



# **STORM WATER MONITORING PROGRAM 2025 ANNUAL REPORT**

**Hecla Greens Creek Mining  
Company February 26, 2026**

## CONTENTS

1. Introduction .....	1
2. Annual Monitoring Results .....	5
2.1. Storm Event Data .....	5
2.2. Water Quality Data .....	6
3. Water Quality Monitoring Summary .....	9
3.1. Storm Water Outfall 003 – Hawk Inlet .....	11
3.2. Storm Water Outfall 004 – Pit 7 .....	11
3.3. Storm Water Outfall 005.2 – Zinc Creek Bridge .....	11
3.4. Storm Water Outfall 005.3 – Site E .....	11
3.5. Storm Water Outfall 005.4 – Pit 6 .....	12
3.6. Storm Water Outfall 005.5 – 7.8 Mile B-Road Culvert .....	12
3.7. Storm Water Outfall 006 – Pond D Overflow .....	13
3.8. Storm Water Outfall 007 – Pond C Overflow .....	13
3.9. Storm Water Outfall 008 – 960 Site .....	13
3.10. Storm Water Outfall 009 – 1350 Site .....	13
3.11. Storm Water Outfall 012 – A-Road Sand Pit .....	14
4. Certification .....	15
5. References Cited .....	16

TABLES

Table 1: Authorized Discharge Locations ..... 1

Table 2: Storm Water Outfall Monitoring Requirements ..... 2

Table 3: Storm Water Outfall and Receiving Water Monitoring Sites ..... 4

Table 4: Storm Event Details..... 5

Table 5: Storm Water Outfall Area and Estimated Total Discharge Volume ..... 6

Table 6: Storm Water Outfall and Receiving Water Monitoring Results ..... 7

Table 7: Comparison of Water Quality Data to Alaska Water Quality Standards ..... 10

ATTACHMENTS

- Attachment A: Figures
- Attachment B: Time Series Charts
- Attachment C: Statistical Charts
- Attachment D: Historical Water Quality Data (submitted electronically)

## 1. INTRODUCTION

This Storm Water Report is submitted by Hecla Greens Creek Mining Company (HGCMC) pursuant to Parts 1.3, 1.6.2 and 1.8 of Alaska Pollutant Discharge Elimination System (APDES) Permit AK-0043206, effective 1 October 2023. APDES Permit AK-0043206 authorizes HGCMC to discharge from the Greens Creek Mine facility located on Admiralty Island at 12 locations (Table 1).

**Table 1: Authorized Discharge Locations**

<b>Outfall</b>	<b>Receiving Water or Body</b>	<b>Latitude</b>	<b>Longitude</b>
2	Hawk Inlet	58° 06' 06" N	134° 46' 30" W
3	Hawk Inlet	58° 07' 32" N	134° 45' 16" W
4	Wetlands	58° 09' 01" N	134° 45' 16" W
5.2	Zinc Creek	58° 05' 28" N	134° 44' 10" W
5.3	Greens Creek	58° 04' 23" N	134° 43' 25" W
5.4	Greens Creek	58° 04' 21" N	134° 43' 12" W
5.5	Greens Creek	58° 04' 41" N	134° 39' 07" W
6	Greens Creek	58° 04' 43" N	134° 38' 49" W
7	Greens Creek	58° 04' 50" N	134° 38' 27" W
8	Greens Creek	58° 04' 52" N	134° 38' 06" W
9	Greens Creek	58° 04' 47" N	134° 37' 47" W
12	Hawk Inlet	58° 08' 39" N	134° 45' 15" W

Outfall 002, located at the mouth of Hawk Inlet, discharges treated wastewater contributed by mine contact water, storm water, mill process water, treated domestic wastewater, and intercepted groundwater. Monitoring associated with the APDES Outfall 002 diffuser is included in the Hawk Inlet Monitoring Program Annual Report.

This report includes results of monitoring associated with storm water outfalls 003, 004, 005.2, 005.3, 005.4, 005.5, 006, 007, 008, 009, and 012. Outfall monitoring requirements (AK-0043206 Part 1.3) are summarized in Table 2. Outfall locations are shown in Figure 1 (Attachment A).

**Table 2: Storm Water Outfall Monitoring Requirements**

<b>Outfall</b>	<b>Location</b>	<b>Parameters <sup>a</sup></b>	<b>Minimum Frequency <sup>b</sup></b>	<b>Sample Type</b>
3	Southern part of Hawk Inlet facilities area near the cannery buildings	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
4	Pit 7 (inactive rock quarry and topsoil storage) off of A-road at mile 1.9	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
5.2	Zinc Creek (east side of bridge) off of B-road at mile 3.0	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
5.3	Site E (inactive waste rock storage area) off of B-road at mile 4.7	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
5.4	Pit 6 (inactive rock quarry and top soil storage) off of B-road at mile 4.6	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
5.5	Culvert at B-road mile 7.8	Flow, oil & grease, lead, zinc, TSS, pH, hardness	twice per year	Grab
6	Pond D (sediment pond from inactive waste rock storage area D) off of B-road at mile 8.0	Flow, lead, zinc, TSS, pH, hardness	twice per year	Grab
7	Pond C (sediment pond from inactive waste rock storage area C) off of B-road at mile 8.2	Flow, lead, zinc, TSS, pH, hardness	twice per year	Grab
8	960 laydown site (initial portal development waste rock)	Flow, lead, zinc, TSS, pH, hardness	twice per year	Grab
9	Site 1350 adit inactive waste rock storage area	Flow, lead, zinc, TSS, pH, hardness	twice per year	Grab
12	A-Road sand pit area	Flow, lead, zinc, TSS, pH, hardness	twice per year	Grab

a. Flow shall be reported in gpm, lead and zinc shall be measured as total recoverable in µg/L, oil & grease and TSS shall be measured in mg/L, pH shall be measured in s.u., and hardness shall be measured as mg/L of CaCO<sub>3</sub>.

b. The samples must be collected once during the spring runoff or snow-melt and once during the fall rainfall events. Sampling is only required when an outfall is discharging.

Section 1.6.2 of APDES Permit AK-0043206 requires monitoring of the receiving water directly upstream and downstream of where each storm water outfall enters the receiving water. The upstream and downstream monitoring sites are summarized in Table 3 and locations are shown in Figures 2 through 10 (Attachment A).

Receiving water monitoring was conducted semiannually and at the same time (within three hours) as each associated outfall. Samples were collected during the spring runoff or snow-melt and during the fall rainfall events. Because of the time required to visit all storm water outfalls and associated receiving water sites, semiannual monitoring events may occur over multiple days and potentially during separate storm events.

Storm event and analytical water quality monitoring data for the reporting period are presented in Section 2.0 of this report. An evaluation of the results for each outfall, including comparison of upstream and downstream monitoring, is presented in Section 3.0 pursuant to AK-0043206 Part 1.8. Graphical presentations of the data at each monitoring station versus time are included in Attachment B. Attachment C contains time plots for outfalls that exceed the Alaska Water Quality Standards (AWQS) and the statistical comparison between upstream and downstream receiving sites. Attachment D is a tabulation of historical data for the outfalls and receiving waters. The data are submitted as an electronic spreadsheet per AK-0043206 Part 1.8.

**Table 3: Storm Water Outfall and Receiving Water Monitoring Sites**

Location	Outfall	Site	Type*	Site Description
Hawk Inlet	3	527	S	Stormwater #003 - North Cannery Building @ Culvert Outfall
		529	RD	Stormwater - Hawk Inlet Float Plane Dock
Pit 7	4	520	S	Stormwater #004 - "A" Road @ 1.8 Mile - Pit "7"
		532	RU	Stormwater at Pit 7 - Upstream of Outfall 004
		524	RD	Pit 7 - Fowler Creek
Zinc Creek Bridge	5.2	539	S	Stormwater #005.2 - "B" Road @ 3.0 Mile - Zinc Creek Bridge
		371	RU	Zinc Creek - Above B Road
		368	RD	Zinc Creek - 0466 ft below bridge
Site E	5.3	545	S	Stormwater #005.3 - "B" Road @ 4.5 Mile - Waste Rock Area "E"
		595	RU	Stormwater - Greens Creek upstream of Outfalls 005.3 and 005.4
		591	RD	Stormwater Greens Creek Below Site E
Pit 6	5.4	547	S	Stormwater #005.4 - "B" Road @ 4.6 Mile - Pit "6"
		595	RU	Stormwater - Greens Creek upstream of Outfalls 005.3 and 005.4
		591	RD	Stormwater Greens Creek Below Site E
7.8 Mile	5.5	560	S	Stormwater #005.5 - "B" Road @ 7.8 Mile - Culvert Outfall
		6	RU	Greens Creek - Middle, Above Bruin Creek
		590	RD	Stormwater - 920 Down Gradient - Greens Creek
Pond D	6	562	S	Stormwater #006 - Pond "D" Overflow - Waste Rock Area "D"
		6	RU	Greens Creek - Middle, Above Bruin Creek
		590	RD	Stormwater - 920 Down Gradient - Greens Creek
Pond C	7	565	S	Stormwater #007 - Pond "C" Overflow - Waste Rock Area "C"
		1	RU	Greens Creek - Upper, At 920 Weir
		6	RD	Greens Creek - Middle, Above Bruin Creek
960 Site	8	570	S	Stormwater #008 - Waste Rock Area "980"
		1	RU	Greens Creek - Upper, At 920 Weir
		6	RD	Greens Creek - Middle, Above Bruin Creek
1350 Site	9	580	S	Stormwater #009 - Adit Inactive Waste Rock Storage Area – East Drainage
		48	RU	Greens Creek - Background Control Site
		1	RD	Greens Creek - Upper, At 920 Weir
A-Road Sand Pit	12	533**	S	Sand Pit Culvert @ 1.4 A-Road

\* S = Storm water, RU = Receiving water upstream, RD = Receiving water downstream

\*\*GCM-534 is the RD for 533. It's assumed to be Hawk Inlet and has not been sampled with no flows from GCM-533.

## 2. ANNUAL MONITORING RESULTS

This section includes the results of storm water outfall and receiving waterbody monitoring pursuant to APDES Permit AK-0043206 Parts 1.3 and 1.6.2. Section 2.1 includes the date and duration (in hours) of the storm event sampled, rainfall measurements or estimates (in inches) of the storm event, the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event, and an estimate of the total volume (in gallons) of the discharge (AK-0043206 Part 1.3.7). Water quality data are included in Section 2.2.

### 2.1. Storm Event Data

Precipitation and duration data associated with the sampling events that occurred during the reporting period are summarized in Table 4. HGCMC maintains three meteorological stations at the site; one located at the mill site, one located at the tailings facility, and one located at the Hawk Inlet float plane dock. When possible, the meteorological station in closest proximity to the outfalls being sampled is used as the reference station for the precipitation and duration data.

**Table 4: Storm Event Details**

Date	4/23/2025	4/24/2025	4/28/2025	9/20/2025	9/20/2025	9/21/2025
Outfalls Sampled	003,	005.2, 005.3, 005.4	005.5, 008, 009	003,	005.2, 005.3, 005.4	005.5, 008, 009
Outfalls Observed (not sampled)*	004,	--	006, 007, 012	--	--	004, 006, 007, 012
Meteorological Station Reference	Hawk Inlet	Tailings	Mill Site	Hawk Inlet	Tailings	Mill Site
<b>SAMPLE EVENT</b>						
Duration (hours)	84.75	84.75	27	96	96	96
Start Date	4/21/2025	4/21/2025	4/27/2025	9/18/2025	9/18/2025	9/18/2025
Start Time	845	845	2100	1745	1745	1745
Precipitation (inches)	1.41	0.857	0.496	2.91	3.38	3.38
Same Day Precip. (inches)	0.18	0.549	0.452	0.34	0.402	0.551
<b>PRIOR EVENT</b>						
Lapse Between Events (hours)	79.75	79.75	71.5	25.25	25.25	25.25
Duration (hours)	10.75	10.75	84.75	15.75	15.75	15.75
Start Date	4/17/2025	4/17/2025	4/21/2025	9/17/2025	9/17/2025	9/17/2025
Start Time	1415	1415	845	45	45	45
Precipitation (inches)	0.15	0.63	1.14	0.18	0.24	0.51

\*Outfalls observed may include observations made within one day of the sampling event date listed

The estimated total gallons of storm water discharged through the outfalls that were sampled during the reporting period are presented in Table 5. These discharge estimates were calculated using the rational method equation. Catchment areas were calculated based on high resolution LiDAR aerial imagery acquired in 2015.

**Table 5: Storm Water Outfall Area and Estimated Total Discharge Volume**

<b>Outfall</b>	<b>Sample Date</b>	<b>Catchment Area (acres)</b>	<b>Total Discharge (gallons)</b>
3	4/23/2025	0.2	5,316
5.2	4/24/2025	0.6	4,154
5.3	4.24/2025	6.8	78,468
5.4	4/24/2025	1.9	17,540
5.5	4/28/2025	5.3	21,238
8	4/28/2025	0.7	3,740
9	4/28/2025	3.3	17,632
3	9/20/2025	0.2	10,971
5.2	9/20/2025	0.6	16,384
5.3	9/20/2025	6.8	309,478
5.4	9/20/2025	1.9	69,177
5.5	9/21/2025	5.3	144,726
8	9/21/2025	0.7	25,486
9	9/21/2025	3.3	120,150

## 2.2. Water Quality Data

Analytical results for the required monitoring parameters (Table 2) for each outfall and associated receiving water sites are presented in Table 6. Also provided are the method detection limit (MDL) and minimum level of quantification (ML) for total recoverable lead, total recoverable zinc, oil and grease, and total suspended solids. As required by Permit Part 1.3.6, if a value is less than the MDL it is reported as less than the numeric value of the MDL, and if a value is less than the ML it is reported as less than the numeric value of the ML.

The results in Table 6 are organized first by the permitted outfall, and then by the date of the sample or observation. The results for the storm water effluent (S) are grouped with the receiving water upstream sites (RU) and downstream sites (RD), as appropriate for each sampling event. A discussion and evaluation of the results for each outfall and sampling event is provided in the following section.

**Table 6: Storm Water Outfall and Receiving Water Monitoring Results**

Outfall	Type*	Site	Date	Time	Flow	pH	Hardness	Lead-TR			Zinc-TR			Oil & Grease			TSS		
					(gpm)	(su)	(mg/L)	(µg/L)	MDL	ML	(µg/L)	MDL	ML	mg/L	MDL	ML	mg/L	MDL	ML
3	S	527	04/23/2025	1230	0.3	6.91	154.0	17.0	0.1	0.5	62	6	15	<10.2	2	10.2	<5	5	20
	RD	529	4/23/2025	1245			4,620.0	<0.1	0.1	0.5	<15	6	15	<2.1	2.1	10.3	<20	5	20
	S	527	9/20/2025	1245	0.8	6.93	135.0	4.3	0.1	0.5	63.3	6	15	<1.9	1.9	9.6	<5	5	20
	RD	529	9/20/2024	1255		7.24	3,390.0	0.9	0.1	0.5	<15	6	15	<2	2	10.1	27	5	20
4	S	520	04/23/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RU	532	4/23/2025	1205		5.64	7.7	<0.5	0.1	0.5	<6	6	15	<10.3	2.1	10.3	<5	5	20
	RD	524	4/23/2025	1150		6.37	16.0	0.6	0.1	0.5	<15	6	15	<2.1	2.1	10.3	<5	5	20
	S	520	9/22/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RU	532	9/22/2025	830		6.21	13.0	<2.5	0.5	2.5	<30	30	75	<1.9	1.9	9.7	<5	5	20
	RD	524	9/22/2025	815		6.91	14.0	<2.5	0.5	2.5	<30	30	75	<1.9	1.9	9.7	<5	5	20
5.2	S	539	4/24/2025	1550	2.5	4.84	57.0	2.7	0.1	0.5	49.4	6	15	<2	2	10.1	<5	5	20
	RU	371	4/24/2025	1600		6.83	25.0	<0.5	0.1	0.5	<15	6	15	<2	2	10	<20	5	20
	RD	368	4/24/2025	1540		7.84	26.0	<0.5	0.1	0.5	<15	6	15	<2	2	10	<5	5	20
	S	539	9/20/2025	1055	0.3	5.01	45.0	5.9	0.5	2.5	<75	30	75	<2	2	10	<5	5	20
	RU	371	9/20/2025	1110		6.50	29.0	<0.5	0.1	0.5	<15	6	15	<2	2	10	<5	5	20
	RD	368	9/20/2025	1050		7.24	29.0	<0.2	0.2	1.0	<30	12	30	<1.9	1.9	9.6	<5	5	20
5.3	S	545	4/24/2025	1025	145.0	7.64	136.0	11.1	0.1	0.5	156	6	15	<2	2	10.1	<20	5	20
	RU	595	4/24/2025	930		7.78	55.0	<0.5	0.1	0.5	<15	6	15	<2	2	10	<5	5	20
	RD	591	4/24/2025	920		7.81	55.0	<0.5	0.1	0.5	<6	6	15	<2	2	10	<5	5	20
	S	545	9/20/2025	935	250.0	7.47	75.0	6.0	0.1	0.5	150	6	15	<1.9	1.9	9.7	<5	5	20
	RU	595	9/20/2025	835		7.51	48.0	2.1	0.1	0.5	102	6	15	<1.9	1.9	9.6	<20	5	20
	RD	591	9/20/2025	820		7.70	47.0	2.2	0.1	0.5	<15	6	15	<9.7	1.9	9.7	<20	5	20
5.4	S	547	4/24/2025	1045	0.3	7.88	33.0	1.1	0.1	0.5	19	6	15	<2	2	10.1	<5	5	20
	RU	595	4/24/2025	930		7.78	55.0	<0.5	0.1	0.5	<15	6	15	<2	2	10	<5	5	20
	RD	591	4/24/2025	920		7.81	55.0	<0.5	0.1	0.5	<6	6	15	<2	2	10	<5	5	20
	S	547	9/20/2025	1000	1.5	6.95	51.0	<0.5	0.1	0.5	<15	6	15	<1.9	1.9	9.7	<5	5	20
	RU	595	9/20/2025	835		7.51	48.0	2.1	0.1	0.5	102	6	15	<1.9	1.9	9.6	<20	5	20
	RD	591	9/20/2025	820		7.70	47.0	2.2	0.1	0.5	<15	6	15	2	1.9	9.7	<20	5	20

**Table 6 (cont): Storm Water Outfall and Receiving Water Monitoring Results**

Outfall	Type*	Site	Date	Time	Flow	pH	Hardness	Lead-TR			Zinc-TR			Oil & Grease			TSS		
					(gpm)	(su)	(mg/L)	(µg/L)	MDL	ML	(µg/L)	MDL	ML	mg/L	MDL	ML	mg/L	MDL	ML
5.5	S	560	4/28/2025		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RU	6	4/28/2025	810		7.84	41.0	<0.5	0.1	0.5	<6	6	15	<2	2	9.8	<5	5	20
	RD	590	4/28/2025	735		7.65	50.0	<0.5	0.1	0.5	<15	6	15	<2	2	9.8	<5	5	20
	S	560	9/21/2025	915	9.0	7.79	218.0	2,120.0	0.5	2.5	1950	30	75	<2	2	9.9	<5	5	20
	RU	6	9/21/2025	940		7.63	43.0	1.3	0.1	0.5	17.2	6	15	<1.9	1.9	9.7	<5	5	20
	RD	590	9/21/2025	855		7.82	48.0	2.1	0.1	0.5	16.8	6	15	<1.9	1.9	9.5	<5	5	20
6	S	562	4/28/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S	562	9/21/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	S	565	4/28/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S	565	9/21/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	S	570	4/28/2025	920	3.2	7.35	153.0	<0.1	0.1	0.5	<15	6	15	NA	NA	NA	<5	5	20
	RU	1	4/28/2025	910		7.72	40.0	<0.1	0.1	0.5	<6	6	15	NA	NA	NA	<5	5	20
	RD	6	4/28/2025	810		7.84	41.0	<0.5	0.1	0.5	<6	6	15	<2	2	9.8	<5	5	20
	S	570	9/21/2025	1050	16.0	7.59	181.0	<0.1	0.1	0.5	24	6	15	NA	NA	NA	<5	5	20
	RU	1	9/21/2025	1010		8.14	45.0	2.4	0.2	1.0	<30	12	30	NA	NA	NA	28	5	20
	RD	6	9/21/2025	940		7.63	43.0	1.3	0.1	0.5	17.2	6	15	<1.9	1.9	9.7	<5	5	20
9	S	580	4/28/2025	940	2.6	7.66	44.0	<0.1	0.1	0.5	81.9	6	15	NA	NA	NA	<5	5	20
	RU	48	4/28/2025	850		7.66	39.0	<0.5	0.1	0.5	<6	6	15	NA	NA	NA	<5	5	20
	RD	1	4/28/2025	910		7.72	40.0	<0.1	0.1	0.5	<6	6	15	NA	NA	NA	<5	5	20
	S	580	9/21/2025	1105	31.0	7.52	40.0	<0.5	0.1	0.5	53.7	6	15	NA	NA	NA	<5	5	20
	RU	48	9/21/2025	1020		7.63	41.0	1.5	0.2	1.0	<30	12	30	NA	NA	NA	<5	5	20
	RD	1	9/21/2025	1010		8.14	45.0	2.4	0.2	1.0	<30	12	30	NA	NA	NA	28	5	20
12	S	533	4/28/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S	533	9/21/2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

- No water, sample not taken
- NA Sample not required at this location

### 3. WATER QUALITY MONITORING SUMMARY

Permit AK-0043206 does not establish numeric effluent limits for the individual storm water outfalls. As stated in the Permit Fact Sheet, this is due to the difficulty in developing numeric limits for storm water discharges that are extremely variable in flow and pollutant concentrations and the uncertainty regarding the effect of the storm water discharges on the receiving waters. Instead, the Permit requires HGCMC to implement corrective action if a storm water discharge exceeds a water quality criterion *and* results in a statistically significant reduction in receiving water quality for the same criterion.

Table 7 is a tabulation of water quality collected during the reporting period compared to applicable AWQS (Alaska Department of Conservation, 2022). In Sections 3.1 through 3.11, monitoring results for this reporting period are discussed in general terms as well as in relation to AWQS.

A data analysis plan (DAP) for evaluating whether statistically significant reductions in receiving water quality have occurred was established. The plan includes details pertaining to the statistical evaluation methodology. Per the DAP and the Permit requirement mentioned above, if the concentrations for lead or zinc in the outfall exceeded the AQWS a statistical analysis was performed to compare the upstream and downstream receiving sites. The comparison involves computing an upper tolerance limit (UTL) from the upstream site data collected since 2016 using Sanitas software (Sanitas Technologies, 2016) to determine a baseline standard for normal concentrations of pH, lead, and zinc. Individual downstream measurements are compared to the UTL. If a downstream result exceeds the UTL it indicates that the levels of lead or zinc may be above background.

Attachment C contains time graphs for outfalls that exceeded at least one of the AWQS and the time plots comparing downstream results to the UTL. Outfalls 005.2, 005.3, 005.5, and 009 exceeded at least one AWQS and are included in Attachment C. The lead concentration in both samples collected from Outfall 003 during the reporting period exceeded the chronic lead AQWS, but there is no upstream receiving water site for this outfall thus no statistical comparison can be made.

Statistics can be used to define the statistical uncertainty between sample values collected at different sites (e.g., upstream and downstream receiving waters). Statistics can never prove that a difference between sample values is real, only the probability that one may exist, given the available data. Statistical tests rely on using estimates of the true mean and true variance of a population, where larger sample populations increase statistical confidence.

The results of the statistical analysis indicate that background (upper UTL at the upstream sites) was not exceeded for measured analytes in 2025.

**Table 7: Comparison of Water Quality Data to Alaska Water Quality Standards**

Sample Data <sup>1,2</sup>				Alaska Water Quality Standards (AWQS) <sup>3</sup>					
Outfall	Type <sup>4</sup>	Site	Date	Hardness	Pb	Zn	Acute Pb	Chronic Pb	Acute and Chronic Zn
				(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
3	S	527	04/23/2025	154.0	17.0	62	141.46	5.51	172.74
	RD	529	4/23/2025	4,620.0	0.0	0.0	476.82	18.58	387.83
	S	527	9/20/2025	135.0	4.3	63.3	119.63	4.66	154.51
	RD	529	9/20/2024	3,390.0	0.9	0.0	476.82	18.58	387.83
4	S	520	04/23/2025	No sample taken due to no flow					
	RU	532	4/23/2025	7.7	0.0	0.0	13.98	0.54	37.025
	RD	524	4/23/2025	16.0	0.6	0.0	13.98	0.54	37.025
	S	520	9/22/2025	No sample taken due to no flow					
	RU	532	9/22/2025	13.0	0.0	0.0	13.98	0.54	37.025
	RD	524	9/22/2025	14.0	0.0	0.0	13.98	0.54	37.025
5.2	S	539	4/24/2025	57.0	2.7	49.4	39.92	1.56	74.42
	RU	371	4/24/2025	25.0	0.0	0.0	13.98	0.54	37.025
	RD	368	4/24/2025	26.0	0.0	0.0	14.7	0.57	38.27
	S	539	9/20/2025	45.0	0.0	0.0	29.54	1.15	60.91
	RU	371	9/20/2025	29.0	0.0	0.0	16.89	0.66	41.98
	RD	368	9/20/2025	29.0	0.0	0.0	16.89	0.66	41.98
5.3	S	545	4/24/2025	136.0	11.1	156	120.76	4.71	155.48
	RU	595	4/24/2025	55.0	0.0	0.0	38.14	1.49	72.2
	RD	591	4/24/2025	55.0	0.0	0.0	38.14	1.49	72.2
	S	545	9/20/2025	75.0	6.0	150	56.61	2.21	93.9
	RU	595	9/20/2025	48.0	2.1	102	32.07	1.25	64.33
	RD	591	9/20/2025	47.0	2.2	0.0	31.23	1.22	63.2
5.4	S	547	4/24/2025	33.0	1.1	19	19.91	0.78	46.83
	RU	595	4/24/2025	55.0	0.0	0.0	38.14	1.49	72.2
	RD	591	4/24/2025	55.0	0.0	0.0	38.14	1.49	72.2
	S	547	9/20/2025	51.0	0.0	0.0	34.65	1.35	67.72
	RU	595	9/20/2025	48.0	2.1	102	32.07	1.25	64.33
	RD	591	9/20/2025	47.0	2.2	0.0	31.23	1.22	63.2
5.5	S	560	4/28/2025	No sample taken due to no flow					
	RU	6	4/28/2025	41.0	0.0	0.0	26.24	1.02	56.29
	RD	590	4/28/2025	50.0	0.0	0.0	33.78	1.32	66.6
	S	560	9/21/2025	218.0	2,120.0	1950	220.18	8.58	231.89
	RU	6	9/21/2025	43.0	1.3	17.2	27.88	1.09	58.61
	RD	590	9/21/2025	48.0	2.1	16.8	32.07	1.25	64.33
8	S	570	4/28/2025	153.0	0.0	0.0	140.3	5.47	171.79
	RU	1	4/28/2025	40.0	0.0	0.0	25.43	0.99	55.12
	RD	6	4/28/2025	41.0	0.0	0.0	26.24	1.02	56.29
	S	570	9/21/2025	181.0	0.0	24	173.76	6.77	198.08
	RU	1	9/21/2025	45.0	2.4	0.0	29.54	1.15	60.91
	RD	6	9/21/2025	43.0	1.3	17.2	27.88	1.09	58.61
9	S	580	4/28/2025	44.0	0.0	81.9	28.71	1.12	59.76
	RU	48	4/28/2025	39.0	0.0	0.0	24.62	0.96	53.95
	RD	1	4/28/2025	40.0	0.0	0.0	25.43	0.99	55.12
	S	580	9/21/2025	40.0	0.0	53.7	25.43	0.99	55.12
	RU	48	9/21/2025	41.0	1.5	0.0	26.24	1.02	56.29
	RD	1	9/21/2025	45.0	2.4	0.0	29.54	1.15	60.91

1 - Shaded cells indicate exceedance of AWQS

2 - Italic font indicates the laboratory result was non-detect and tabulated value is zero if less than the Method Detection Limit (MDL) or the value of MDL if less than the Minimum Level of Quantification (ML)

3 - AWQS are from the Alaska Department of Conservation "ALASKA WATER QUALITY CRITERIA MANUAL FOR TOXIC AND OTHER DELETERIOUS ORGANIC AND INORGANIC SUBSTANCES" as amended through September 8, 2022

4 - S = Storm water, RU = Receiving water upstream, RD = Receiving water downstream

### **3.1. Storm Water Outfall 003 – Hawk Inlet**

Outfall 003, a culvert pipe located adjacent to the North Cannery Building, drains the storm water runoff from a small area approximately 0.2 acres in size (Attachment A, Figure 2). Outfall 003 discharges directly into Hawk Inlet, and therefore there is only one associated receiving water monitoring site (Site 529). The lead concentration in the April 2025 outfall sample exceeded freshwater chronic aquatic life criteria. Lead and zinc concentrations in the receiving Hawk Inlet water were well below the freshwater chronic aquatic life criteria due to low discharge rate through the outfall and the immense dilution volume of Hawk Inlet.

### **3.2. Storm Water Outfall 004 – Pit 7**

Outfall 004 is located downgradient of a constructed wetlands that receives runoff from Pit 7 (Figure 3), which is a former rock quarry and current reclamation material storage pile. Flow has not been observed at this outfall during storm events since 2012, and there was no flow observed during the storm event monitoring conducted during this reporting period. There was no activity at Pit 7 during the reporting period and no signs of erosion from the reclamation material stockpile.

### **3.3. Storm Water Outfall 005.2 – Zinc Creek Bridge**

Outfall 005.2 is located near the bottom of the north abutment, upstream side, of the Zinc Creek Bridge located at 3.0-mile on the B-Road (Figure 4). The drainage area for this outfall, approximately 0.6 acres in size, captures runoff from a short section of road and a portion of the abutment. Receiving water monitoring is conducted at Site 371 (upstream) and Site 368 (downstream) in Zinc Creek.

The pH of the outfall samples collected during storm event monitoring were lower than the AWQS but within the range of historical values for this outfall. Outfall sample pH was also below AWQS in 2024. Lead concentrations in the outfall exceeded the chronic AWQS during the spring sampling event, but met standards during the fall sampling event. In samples collected from the receiving water, pH is near neutral and lead and zinc concentrations were below the laboratory ML. Results from the 2024 and 2025 sampling events indicate that the discharge from the outfall does not have an adverse impact on Zinc Creek (Attachment C).

### **3.4. Storm Water Outfall 005.3 – Site E**

Outfall 005.3 is located in a small drainage that runs between the B-Road and inactive waste rock Site E (Figure 5). The drainage area contributing to the outfall location is approximately 6.8 acres. The drainage flows into Greens Creek approximately one-half mile from the outfall location. Receiving water monitoring is conducted in Greens Creek at Site 595 (upstream) and Site 591 (downstream).

Water quality at the outfall is influenced by the Site E waste rock and has exhibited highly variable lead and zinc concentrations throughout its monitoring history (Attachment B). Concentrations of both lead and zinc exceeded AWQS in both spring and fall outfall samples. Lead and zinc concentrations in the upstream and downstream receiving water samples were below the ML during the spring sampling event. However,

lead and zinc exceeded fresh water chronic standards in the upstream and lead fresh water chronic standards in the downstream were exceeded during the fall sampling event. Statistical analysis shows the downstream lead and zinc concentrations did not exceed background levels during the fall sampling event and therefore outfall waters do not appear to have an adverse impact on Greens Creek.

In 2006, HGCMC initiated a program of removing Site E waste rock for co-disposal in the tailings facility. During 2025, HGCMC removed approximately 8,100 cubic yards of material. The water quality at Outfall 005.3 is expected to show gradual improvement as the waste rock removal activities continue.

### **3.5. Storm Water Outfall 005.4 – Pit 6**

Outfall 005.4 is the discharge location for runoff from a reclamation material storage area in an old road construction quarry called Pit 6 (Figure 5). The catchment area draining to the outfall is approximately 1.9 acres in size. There has been no activity in Pit 6 since 2009 and the area is stabilized and vegetated. Storm water runoff flows into Greens Creek approximately one-half mile from the outfall location. Receiving water monitoring is performed in Greens Creek at Site 595 (upstream) and Site 591 (downstream).

During the spring sampling event, outfall waters exceeded fresh water chronic standards for lead, but both the upstream and downstream receiving waters were below the laboratory ML for lead. This observation was reversed during fall sampling, with the stormwater outfall below laboratory ML for lead and zinc, but upstream receiving waters exceeding fresh water chronic standards for lead and zinc and downstream receiving waters exceeding fresh water chronic standards for lead. Background concentrations of lead and zinc were not exceeded in downstream samples. This pattern indicates that stormwater is not influencing lead and zinc concentrations in the downstream receiving waters.

### **3.6. Storm Water Outfall 005.5 – 7.8 Mile B-Road Culvert**

Outfall 005.5 is a culvert that drains a portion of the B-Road surface above mile 7.8 (Figure 6). The catchment area draining to the culvert is approximately 5.3 acres, most of which is undisturbed forest on the uphill side of the road. Discharge from the culvert is to a forested hillside, approximately 200 feet from Greens Creek. Flows through the culvert during storm event monitoring have been low and typically less than 10 gpm. As a result, the drainage infiltrates into the forest duff and a point source discharge to Greens Creek has not been observed.

Access to this section of Greens Creek below the culvert is challenging, particularly during storm events. Therefore, the sites for the upstream and downstream receiving water monitoring were chosen to address safety concerns while also satisfying the intent of the Permit. Site 6, which is also sampled on a regular basis under the Fresh Water Monitoring Program (FWMP), was selected as the upstream receiving water site (Figure 6). Site 590, located below mile 7.6, was selected as the downstream site.

No flows were observed at the outfall (Site 560) during the spring storm event and no sample was collected. High rainfall during the month of September meant flows were present for the fall sampling event. Both lead and zinc concentrations within the outfall waters exceeded fresh water acute standards. It should be noted that outfall waters are from a culvert that drains a portion of the B Road and does not contain aquatic life in any form.

During the fall sampling, zinc AWQS were not exceeded in either the upstream or downstream receiving waters. While freshwater chronic standards were exceeded for lead in both the upstream and downstream receiving waters, downstream receiving waters did not exceed background levels. As with other locations discussed in this report, analysis indicates that outfall waters are not significantly influencing downstream receiving waters.

### **3.7. Storm Water Outfall 006 – Pond D Overflow**

Under normal circumstances, pump systems maintain a low water level in Pond D and route storm water to treatment facilities or for use in the mill. In the event that discharges do occur, the designated upstream and downstream receiving water locations for this outfall are Site 6 and Site 590, respectively (Figure 6). No discharges from the outfall were observed during storm event monitoring conducted during this reporting period.

### **3.8. Storm Water Outfall 007 – Pond C Overflow**

The Pond C system, consisting of an upper and lower pond, collects storm water runoff from an inactive waste rock storage area and a section of the B-Road (Figure 7). Hecla's standard practice is to pump water collected in the Pond C system to water treatment facilities and not routinely discharge storm water through Outfall 007. Should discharge from Outfall 007 occur, designated receiving water monitoring locations in Greens Creek are Site 1 (the 920 weir) for the upstream site and Site 6 for the downstream site. No discharges from the outfall were observed during storm event monitoring conducted during this reporting period.

### **3.9. Storm Water Outfall 008 – 960 Site**

Outfall 008 is the discharge location (Figure 8) for runoff from a former waste rock storage pile placed during development of the 920 mine portal. The majority of the waste rock was removed in 2005. The catchment area contributing runoff to the outfall is approximately 0.7 acres. Lead and zinc concentrations were below the ML or MDL during spring sampling and met AWQS at all three sampling locations. During fall sampling, lead and zinc concentrations were below AWQS at the outfall. Both the upstream and downstream receiving waters exceeded freshwater chronic standards for lead. However, downstream lead concentrations were lower than upstream lead concentrations.

### **3.10. Storm Water Outfall 009 – 1350 Site**

Outfall 009 monitors the runoff quality from an inactive waste rock pile that was placed during the development of the 1350 adit (Figure 9). Between 2005 and 2015, over 80

percent of the waste rock was removed for disposal in the underground mine. The catchment area contributing runoff to the outfall is approximately 3.3 acres in size. Receiving water monitoring is performed in Greens Creek at Site 48 (upstream) and Site 1 (downstream). Site 48, also sampled routinely as part of the FWMP, is located upstream of all mining activity and represents natural background quality for Greens Creek.

Due to seasonally high levels of dissolved metals in the area near the 1350, in 2022 HGCMC installed drains within the holding pond near the audit which drained collected rainwater from the area into the mine for treatment at the water treatment plant. While concentrations of zinc remain slightly above the AWQS, FWMP sampling at Site 13 (near the 1350 adit) shows 2025 concentrations continue a downward trend. Zinc concentrations in outfall samples are expected to mirror the decrease observed at Site 13 as conditions improve in the 1350 drainage area.

During spring sampling, zinc concentrations at the outfall exceeded AWQS. However, both the upstream and downstream receiving waters were below either the ML or MDL for lead and zinc. Conversely, during fall sampling outfall water met AWQS and both the upstream and downstream receiving waters exceeded freshwater chronic lead standards. Downstream lead concentrations were within background levels.

### **3.11. Storm Water Outfall 012 – A-Road Sand Pit**

Outfall 012 is the discharge location for runoff from the A-Road sand pit (Figure 10). This location was added in the updated APDES Permit in October 2023. Discharge from the outfall did not occur during the reporting period. The catchment area draining to the outfall is approximately 11.3 acres in size. Storm water runoff flows into Hawk Inlet and no formal RD location has been established. No flows from the outfall occurred during 2025 sampling events and no samples were collected.

#### **4. CERTIFICATION**

Fulfillment of requirements set forth in Permit AK-0043206 regarding monitoring of storm water outfalls 003, 004, 005.2, 005.3, 005.4, 005.5, 006, 007, 008, and 009 (AK-0043206 Parts 1.3 and 1.6.2) are met with the above report.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paula Lillesve

Environmental Manager

Hecla Greens Creek Mining Company

## **5. REFERENCES CITED**

Alaska Department of Conservation, 2022, "Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances" as amended through September 8, 2022.

Sanitas Technologies, 2016, Sanitas, [www.sanitastech.com](http://www.sanitastech.com), Shawnee, Kansas.

## ATTACHMENT A – FIGURES

**Figure 1.** Outfall Locations

**Figure 2.** APDES Outfall 003 Monitoring Locations – Hawk Inlet

**Figure 3.** APDES Outfall 004 Monitoring Locations – Pit 7

**Figure 4.** APDES Outfall 005.2 Monitoring Locations – Zinc Creek Bridge

**Figure 5.** APDES Outfalls 005.3 and 005.4 Monitoring Locations – Site E and Pit 6

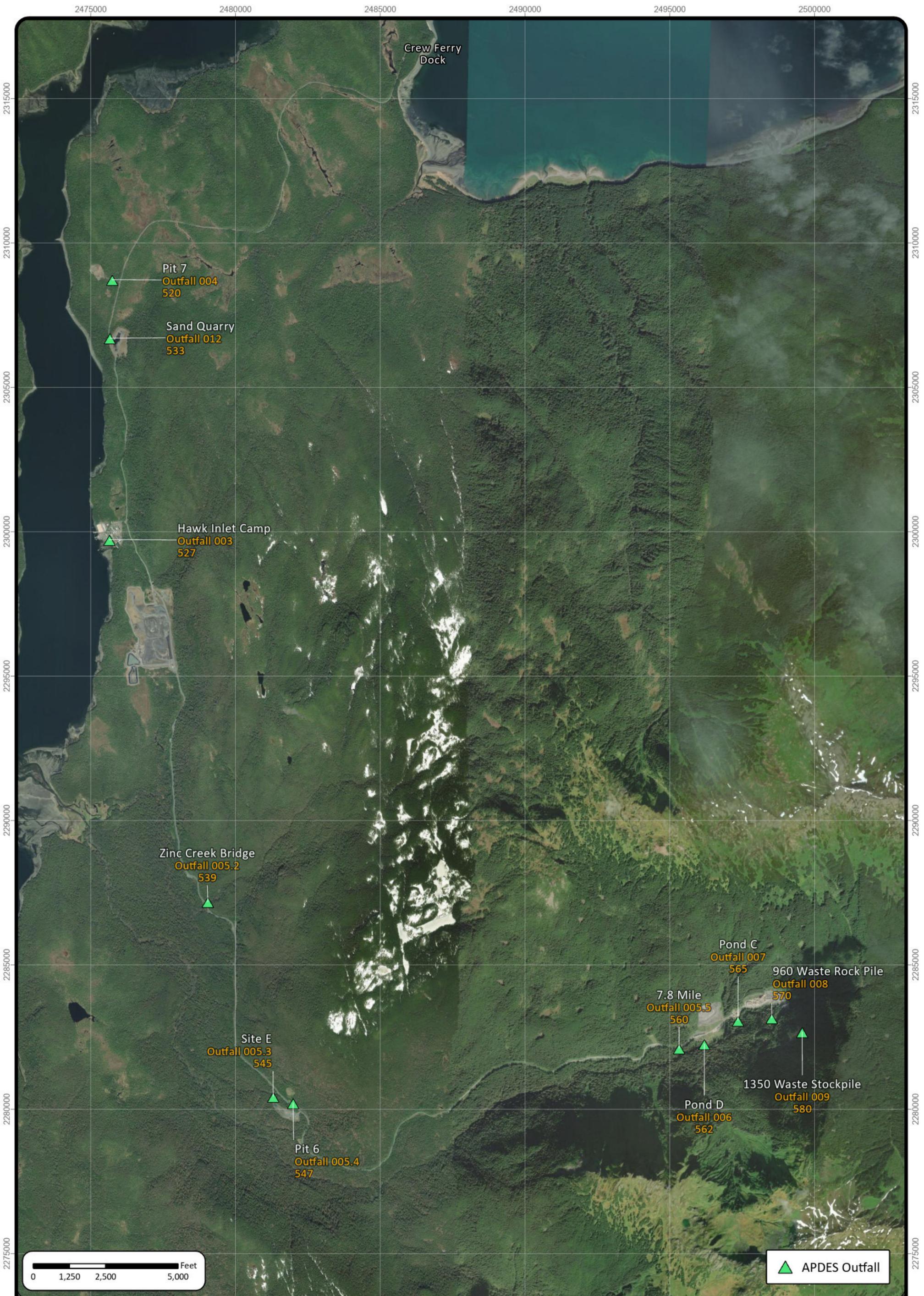
**Figure 6.** APDES Outfalls 005.5 and 006 Monitoring Locations – 7.8 Mile B-Road  
Culvert and Pond D Overflow

**Figure 7.** APDES Outfall 007 Monitoring Locations – Pond C Overflow

**Figure 8.** APDES Outfall 008 Monitoring Locations – 960 Site

**Figure 9.** APDES Outfall 009 Monitoring Locations – 1350 Site

**Figure 10.** APDES Outfall 012 Monitoring Locations – A-Road Sand Pit

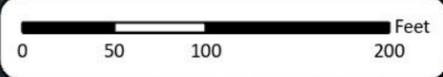


OUTFALL LOCATIONS	
HECLA GREENS CREEK MINING COMPANY ADMIRALTY ISLAND, ALASKA	
<b>FIGURE 1</b>	JOB#: GCMW05
	DATE: 2/18/2025
Path: M:\GCM\StormwaterReport2024\GIS\GCM\Stormwater\2024\GCM\Stormwater\2024.aprx, Author: eiahey	

**NOTES**  
 Imagery Source: Maxar  
 2018-2021

NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATED	2/4/25	EL	CN
2				
3				
4				
5				





▲ APDES Outfall  
● Stormwater Site  
 Runoff Area



<b>APDES OUTFALL 003 MONITORING LOCATIONS HAWK INLET</b>	
<small>HECLA GREENS CREEK MINING COMPANY ADMIRALTY ISLAND, ALASKA</small>	
<b>FIGURE 2</b>	JOB#: GCMW05 DATE: 2/18/2025
<small>Path: M:\GCM\StormwaterReport\2024\GIS\GCM\Stormwater\2024\GIS\GCM\Stormwater\2024.aprx, Author: eShey</small>	

**NOTES**  
 Imagery Source: Maxar 5/18/21

NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATED	2/4/25	EL	CN
2				
3				
4				
5				





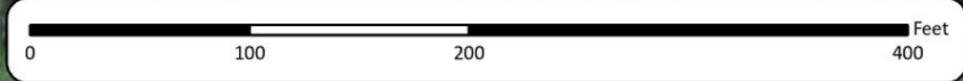
▲ APDES Outfall  
● Stormwater Site  
 Runoff Area



NO.	DESCRIPTION	DATE	REVIEW	
			DRAFT	EL
1	MAP CREATED	2/5/25		CN
2				
3				
4				
5				

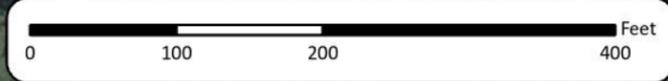
**NOTES**  
 Imagery Source: Maxar  
 5/18/2021

**APDES OUTFALL 004 MONITORING LOCATIONS**  
 PIT 7  
 HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA  
**FIGURE 3**  
 JOB#: GCMW05      DATE: 2/18/2025  
Path: M:\GCM\StormwaterReport2024\GIS\GCM\stormwater2024\GCM\stormwater2024.aprx, Author: eahley





▲ APDES Outfall  
● Stormwater Site  
 Runoff Area



NO.	DESCRIPTION	DATE	DRAFT		REVIEW	
			EL	CN	EL	CN
1	MAP CREATED	2/5/25				
2						
3						
4						
5						

**NOTES**  
 Imagery Source: Maxar  
 5/18/2021

**APDES OUTFALL 005.2 MONITORING LOCATIONS**  
**ZINC CREEK BRIDGE**  
 HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA  
**FIGURE 4**  
 JOB#: GCMW05  
 DATE: 2/18/2025  
Path: M:\GCM\StormwaterReport2024\GIS\GCM\Stormwater2024\GCM\Stormwater2024.aprx, Author: eahley



- ▲ APDES Outfall
- Stormwater Site
- Runoff Area



NO.	DESCRIPTION	DATE	DRAFT		REVIEW	
			EL	CN	EL	CN
1	MAP CREATED	2/5/25				
2						
3						
4						
5						

**NOTES**  
 Imagery Source: Maxar  
 5/18/2021

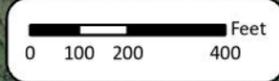
**APDES OUTFALL 005.3 AND 005.4 MONITORING LOCATIONS  
 SITE E AND PIT 6**

HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA

**FIGURE 5**

JOB#: GCMW05  
 DATE: 2/18/2025

Path: M:\GCM\StormwaterReport2024\GIS\GCMStormwater2024\GCMStormwater2024.aprx, Author: eahley





	APDES Outfall
	Stormwater Site
	Runoff Area



NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATED	2/5/25	EL	CN
2				
3				
4				
5				

**NOTES**  
 Imagery Source: Maxar  
 5/18/2021

APDES OUTFALLS 005.5 AND 006 MONITORING LOCATIONS  
 7.8 MILE B-ROAD CULVERT AND POND D OVERFLOW

HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA

**FIGURE 6**

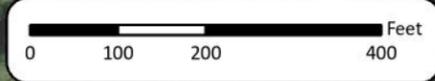
JOB#: GCMW05  
 DATE: 2/18/2025

Path: M:\GCM\StormwaterReport2024\GIS\GCMStormwater2024\GCMStormwater2024.aprx, Author: eahley





- ▲ APDES Outfall
- Stormwater Site
- Runoff Area



NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATED	2/5/25	EL	CN
2				
3				
4				
5				

**NOTES**  
 Imagery Source: Maxar  
 9/6/2018

**APDES OUTFALL 007 MONITORING LOCATIONS**  
**POND C COVERFLOW**  
 HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA  
**FIGURE 7**  
 JOB#: GCMW05  
 DATE: 2/18/2025  
 Path: M:\GCM\StormwaterReport2024\GIS\GCMStormwater2024\GCMStormwater2024.aprx, Author: eahley





- ▲ APDES Outfall
- Stormwater Site
- Runoff Area



NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATED	2/5/25	EL	CN
2				
3				
4				
5				

**NOTES**  
 Imagery Source: Maxar  
 9/6/2018

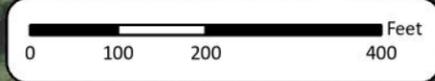
**APDES OUTFALL 008 MONITORING LOCATIONS**  
 960 SITE

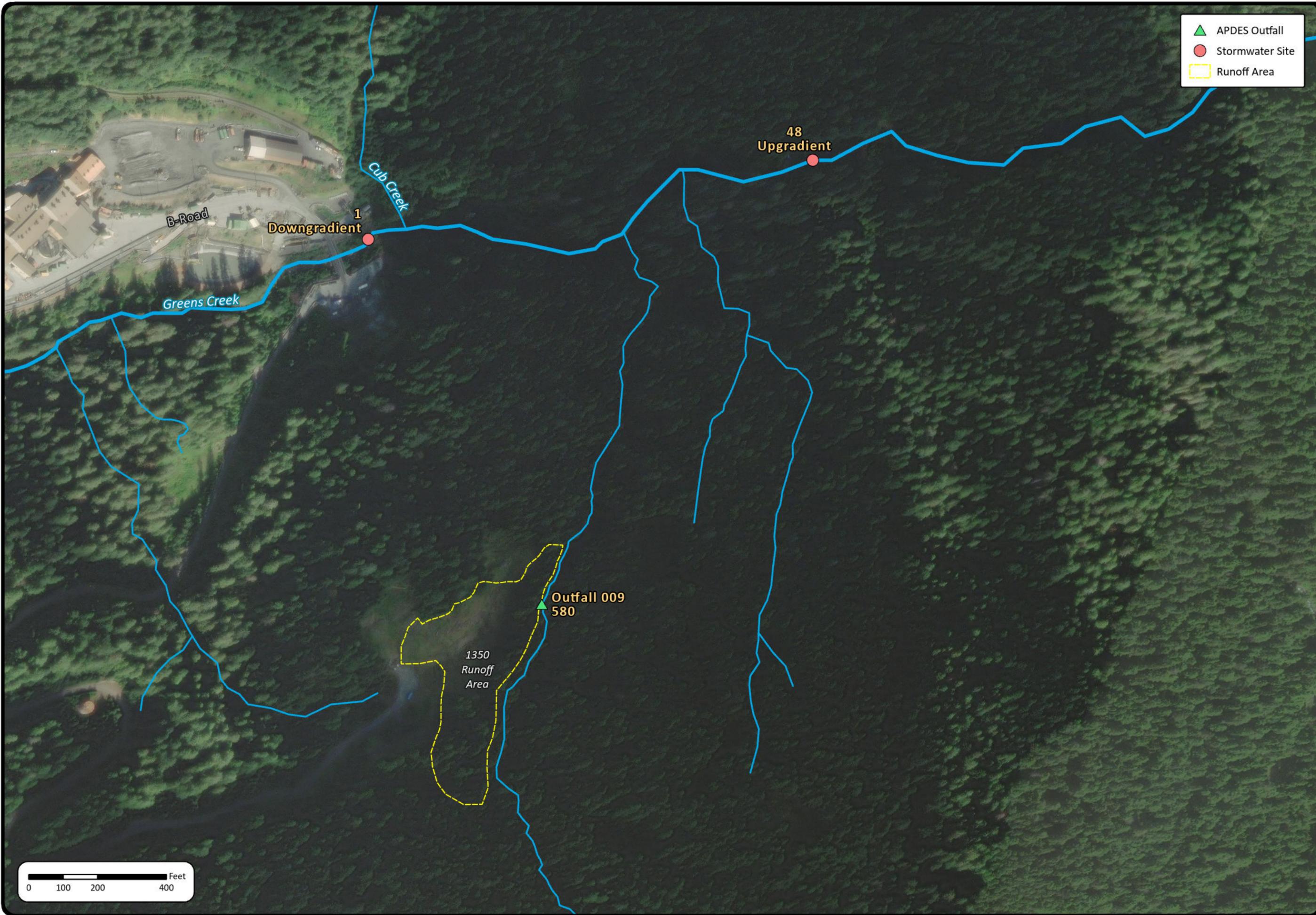
HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA

**FIGURE 8**

JOB#: GCMW05  
 DATE: 2/18/2025

Path: M:\GCM\StormwaterReport2024\GIS\GCMStormwater2024\GCMStormwater2024.aprx, Author: eahley





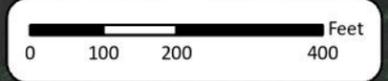
- ▲ APDES Outfall
- Stormwater Site
- Runoff Area



NO.	DESCRIPTION	DATE	DRAFT		REVIEW	
			EL	CN	EL	CN
1	MAP CREATED	2/5/25				
2						
3						
4						
5						

**NOTES**  
 Imagery Source: Maxar  
 9/6/2018

**APDES OUTFALL 009 MONITORING LOCATIONS**  
 1350 SITE  
 HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA  
**FIGURE 9**  
 JOB#: GCMW05      DATE: 2/18/2025  
 Path: M:\GCM\StormwaterReport2024\GIS\GCM\Stormwater2024\GCM\Stormwater2024.aprx, Author: eahley





- ▲ APDES Outfall
- Stormwater Site
- Runoff Area



Hawk Inlet

Outfall 012  
533

A-Road

A Road Sand Pit

A Road Sand Pit  
Runoff Area



NO.	DESCRIPTION	DATE	DRAFT		REVIEW	
			EL	CN	EL	CN
1	MAP CREATED	2/5/25				
2						
3						
4						
5						

**NOTES**  
 Imagery Source: Maxar  
 5/18/2021

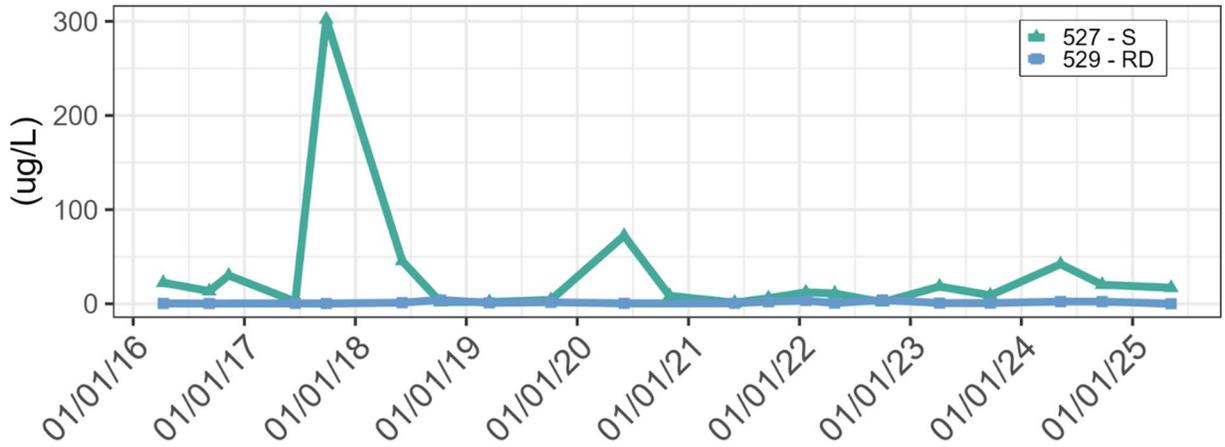
APDES OUTFALL 012 MONITORING LOCATIONS  
 A-ROAD SAND PIT  
 HECLA GREENS CREEK MINING COMPANY  
 ADMIRALTY ISLAND, ALASKA  
**FIGURE 10**  
 JOB#: GCMW05  
 DATE: 2/18/2025  
Path: M:\GCM\StormwaterReport2024\GIS\GCM\Stormwater2024\GCM\Stormwater2024.aprx, Author: eahley



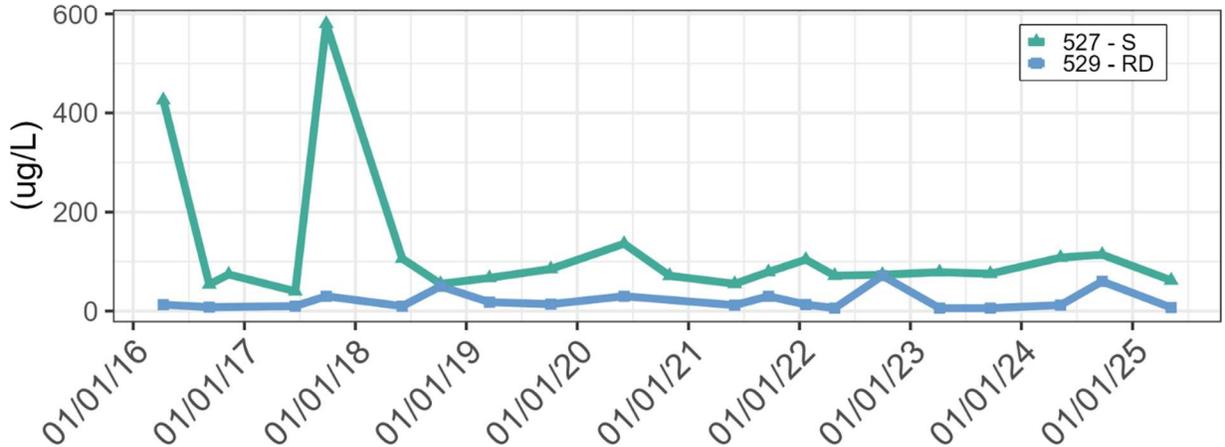
## ATTACHMENT B – TIME SERIES CHARTS

### Outfall 003

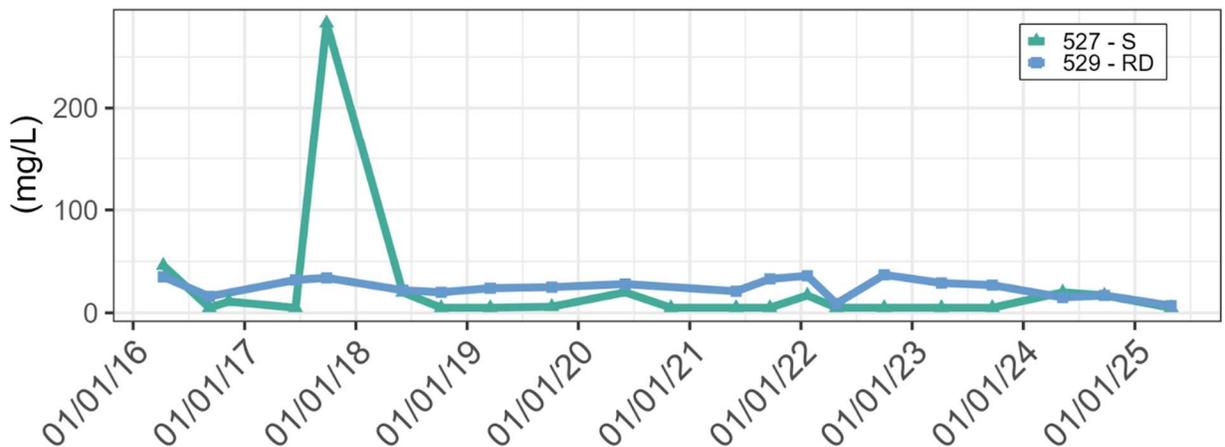
#### Lead, Total Recoverable (ug/L)



#### Zinc, Total Recoverable (ug/L)

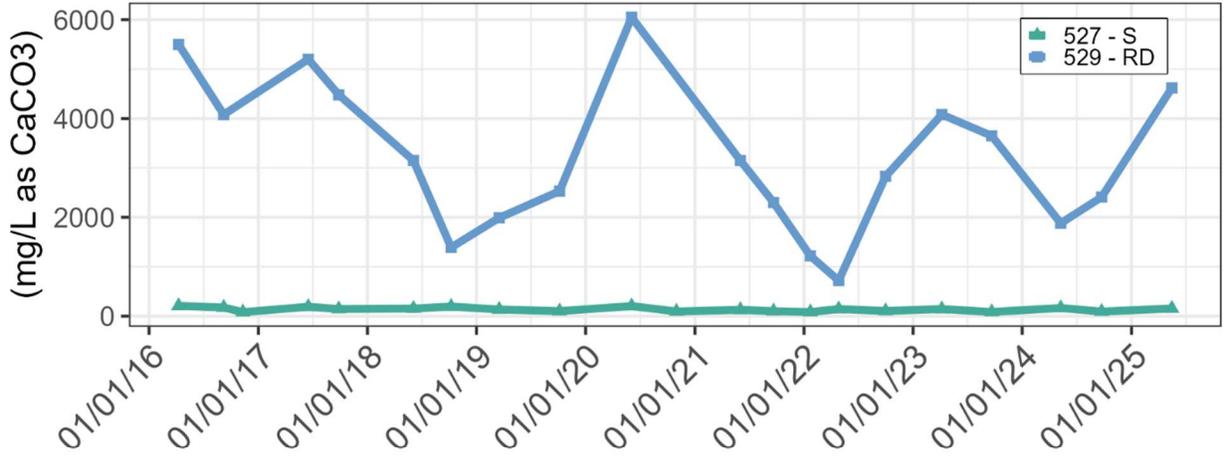


#### Total Suspended Solids (mg/L)

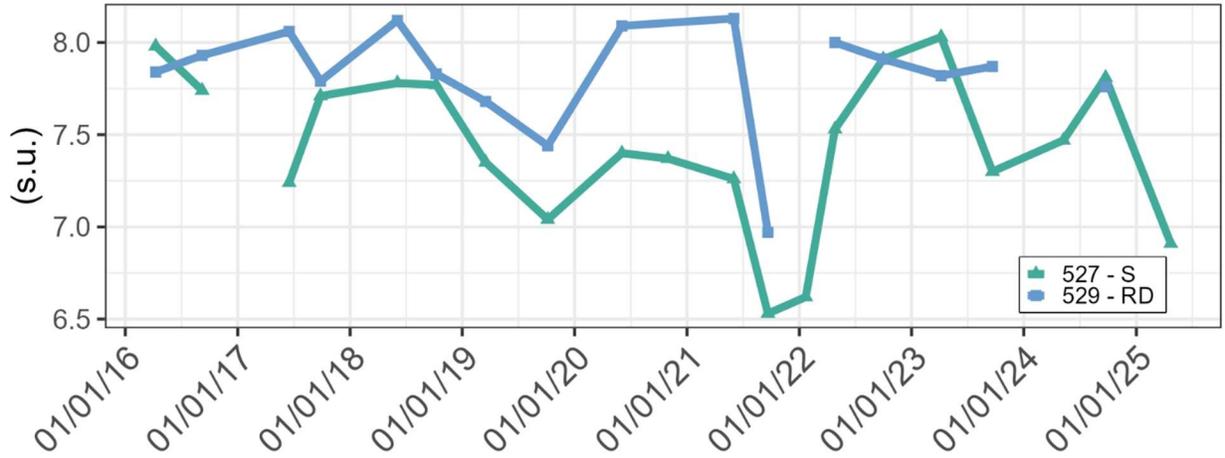


### Outfall 003

Hardness, Total (mg/L as CaCO3)



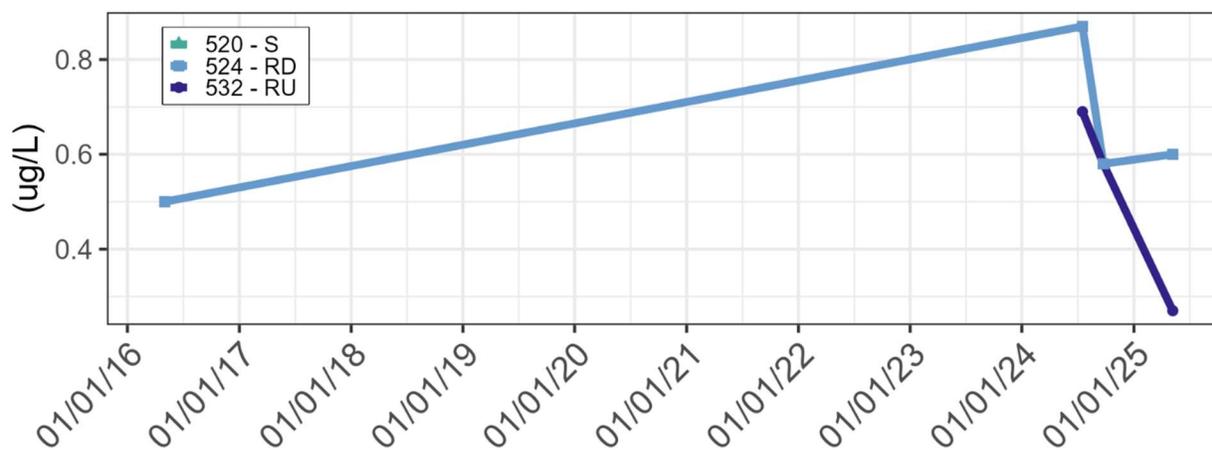
pH, Field (standard units)



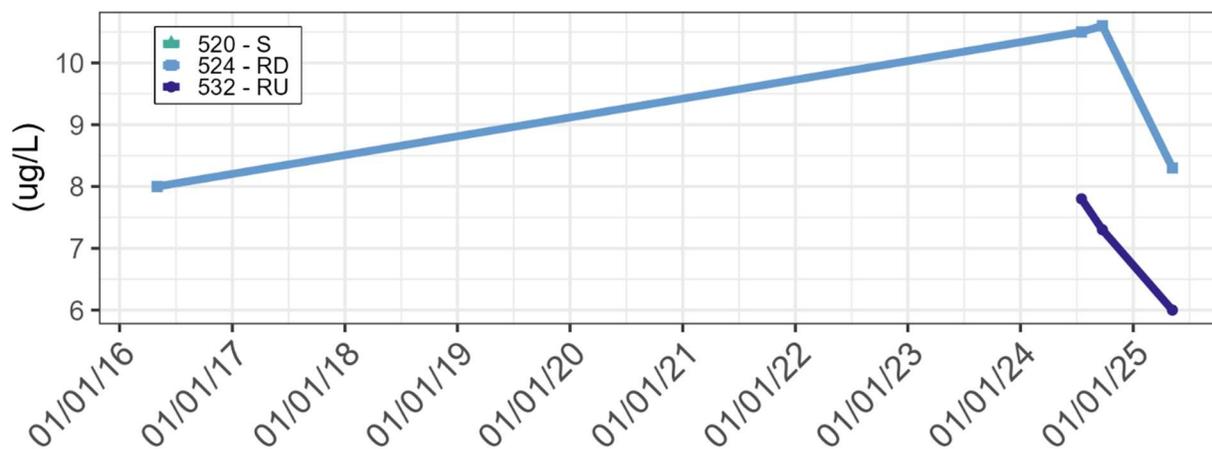
## ATTACHMENT C – STATISTICAL CHART

### Outfall 004

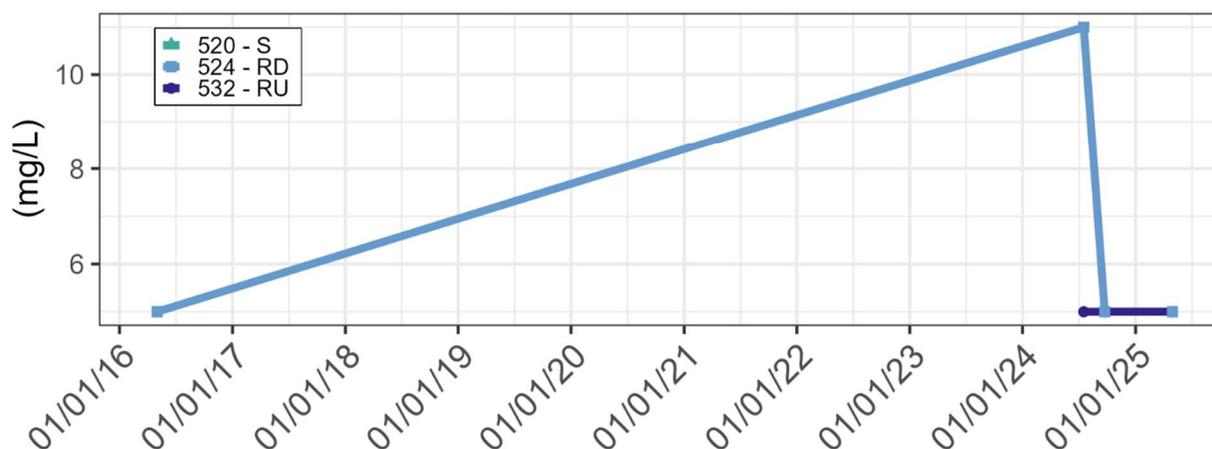
#### Lead, Total Recoverable (ug/L)



#### Zinc, Total Recoverable (ug/L)

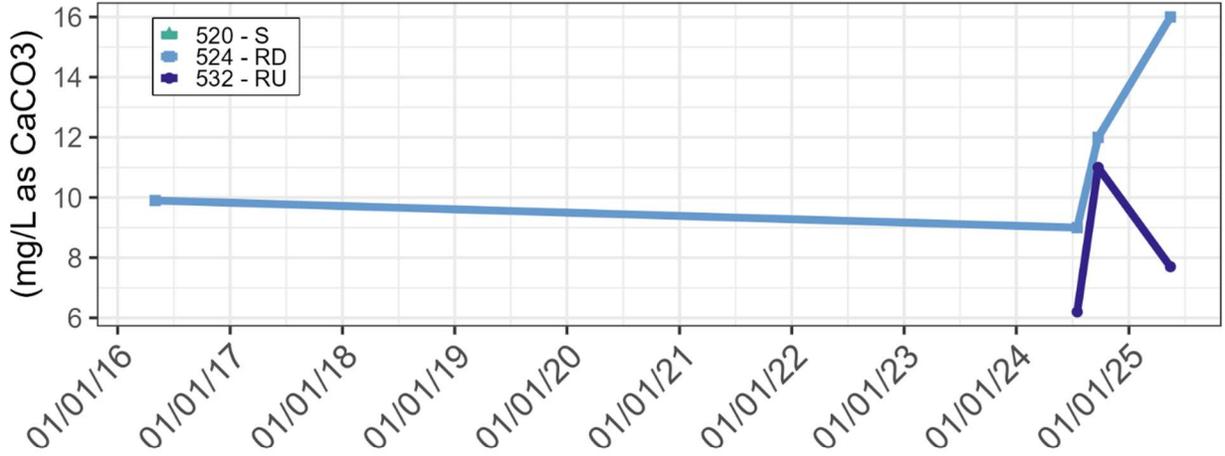


#### Total Suspended Solids (mg/L)

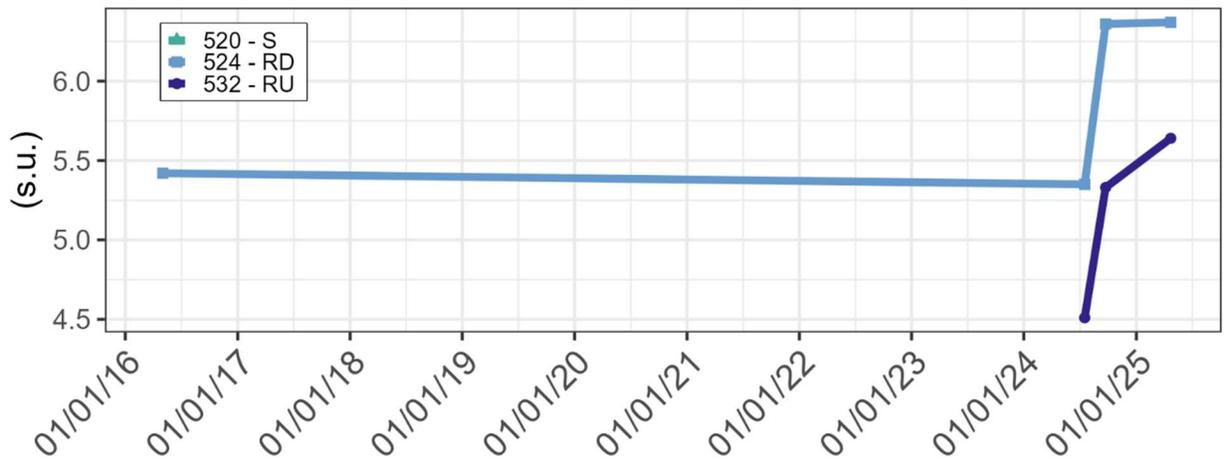


# Outfall 004

## Hardness, Total (mg/L as CaCO3)

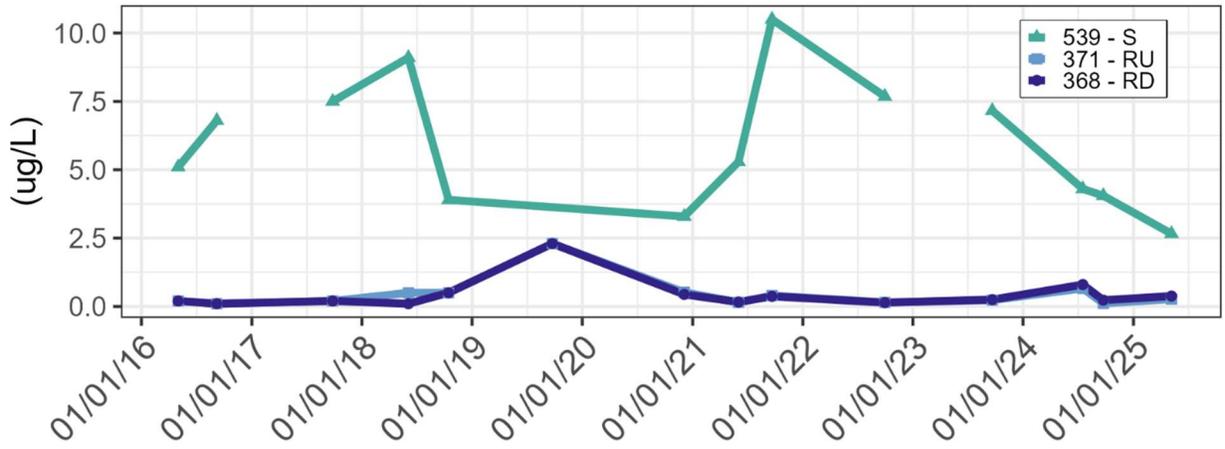


## pH, Field (standard units)

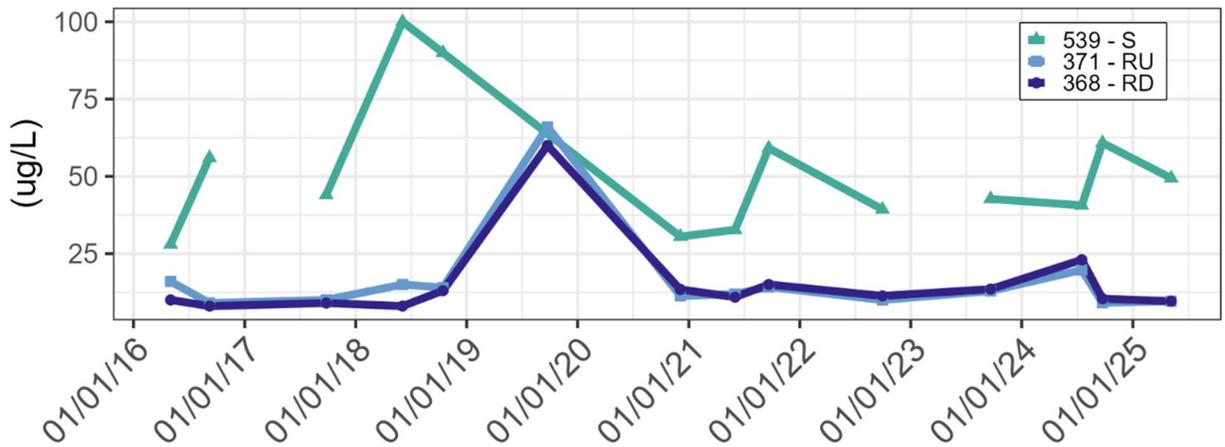


## Outfall 005.2

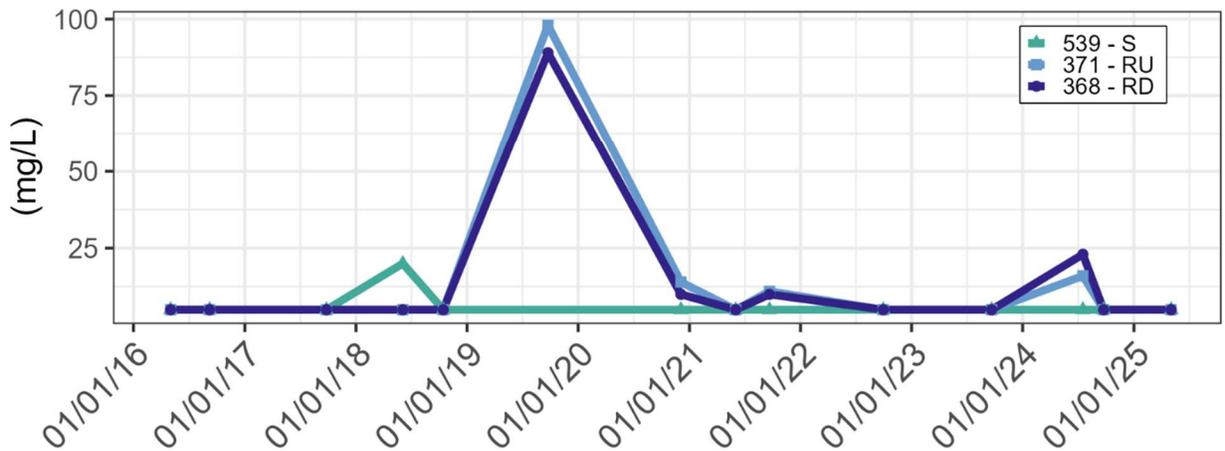
### Lead, Total Recoverable (ug/L)



### Zinc, Total Recoverable (ug/L)

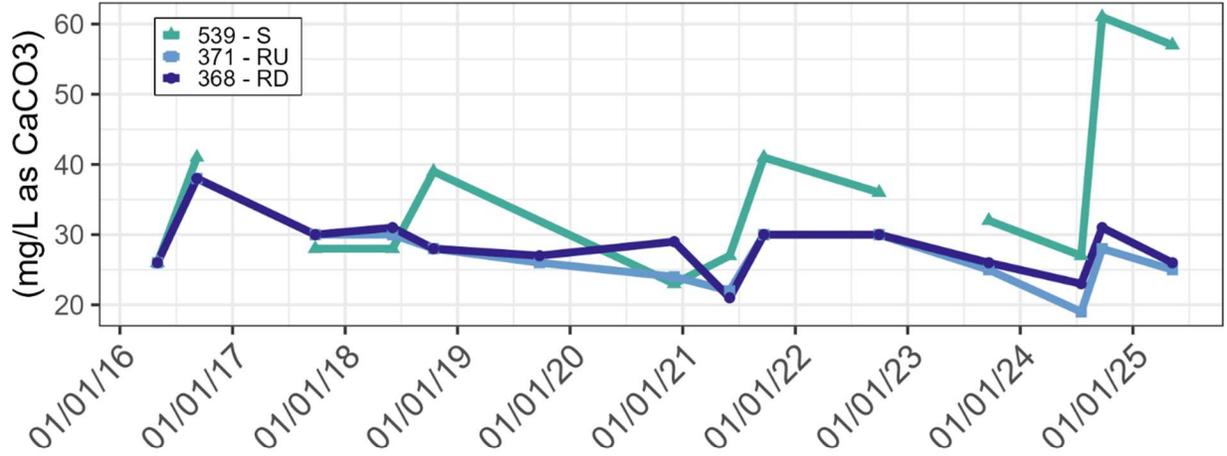


### Total Suspended Solids (mg/L)

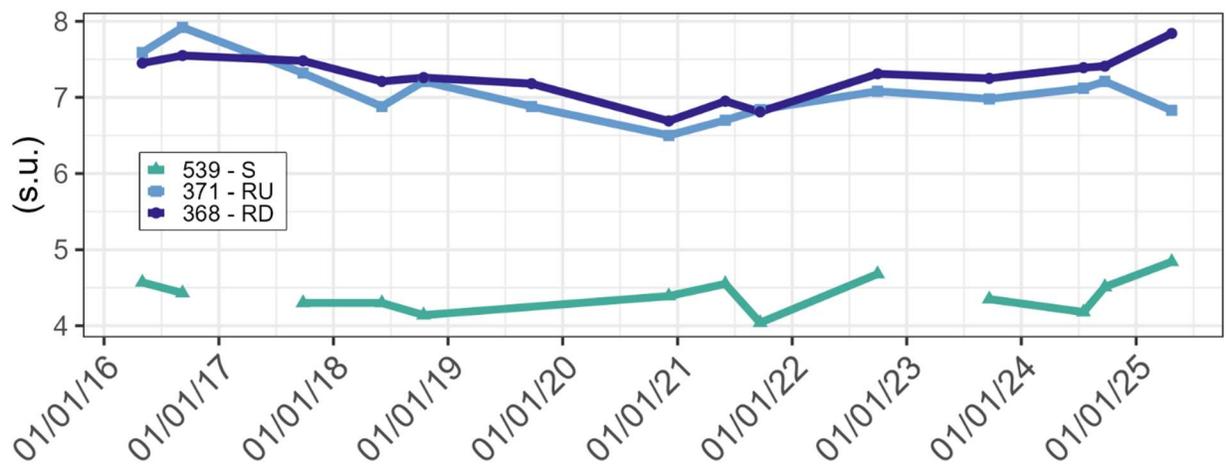


## Outfall 005.2

Hardness, Total (mg/L as CaCO<sub>3</sub>)

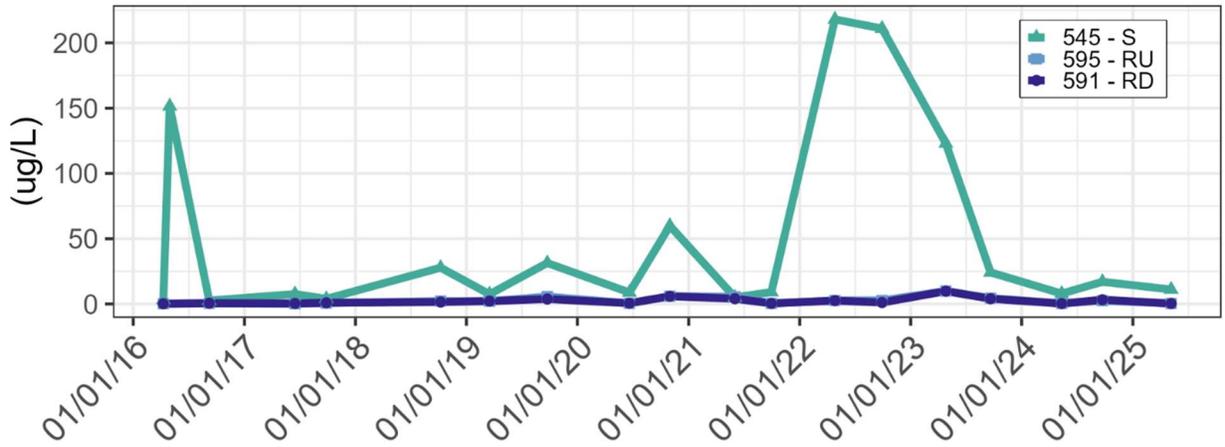


pH, Field (standard units)

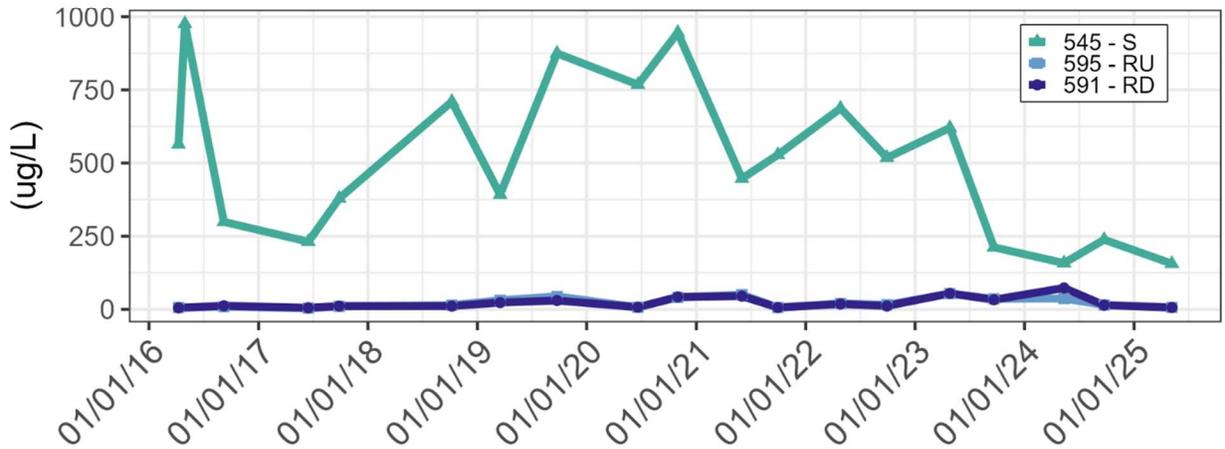


### Outfall 005.3

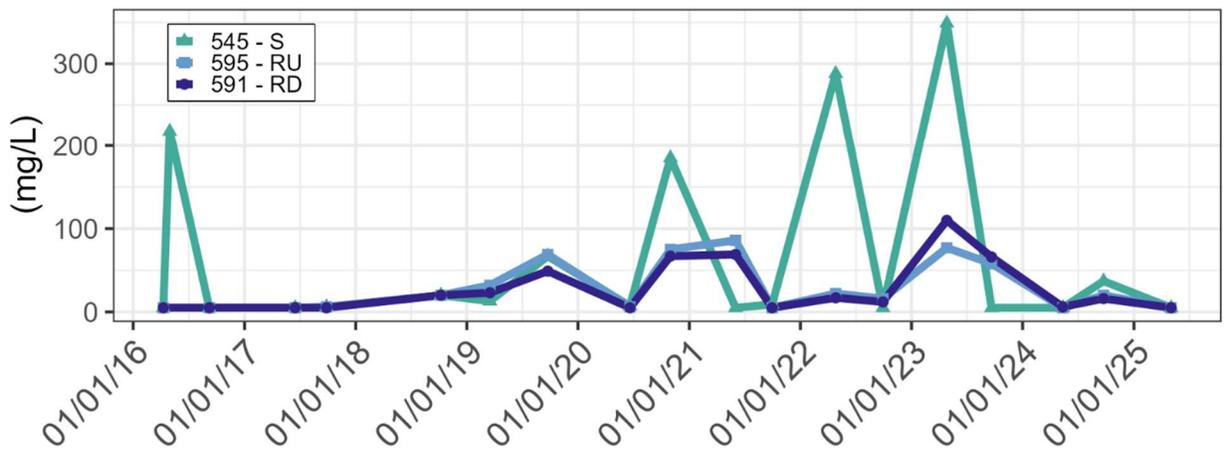
#### Lead, Total Recoverable (ug/L)



#### Zinc, Total Recoverable (ug/L)

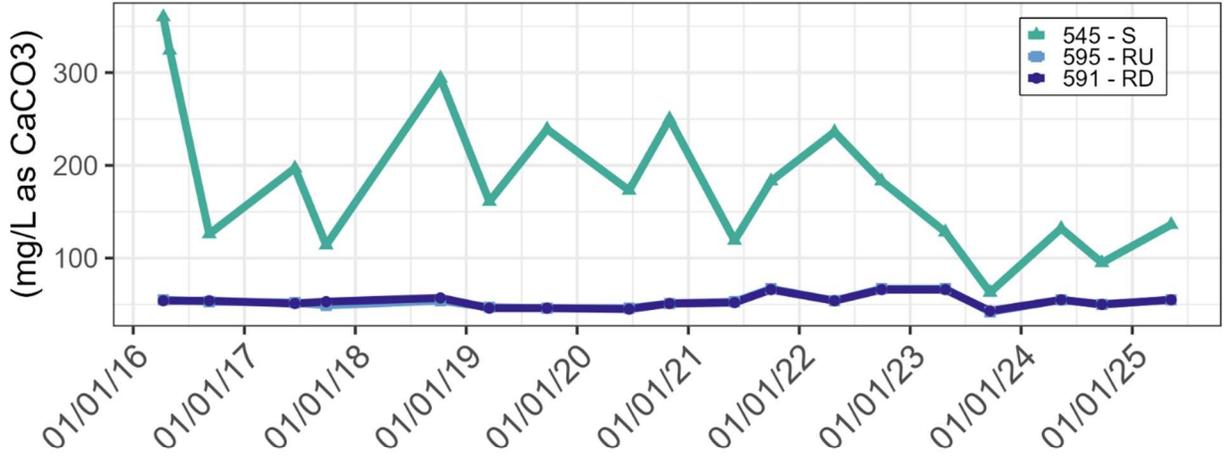


#### Total Suspended Solids (mg/L)

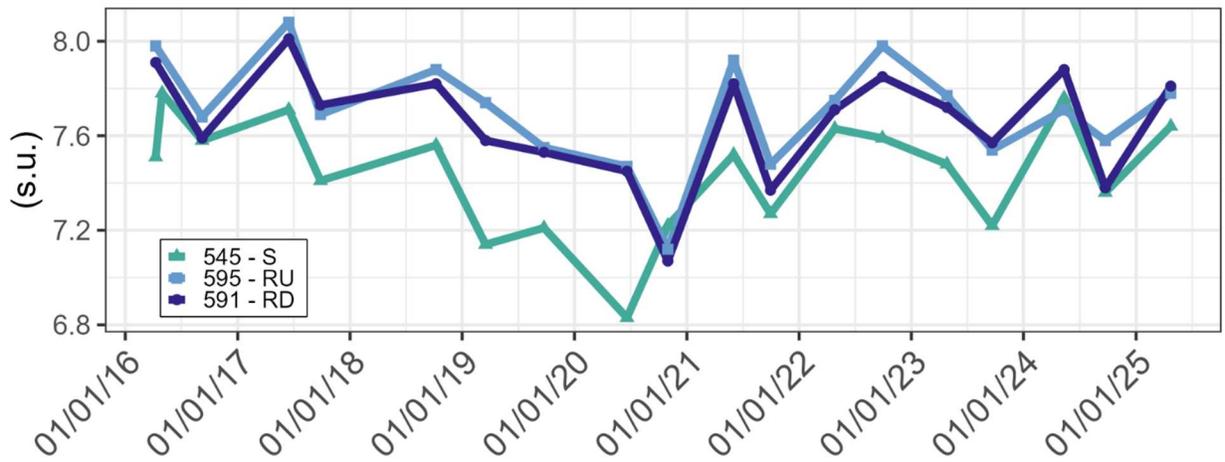


### Outfall 005.3

Hardness, Total (mg/L as CaCO3)

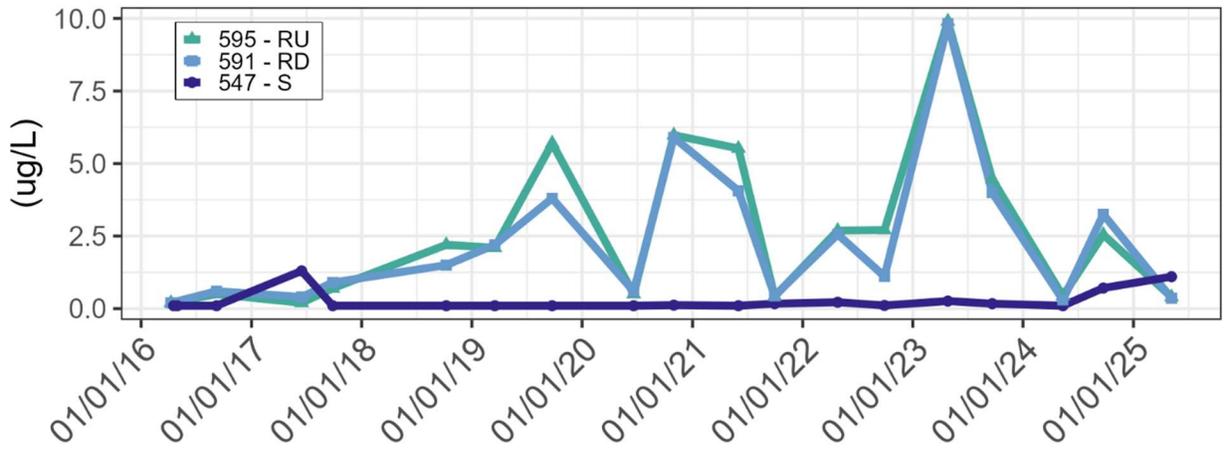


pH, Field (standard units)

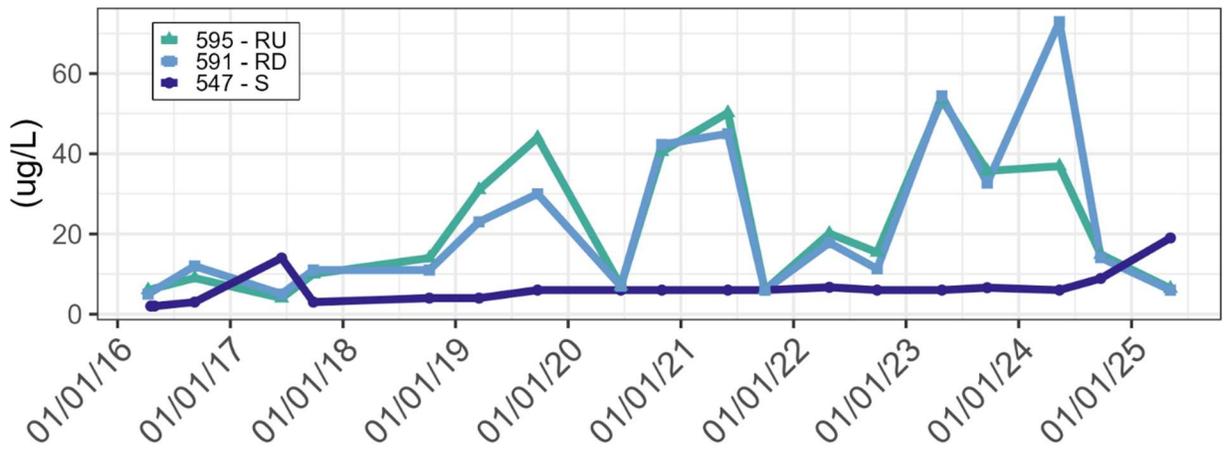


### Outfall 005.4

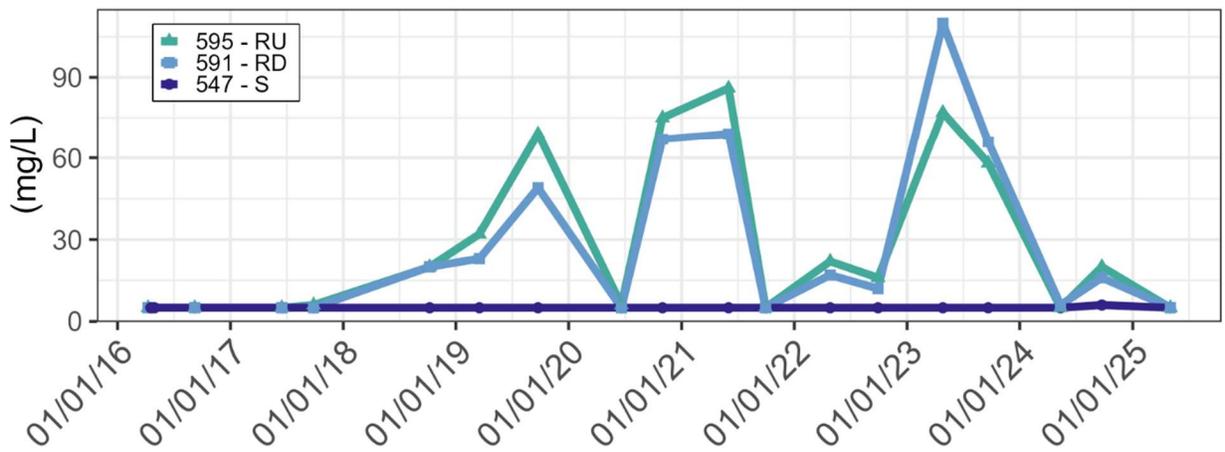
#### Lead, Total Recoverable (ug/L)



#### Zinc, Total Recoverable (ug/L)

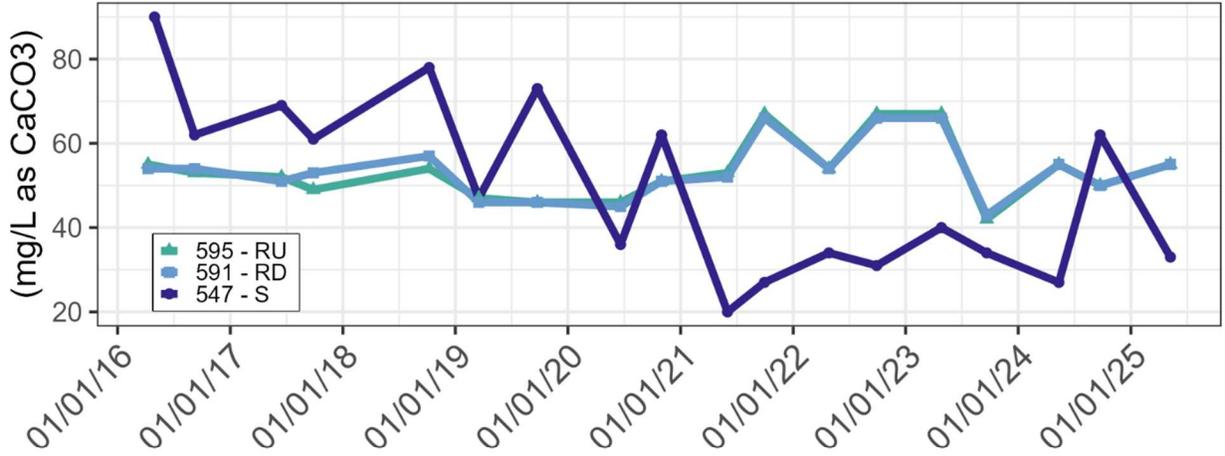


#### Total Suspended Solids (mg/L)

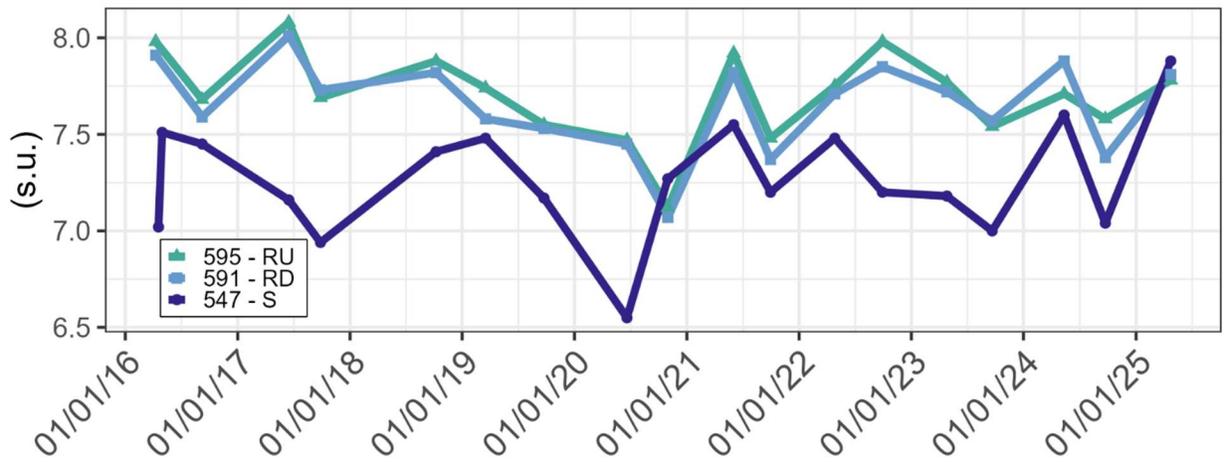


### Outfall 005.4

Hardness, Total (mg/L as CaCO3)

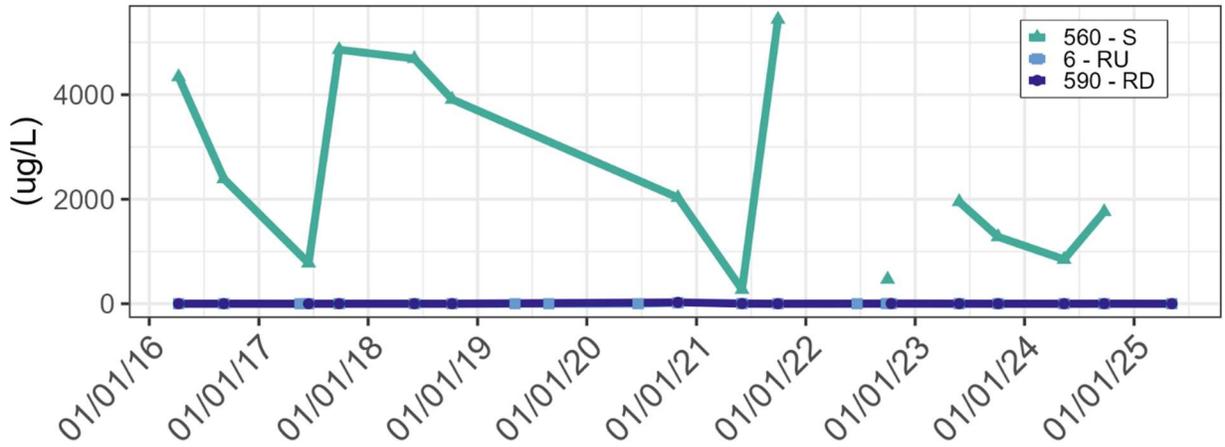


pH, Field (standard units)

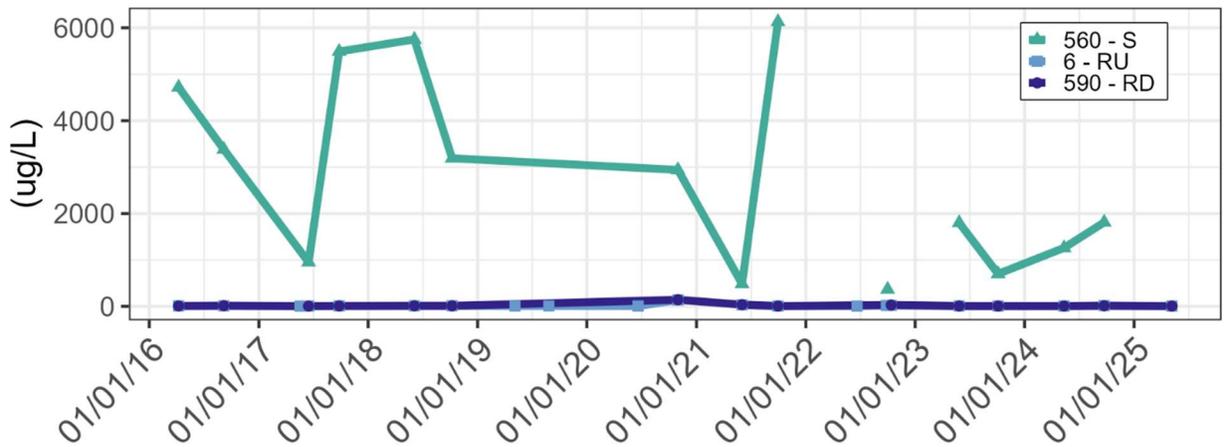


# Outfall 005.5

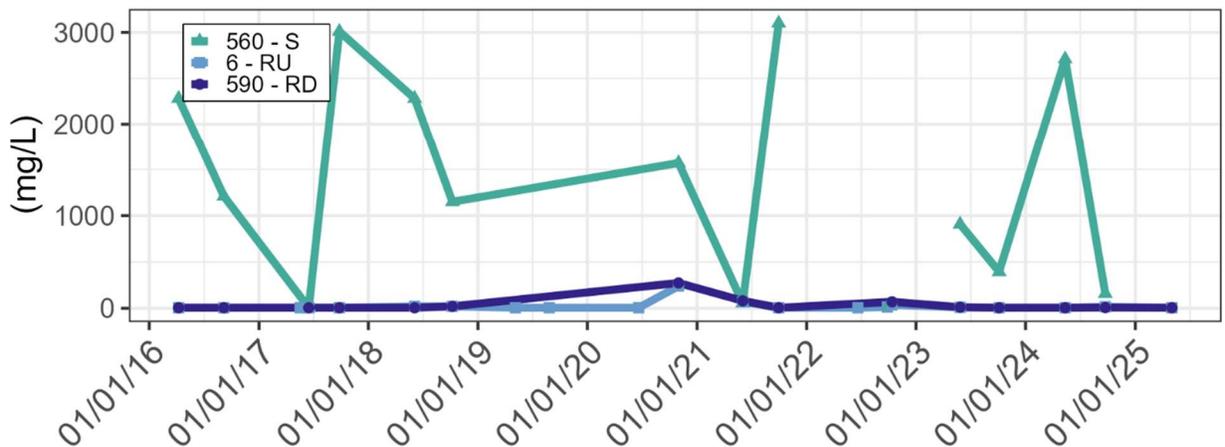
## Lead, Total Recoverable (ug/L)



## Zinc, Total Recoverable (ug/L)

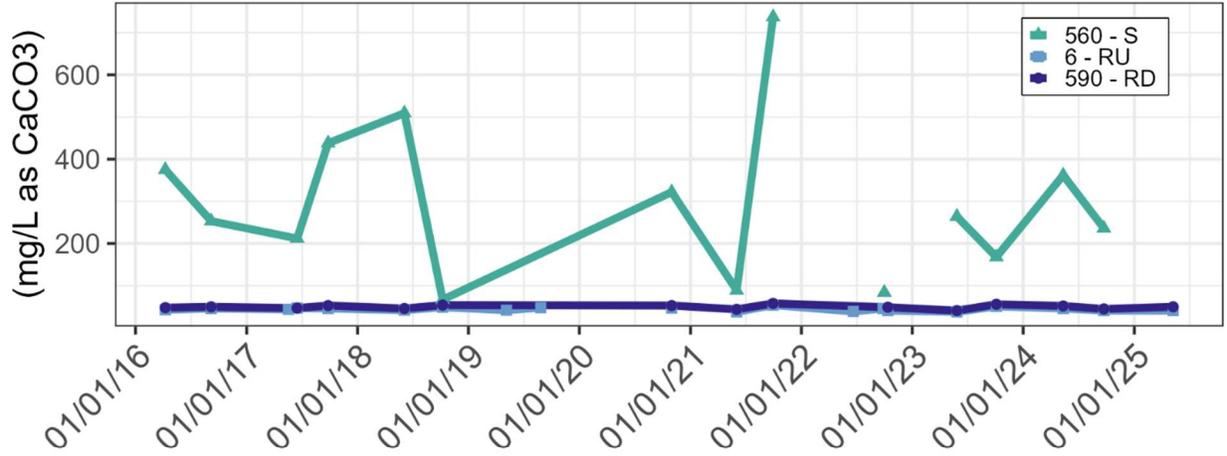


## Total Suspended Solids (mg/L)



## Outfall 005.5

Hardness, Total (mg/L as CaCO<sub>3</sub>)

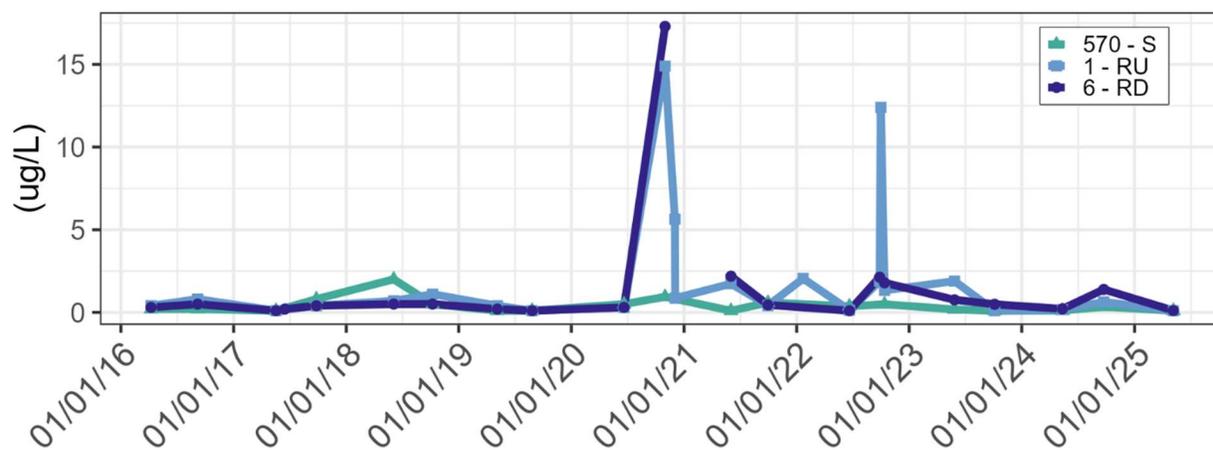


pH, Field (standard units)

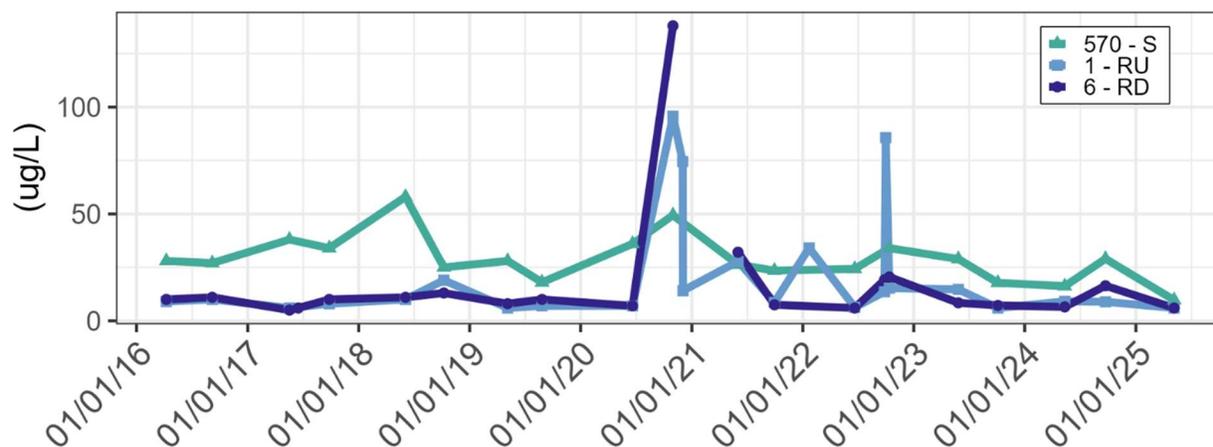


# Outfall 008

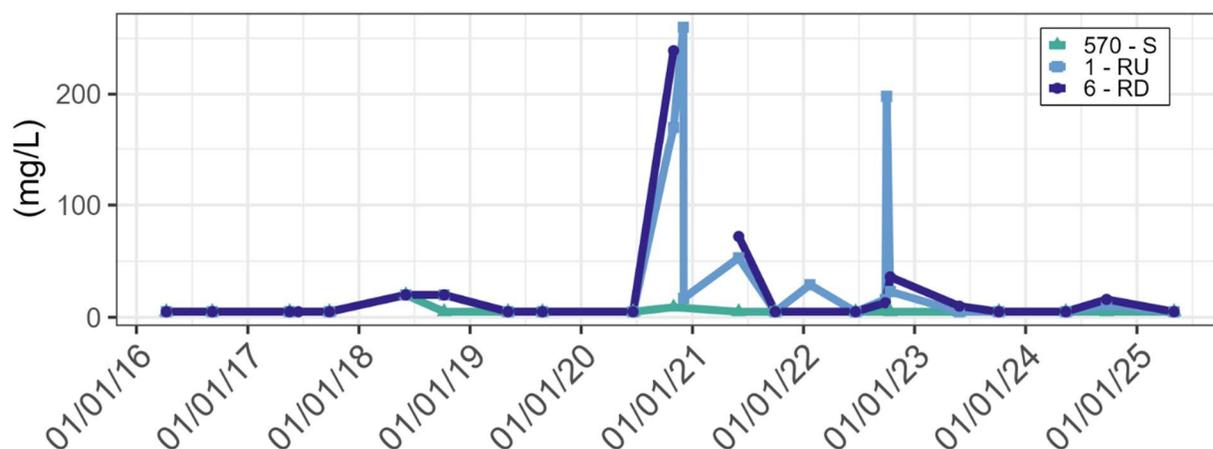
## Lead, Total Recoverable (ug/L)



## Zinc, Total Recoverable (ug/L)

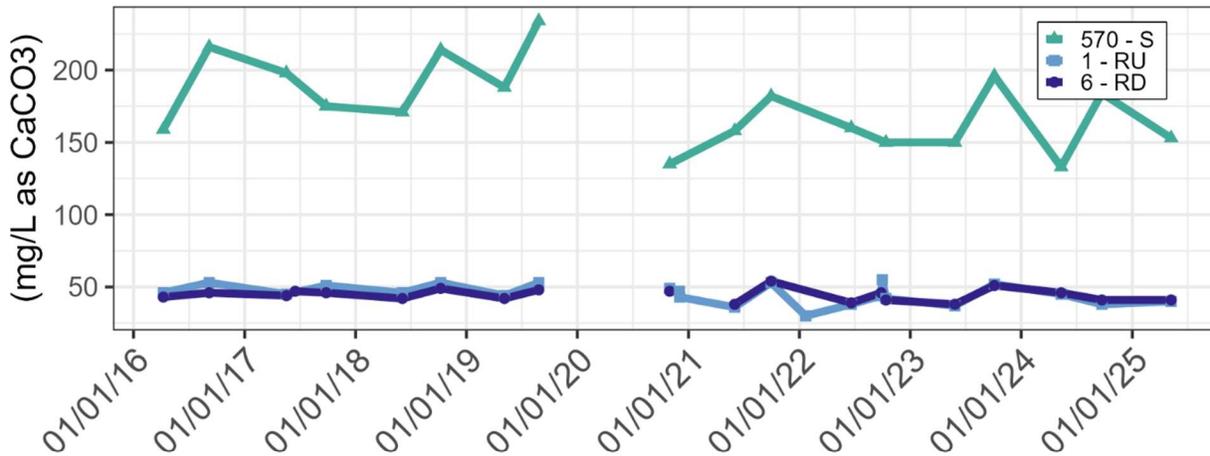


## Total Suspended Solids (mg/L)

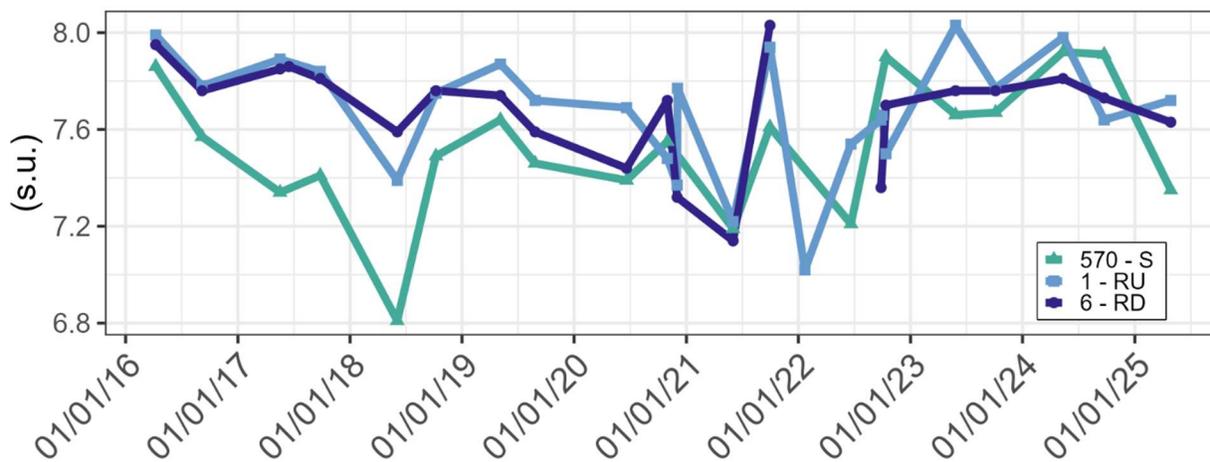


### Outfall 008

#### Hardness, Total (mg/L as CaCO3)

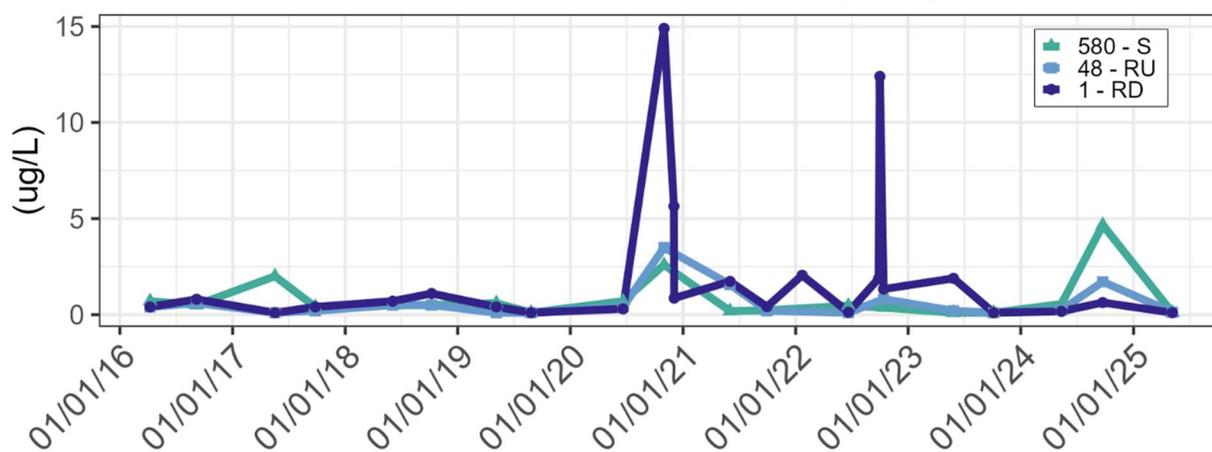


#### pH, Field (standard units)

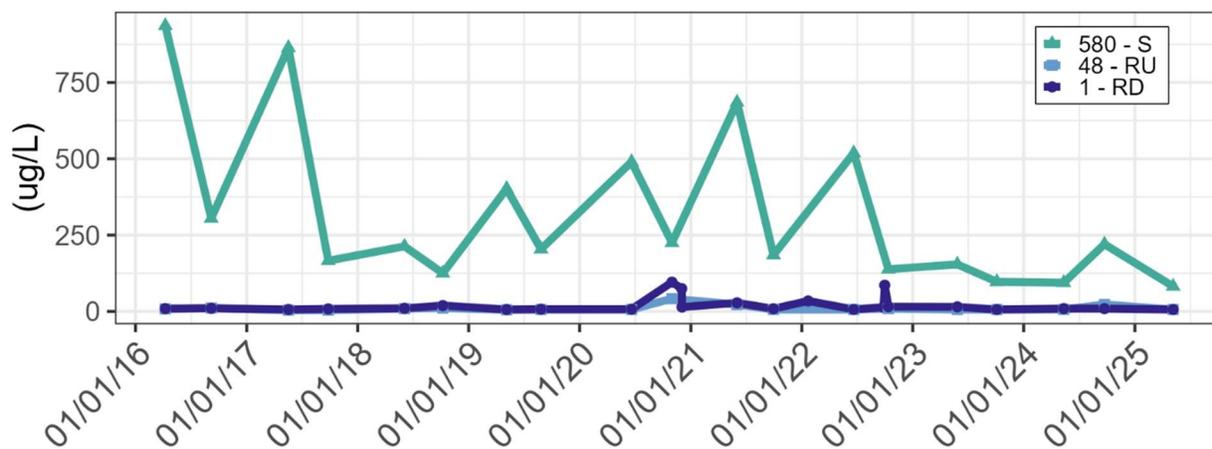


# Outfall 009

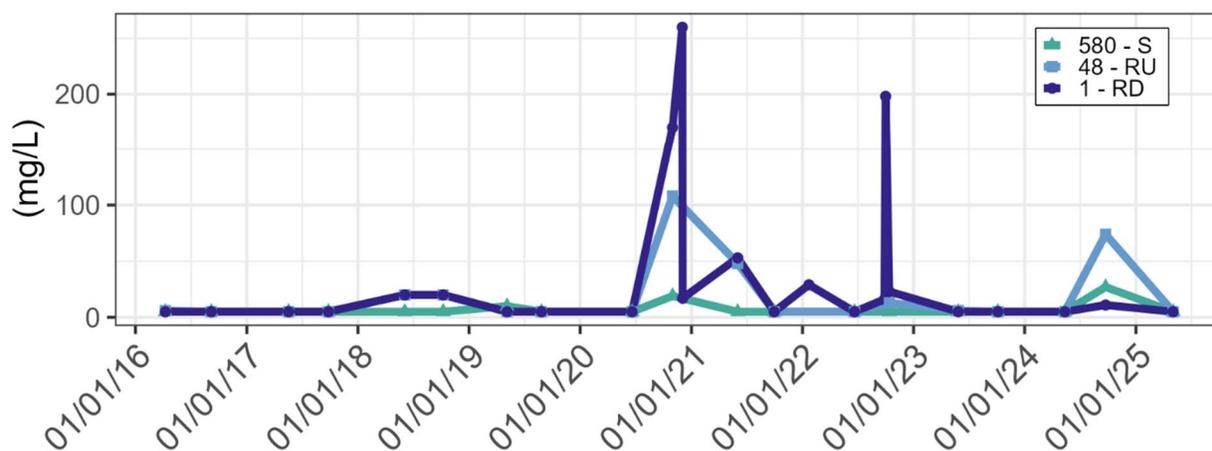
## Lead, Total Recoverable (ug/L)



## Zinc, Total Recoverable (ug/L)

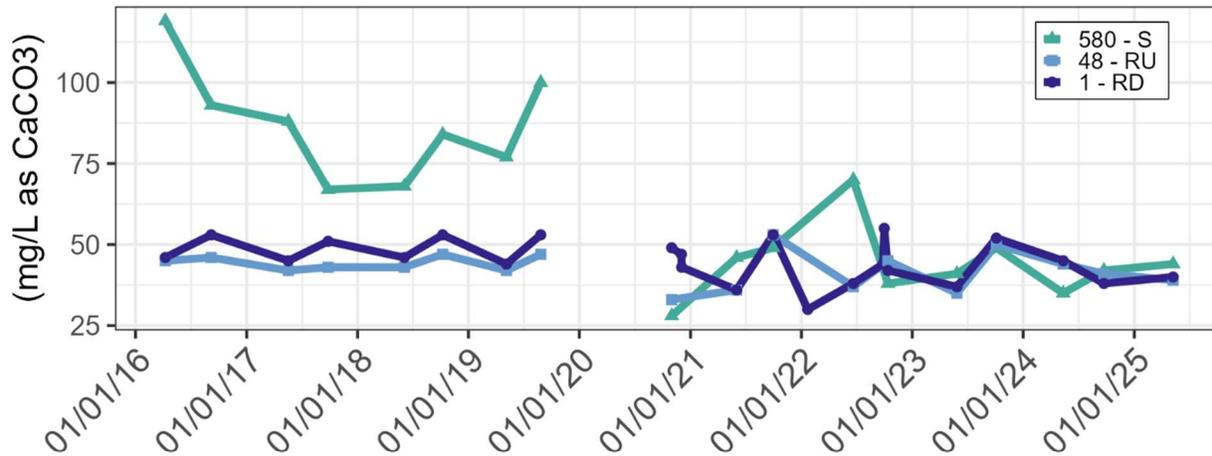


## Total Suspended Solids (mg/L)

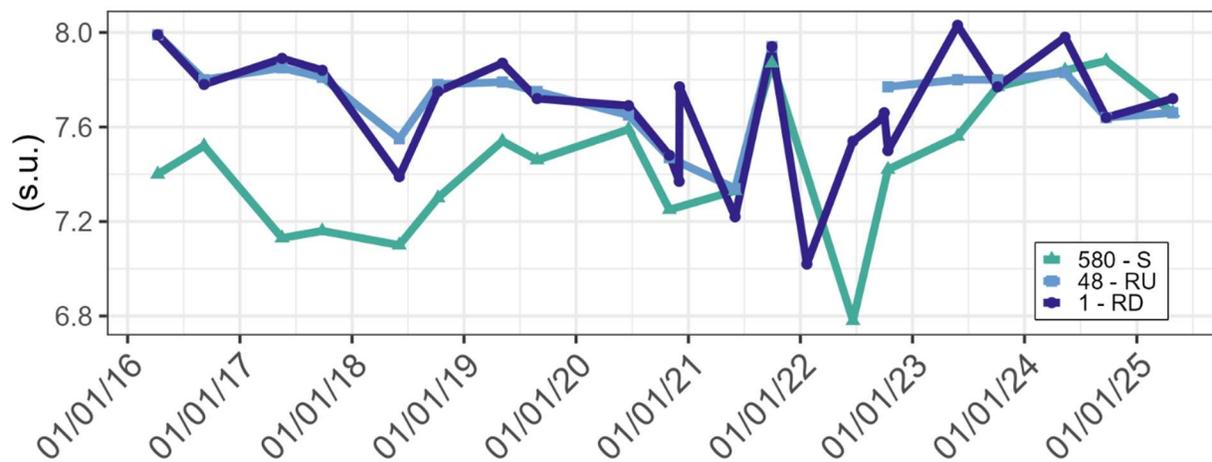


## Outfall 009

### Hardness, Total (mg/L as CaCO<sub>3</sub>)



### pH, Field (standard units)



---

# Summary of the Fall 2025 Greens Creek Water Quality Sampling Event

17 February 2026

This white paper includes results of monitoring associated with storm water outfalls 004, 005.2, 005.3, 005.4, 005.5, 006, 007, 008, 009, and 012. Table 1 shows the sampling results for lead, zinc, pH, flow rate, hardness, and total dissolved solids from September 2025 sampling events. Table 2 lists the Alaska water quality standards (AWQS) for lead and zinc. The AWQS were exceeded in Outfalls 003, 004, 005.2, 005.3, and 008. Time series and upper tolerance limit (UTL) figures are included for relevant outfalls. Statistical analysis indicates that, at locations where downstream receiving water samples exceeded AWQS, concentrations remained below the upstream UTL.

## REFERENCES CITED

Alaska Department of Conservation, 2022, "Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances" as amended through September 8, 2022.

Sanitas Technologies, 2016, Sanitas, [www.sanitastech.com](http://www.sanitastech.com), Shawnee, Kansas

**Table 1: Storm Water Outfall and Receiving Water Monitoring Results**

Outfall	Type *	Site	Date	Time	Flow	pH*	Hardness	Lead-TR			Zinc-TR			Oil & Grease			TSS		
					(gpm)	(su)	(mg/L)	(ug/L)	MDL	ML	(ug/L)	MDL	ML	(mg/L)	MDL	ML	(mg/L)	MDL	ML
003	S	527	2025-09-20	12:45	0.8	6.93	135	4.36	0.1	0.5	63.3	6	15	<2	2.1	10.3	<5	5	20
	RD	529	2025-09-20	12:55	0	7.24	3390	0.93	0.1	0.5	7.6	6	15	<2	2.1	10.3	<27	5	20
004	RU	532	2025-09-22	08:30	400	6.21	13	0.79	0.1	0.5	<30	6	15	<1.9	2.1	10.3	<5	5	20
	RD	524	2025-09-22	08:15	400	6.91	14	0.65	0.1	0.5	<30	6	15	<1.9	2.1	10.3	<5	5	20
005.2	S	539	2025-09-20	10:55	0.3	5.01	45	5.94	0.1	0.5	58.4	6	15	<2	2.1	10.3	<5	5	20
	RU	371	2025-09-02	08:40	897.662	7.53			0.1	0.5		6	15		2.1	10.3		5	20
	RU	371	2025-09-20	11:10	1346.493	6.5	29	0.13	0.1	0.5	9.8	6	15	<2	2.1	10.3	<5	5	20
	RD	368	2025-09-20	10:50	1795.324	7.24	29	<0.2	0.1	0.5	13.7	6	15	<1.9	2.1	10.3	<5	5	20
005.3	S	545	2025-09-20	09:35	250	7.47	75	6.03	0.1	0.5	150	6	15	<1.9	2.1	10.3	<5	5	20
	RU	595	2025-09-20	08:35	65080.495	7.51	48	2.13	0.1	0.5	102	6	15	<1.9	2.1	10.3	13	5	20
	RD	591	2025-09-20	08:20	65080.495	7.7	47	2.16	0.1	0.5	13.6	6	15	2	2.1	10.3	16	5	20
005.4	S	547	2025-09-20	10:00	1.5	6.95	51	0.1	0.1	0.5	7.6	6	15	<1.9	2.1	10.3	<5	5	20
005.5	S	560	2025-09-21	09:15	9	7.79	218	2120	0.1	0.5	1950	6	15	<2	2.1	10.3	<5	5	20
	RU	6	2025-09-01	10:50	8527.789	7.83			0.1	0.5		6	15		2.1	10.3		5	20
	RU	6	2025-09-21	09:40	74057.115	7.84	43	1.26	0.1	0.5	17.2	6	15	<1.9	2.1	10.3	<5	5	20
	RD	590	2025-09-21	08:55	74057.115	7.82	48	2.06	0.1	0.5	16.8	6	15	<1.9	2.1	10.3	<5	5	20
006	S	562						No sample taken due to no discharge											
007	S	565						No sample taken due to no discharge											
008	S	570	2025-09-21	10:50	16	7.59	181	<0.1	0.1	0.5	24	6	15		2.1	10.3	<5	5	20
	RU	1	2025-09-21	10:10	74057.115	8.14	45	2.42	0.1	0.5	27.9	6	15		2.1	10.3	28	5	20
009	S	580	2025-09-21	11:05	31	7.52	40	0.25	0.1	0.5	53.7	6	15		2.1	10.3	<5	5	20
	RU	48	2025-09-01	13:10	8527.789	7.87			0.1	0.5		6	15		2.1	10.3		5	20
	RU	48	2025-09-21	10:20	74057.115	7.63	41	1.52	0.1	0.5	21.6	6	15		2.1	10.3	<5	5	20
012	S	533						No sample taken due to no discharge											

Type codes: S = surface water (stormwater outfall); RU = receiving water upstream; RD = receiving water downstream

**Table 2: Comparison of Water Quality Data to Alaska Water Quality Standards**

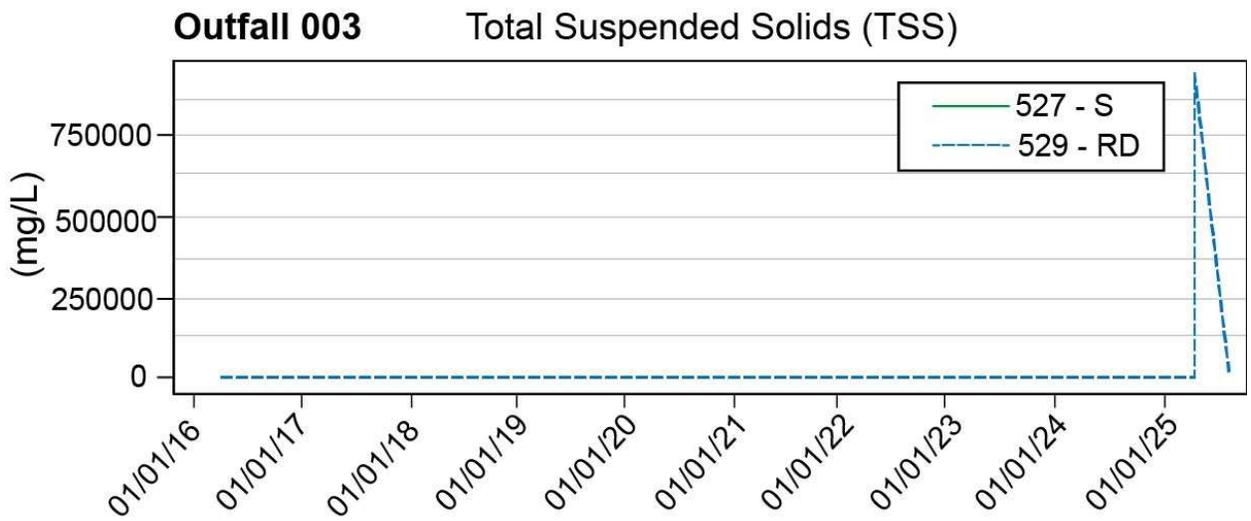
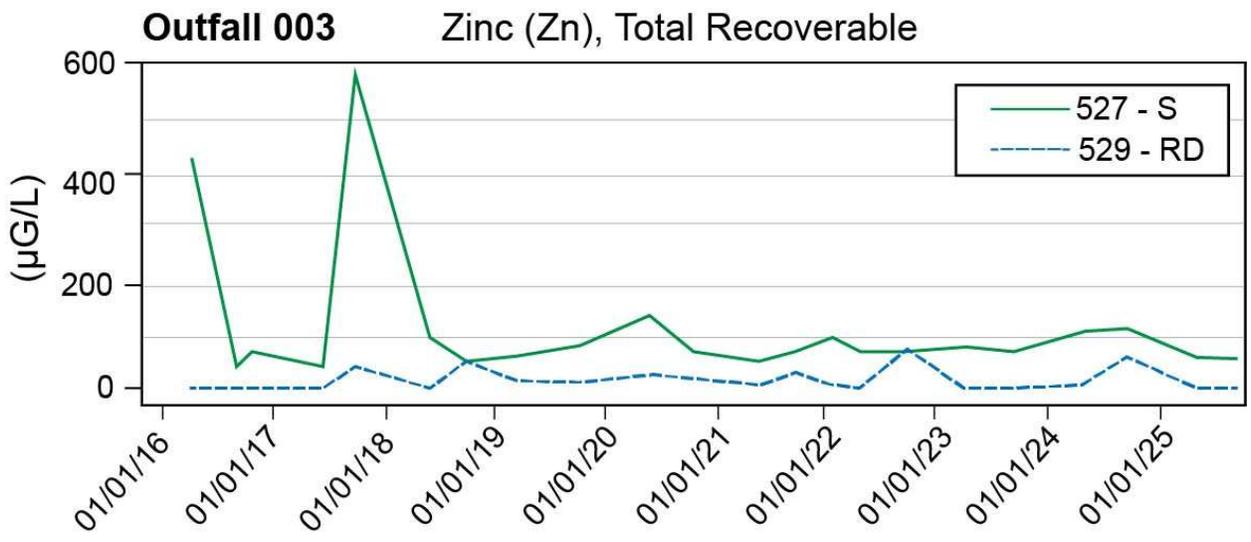
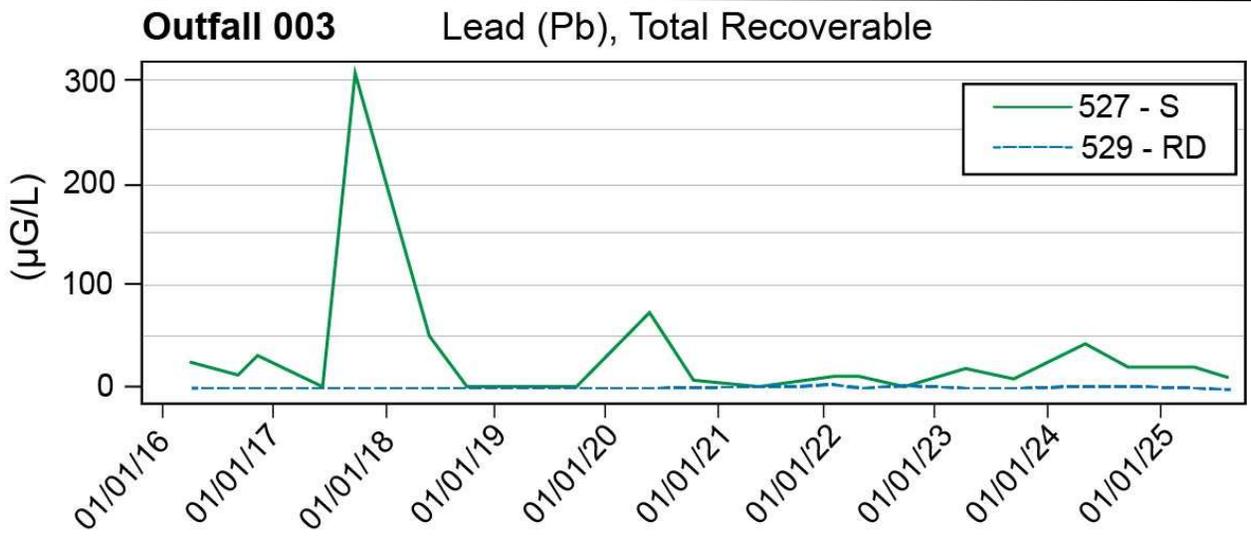
Sample Data <sup>1, 2</sup>							Alaska Water Quality Standards (AWQS) <sup>3</sup>		
Outfall	Type <sup>4</sup>	Site	Date	pH (su)	Pb (µg/L)	Zn (µg/L)	Acute Pb (µg/L)	Chronic Pb (µg/L)	Acute and Chronic Zn (µg/L)
003	S	527SW	2025-09-20	6.93	4.36	63.3	119.63	4.66	150.9
	RD	529SW	2025-09-20	7.24	0.93	7.6	7242.26	282.22	2316.36
004	S	520SW	2025-09-22	6.21	0.79	0	6.08	0.24	20.77
	RD	524SW	2025-09-22	6.91	0.65	0	6.68	0.26	22.12
005.2	S	539SW	2025-09-20	5.01	5.94	58.4	29.54	1.15	59.49
	RU	371SW	2025-09-20	5.53	0.13	9.8	16.89	0.66	41
	RD	368SW	2025-09-20	7.24	0.2	13.7	16.89	0.66	41
005.3	S	545SW	2025-09-20	7.47	6.03	150	56.61	2.21	91.71
	RU	595SW	2025-09-20	7.51	2.13	102	32.07	1.25	62.83
	RD	591SW	2025-09-20	7.7	2.16	13.6	31.23	1.22	61.72
005.4	S	547SW	2025-09-20	7.79	0.1	7.6	34.65	1.35	66.14
005.5	RU	6SW	2025-09-01	7.83	0	0	12.57	0.49	33.69
	RD	590SW	2025-09-01	7.72	0.11	6.5	32.07	1.25	62.83
008	S	570SW	2025-09-21	7.59	0.1	24	173.76	6.77	193.46
	RU	1SW	2025-09-21	8.14	2.42	27.9	29.54	1.15	59.49
	RD	6SW	2025-09-21	7.82	0.11	6.5	26.24	1.02	54.98
009	S	580SW	2025-09-21	7.87	0.1	53.7	26.24	1.02	53.9
	RU	48SW	2025-09-21	7.87	0.13	0	26.24	1.02	54.98
	RD	1SW	2025-09-21	7.72	0.1	0	26.24	1.02	54.98

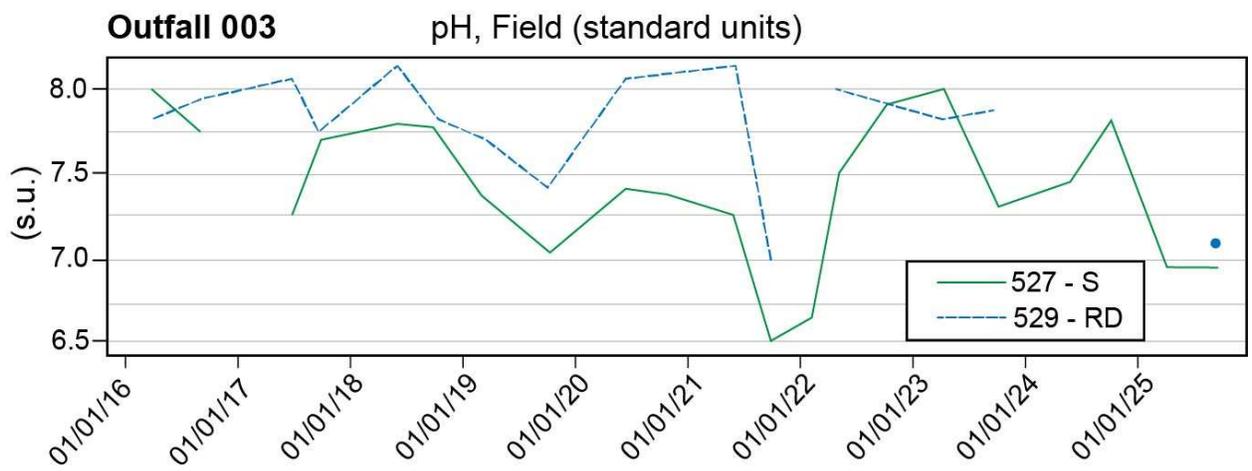
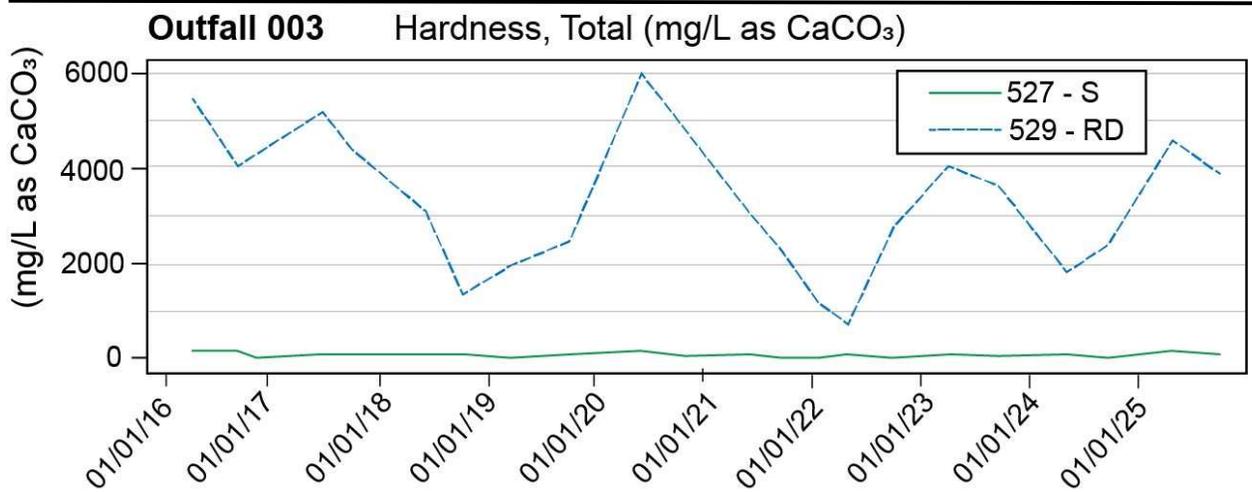
1 - Shaded cells indicate exceedance of AWQS

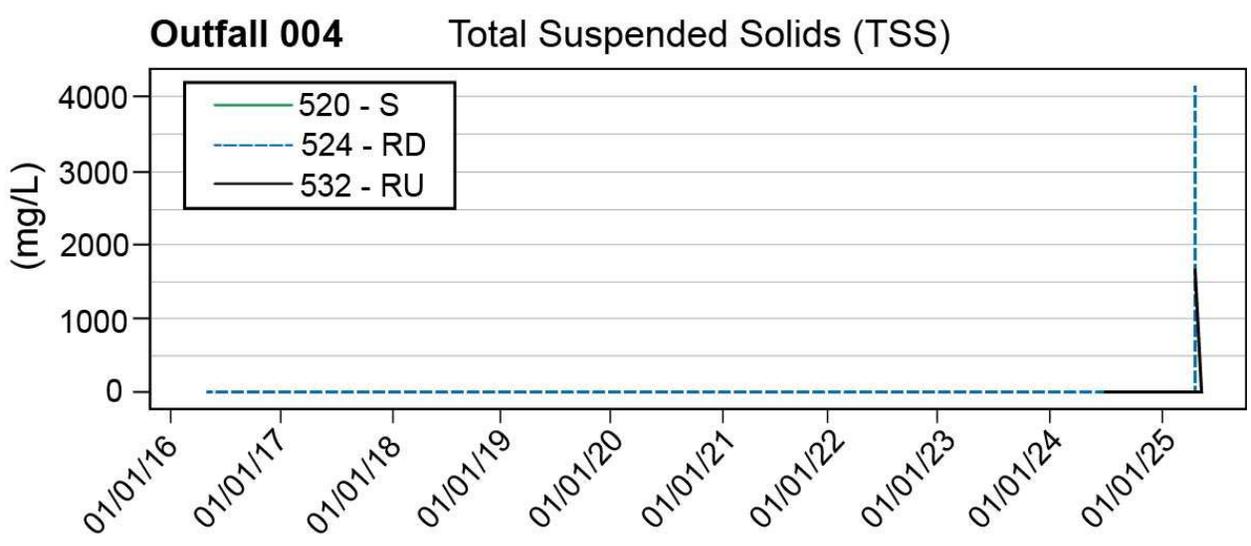
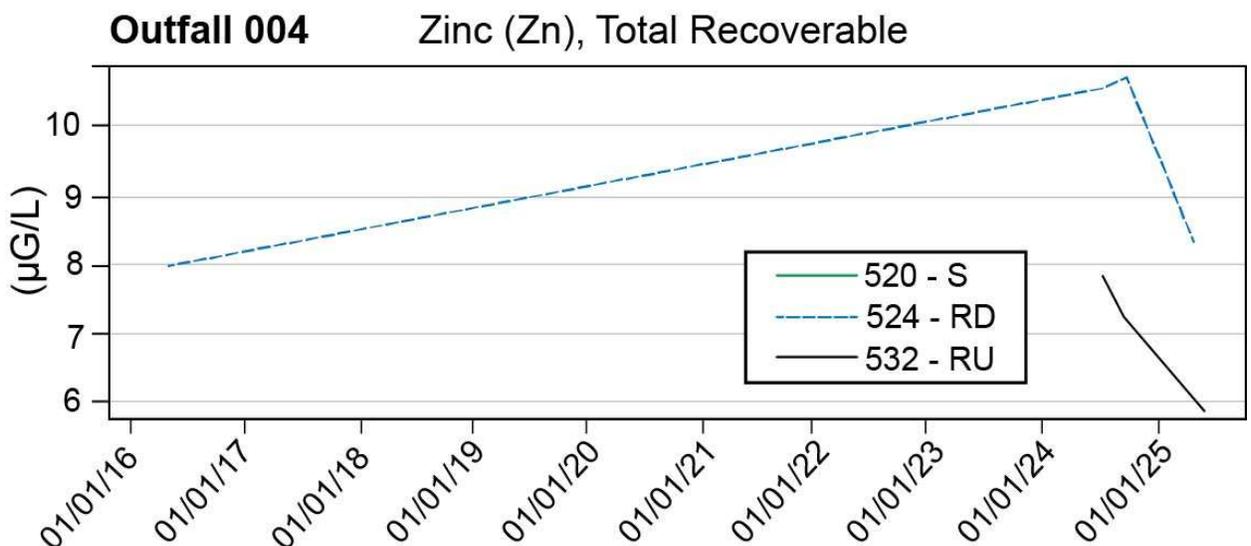
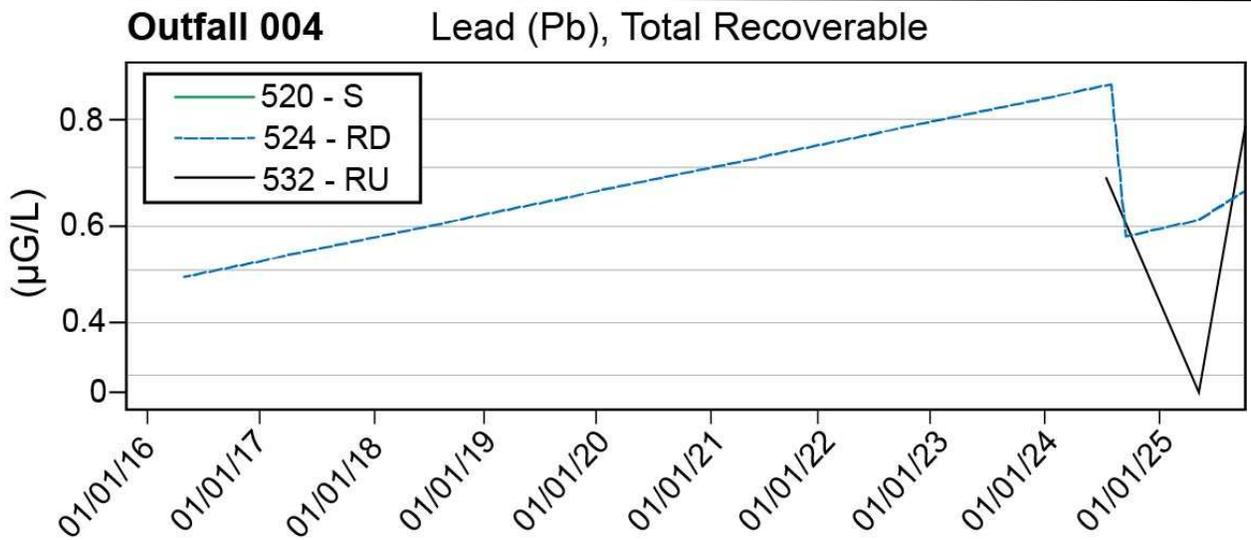
2 - Italic font indicates laboratory result was non-detect and tabulated value is zero if less than the Method Detection Limit (MDL) or the value of MDL if less than the Minimum Level of Quantification (ML)

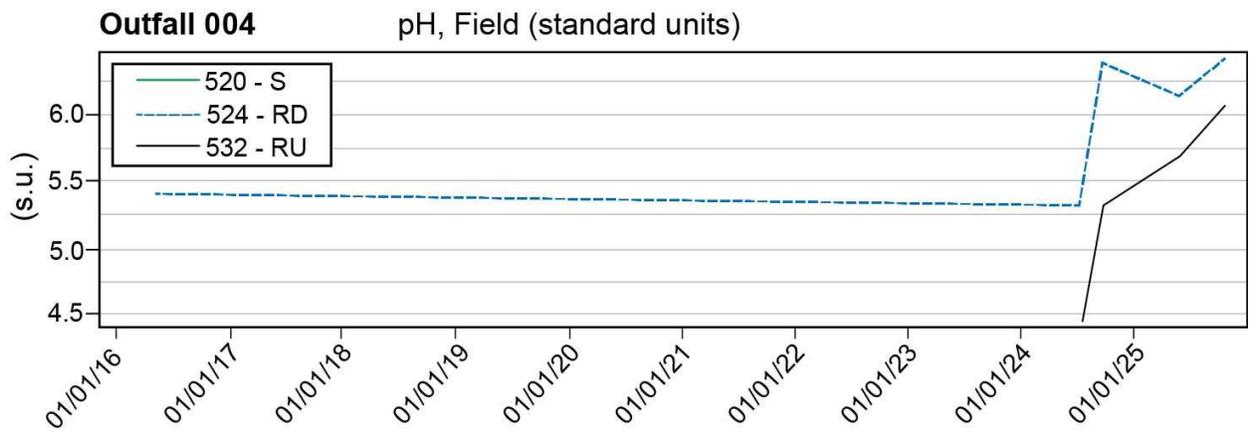
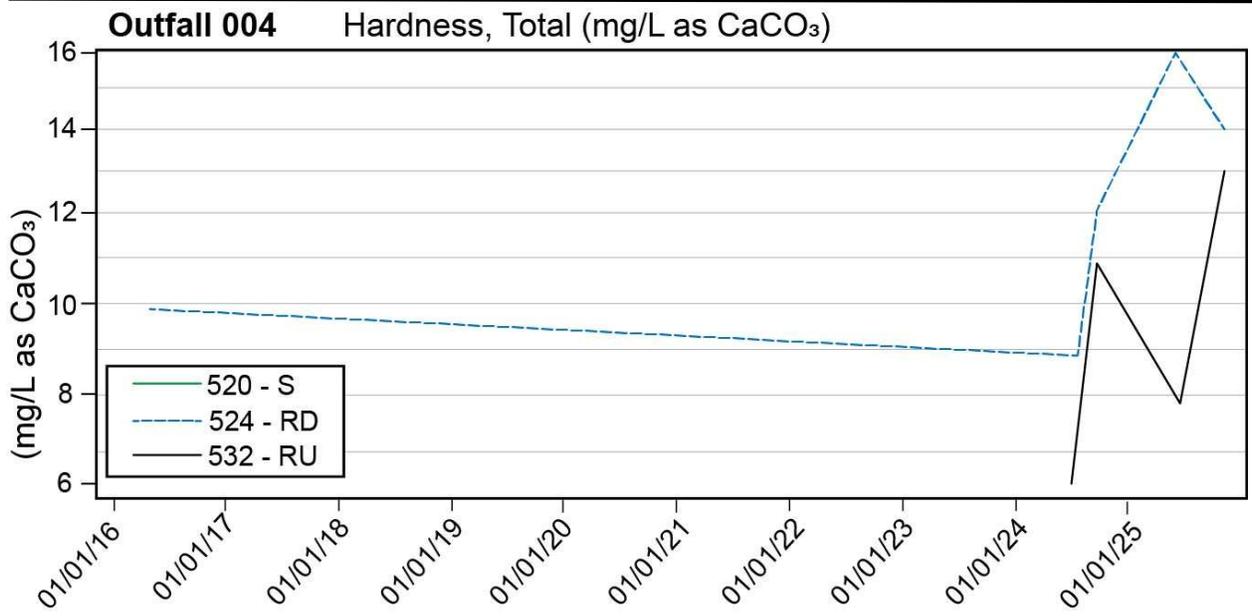
3 - AWQS are from the Alaska Department of Conservation "ALASKA WATER QUALITY CRITERIA MANUAL FOR TOXIC AND OTHER DELETERIOUS ORGANIC AND INORGANIC SUBSTANCES" as amended through September 8, 2022

4 - S = Storm water, RU = Receiving water upstream, RD = Receiving water downstream

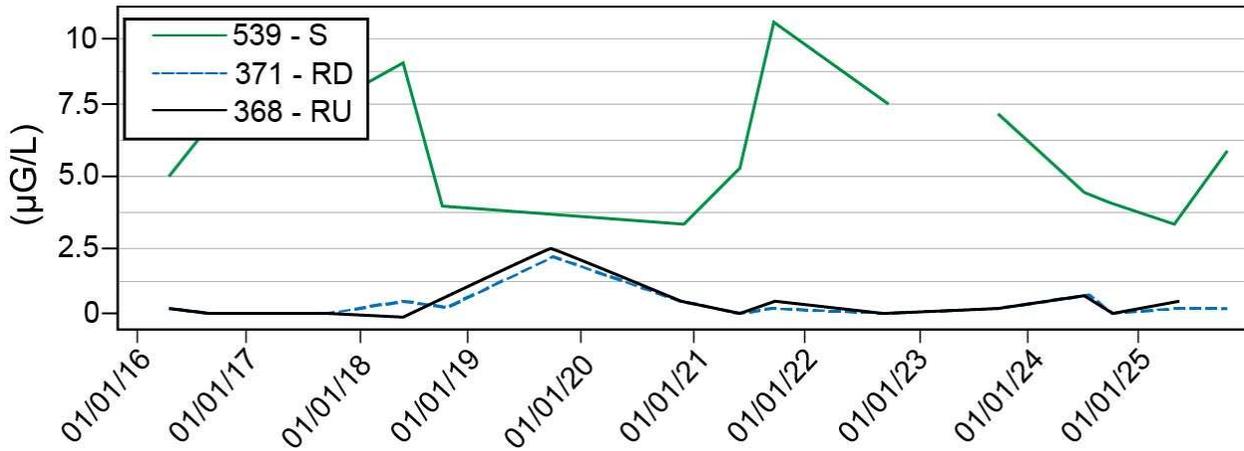




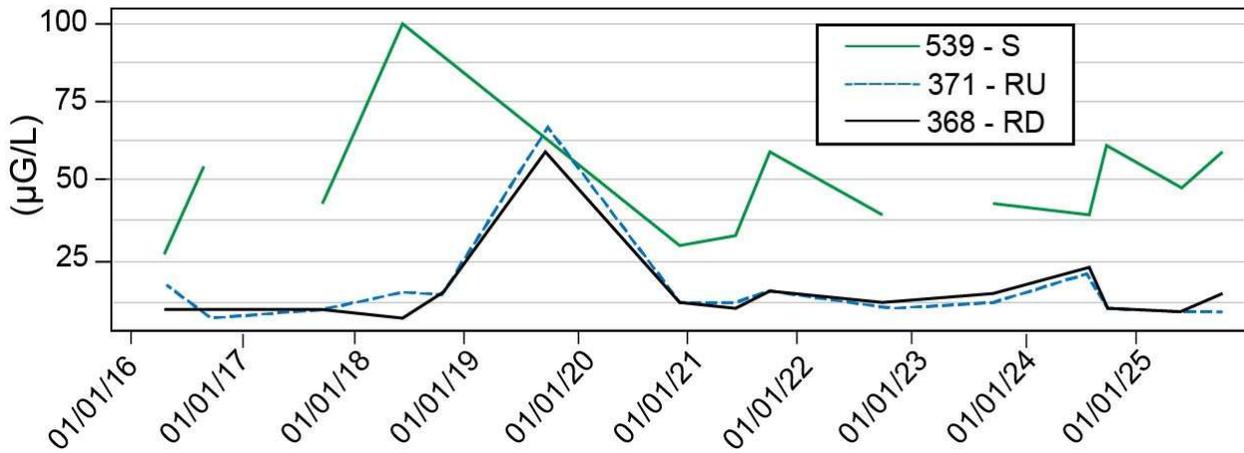




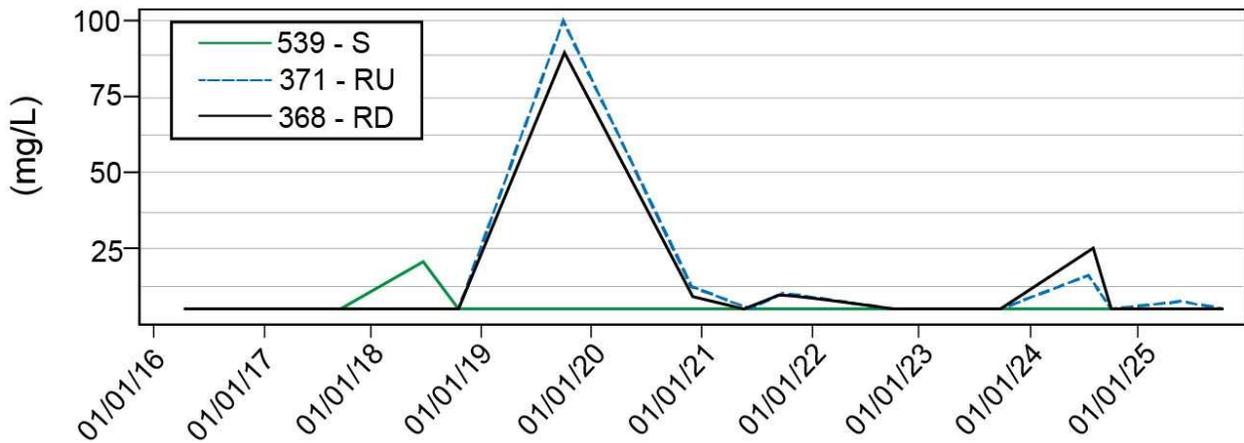
**Outfall 005.2** Lead (Pb), Total Recoverable

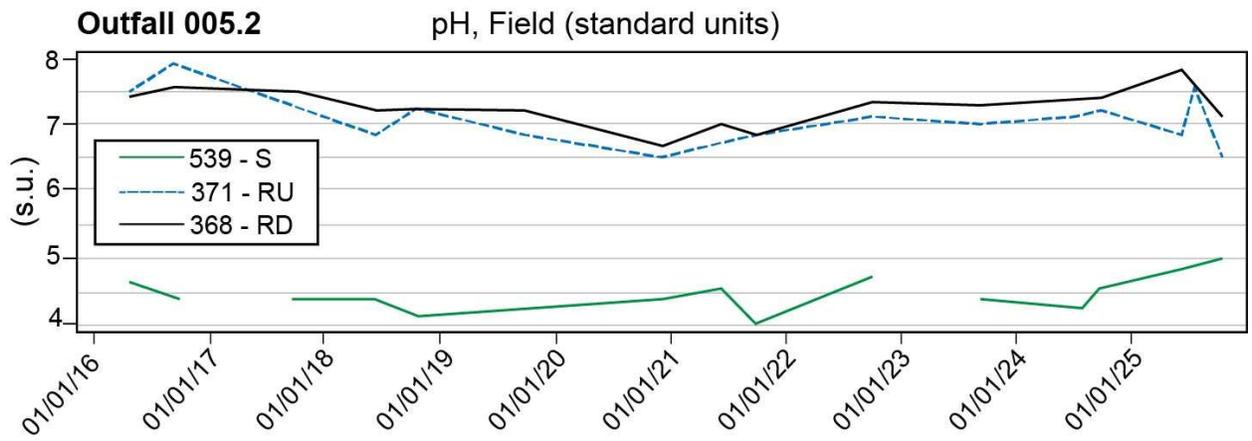
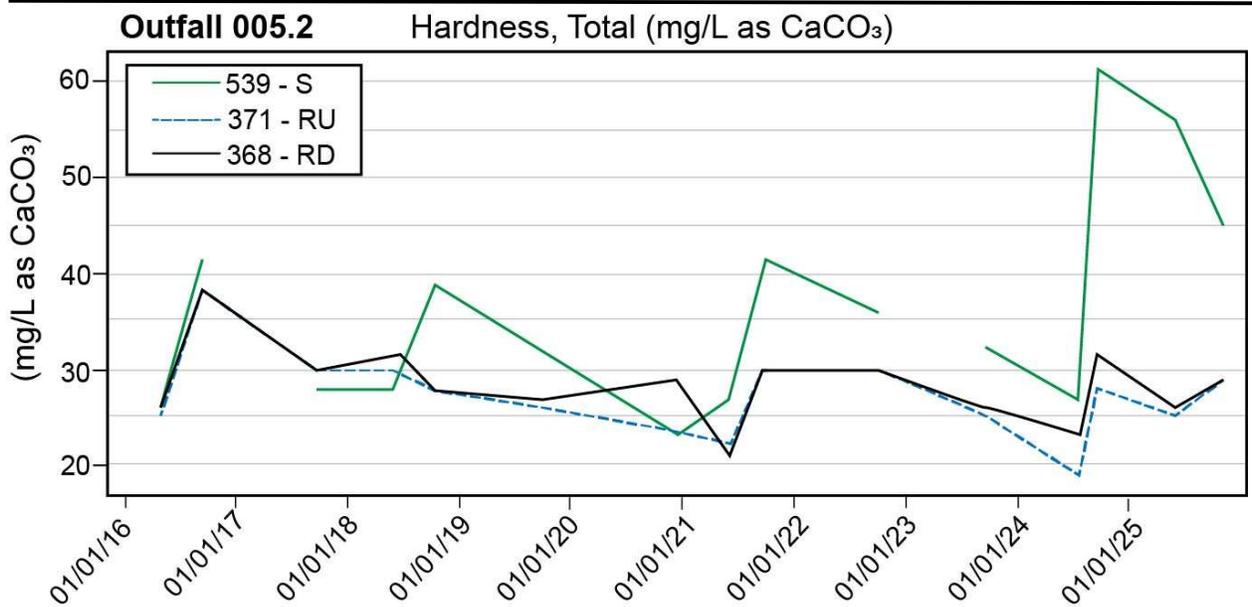


**Outfall 005.2** Zinc (Zn), Total Recoverable

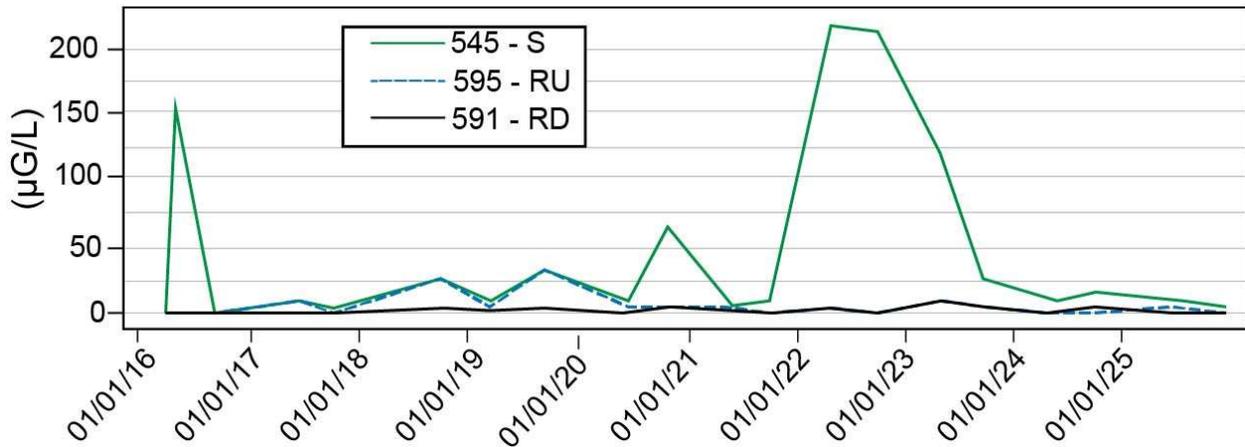


**Outfall 005.2** Total Suspended Solids (TSS)

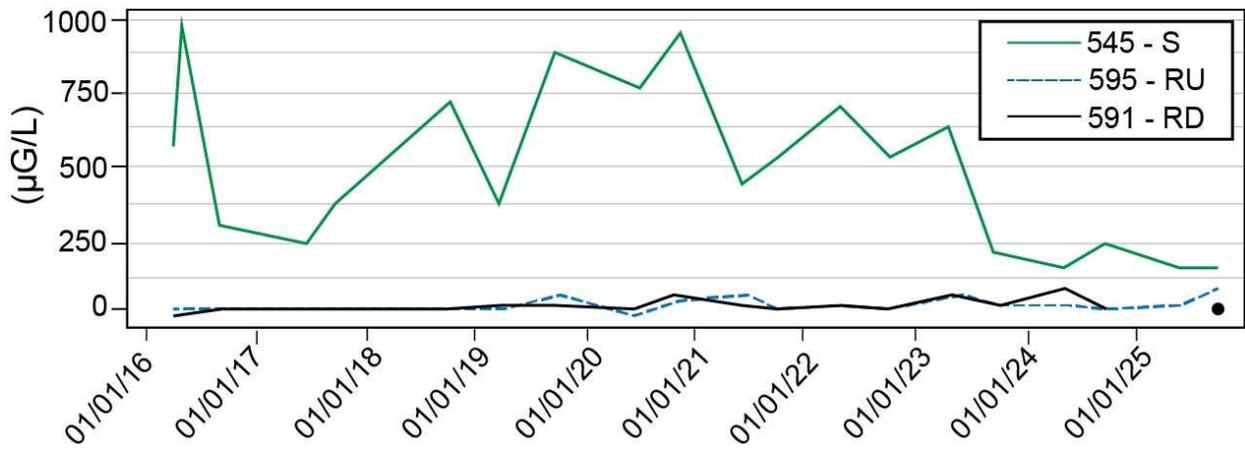




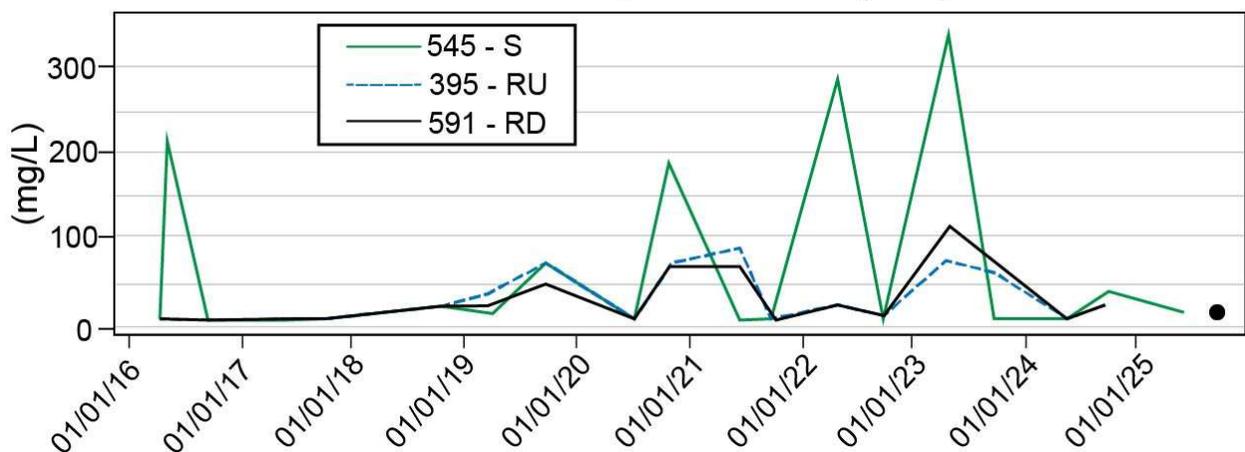
**Outfall 005.3** Lead (Pb), Total Recoverable

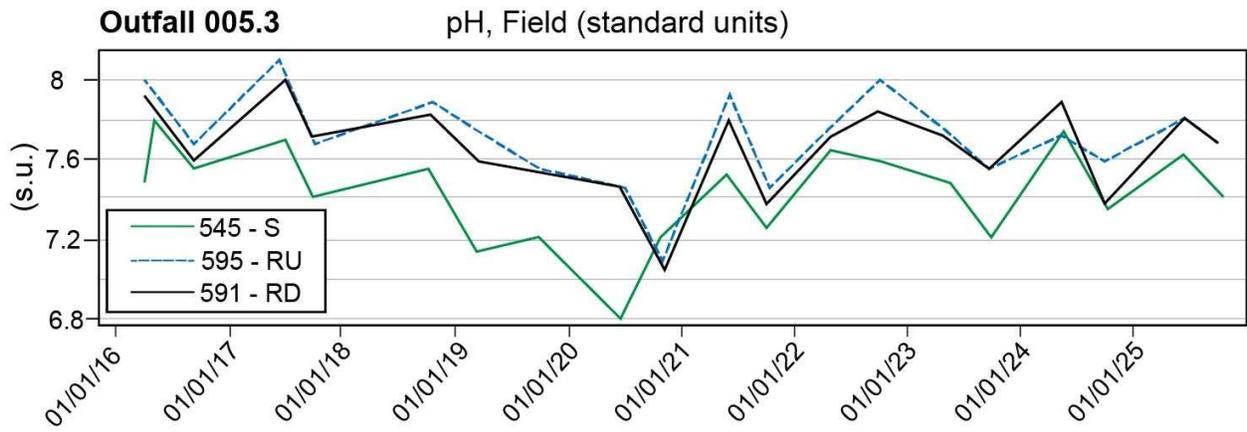
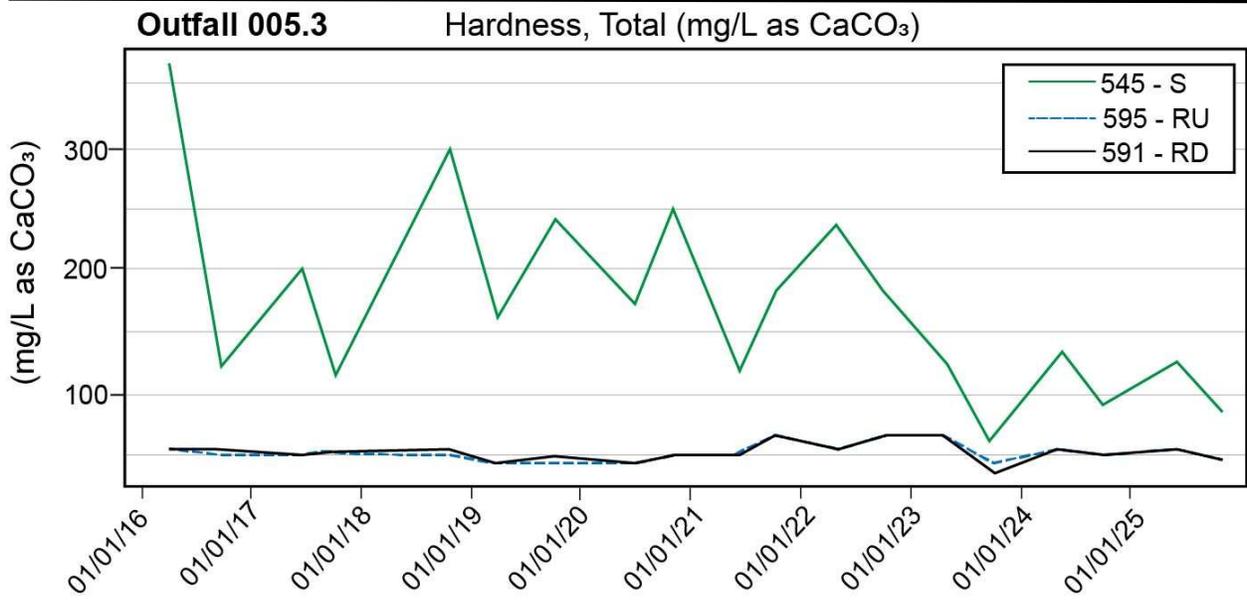


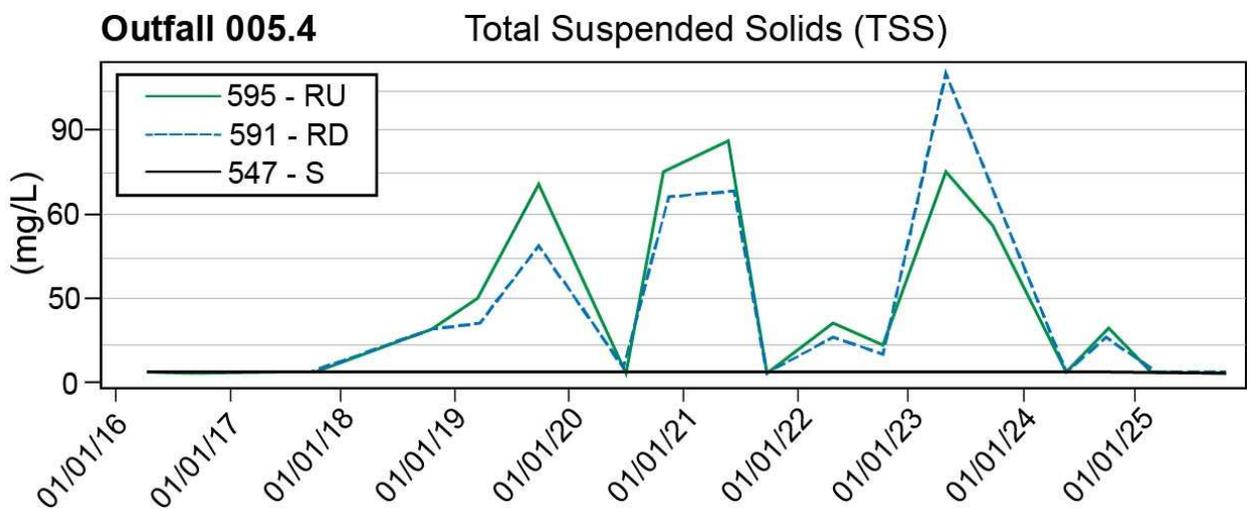
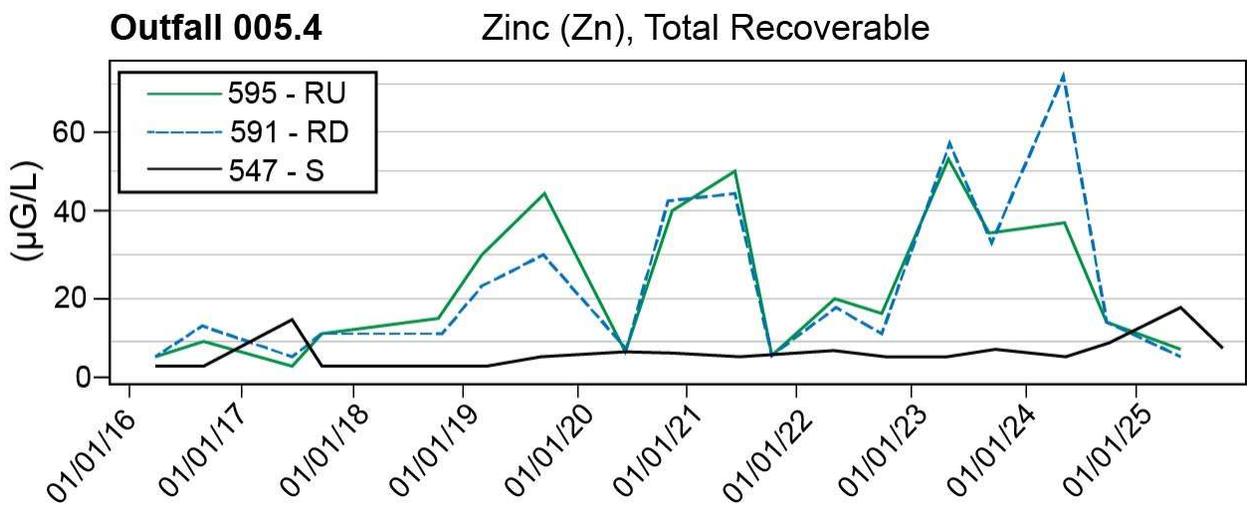
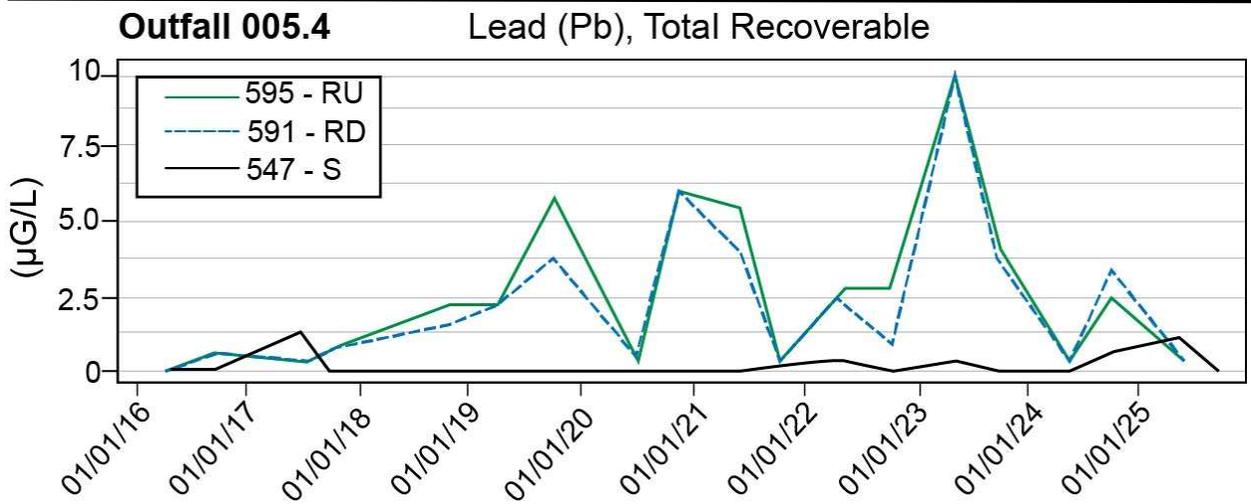
**Outfall 005.3** Zinc (Zn), Total Recoverable

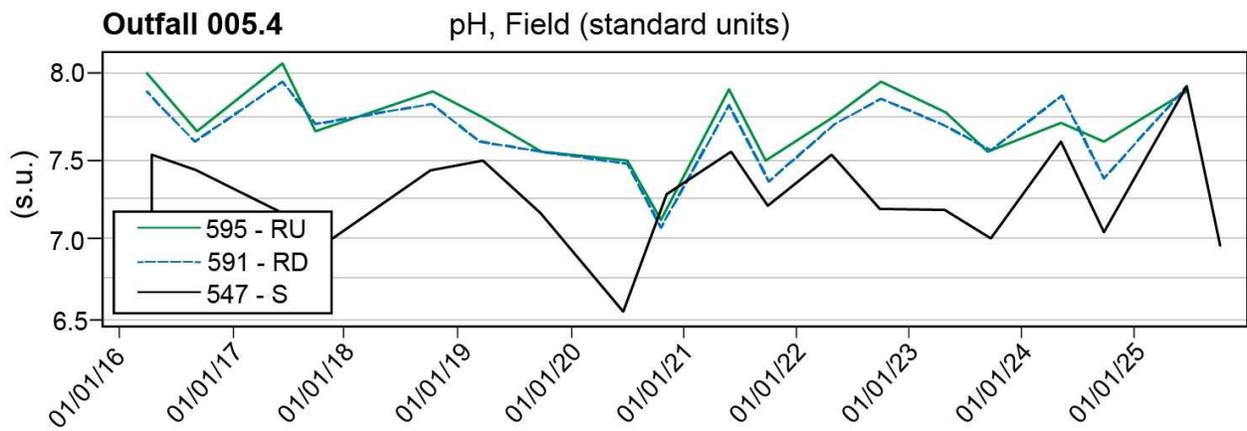
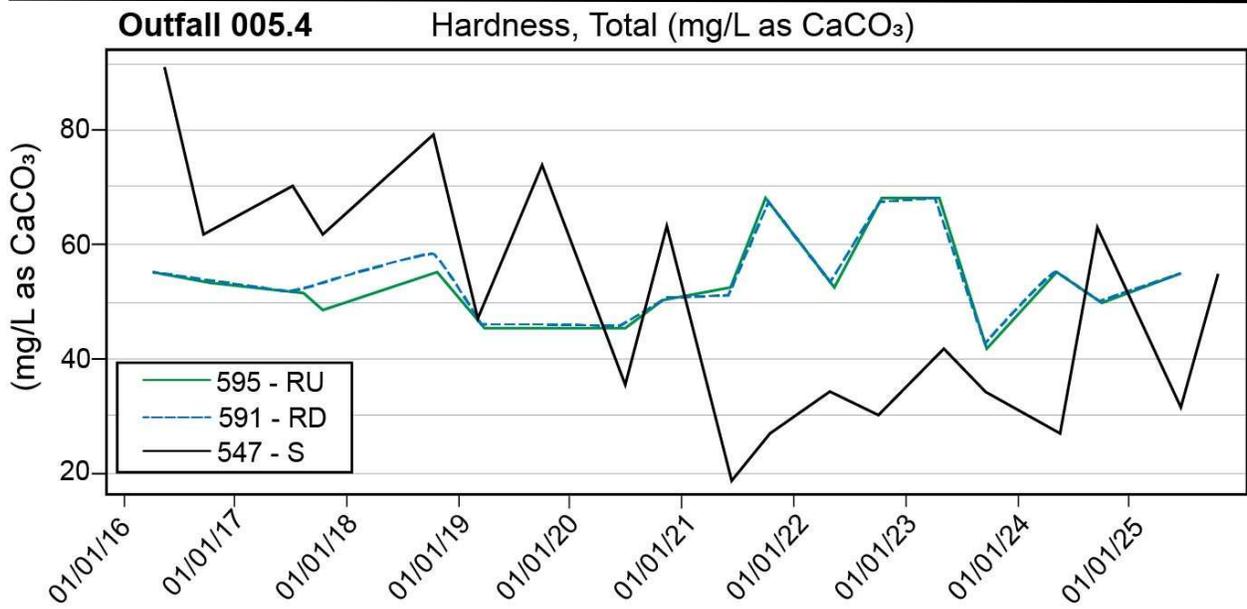


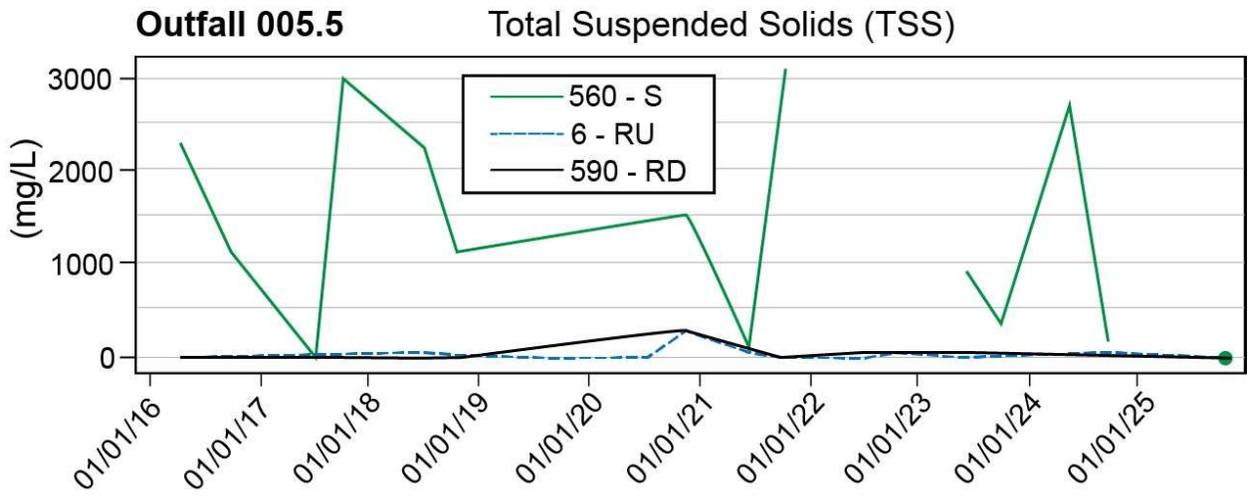
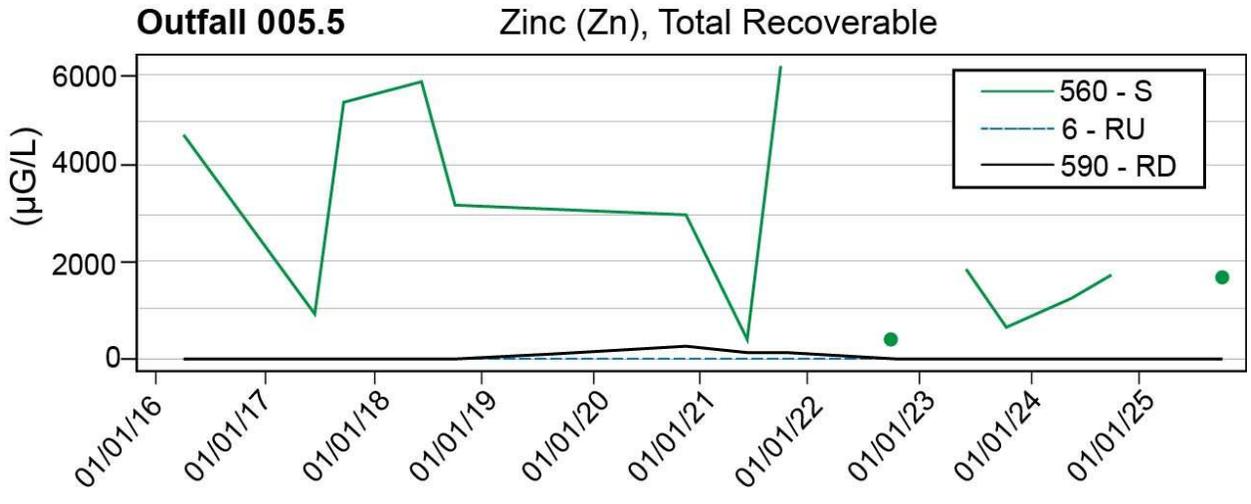
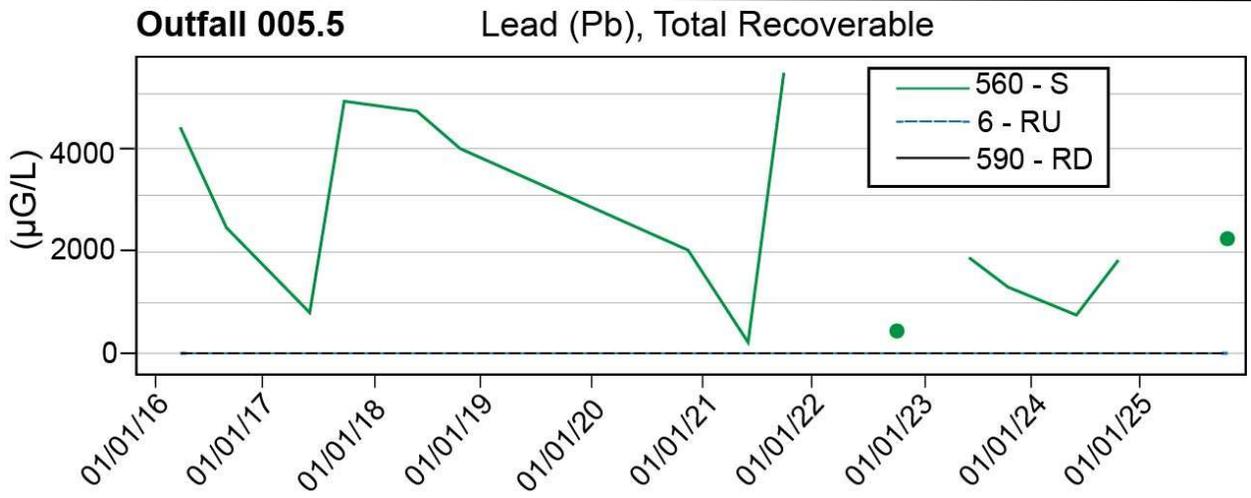
**Outfall 005.3** Total Suspended Solids (TSS)

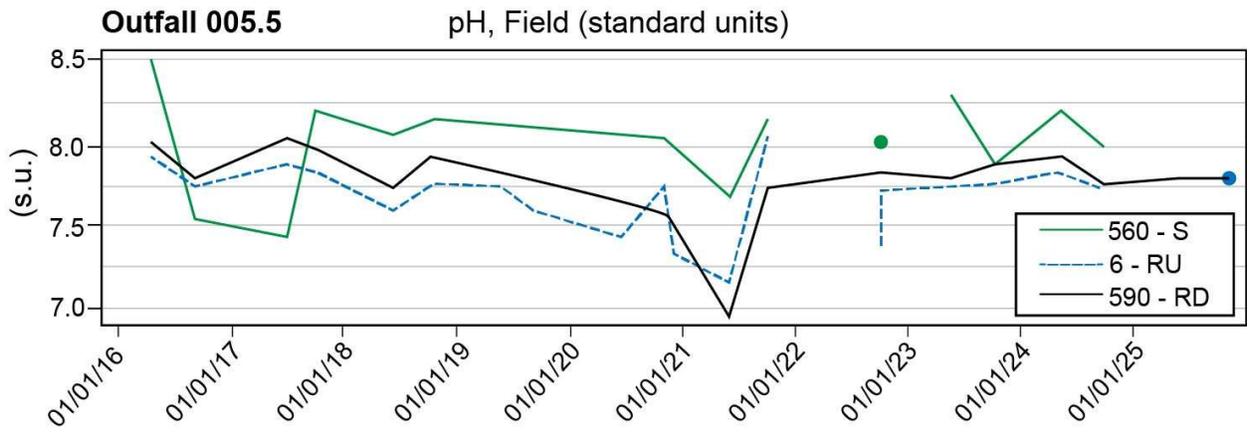
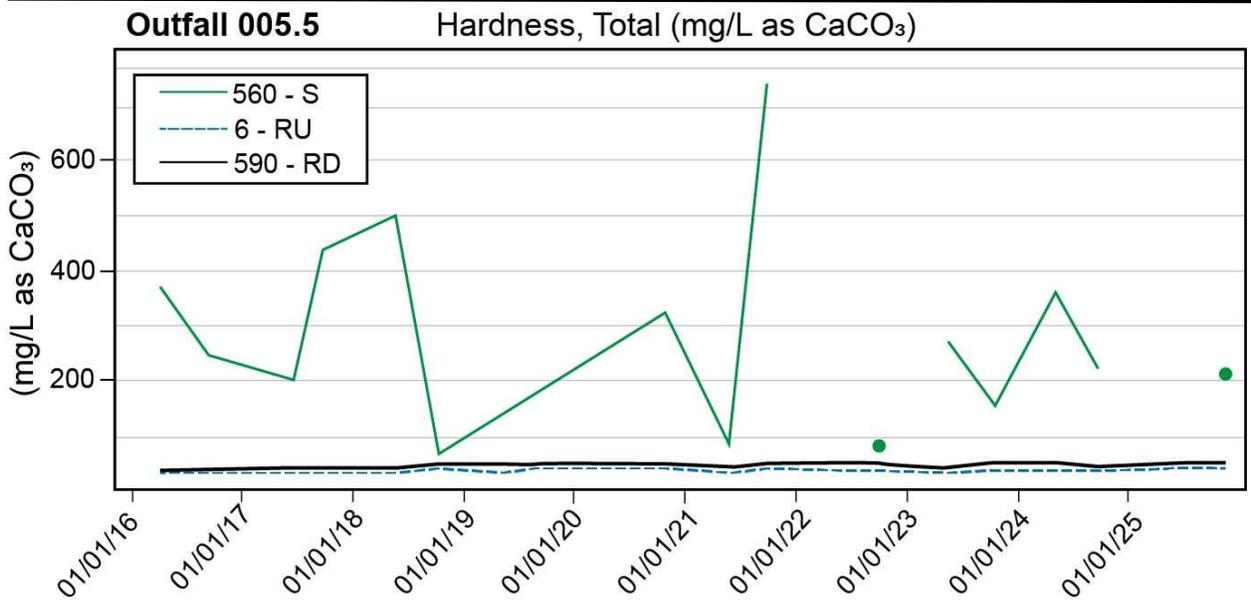


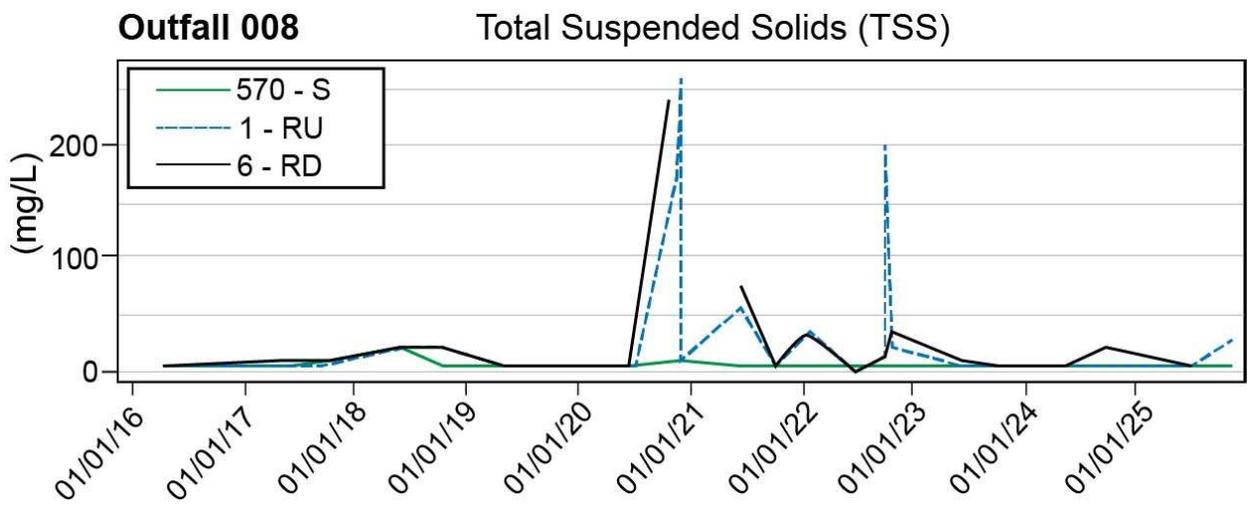
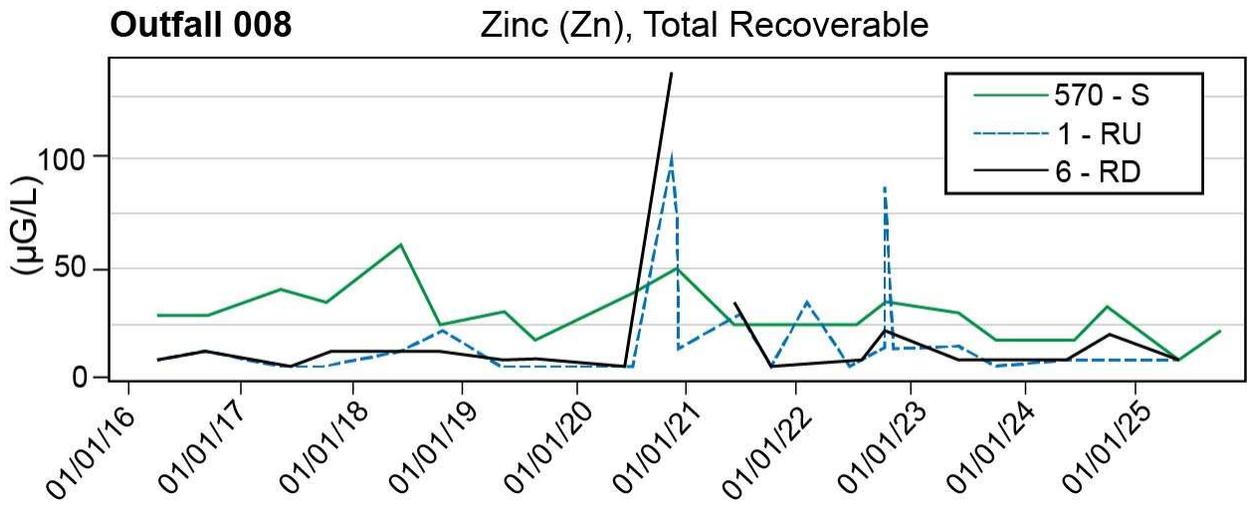
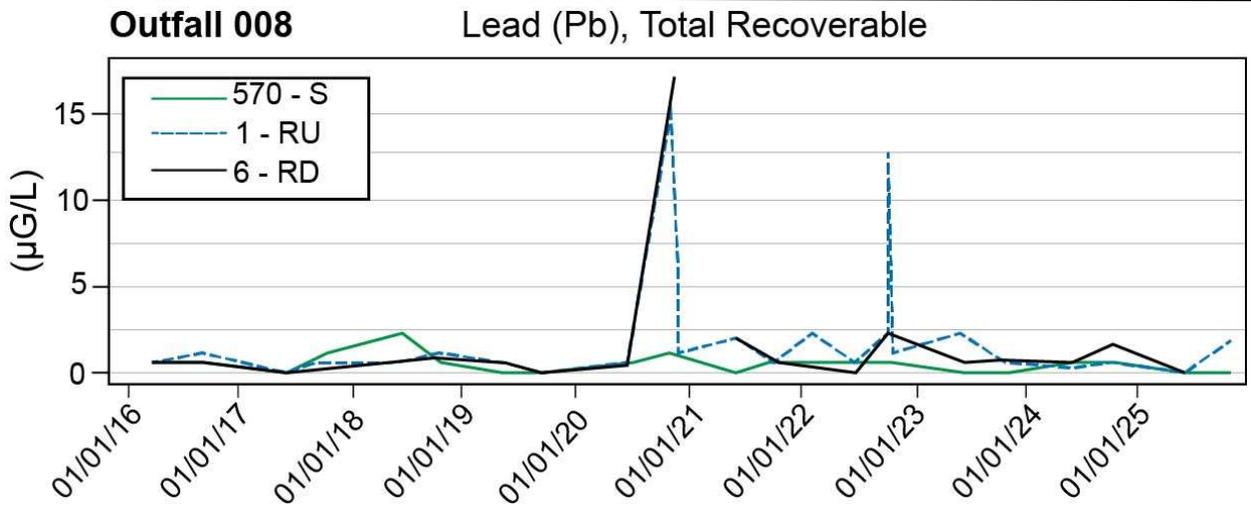


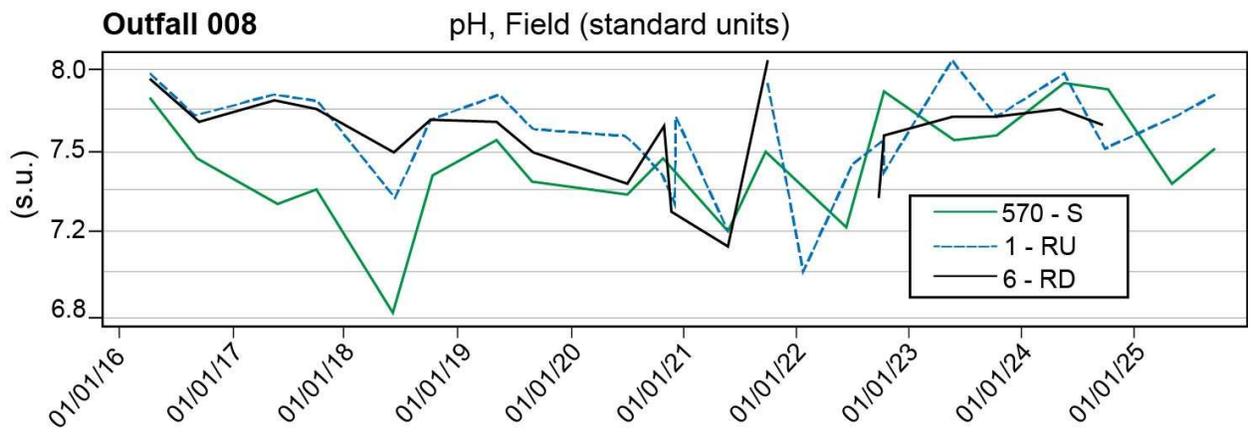
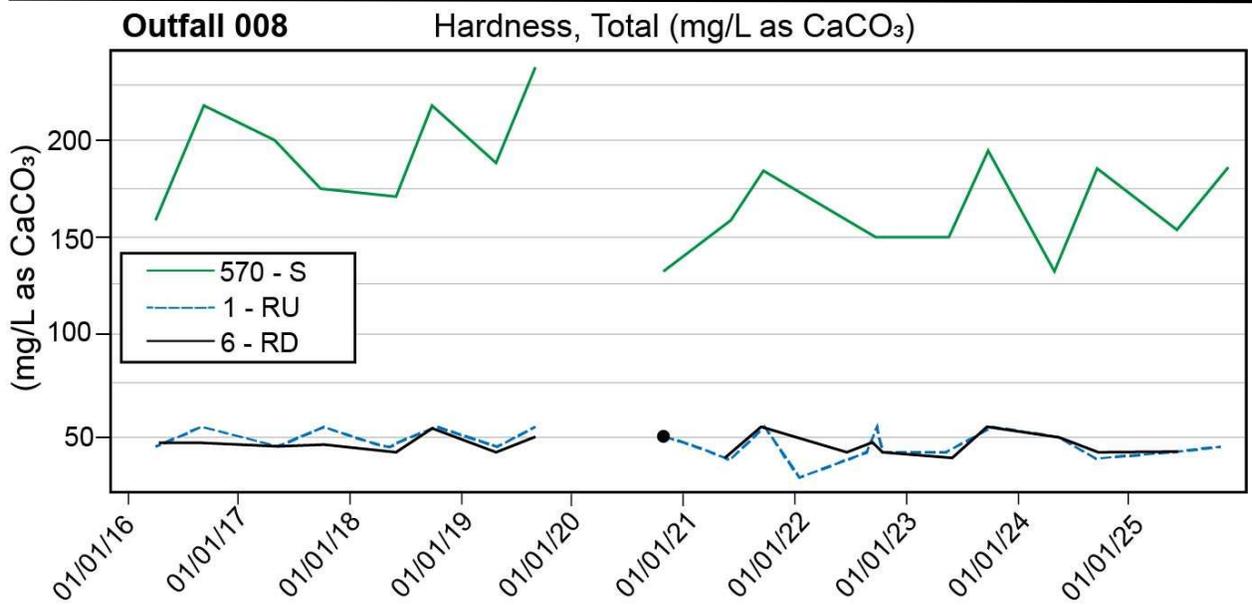


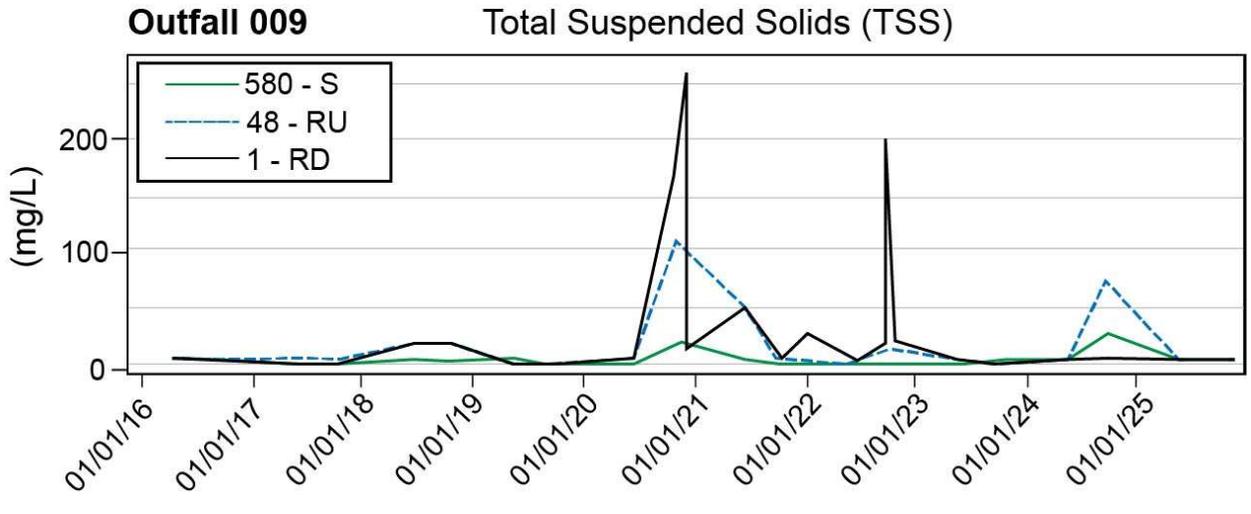
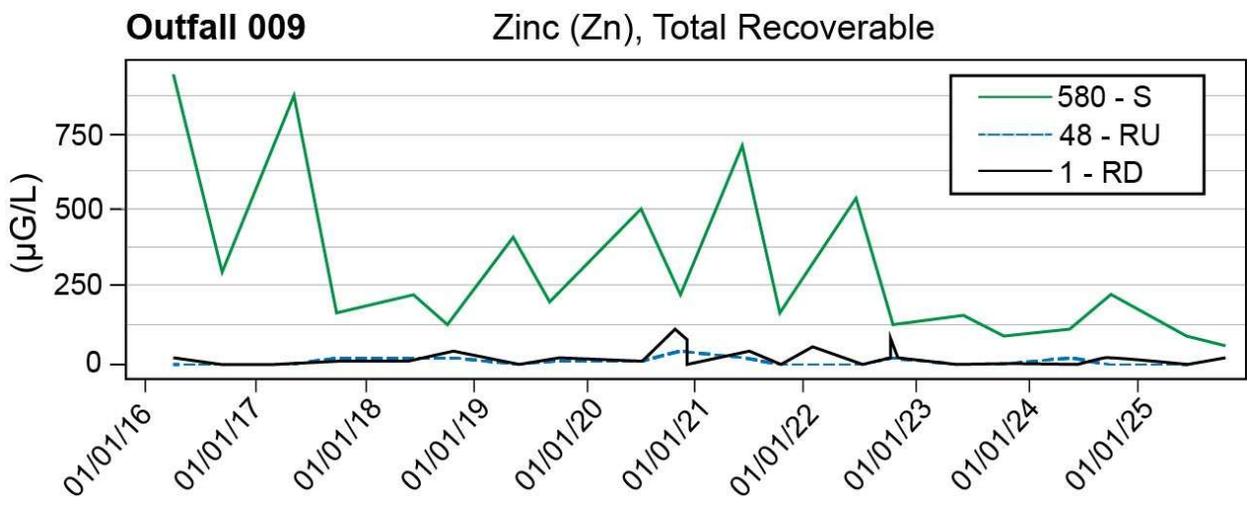
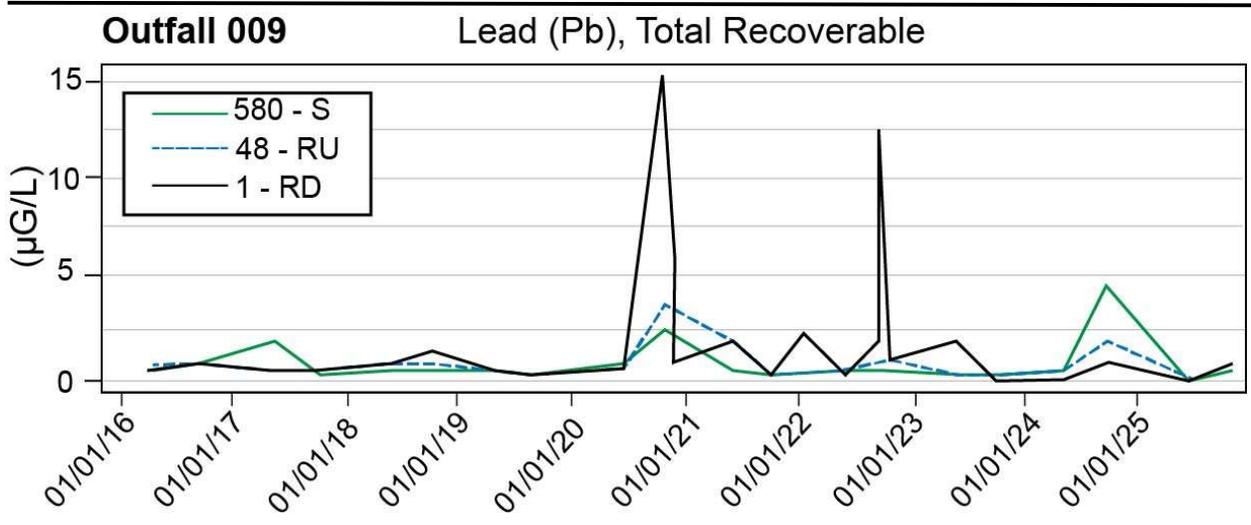


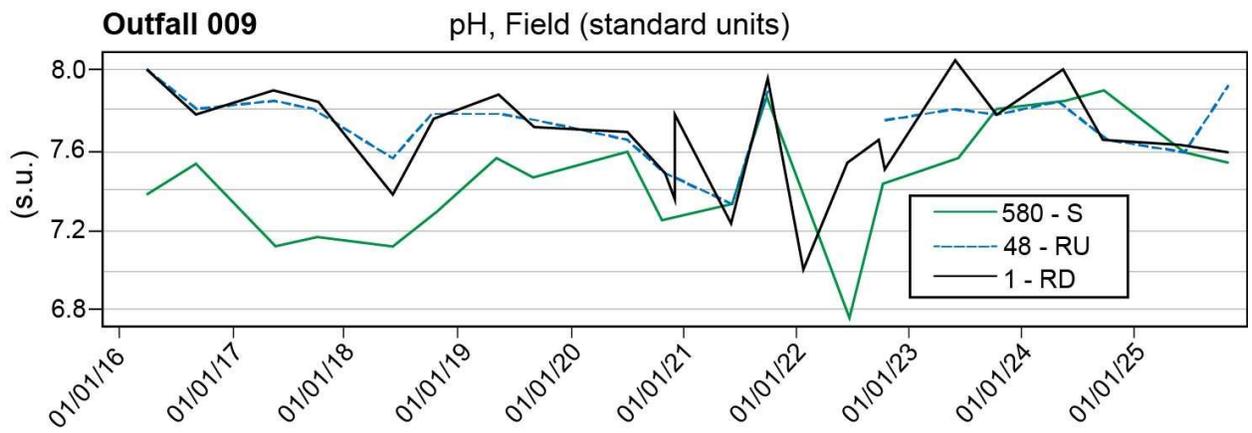
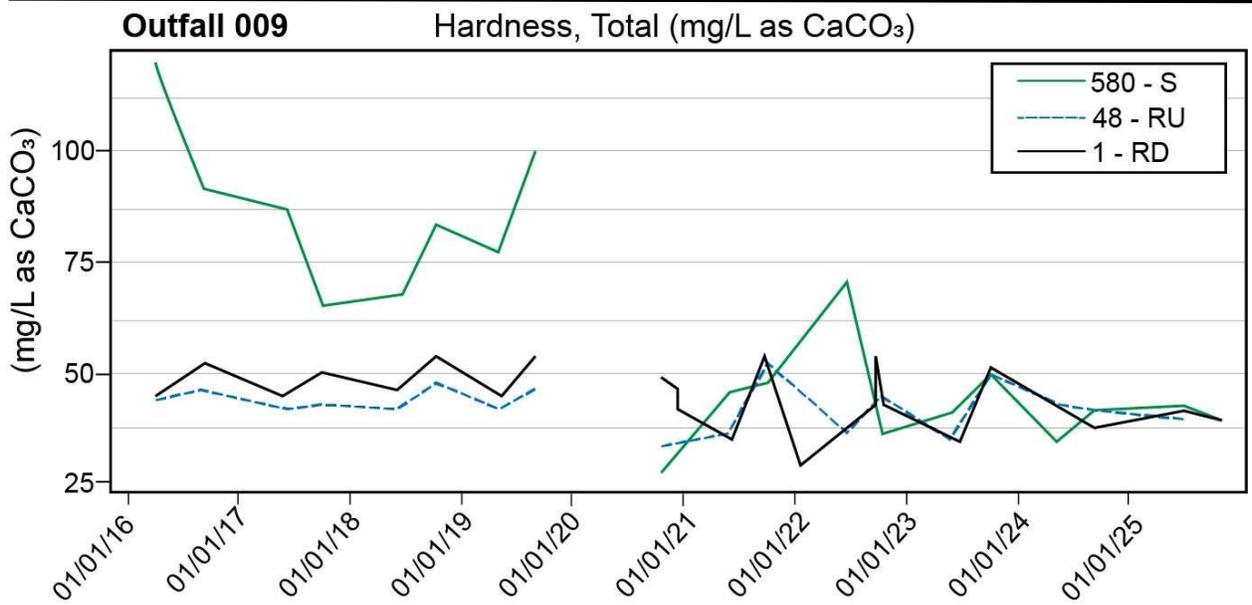




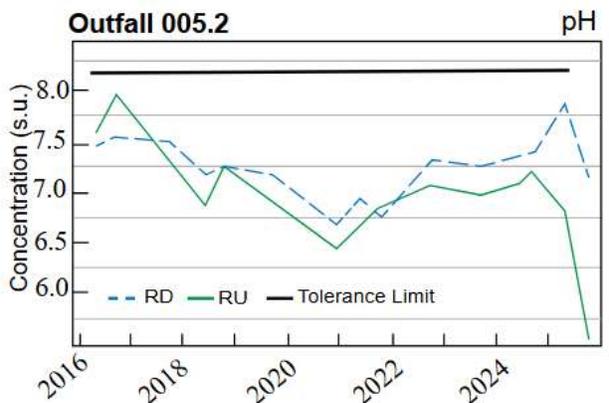
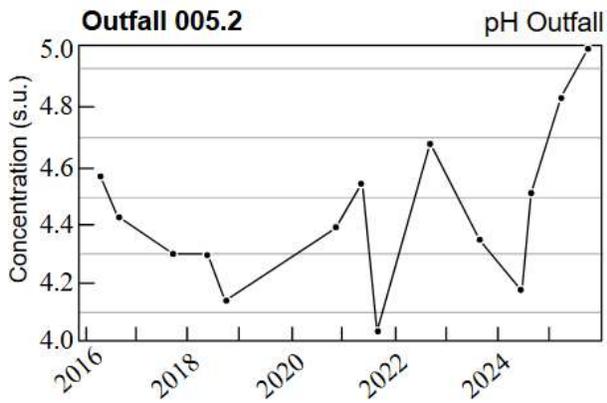
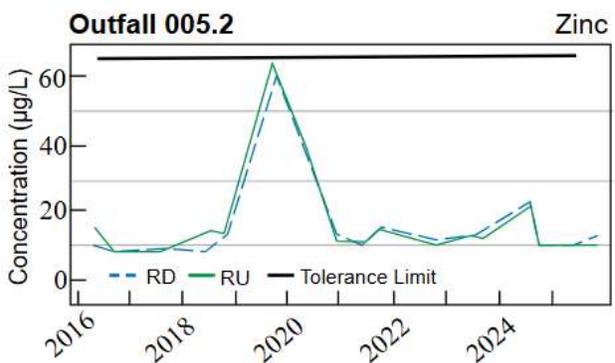
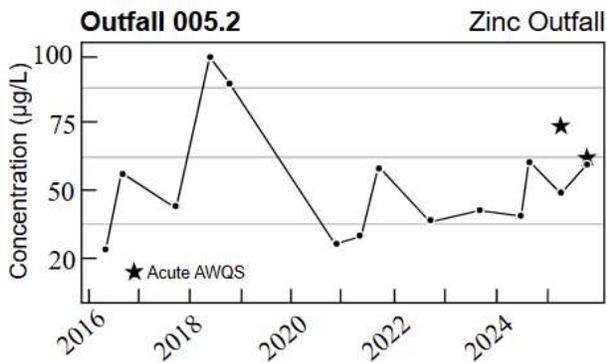
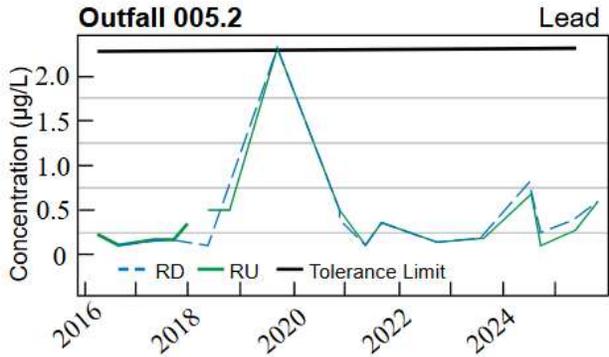
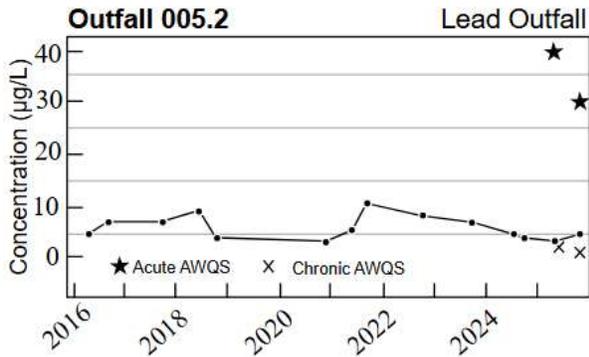




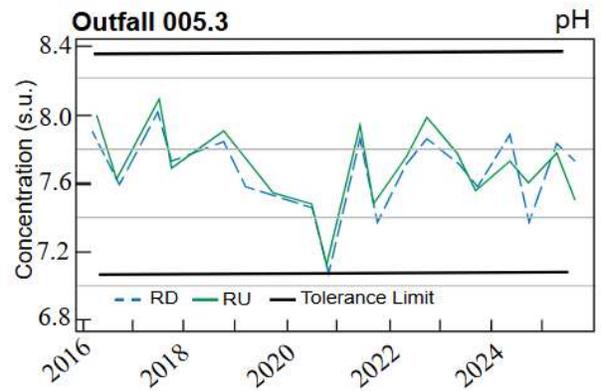
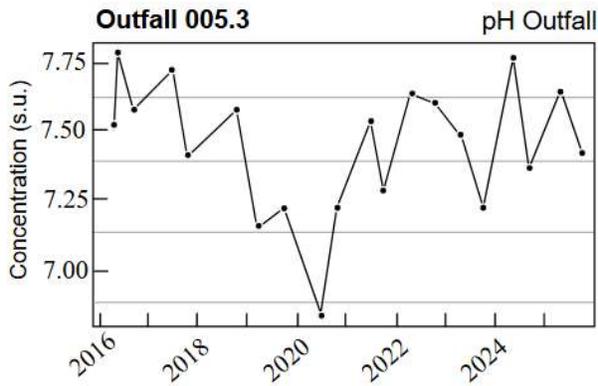
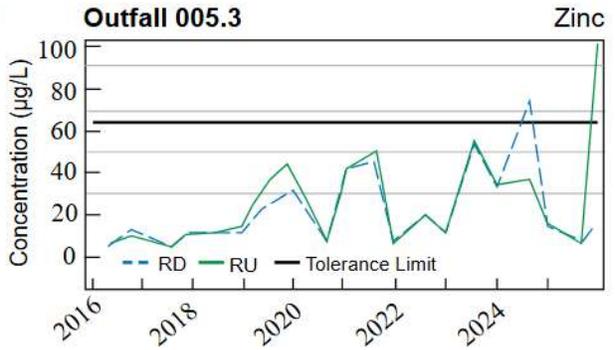
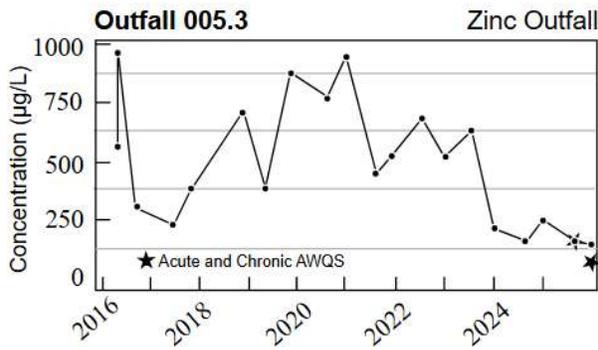
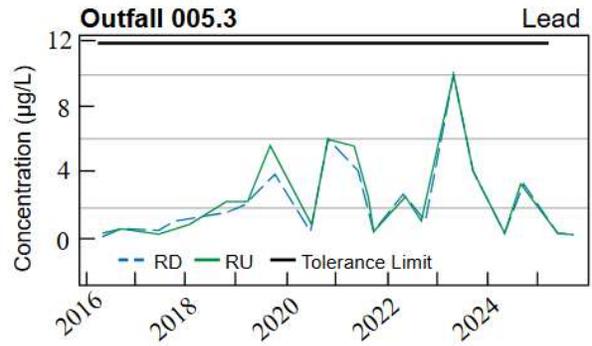
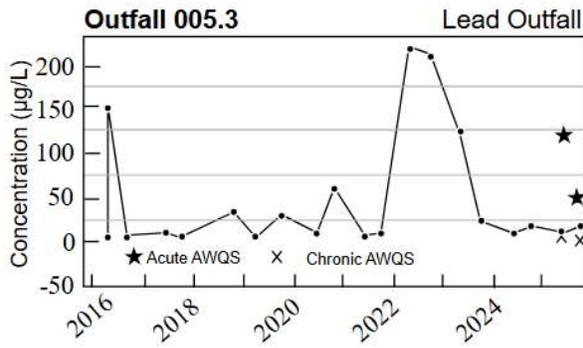




# Outfall 005.2



# Outfall 005.3



# Outfall 009

