



December 11, 2023

Mr. Caleb Bos
Washington State Department of Ecology
1250 Alder St.
Union Gap, WA 98903

Mr. Bos,

Attached is the summary data for Nason Creek flow and temperature monitoring, as required per Section S9.5 of the District's NPDES permit. The previous data summary report (dated November 4, 2022) included year 2022 information and this monitoring report includes the year 2023 data. The calculation spreadsheets have also been emailed to you via a separate correspondence. Those spreadsheets include the raw temperature data. Culvert flow calculations were provided by the District based on the same reference tables as provided in previous reports. The raw data recording sheet is included as an attachment.

Creek flows and temperature are summarized and graphically presented in the following pages. A 7-day running average of the maximum daily temperature is provided, with the calculation starting at the first data point (day) that had six previous days of data.

2023 Data

Flow: Measurements for flow were taken between 6/29/2023 and 10/23/2023. The minimum total daily culvert flow was approximately 0.70 CFS.

Temperature: Temperature data was taken from 6/29/2023 through 10/23/2023. The highest daily maximum recorded was 62.5°F. The maximum 7-day running average was 60.7°F, which stems from a period of higher creek temperature in mid-August.

If you have any additional questions, please feel free to contact me at any time.

Sincerely,

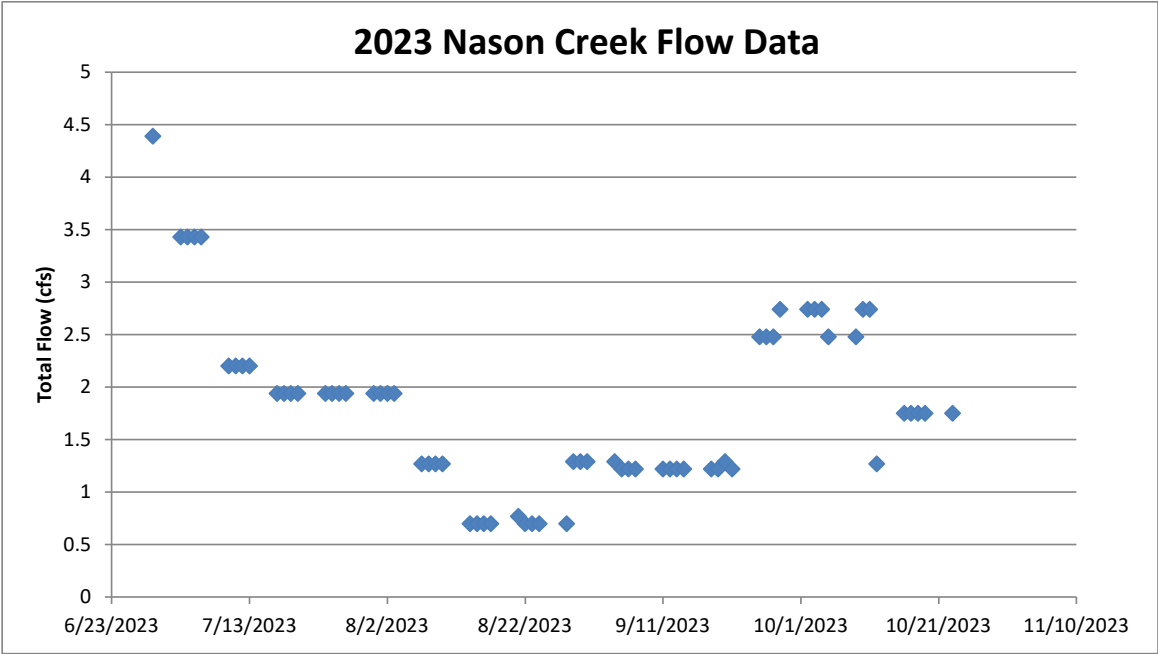
A handwritten signature in black ink, appearing to read 'Jeffrey Zahller'.

Jeffrey Zahller, PE
Senior Professional Associate

2023 Nason Creek Flow Summary

Calculated

Total Flow		
Ave	1.81	cfs
Median	1.75	cfs
Min	0.70	cfs
Max	4.39	cfs



Summary of Flow Log Data July to October 2023

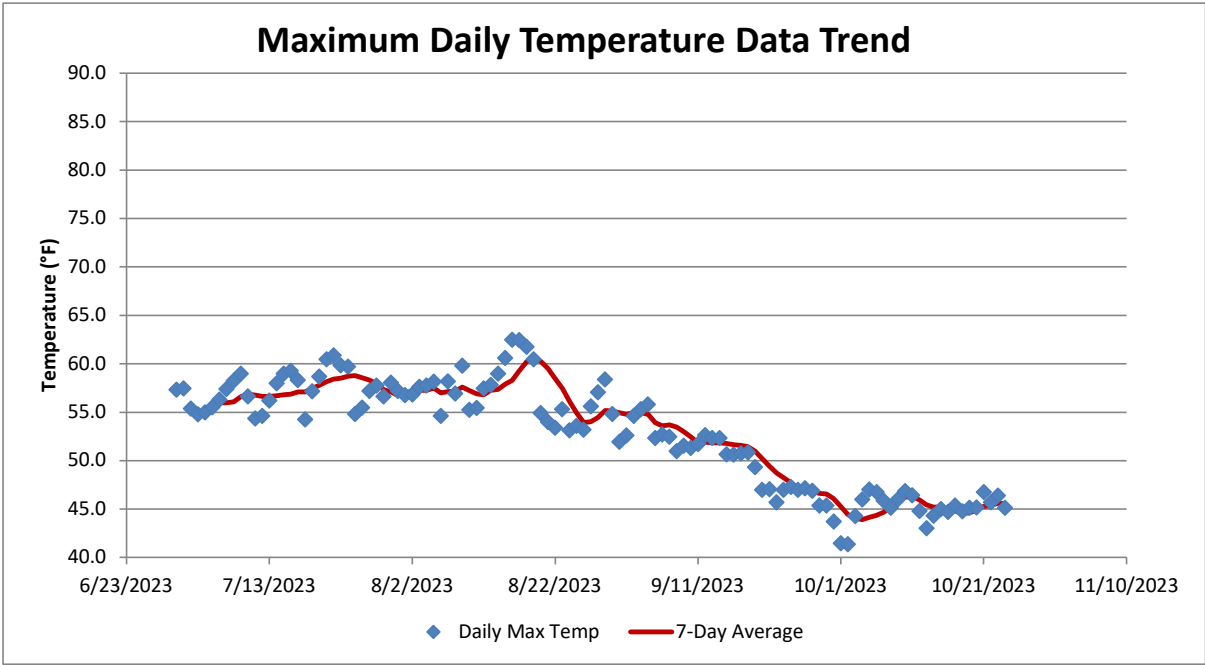
Calculated Calculated Calculated

Date			Culvert #1	Culvert #2	Culvert #3	Calculated
			C	B	A	Total CFS
6/29/2023			1.51	0.33	2.55	4.39
7/3/2023			1.51	0.33	1.59	3.43
7/4/2023			1.51	0.33	1.59	3.43
7/5/2023			1.51	0.33	1.59	3.43
7/6/2023			1.51	0.33	1.59	3.43
7/10/2023			1.51	0.33	0.36	2.2
7/11/2023			1.51	0.33	0.36	2.2
7/12/2023			1.51	0.33	0.36	2.2
7/13/2023			1.51	0.33	0.36	2.2
7/17/2023			1.51	0.07	0.36	1.94
7/18/2023			1.51	0.07	0.36	1.94
7/19/2023			1.51	0.07	0.36	1.94
7/20/2023			1.51	0.07	0.36	1.94
7/24/2023			1.51	0.07	0.36	1.94
7/25/2023			1.51	0.07	0.36	1.94
7/26/2023			1.51	0.07	0.36	1.94
7/27/2023			1.51	0.07	0.36	1.94
7/31/2023			1.51	0.07	0.36	1.94
8/1/2023			1.51	0.07	0.36	1.94
8/2/2023			1.51	0.07	0.36	1.94
8/3/2023			1.51	0.07	0.36	1.94
8/7/2023			0.34	0.07	0.86	1.27
8/8/2023			0.34	0.07	0.86	1.27
8/9/2023			0.34	0.07	0.86	1.27
8/10/2023			0.34	0.07	0.86	1.27
8/14/2023			0.34	0	0.36	0.7
8/15/2023			0.34	0	0.36	0.7
8/16/2023			0.34	0	0.36	0.7
8/17/2023			0.34	0	0.36	0.7
8/21/2023			0.34	0.07	0.36	0.77
8/22/2023			0.34	0	0.36	0.7
8/23/2023			0.34	0	0.36	0.7
8/24/2023			0.34	0	0.36	0.7
8/28/2023			0.34	0	0.36	0.7
8/29/2023			0.86	0.07	0.36	1.29
8/30/2023			0.86	0.07	0.36	1.29
8/31/2023			0.86	0.07	0.36	1.29
9/4/2023			0.86	0.07	0.36	1.29
9/5/2023			0.86	0	0.36	1.22
9/6/2023			0.86	0	0.36	1.22
9/7/2023			0.36	0	0.86	1.22
9/11/2023			0.36	0	0.86	1.22
9/12/2023			0.36	0	0.86	1.22
9/13/2023			0.36	0	0.86	1.22
9/14/2023			0.36	0	0.86	1.22
9/18/2023			0.36	0	0.86	1.22
9/19/2023			0.36	0	0.86	1.22
9/20/2023			0.36	0.07	0.86	1.29
9/21/2023			0.36	0	0.86	1.22
9/25/2023			0.82	0.07	1.59	2.48
9/26/2023			0.82	0.07	1.59	2.48
9/27/2023			0.82	0.07	1.59	2.48
9/28/2023			0.82	0.33	1.59	2.74
10/2/2023			0.82	0.33	1.59	2.74
10/3/2023			0.82	0.33	1.59	2.74
10/4/2023			0.82	0.33	1.59	2.74
10/5/2023			0.82	0.07	1.59	2.48
10/9/2023			0.82	0.07	1.59	2.48
10/10/2023			0.82	0.33	1.59	2.74
10/11/2023			0.82	0.33	1.59	2.74
10/12/2023			0.34	0.07	0.86	1.27
10/16/2023			0.82	0.07	0.86	1.75
10/17/2023			0.82	0.07	0.86	1.75
10/18/2023			0.82	0.07	0.86	1.75
10/19/2023			0.82	0.07	0.86	1.75
10/23/2023			0.82	0.07	0.86	1.75

2023 Temperature Data Calculations and Summary Graph

Calculated

Temperature Summary		
Ave	52.8 °F	daily max
Median	54.3 °F	daily max
Min	41.4 °F	daily max
Max	62.5 °F	daily max
Min	43.9 °F	7-day Average
Max	60.7 °F	7-day Average



2023 Temperature Data Calculations and Summary Graph

Day	Calculated	Calculated
	Max Daily, °F	7-Day Running Average
6/29/2023	57.3	
6/30/2023	57.5	
7/1/2023	55.4	
7/2/2023	54.8	
7/3/2023	55.0	
7/4/2023	55.5	
7/5/2023	56.3	56.0
7/6/2023	57.4	56.0
7/7/2023	58.2	56.1
7/8/2023	59.0	56.6
7/9/2023	56.6	56.9
7/10/2023	54.3	56.8
7/11/2023	54.6	56.6
7/12/2023	56.2	56.6
7/13/2023	58.0	56.7
7/14/2023	59.0	56.8
7/15/2023	59.3	56.9
7/16/2023	58.3	57.1
7/17/2023	54.3	57.1
7/18/2023	57.2	57.5
7/19/2023	58.7	57.8
7/20/2023	60.5	58.2
7/21/2023	60.9	58.4
7/22/2023	59.8	58.5
7/23/2023	59.7	58.7
7/24/2023	54.8	58.8
7/25/2023	55.5	58.5
7/26/2023	57.2	58.3
7/27/2023	57.8	58.0
7/28/2023	56.6	57.3
7/29/2023	58.1	57.1
7/30/2023	57.2	56.7
7/31/2023	56.8	57.0
8/1/2023	56.8	57.2
8/2/2023	57.6	57.3
8/3/2023	57.8	57.3
8/4/2023	58.2	57.5
8/5/2023	54.6	57.0
8/6/2023	58.2	57.1
8/7/2023	56.9	57.2
8/8/2023	59.8	57.6
8/9/2023	55.3	57.2
8/10/2023	55.4	56.9
8/11/2023	57.5	56.8
8/12/2023	57.8	57.3
8/13/2023	59.0	57.4
8/14/2023	60.6	57.9
8/15/2023	62.5	58.3
8/16/2023	62.4	59.3
8/17/2023	61.8	60.2
8/18/2023	60.5	60.7
8/19/2023	54.9	60.2
8/20/2023	54.0	59.5
8/21/2023	53.4	58.5
8/22/2023	55.3	57.5
8/23/2023	53.1	56.1

8/24/2023	53.6	55.0
8/25/2023	53.2	53.9
8/26/2023	55.6	54.0
8/27/2023	57.1	54.5
8/28/2023	58.4	55.2
8/29/2023	54.8	55.1
8/30/2023	51.9	54.9
8/31/2023	52.6	54.8
9/1/2023	54.6	55.0
9/2/2023	55.3	55.0
9/3/2023	55.8	54.8
9/4/2023	52.3	53.9
9/5/2023	52.7	53.6
9/6/2023	52.5	53.7
9/7/2023	51.0	53.5
9/8/2023	51.5	53.0
9/9/2023	51.3	52.4
9/10/2023	51.7	51.9
9/11/2023	52.6	51.9
9/12/2023	52.3	51.9
9/13/2023	52.3	51.8
9/14/2023	50.7	51.8
9/15/2023	50.6	51.7
9/16/2023	50.8	51.6
9/17/2023	50.8	51.5
9/18/2023	49.3	51.0
9/19/2023	47.0	50.2
9/20/2023	47.1	49.5
9/21/2023	45.7	48.8
9/22/2023	47.0	48.2
9/23/2023	47.3	47.7
9/24/2023	47.0	47.2
9/25/2023	47.2	46.9
9/26/2023	46.9	46.9
9/27/2023	45.4	46.6
9/28/2023	45.4	46.6
9/29/2023	43.7	46.1
9/30/2023	41.5	45.3
10/1/2023	41.4	44.5
10/2/2023	44.3	44.1
10/3/2023	46.0	43.9
10/4/2023	47.0	44.2
10/5/2023	46.8	44.4
10/6/2023	45.9	44.7
10/7/2023	45.1	45.2
10/8/2023	46.0	45.9
10/9/2023	46.8	46.2
10/10/2023	46.4	46.3
10/11/2023	44.8	46.0
10/12/2023	43.0	45.4
10/13/2023	44.3	45.2
10/14/2023	45.0	45.2
10/15/2023	44.7	45.0
10/16/2023	45.4	44.8
10/17/2023	44.8	44.6
10/18/2023	45.1	44.6
10/19/2023	45.2	44.9
10/20/2023	46.8	45.3
10/21/2023	45.7	45.4
10/22/2023	46.4	45.6
10/23/2023	45.1	45.6

LAUNCH 6-29-23

CREEKS & PLANT FLOW RECORD

SHEET NO. _____

DATE			NASON X.6467					MGO	Time	Temp	Weather	Int.		
MO	DA	YR	C		B		A	TOTAL						
			IND.	FLOW	IND.	FLOW	IND.	FLOW	CFS					
6-29-23			56	1.51	58	.33	55	2.55	4.39	2.84	10am	60am	Sun	(TW)
7-3-23			56	1.51	58	.33	56	1.59	3.43	2.22	8:00	60	Sun	SOB
7-4-23			56	1.51	58	.33	56	1.59	3.43	2.22	8:00	60	Sun	SOB
7-5-23			56	1.51	58	.33	56	1.59	3.43	2.22	11:30	60	Sun	SOB
7-6-23			56	1.51	58	.33	56	1.59	3.43	2.22	10:30	65	Sun	(TW)
7-10-23			56	1.51	58	.33	58	.36	2.20	1.42	9:00	60	Sun	MF
7-11-23			56	1.51	58	.33	58	.36	2.20	1.42	8:30	58	Sun	MT
7-12-23			56	1.51	58	.33	58	.36	2.20	1.42	8:30	60	Sun	MF
7-13-23			56	1.51	58	.33	58	.36	2.20	1.42	8:45	62	Sun	SOB
7-17-23			56	1.51	59	.07	58	.36	1.94	1.25	9:00	60	Sun	MF
7-18-23			56	1.51	59	.07	58	.36	1.94	1.25	9:30	63	Sun	(MF)
7-19-23			56	1.51	59	.07	58	.36	1.94	1.25	10:00	65	Sun	(TW)
7-20-23			56	1.51	59	.07	58	.36	1.94	1.25	9:00	59	Sun	MF
7-24-23			56	1.51	59	.07	58	.36	1.94	1.25	12:00	60	Blk-	MF
7-25-23			56	1.51	59	.07	58	.36	1.94	1.25	9:00	55	Sun	MF
7-26-23			56	1.51	59	.07	58	.36	1.94	1.25	8:30	57	Sun	MF
7-27-23			56	1.51	59	.07	58	.36	1.94	1.25	8:00	52	Sun	SOB
7-31-23			56	1.51	59	.07	58	.36	1.94	1.25	10:30	62	Sun	MF
8-1-23			56	1.51	59	.07	58	.36	1.94	1.25	9:00	62	Sun	SOB
8-2-23			56	1.51	59	.07	58	.36	1.94	1.25	9:00	60	Sun	SOB
8-3-23			56	1.51	59	.07	58	.36	1.94	1.25	10:00	58	Sun	SOB
8-7-23			58	.34	59	.07	57	.86	1.27	.82	8:30	60	Cldy	SOB
8-8-23			58	.34	59	.07	57	.86	1.27	.82	9:00	60	Cldy	SOB
8-9-23			58	.34	59	.07	57	.86	1.27	.82	10:00	60	Cldy	SOB
8-10-23			58	.34	59	.07	57	.86	1.27	.82	10:40	60	Cldy	(TW)

* CFS = GPD / 624317

DILUTION RATIO = CREEKS' TOTAL FLOW / PLANT FLOW CFS

CREEKS & PLANT FLOW RECORD

SHEET NO. _____

DATE			NASON X.6467					MGO	Time	Temp	Weather	Int.		
MO	DA	YR	C		B		A	TOTAL						
			IND.	FLOW	IND.	FLOW	IND.	FLOW						
								CFS						
8	10	23	58	.34	59	.07	57	.86	1.27	.82	10:00	60	cldy	See
8	14	23	58	.34	60	0	58	.36	.70	.45	8:30	58	cl	See
8	15	23	58	.34	60	0	58	.36	.70	.45	8:00	60	clr	See
8	16	23	58	.34	60	0	58	.36	.70	.45	10:00	70	clr	See
8	17	23	58	.34	60	0	58	.36	.70	.45	10:00	68	Clr	See
8	21	23	58	.34	59	.07	58	.36	.77	.49	10:00	60	Smoky	See
8	22	23	58	.34	60	0	58	.36	.70	.45	10:00	60	clr	See
8	23	23	58	.34	60	0	58	.36	.70	.45	10:00	55	clr	See
8	24	23	58	.34	60	0	58	.36	.70	.45	10:00	60	CLR	See
8	28	23	58	.34	60	0	58	.36	.70	.45	9:45	70	CLR	See
8	29	23	57	.86	59	.07	58	.36	1.29	.83	10:30	50	cldy	See
8	30	23	57	.86	59	.07	58	.36	1.29	.83	10:00	50	cldy	See
8	31	23	57	.86	59	.07	58	.36	1.29	.83	10:00	50	Cloudy	See
9	4	23	57	.86	59	.07	58	.36	1.29	.83	7:30	54	Cloudy	MF
9	5	23	58	.86	60	0	58	.36	1.22	.789	10:00	52	Cloudy	See
9	6	23	57	.86	60	0	58	.36	1.22	.789	10:00	52	Sun	See
9	7	23	58	.36	60	0	57	.86	1.22	.789	9:45	54	Sun	MF
9	11	23	58	.36	60	0	57	.86	1.22	.789	11:00	60	Sun	MF
9	12	23	58	.36	60	0	57	.86	1.22	.789	10:00	58	Cloudy	See
9	13	23	58	.36	60	0	57	.86	1.22	.789	10:00	54	Sun	MF
9	14	23	58	.36	60	0	57	.86	1.22	.789	9:30	55	Sun	See
9	16	23	58	.36	60	0	57	.86	1.22	.789	10:00	44	Cloudy	MF
9	19	23	58	.36	60	0	57	.86	1.22	.789	9:30	42	Sun	MF
9	20	23	58	.36	59	.07	57	.86	1.29	.83	9:30	42	Cloudy	See
9	21	23	58	.36	60	0	57	.86	1.22	.789	10:30	45	CLR	See

* CFS = GPD / 624317

DILUTION RATIO = CREEKS' TOTAL FLOW / PLANT FLOW CFS

CREEKS & PLANT FLOW RECORD

SHEET NO.

DATE MO DA YR	NASON X.646T							MGD	Time	Temp	Weather	Int.
	C		B		A		TOTAL					
	IND.	FLOW	IND.	FLOW	IND.	FLOW	CFS					
9-25-23	57	.82	59	.07	56	1.59	2.48	1.60	11:00	48	Rain	SOB
9-26-23	57	.82	59	.07	56	1.59	2.48	1.60	10:30	49	Rain	SOB
9-27-23	57	.82	59	.07	56	1.59	2.48	1.60	11:00	48	Rain	SOB
9-28-23	57	.82	58	.33	56	1.59	2.74	1.77	9:30	48	Rain	SOB
10-2-23	57	.82	58	.33	56	1.59	2.74	1.77	9:00	50	Clear	MF
10-3-23	57	.82	58	.33	56	1.59	2.74	1.77	10:00	55	Clear	MF
10-4-23	57	.82	58	.33	56	1.59	2.74	1.77	9:00	46	Rain	MF
10-5-23	57	.82	59	.07	56	1.59	2.48	1.60	10:00	45	Sun	MF
10-9-23	57	.82	59	.07	56	1.59	2.48	1.60	10:30	45	Cldy	SOB
10-10-23	57	.82	58	.33	56	1.59	2.74	1.77	10:00	42	Cldy	SOB
10-11-23	57	.82	58	.33	56	1.59	2.74	1.77	9:45	42	Cldy	SOB
10-12-23	58	.34	59	.07	57	.86	1.27	.82	9:40	41	Cloud/Rain	MF
10-16-23	57	.82	59	.07	57	.86	1.75	1.13	9:00	42	Rain	SOB
10-17-23	57	.82	59	.07	57	.86	1.75	1.13	10:30	44	Rain	SOB
10-18-23	57	.82	59	.07	57	.86	1.75	1.13	12:30	50	Sun	SOB
10-19-23	57	.82	59	.07	57	.86	1.75	1.13	11:00	46	Sun	SOB
10-23-23	57	.82	59	.07	57	.86	1.75	1.13	11:30	48	Cldy	SOB

Pulled

10-23-23

-SNOW expected

* CFS = GPD/624317

DILUTION RATIO = CREEKS' TOTAL FLOW/PLANT FLOW CFS