared: 25-Jun-2019 Analyzed: 26-Jun-2019 22:23									
Diesel Range Organics (C12-C24)	3.05	0.100	mg/L	3.00	102	70-120			
Surrogate: o-Terphenyl	0.202		mg/L	0.225	90.0	50-150			

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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Metals and Metallic Compounds - Quality Control

Batch BHF0686 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0686-BLK1)						Prepared: 27-Jun-2019 Analyzed: 27-Jun-2019 16:27						
Chromium	52	ND	0.130	0.500	ug/L							U
Chromium	53	ND	0.0700	0.500	ug/L							U
Lead	208	ND	0.0680	0.100	ug/L							U
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Zinc	66	1.27	0.820	4.00	ug/L							J
Zinc	67	1.46	0.940	4.00	ug/L							J
LCS (BHF0686-BS1)						Prepared: 27-Jun-2019 Analyzed: 27-Jun-2019 16:22						
Chromium	52	26.4	0.130	0.500	ug/L	25.0		106	80-120			
Chromium	53	25.5	0.0700	0.500	ug/L	25.0		102	80-120			
Lead	208	26.1	0.0680	0.100	ug/L	25.0		104	80-120			
Arsenic	75a	25.0	0.0220	0.200	ug/L	25.0		100	80-120			
Copper	63	25.3	0.340	0.500	ug/L	25.0		101	80-120			
Copper	65	25.1	0.350	0.500	ug/L	25.0		100	80-120			
Zinc	66	81.9	0.820	4.00	ug/L	80.0		102	80-120			
Zinc	67	76.2	0.940	4.00	ug/L	80.0		95.2	80-120			



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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Metals and Metallic Compounds - Quality Control

Batch BHF0730 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0730-BLK1)						Prepared: 28-Jun-2019 Analyzed: 28-Jun-2019 15:54					
Arsenic	75a	ND	0.0220	0.200	ug/L						U
LCS (BHF0730-BS1)						Prepared: 28-Jun-2019 Analyzed: 28-Jun-2019 15:59					
Arsenic	75a	24.2	0.0220	0.200	ug/L	25.0		96.8	80-120		

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Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Wet Chemistry - Quality Control

Batch BHF0550 - SM 5310 A-00, 0.45um filtration

Instrument: UV1800-2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHF0550-BLK1)											
						Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 19:27					
Hexavalent Chromium	ND	0.013	0.013	mg/L							U
LCS (BHF0550-BS1)											
						Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 19:27					
Hexavalent Chromium	0.618	0.013	0.013	mg/L	0.625		98.9	85-115			D
Duplicate (BHF0550-DUP1)											
				Source: 19F0329-01		Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 19:29					
Hexavalent Chromium	ND	0.013	0.013	mg/L		ND					U
Matrix Spike (BHF0550-MS1)											
				Source: 19F0329-01		Prepared: 21-Jun-2019 Analyzed: 21-Jun-2019 19:30					
Hexavalent Chromium	0.059	0.013	0.013	mg/L	0.0625	ND	93.8	85-115			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project Number: [none]
Project Manager: Roy Jensen

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Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Chromium-52	NELAP,WADOE,WA-DW,DoD-ELAP
Chromium-53	NELAP,WADOE,WA-DW,DoD-ELAP
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-67	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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Project: Paccar

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Project Manager: Roy Jensen

Reported:

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1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE

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Project: Paccar

Project Number: [none]

Project Manager: Roy Jensen

Reported:

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1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

SM 3500-Cr B-09 in Water

Hexavalent Chromium	WADOE,NELAP
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Hart Crowser

3131 Elliott Ave Suite 600

Seattle WA, 98121

Project: Paccar

Project Number: [none]

Project Manager: Roy Jensen

Reported:

08-Jul-2019 16:58

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

DRAFT REPORT

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: [none]
Project Manager: Roy Jensen

Reported:
08-Jul-2019 16:58

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
19F0329-01	Filter 0.45 micron (Cr+6)		Status is Filtered

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
19F0329-02	Filter 0.45 micron (Cr+6)		Status is Filtered

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
19F0329-03	Filter 0.45 micron (Cr+6)		Status is Filtered

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
19F0329-10	Filter 0.45 micron (Cr+6)		Status is Filtered
	Hold Sample		Status is Available
	Met 200.8 - Cr		Missing Chromium-53
	Met 200.8 - Cu UCT		Missing Copper-65
	Met 200.8 - Zn UCT		Missing Zinc-67

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	624 VOC	(Water)	B-Flags used
	624 VOC	(Water)	D-Flags used
	624 VOC	(Water)	J-Flags used
	624 VOC	(Water)	Result calculations based on MDL
	624 VOC	(Water)	U-Flags used
	8260C VOA	(Water)	B-Flags used
	8260C VOA	(Water)	D-Flags used
	8260C VOA	(Water)	J-Flags used
	8260C VOA	(Water)	Result calculations based on MDL
	8260C VOA	(Water)	U-Flags used
	Chromium, Hexavalent, SM 350	(Water)	B-Flags used
	Chromium, Hexavalent, SM 350	(Water)	D-Flags used
	Chromium, Hexavalent, SM 350	(Water)	Result calculations based on MDL
	Chromium, Hexavalent, SM 350	(Water)	U-Flags used
	Filter 0.45 micron (Cr+6)	(Water)	Result calculations based on MDL
	Filter 0.45 micron (Cr+6)	(Water)	U-Flags used
	Met 200.8 - Ag	(Solid)	B-Flags used
	Met 200.8 - Ag	(Water)	B-Flags used
	Met 200.8 - Ag	(Solid)	D-Flags used
	Met 200.8 - Ag	(Water)	D-Flags used
	Met 200.8 - Ag	(Solid)	J-Flags used
	Met 200.8 - Ag	(Water)	J-Flags used
	Met 200.8 - Ag	(Solid)	Result calculations based on MDL
	Met 200.8 - Ag	(Water)	Result calculations based on MDL
	Met 200.8 - Ag	(Solid)	U-Flags used
	Met 200.8 - Ag	(Water)	U-Flags used
	Met 200.8 - Al	(Solid)	B-Flags used
	Met 200.8 - Al	(Water)	B-Flags used
	Met 200.8 - Al	(Solid)	D-Flags used
	Met 200.8 - Al	(Water)	D-Flags used
	Met 200.8 - Al	(Solid)	J-Flags used
	Met 200.8 - Al	(Water)	J-Flags used
	Met 200.8 - Al	(Solid)	Result calculations based on MDL
	Met 200.8 - Al	(Water)	Result calculations based on MDL
	Met 200.8 - Al	(Solid)	U-Flags used
	Met 200.8 - Al	(Water)	U-Flags used
	Met 200.8 - As	(Water)	B-Flags used
	Met 200.8 - As	(Water)	D-Flags used
	Met 200.8 - As	(Water)	J-Flags used
	Met 200.8 - As	(Water)	Result calculations based on MDL
	Met 200.8 - As	(Water)	U-Flags used
	Met 200.8 - As UCT	(Solid)	B-Flags used
	Met 200.8 - As UCT	(Water)	B-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 200.8 - As UCT	(Solid)	D-Flags used
	Met 200.8 - As UCT	(Water)	D-Flags used
	Met 200.8 - As UCT	(Solid)	J-Flags used
	Met 200.8 - As UCT	(Water)	J-Flags used
	Met 200.8 - As UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - As UCT	(Water)	Result calculations based on MDL
	Met 200.8 - As UCT	(Solid)	U-Flags used
	Met 200.8 - As UCT	(Water)	U-Flags used
	Met 200.8 - Ba	(Solid)	B-Flags used
	Met 200.8 - Ba	(Solid)	D-Flags used
	Met 200.8 - Ba	(Solid)	J-Flags used
	Met 200.8 - Ba	(Solid)	Result calculations based on MDL
	Met 200.8 - Ba	(Solid)	U-Flags used
	Met 200.8 - Be	(Water)	B-Flags used
	Met 200.8 - Be	(Water)	D-Flags used
	Met 200.8 - Be	(Water)	J-Flags used
	Met 200.8 - Be	(Water)	Result calculations based on MDL
	Met 200.8 - Be	(Water)	U-Flags used
	Met 200.8 - Cd UCT	(Solid)	B-Flags used
	Met 200.8 - Cd UCT	(Water)	B-Flags used
	Met 200.8 - Cd UCT	(Solid)	D-Flags used
	Met 200.8 - Cd UCT	(Water)	D-Flags used
	Met 200.8 - Cd UCT	(Solid)	J-Flags used
	Met 200.8 - Cd UCT	(Water)	J-Flags used
	Met 200.8 - Cd UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Cd UCT	(Water)	Result calculations based on MDL
	Met 200.8 - Cd UCT	(Solid)	U-Flags used
	Met 200.8 - Cd UCT	(Water)	U-Flags used
	Met 200.8 - Co UCT	(Solid)	B-Flags used
	Met 200.8 - Co UCT	(Solid)	D-Flags used
	Met 200.8 - Co UCT	(Solid)	J-Flags used
	Met 200.8 - Co UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Co UCT	(Solid)	U-Flags used
	Met 200.8 - Cr	(Solid)	B-Flags used
	Met 200.8 - Cr	(Water)	B-Flags used
	Met 200.8 - Cr	(Solid)	D-Flags used
	Met 200.8 - Cr	(Water)	D-Flags used
	Met 200.8 - Cr	(Solid)	J-Flags used
	Met 200.8 - Cr	(Water)	J-Flags used
	Met 200.8 - Cr	(Solid)	Result calculations based on MDL
	Met 200.8 - Cr	(Water)	Result calculations based on MDL
	Met 200.8 - Cr	(Solid)	U-Flags used
	Met 200.8 - Cr	(Water)	U-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 200.8 - Cu	(Water)	B-Flags used
	Met 200.8 - Cu	(Water)	D-Flags used
	Met 200.8 - Cu	(Water)	J-Flags used
	Met 200.8 - Cu	(Water)	Result calculations based on MDL
	Met 200.8 - Cu	(Water)	U-Flags used
	Met 200.8 - Cu UCT	(Solid)	B-Flags used
	Met 200.8 - Cu UCT	(Water)	B-Flags used
	Met 200.8 - Cu UCT	(Solid)	D-Flags used
	Met 200.8 - Cu UCT	(Water)	D-Flags used
	Met 200.8 - Cu UCT	(Solid)	J-Flags used
	Met 200.8 - Cu UCT	(Water)	J-Flags used
	Met 200.8 - Cu UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Cu UCT	(Water)	Result calculations based on MDL
	Met 200.8 - Cu UCT	(Solid)	U-Flags used
	Met 200.8 - Cu UCT	(Water)	U-Flags used
	Met 200.8 - Fe	(Water)	B-Flags used
	Met 200.8 - Fe	(Water)	D-Flags used
	Met 200.8 - Fe	(Water)	J-Flags used
	Met 200.8 - Fe	(Water)	Result calculations based on MDL
	Met 200.8 - Fe	(Water)	U-Flags used
	Met 200.8 - Mn	(Water)	B-Flags used
	Met 200.8 - Mn	(Water)	D-Flags used
	Met 200.8 - Mn	(Water)	J-Flags used
	Met 200.8 - Mn	(Water)	Result calculations based on MDL
	Met 200.8 - Mn	(Water)	U-Flags used
	Met 200.8 - Mo	(Water)	B-Flags used
	Met 200.8 - Mo	(Water)	D-Flags used
	Met 200.8 - Mo	(Water)	J-Flags used
	Met 200.8 - Mo	(Water)	Result calculations based on MDL
	Met 200.8 - Mo	(Water)	U-Flags used
	Met 200.8 - Mo UCT	(Solid)	B-Flags used
	Met 200.8 - Mo UCT	(Solid)	D-Flags used
	Met 200.8 - Mo UCT	(Solid)	J-Flags used
	Met 200.8 - Mo UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Mo UCT	(Solid)	U-Flags used
	Met 200.8 - Ni UCT	(Solid)	B-Flags used
	Met 200.8 - Ni UCT	(Water)	B-Flags used
	Met 200.8 - Ni UCT	(Solid)	D-Flags used
	Met 200.8 - Ni UCT	(Water)	D-Flags used
	Met 200.8 - Ni UCT	(Solid)	J-Flags used
	Met 200.8 - Ni UCT	(Water)	J-Flags used
	Met 200.8 - Ni UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Ni UCT	(Water)	Result calculations based on MDL

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 200.8 - Ni UCT	(Solid)	U-Flags used
	Met 200.8 - Ni UCT	(Water)	U-Flags used
	Met 200.8 - Pb	(Solid)	B-Flags used
	Met 200.8 - Pb	(Water)	B-Flags used
	Met 200.8 - Pb	(Solid)	D-Flags used
	Met 200.8 - Pb	(Water)	D-Flags used
	Met 200.8 - Pb	(Solid)	J-Flags used
	Met 200.8 - Pb	(Water)	J-Flags used
	Met 200.8 - Pb	(Solid)	Result calculations based on MDL
	Met 200.8 - Pb	(Water)	Result calculations based on MDL
	Met 200.8 - Pb	(Solid)	U-Flags used
	Met 200.8 - Pb	(Water)	U-Flags used
	Met 200.8 - Sb	(Water)	B-Flags used
	Met 200.8 - Sb	(Water)	D-Flags used
	Met 200.8 - Sb	(Water)	J-Flags used
	Met 200.8 - Sb	(Water)	Result calculations based on MDL
	Met 200.8 - Sb	(Water)	U-Flags used
	Met 200.8 - Se	(Water)	B-Flags used
	Met 200.8 - Se	(Water)	D-Flags used
	Met 200.8 - Se	(Water)	J-Flags used
	Met 200.8 - Se	(Water)	Result calculations based on MDL
	Met 200.8 - Se	(Water)	U-Flags used
	Met 200.8 - Se UCT	(Water)	B-Flags used
	Met 200.8 - Se UCT	(Water)	D-Flags used
	Met 200.8 - Se UCT	(Water)	J-Flags used
	Met 200.8 - Se UCT	(Water)	Result calculations based on MDL
	Met 200.8 - Se UCT	(Water)	U-Flags used
	Met 200.8 - Tl	(Water)	B-Flags used
	Met 200.8 - Tl	(Water)	D-Flags used
	Met 200.8 - Tl	(Water)	J-Flags used
	Met 200.8 - Tl	(Water)	Result calculations based on MDL
	Met 200.8 - Tl	(Water)	U-Flags used
	Met 200.8 - Zn	(Water)	B-Flags used
	Met 200.8 - Zn	(Water)	D-Flags used
	Met 200.8 - Zn	(Water)	J-Flags used
	Met 200.8 - Zn	(Water)	Result calculations based on MDL
	Met 200.8 - Zn	(Water)	U-Flags used
	Met 200.8 - Zn UCT	(Solid)	B-Flags used
	Met 200.8 - Zn UCT	(Water)	B-Flags used
	Met 200.8 - Zn UCT	(Solid)	D-Flags used
	Met 200.8 - Zn UCT	(Water)	D-Flags used
	Met 200.8 - Zn UCT	(Solid)	J-Flags used
	Met 200.8 - Zn UCT	(Water)	J-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 200.8 - Zn UCT	(Solid)	Result calculations based on MDL
	Met 200.8 - Zn UCT	(Water)	Result calculations based on MDL
	Met 200.8 - Zn UCT	(Solid)	U-Flags used
	Met 200.8 - Zn UCT	(Water)	U-Flags used
	Met 6020A - Ag	(Solid)	B-Flags used
	Met 6020A - Ag	(Water)	B-Flags used
	Met 6020A - Ag	(Solid)	D-Flags used
	Met 6020A - Ag	(Water)	D-Flags used
	Met 6020A - Ag	(Solid)	J-Flags used
	Met 6020A - Ag	(Water)	J-Flags used
	Met 6020A - Ag	(Solid)	Result calculations based on MDL
	Met 6020A - Ag	(Water)	Result calculations based on MDL
	Met 6020A - Ag	(Solid)	U-Flags used
	Met 6020A - Ag	(Water)	U-Flags used
	Met 6020A - Al	(Water)	B-Flags used
	Met 6020A - Al	(Water)	D-Flags used
	Met 6020A - Al	(Water)	J-Flags used
	Met 6020A - Al	(Water)	Result calculations based on MDL
	Met 6020A - Al	(Water)	U-Flags used
	Met 6020A - As	(Water)	B-Flags used
	Met 6020A - As	(Water)	D-Flags used
	Met 6020A - As	(Water)	J-Flags used
	Met 6020A - As	(Water)	Result calculations based on MDL
	Met 6020A - As	(Water)	U-Flags used
	Met 6020A - As UCT	(Solid)	B-Flags used
	Met 6020A - As UCT	(Water)	B-Flags used
	Met 6020A - As UCT	(Solid)	D-Flags used
	Met 6020A - As UCT	(Water)	D-Flags used
	Met 6020A - As UCT	(Solid)	J-Flags used
	Met 6020A - As UCT	(Water)	J-Flags used
	Met 6020A - As UCT	(Solid)	Result calculations based on MDL
	Met 6020A - As UCT	(Water)	Result calculations based on MDL
	Met 6020A - As UCT	(Solid)	U-Flags used
	Met 6020A - As UCT	(Water)	U-Flags used
	Met 6020A - Ba	(Solid)	B-Flags used
	Met 6020A - Ba	(Solid)	D-Flags used
	Met 6020A - Ba	(Solid)	J-Flags used
	Met 6020A - Ba	(Solid)	Result calculations based on MDL
	Met 6020A - Ba	(Solid)	U-Flags used
	Met 6020A - Ca	(Water)	B-Flags used
	Met 6020A - Ca	(Water)	D-Flags used
	Met 6020A - Ca	(Water)	J-Flags used
	Met 6020A - Ca	(Water)	Result calculations based on MDL

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 6020A - Ca	(Water)	U-Flags used
	Met 6020A - Cd UCT	(Solid)	B-Flags used
	Met 6020A - Cd UCT	(Water)	B-Flags used
	Met 6020A - Cd UCT	(Solid)	D-Flags used
	Met 6020A - Cd UCT	(Water)	D-Flags used
	Met 6020A - Cd UCT	(Solid)	J-Flags used
	Met 6020A - Cd UCT	(Water)	J-Flags used
	Met 6020A - Cd UCT	(Solid)	Result calculations based on MDL
	Met 6020A - Cd UCT	(Water)	Result calculations based on MDL
	Met 6020A - Cd UCT	(Solid)	U-Flags used
	Met 6020A - Cd UCT	(Water)	U-Flags used
	Met 6020A - Cr	(Solid)	B-Flags used
	Met 6020A - Cr	(Water)	B-Flags used
	Met 6020A - Cr	(Solid)	D-Flags used
	Met 6020A - Cr	(Water)	D-Flags used
	Met 6020A - Cr	(Solid)	J-Flags used
	Met 6020A - Cr	(Water)	J-Flags used
	Met 6020A - Cr	(Solid)	Result calculations based on MDL
	Met 6020A - Cr	(Water)	Result calculations based on MDL
	Met 6020A - Cr	(Solid)	U-Flags used
	Met 6020A - Cr	(Water)	U-Flags used
	Met 6020A - Cu UCT	(Solid)	B-Flags used
	Met 6020A - Cu UCT	(Water)	B-Flags used
	Met 6020A - Cu UCT	(Solid)	D-Flags used
	Met 6020A - Cu UCT	(Water)	D-Flags used
	Met 6020A - Cu UCT	(Solid)	J-Flags used
	Met 6020A - Cu UCT	(Water)	J-Flags used
	Met 6020A - Cu UCT	(Solid)	Result calculations based on MDL
	Met 6020A - Cu UCT	(Water)	Result calculations based on MDL
	Met 6020A - Cu UCT	(Solid)	U-Flags used
	Met 6020A - Cu UCT	(Water)	U-Flags used
	Met 6020A - Fe	(Water)	B-Flags used
	Met 6020A - Fe	(Water)	D-Flags used
	Met 6020A - Fe	(Water)	J-Flags used
	Met 6020A - Fe	(Water)	Result calculations based on MDL
	Met 6020A - Fe	(Water)	U-Flags used
	Met 6020A - K	(Water)	B-Flags used
	Met 6020A - K	(Water)	D-Flags used
	Met 6020A - K	(Water)	J-Flags used
	Met 6020A - K	(Water)	Result calculations based on MDL
	Met 6020A - K	(Water)	U-Flags used
	Met 6020A - Mg	(Water)	B-Flags used
	Met 6020A - Mg	(Water)	D-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met 6020A - Mg	(Water)	J-Flags used
	Met 6020A - Mg	(Water)	Result calculations based on MDL
	Met 6020A - Mg	(Water)	U-Flags used
	Met 6020A - Mn	(Water)	B-Flags used
	Met 6020A - Mn	(Water)	D-Flags used
	Met 6020A - Mn	(Water)	J-Flags used
	Met 6020A - Mn	(Water)	Result calculations based on MDL
	Met 6020A - Mn	(Water)	U-Flags used
	Met 6020A - Na	(Water)	B-Flags used
	Met 6020A - Na	(Water)	D-Flags used
	Met 6020A - Na	(Water)	J-Flags used
	Met 6020A - Na	(Water)	Result calculations based on MDL
	Met 6020A - Na	(Water)	U-Flags used
	Met 6020A - Ni UCT	(Water)	B-Flags used
	Met 6020A - Ni UCT	(Water)	D-Flags used
	Met 6020A - Ni UCT	(Water)	J-Flags used
	Met 6020A - Ni UCT	(Water)	Result calculations based on MDL
	Met 6020A - Ni UCT	(Water)	U-Flags used
	Met 6020A - Pb	(Solid)	B-Flags used
	Met 6020A - Pb	(Water)	B-Flags used
	Met 6020A - Pb	(Solid)	D-Flags used
	Met 6020A - Pb	(Water)	D-Flags used
	Met 6020A - Pb	(Solid)	J-Flags used
	Met 6020A - Pb	(Water)	J-Flags used
	Met 6020A - Pb	(Solid)	Result calculations based on MDL
	Met 6020A - Pb	(Water)	Result calculations based on MDL
	Met 6020A - Pb	(Solid)	U-Flags used
	Met 6020A - Pb	(Water)	U-Flags used
	Met 6020A - Se UCT	(Solid)	B-Flags used
	Met 6020A - Se UCT	(Solid)	D-Flags used
	Met 6020A - Se UCT	(Solid)	J-Flags used
	Met 6020A - Se UCT	(Solid)	Result calculations based on MDL
	Met 6020A - Se UCT	(Solid)	U-Flags used
	Met 6020A - Zn UCT	(Solid)	B-Flags used
	Met 6020A - Zn UCT	(Water)	B-Flags used
	Met 6020A - Zn UCT	(Solid)	D-Flags used
	Met 6020A - Zn UCT	(Water)	D-Flags used
	Met 6020A - Zn UCT	(Solid)	J-Flags used
	Met 6020A - Zn UCT	(Water)	J-Flags used
	Met 6020A - Zn UCT	(Solid)	Result calculations based on MDL
	Met 6020A - Zn UCT	(Water)	Result calculations based on MDL
	Met 6020A - Zn UCT	(Solid)	U-Flags used
	Met 6020A - Zn UCT	(Water)	U-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met Diss 200.8 - As UCT	(Water)	B-Flags used
	Met Diss 200.8 - As UCT	(Water)	D-Flags used
	Met Diss 200.8 - As UCT	(Water)	J-Flags used
	Met Diss 200.8 - As UCT	(Water)	Result calculations based on MDL
	Met Diss 200.8 - As UCT	(Water)	U-Flags used
	Met Diss 200.8 - Fe	(Water)	B-Flags used
	Met Diss 200.8 - Fe	(Water)	D-Flags used
	Met Diss 200.8 - Fe	(Water)	J-Flags used
	Met Diss 200.8 - Fe	(Water)	Result calculations based on MDL
	Met Diss 200.8 - Fe	(Water)	U-Flags used
	Met Diss 200.8 - Mn	(Water)	B-Flags used
	Met Diss 200.8 - Mn	(Water)	D-Flags used
	Met Diss 200.8 - Mn	(Water)	J-Flags used
	Met Diss 200.8 - Mn	(Water)	Result calculations based on MDL
	Met Diss 200.8 - Mn	(Water)	U-Flags used
	Met Diss 200.8 - Sb	(Water)	B-Flags used
	Met Diss 200.8 - Sb	(Water)	D-Flags used
	Met Diss 200.8 - Sb	(Water)	J-Flags used
	Met Diss 200.8 - Sb	(Water)	Result calculations based on MDL
	Met Diss 200.8 - Sb	(Water)	U-Flags used
	Met Diss 200.8 - Se UCT	(Water)	B-Flags used
	Met Diss 200.8 - Se UCT	(Water)	D-Flags used
	Met Diss 200.8 - Se UCT	(Water)	J-Flags used
	Met Diss 200.8 - Se UCT	(Water)	Result calculations based on MDL
	Met Diss 200.8 - Se UCT	(Water)	U-Flags used
	Met Diss 6020A - Ag	(Water)	B-Flags used
	Met Diss 6020A - Ag	(Water)	D-Flags used
	Met Diss 6020A - Ag	(Water)	J-Flags used
	Met Diss 6020A - Ag	(Water)	Result calculations based on MDL
	Met Diss 6020A - Ag	(Water)	U-Flags used
	Met Diss 6020A - Al	(Water)	B-Flags used
	Met Diss 6020A - Al	(Water)	D-Flags used
	Met Diss 6020A - Al	(Water)	J-Flags used
	Met Diss 6020A - Al	(Water)	Result calculations based on MDL
	Met Diss 6020A - Al	(Water)	U-Flags used
	Met Diss 6020A - As UCT	(Water)	B-Flags used
	Met Diss 6020A - As UCT	(Water)	D-Flags used
	Met Diss 6020A - As UCT	(Water)	J-Flags used
	Met Diss 6020A - As UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - As UCT	(Water)	U-Flags used
	Met Diss 6020A - Ba	(Water)	B-Flags used
	Met Diss 6020A - Ba	(Water)	D-Flags used
	Met Diss 6020A - Ba	(Water)	J-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met Diss 6020A - Ba	(Water)	Result calculations based on MDL
	Met Diss 6020A - Ba	(Water)	U-Flags used
	Met Diss 6020A - Ca	(Water)	B-Flags used
	Met Diss 6020A - Ca	(Water)	D-Flags used
	Met Diss 6020A - Ca	(Water)	J-Flags used
	Met Diss 6020A - Ca	(Water)	Result calculations based on MDL
	Met Diss 6020A - Ca	(Water)	U-Flags used
	Met Diss 6020A - Cd UCT	(Water)	B-Flags used
	Met Diss 6020A - Cd UCT	(Water)	D-Flags used
	Met Diss 6020A - Cd UCT	(Water)	J-Flags used
	Met Diss 6020A - Cd UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - Cd UCT	(Water)	U-Flags used
	Met Diss 6020A - Cr	(Water)	B-Flags used
	Met Diss 6020A - Cr	(Water)	D-Flags used
	Met Diss 6020A - Cr	(Water)	J-Flags used
	Met Diss 6020A - Cr	(Water)	Result calculations based on MDL
	Met Diss 6020A - Cr	(Water)	U-Flags used
	Met Diss 6020A - Cu UCT	(Water)	B-Flags used
	Met Diss 6020A - Cu UCT	(Water)	D-Flags used
	Met Diss 6020A - Cu UCT	(Water)	J-Flags used
	Met Diss 6020A - Cu UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - Cu UCT	(Water)	U-Flags used
	Met Diss 6020A - Fe	(Water)	B-Flags used
	Met Diss 6020A - Fe	(Water)	D-Flags used
	Met Diss 6020A - Fe	(Water)	J-Flags used
	Met Diss 6020A - Fe	(Water)	Result calculations based on MDL
	Met Diss 6020A - Fe	(Water)	U-Flags used
	Met Diss 6020A - K	(Water)	B-Flags used
	Met Diss 6020A - K	(Water)	D-Flags used
	Met Diss 6020A - K	(Water)	J-Flags used
	Met Diss 6020A - K	(Water)	Result calculations based on MDL
	Met Diss 6020A - K	(Water)	U-Flags used
	Met Diss 6020A - Mg	(Water)	B-Flags used
	Met Diss 6020A - Mg	(Water)	D-Flags used
	Met Diss 6020A - Mg	(Water)	J-Flags used
	Met Diss 6020A - Mg	(Water)	Result calculations based on MDL
	Met Diss 6020A - Mg	(Water)	U-Flags used
	Met Diss 6020A - Mn	(Water)	B-Flags used
	Met Diss 6020A - Mn	(Water)	D-Flags used
	Met Diss 6020A - Mn	(Water)	J-Flags used
	Met Diss 6020A - Mn	(Water)	Result calculations based on MDL
	Met Diss 6020A - Mn	(Water)	U-Flags used
	Met Diss 6020A - Na	(Water)	B-Flags used

Items for Project Manager Review

	Analysis	Matrix	Definition
Analysis Definitions	Met Diss 6020A - Na	(Water)	D-Flags used
	Met Diss 6020A - Na	(Water)	J-Flags used
	Met Diss 6020A - Na	(Water)	Result calculations based on MDL
	Met Diss 6020A - Na	(Water)	U-Flags used
	Met Diss 6020A - Ni UCT	(Water)	B-Flags used
	Met Diss 6020A - Ni UCT	(Water)	D-Flags used
	Met Diss 6020A - Ni UCT	(Water)	J-Flags used
	Met Diss 6020A - Ni UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - Ni UCT	(Water)	U-Flags used
	Met Diss 6020A - Pb	(Water)	B-Flags used
	Met Diss 6020A - Pb	(Water)	D-Flags used
	Met Diss 6020A - Pb	(Water)	J-Flags used
	Met Diss 6020A - Pb	(Water)	Result calculations based on MDL
	Met Diss 6020A - Pb	(Water)	U-Flags used
	Met Diss 6020A - Se UCT	(Water)	B-Flags used
	Met Diss 6020A - Se UCT	(Water)	D-Flags used
	Met Diss 6020A - Se UCT	(Water)	J-Flags used
	Met Diss 6020A - Se UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - Se UCT	(Water)	U-Flags used
	Met Diss 6020A - Zn UCT	(Water)	B-Flags used
	Met Diss 6020A - Zn UCT	(Water)	D-Flags used
	Met Diss 6020A - Zn UCT	(Water)	J-Flags used
	Met Diss 6020A - Zn UCT	(Water)	Result calculations based on MDL
	Met Diss 6020A - Zn UCT	(Water)	U-Flags used
	TPH NW (Extractables) low leve(Solid)		B-Flags used
	TPH NW (Extractables) low leve(Water)		B-Flags used
	TPH NW (Extractables) low leve(Solid)		D-Flags used
	TPH NW (Extractables) low leve(Water)		D-Flags used
	TPH NW (Extractables) low leve(Solid)		U-Flags used
	TPH NW (Extractables) low leve(Water)		U-Flags used

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
BHF0558-BS1	TPH NW (Extractables) low level	Motor Oil Range Organics (C24-C38)	No spike level

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
BHF0638-BS1	8260C VOA	Trichlorofluoromethane	*: Flagged value is not within established control limits.
	8260C VOA	Trichlorofluoromethane	Exceeds lower control limit
	8260C VOA	1,2-Dibromo-3-chloropropane	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
	8260C VOA	Bromoform	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
	8260C VOA	Trichlorofluoromethane	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
BHF0638-BSD1	8260C VOA	Hexachloro-1,3-Butadiene	*: Flagged value is not within established control limits.
	8260C VOA	Trichlorofluoromethane	*: Flagged value is not within established control limits.
	8260C VOA	Trichlorofluoromethane	Exceeds lower control limit
	8260C VOA	Hexachloro-1,3-Butadiene	Exceeds upper control limit
	8260C VOA	1,2-Dibromo-3-chloropropane	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
	8260C VOA	Bromoform	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
	8260C VOA	Trichlorofluoromethane	Q: Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHE0365-ICB1	8260C VOA	1,2,3-Trichlorobenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,2,4-Trichlorobenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,2,4-Trimethylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,2-Dichlorobenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,3,5-Trimethylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,3-Dichlorobenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,4-Dichlorobenzene	*: Flagged value is not within established control limits.
	8260C VOA	2-Chlorotoluene	*: Flagged value is not within established control limits.
	8260C VOA	4-Chlorotoluene	*: Flagged value is not within established control limits.
	8260C VOA	4-Isopropyl Toluene	*: Flagged value is not within established control limits.
	8260C VOA	Acetone	*: Flagged value is not within established control limits.
	8260C VOA	Carbon Disulfide	*: Flagged value is not within established control limits.
	8260C VOA	Hexachloro-1,3-Butadiene	*: Flagged value is not within established control limits.
	8260C VOA	Naphthalene	*: Flagged value is not within established control limits.
	8260C VOA	n-Butylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	n-Propylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	s-Butylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	t-Butylbenzene	*: Flagged value is not within established control limits.
	8260C VOA	1,2-Dichlorobenzene-d4	No spike level
	8260C VOA	1,2-Dichloroethane-d4	No spike level
	8260C VOA	4-Bromofluorobenzene	No spike level
	8260C VOA	Toluene-d8	No spike level

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHE0365-SCV1	8260C VOA	1,2-Dibromo-3-chloropropane	*: Flagged value is not within established control limits.
	8260C VOA	Bromoform	*: Flagged value is not within established control limits.
	8260C VOA	Carbon tetrachloride	*: Flagged value is not within established control limits.
	8260C VOA	Chloroethane	*: Flagged value is not within established control limits.
	8260C VOA	Dibromochloromethane	*: Flagged value is not within established control limits.
	8260C VOA	1,2-Dibromo-3-chloropropane	Exceeds lower control limit
	8260C VOA	Bromoform	Exceeds lower control limit
	8260C VOA	Carbon tetrachloride	Exceeds lower control limit
	8260C VOA	Chloroethane	Exceeds lower control limit
	8260C VOA	Dibromochloromethane	Exceeds lower control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHE0365-TUN1	8260C VOA		Analysis Date before Prep Date

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHE0386-SCV2	TPH NW (Extractables) low level	Diesel Range Organics (C12-C24)	*: Flagged value is not within established control limits.
	TPH NW (Extractables) low level	Diesel Range Organics (C12-C24)	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0307-CAL1	Chromium, Hexavalent, SM 3500		Analysis Date before Prep Date

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0383-ICV1	8260C VOA	1,2-Dibromo-3-chloropropane	*: Flagged value is not within established control limits.
	8260C VOA	Bromoform	*: Flagged value is not within established control limits.
	8260C VOA	Trichlorofluoromethane	*: Flagged value is not within established control limits.
	8260C VOA	1,2-Dibromo-3-chloropropane	Exceeds lower control limit
	8260C VOA	Bromoform	Exceeds lower control limit
	8260C VOA	Trichlorofluoromethane	Exceeds lower control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0383-LCV1	8260C VOA	Hexachloro-1,3-Butadiene	*: Flagged value is not within established control limits.
	8260C VOA	Methylene Chloride	*: Flagged value is not within established control limits.
	8260C VOA	Hexachloro-1,3-Butadiene	Exceeds upper control limit
	8260C VOA	Methylene Chloride	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0383-TUN1	8260C VOA		Analysis Date before Prep Date

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0412-CCVH	Met 200.8 - Pb	Lead-208	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHF0412-IFB1	Met 200.8 - Cr	Chromium-53	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0030-CCV4	Met 200.8 - Zn UCT	Zinc-67	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0030-CCV9	Met 200.8 - Zn UCT	Zinc-66	Exceeds upper control limit
	Met 200.8 - Zn UCT	Zinc-67	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0030-CCVA	Met 200.8 - Zn UCT	Zinc-66	Exceeds upper control limit
	Met 200.8 - Zn UCT	Zinc-67	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0030-CCVB	Met 200.8 - Zn UCT	Zinc-67	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0030-CCVC	Met 200.8 - Zn UCT	Zinc-66	Exceeds upper control limit

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
SHG0037-IFB1	Met 200.8 - Cr	Chromium-53	Exceeds upper control limit

APPENDIX D

Groundwater Quality Summary Charts

CW-1D	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	+	+	+	\	\		\		\		\		\		\		\		\						\		\		\		\		\		\		+		\		\	
Lead				+								+																			+											
Chromium				+								+																														
Benzene	+	+	+	+	+		+		+		+		+																													
VC	+	+	+	+	+		+		\		+		+																	+	+		+			+						
Total cPAHs												+																														
Diesel	+	+	+	+	+		+		+		+																															
Heavy Oil	+	+	+	+	+		+		+		+																															

Notes:

- X = Analytical constituent concentration is above the HSAL.
- \ = Analytical constituent concentration is above the CUL but below the HSAL.
- + = Analytical constituent concentration is below the CUL.
- = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

CW-1S	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	\	\	+	\	\		\		\		\		\		\		\		\		\		\		\		+		\		+		+		+		+		+			
Lead				+							+																	+														
Chromium				+							+																															
Benzene	+	+	+	+	+		+		+		+	+	+		+		+		+					+			+															
VC	+	\	\	\	\		\		X		\	\	\		\		\		\		\		\		+		\		+		\		+		\		+		+			
Total cPAHs											+																															
Diesel	+	+	+	+	+		+		+		+																	+														
Heavy Oil	+	+	+	+	+		+		+		+																															

Notes:

- X = Analytical constituent concentration is above the HSAL.
- \ = Analytical constituent concentration is above the CUL but below the HSAL.
- + = Analytical constituent concentration is below the CUL.
- = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

LW-6D	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	—	—	+	—	—		—		—		+		—		—		—		—		—		—		—		—		—		—		—		—		—		—		—	
Lead				+							+																															
Chromium				+							+																															
Benzene	+	+	+	+	+		+		+		+																															
VC	+	+	+	+	+		+		+		+																															
Total cPAHs											+																															
Diesel	+	+	+	+	+		+		+		+																															
Heavy Oil	+	+	+	+	+		+		+		+																															

Notes:

- X = Analytical constituent concentration is above the HSAL.
- \ = Analytical constituent concentration is above the CUL but below the HSAL.
- + = Analytical constituent concentration is below the CUL.
- = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

LW-9D	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	\	\	\	+	\		\		\		+		\		\		\		\		\		\	\	\		\		\		\		\		\		\		\			
Lead				+							+																															
Chromium				+							+																															
Benzene	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+																							
VC	\	\	\	+	+	\	\	\	\	\	+	\	\	\	\	\	\		\		\		\	\	\		\		\		\		\		\		+		+			
Total cPAHs											+																															
Diesel	+	+	+	+	+		+		+		+																															
Heavy Oil	+	+	+	+	+		+		+		+																															

Notes:

- X = Analytical constituent concentration is above the HSAL.
- \ = Analytical constituent concentration is above the CUL but below the HSAL.
- + = Analytical constituent concentration is below the CUL.
- = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

LW-9S	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	—	—	—	—	—		—		—		—		—		—		—		—		—		—		—		—		—		—		—		—		—		—		—	
Lead				+							+																															
Chromium				+							+																															
Benzene	+	+	+	+	+		+		+		+																															
VC	+	+	+	+	+		+		+		+																				+					+						
Total cPAHs											+																															
Diesel	+	+	+	+	+		+		+		+																				+											
Heavy Oil	+	+	+	+	+		+		+		+																				+											

Notes:

-  = Analytical constituent concentration is above the HSAL.
-  = Analytical constituent concentration is above the CUL but below the HSAL.
-  = Analytical constituent concentration is below the CUL.
-  = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

MW-31	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	\	\	\	\	\		\		\		\		\	\	\	\	\		\		\		\		\		\		\		\		\		\		\		\		\	
Lead				+							+								+																							
Chromium				+							+								+									+														
Benzene	+	+	+	+	+		+		+		+		+						+																							
VC	+	+	+	+	+		+	\			+		+						+								+	+							+							
Total cPAHs											+								+																							
Diesel	+	+	+	+	+		+		+		+								+																							
Heavy Oil	+	+	+	+	+		+		+		+								+																							

Notes:

- X = Analytical constituent concentration is above the HSAL.
- \ = Analytical constituent concentration is above the CUL but below the HSAL.
- + = Analytical constituent concentration is below the CUL.
- = Not sampled
- VC = Vinyl chloride
- HSAL = Hot spot action level
- CUL = cleanup levels

SC-1S	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	+	+	+	—	+		—		—		+		—		—		+		+											+														
Lead	+	+	+	+	+		+		+		+																																	
Chromium	+	+	+	+	+		+		+		+																																	
Benzene																																												
VC																																												
Total cPAHs																																												
Diesel																																												
Heavy Oil																																												

Notes:

- X = Analytical constituent concentration is above the HSAL.
 - \ = Analytical constituent concentration is above the CUL but below the HSAL.
 - + = Analytical constituent concentration is below the CUL.
 - = Not sampled
- VC = Vinyl chloride
HSAL = Hot spot action level
CUL = cleanup levels

SC-2S	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
Analytical Constituents	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall		
Arsenic	+	+	+	+	+		+		—		+		+																+															
Lead	+	+	+	+	+		+		+		+																																	
Chromium	+	+	+	+	+		+		+		+																		+															
Benzene																																												
VC																																												
Total cPAHs																																												
Diesel																																												
Heavy Oil																																												

Notes:

- X = Analytical constituent concentration is above the HSAL.
 - \ = Analytical constituent concentration is above the CUL but below the HSAL.
 - + = Analytical constituent concentration is below the CUL.
 - = Not sampled
- VC = Vinyl chloride
HSAL = Hot spot action level
CUL = cleanup levels