

MEMORANDUM

State of Alaska
Department of Fish and Game
Habitat Section

TO: Ken Bouwens
Southcentral Regional Supervisor

DATE: September 3, 2025

SUBJECT: Johnson Tract Monitoring - 2025

FROM: Josh Brekken 
Habitat Biologist

PHONE NO: 267-2113

Alaska Department of Fish and Game (ADF&G) Habitat Biologists Beth Evers and Josh Brekken conducted three days of field surveys in and near the Johnson River Valley. We departed Anchorage via helicopter at 8 am on August 2 and returned to Merrill Field at 130 pm on August 4. The purpose of the effort was to collect samples and water quality data at our established monitoring sites related to the Johnson Tract Project. Water levels were approximately 400 cfs in the Johnson River during our visit, which is low compared to previous sampling periods.

Two aquatic study sites were established in the Johnson River watershed in 2023, one in the mainstem Johnson River and one in Kona Creek (tributary to Johnson River). These sites were revisited and replicate samples and water quality data were collected using the same methods as used in 2023 and 2024. The YSI multiparameter meter probes were calibrated without issues on August 1. However, the pH probe was not working properly in the field (reporting negative pH numbers) and therefore pH was not recorded in 2025. Water quality data from the aquatic studies sites from all years recorded is shown in Table 1. Turbidity in the Johnson River was low as was conductivity in both streams compared to previous years. The water temperature in Kona Creek was also low compared to past measurements.

Table 1. Water Quality Results from ADF&G Aquatic Studies Sites

Site	Temperature (°C)	Conductivity (mS/cm ²)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)
2023					
Johnson River	2.27	36	14.5	6.82	58.8
Kona Creek	7.45	47	12.76	7.16	7.25
2024					
Johnson River	2.23	33	11.72	6.55	93.12
Kona Creek	6.41	34	11.35	6.86	3.51
2025					
Johnson River	2.64	21	14.10	-	26.47
Kona Creek	4.41	21	13.76	-	3.96

Periphyton, aquatic benthic macroinvertebrate (BMI), sediment, and whole fish (Dolly Varden) samples were collected at both aquatic studies sites. Periphyton, macroinvertebrate, and fish-abundance sampling assess productivity while sediment and whole fish analysis were collected for metals analysis. Ten periphyton samples were collected at each site using methods described in Parker (2017). Macroinvertebrates samples were collected using a Hess Sampler (diameter of

33.1 cm and 243 μ m mesh size). Five (5) replicate samples were collected from riffle habitat at each site. Five sediment sample (grab) were collected at each site by scooping fine sediments from along the shoreline. Dolly Varden were collected at each site using baited (roe) minnow traps. Eleven Dolly Varden were collected and retained from the Johnson River site and nine fish were collected and retained from the Kona Creek site. Samples were collected over two days (August 3 and 4). Sediment and whole fish samples have been shipped and received at ACZ laboratories in Colorado. The samples arrived in a cooler within temperature requirements (received at 2.3 C). Periphyton and BMI samples will be sent to Fairbanks for analysis.

Ten minnow traps were set at both sites on the morning of August 2. After setting the traps, we collected periphyton and BMI samples at the Johnson River and then at Kona Creek. Minnow traps were retrieved on the morning of August 3. At the Johnson River site, 12 Dolly Varden were captured between the ten traps. Seven fish were retained for metals analysis. The desired fork length for retained fish is 90-140 mm. The minnow traps were immediately reset to try and catch more fish for analysis (15 is the goal). At the Kona Creek site, seven fish were captured and all seven were retained for analysis. Ten traps were also reset at Kona Creek. At both sites, the minnow traps were set downstream of the original set.

Minnow traps were checked again on the morning of August 4. A total of 29 fish captured in ten minnow traps in the Johnson River. One juvenile coho salmon and 28 Dolly Varden were captured. Four Dolly Varden were retained. The captured coho salmon represents the highest upstream extent of rearing salmon in the Johnson River. While walking between set traps, hundreds of young-of-the-year Dolly Varde were observed in an isolated (low water), shallow side-channel. Fifteen adult coho salmon and five large Dolly Varden were observed holding in pool habitat of the Johnson River, just upstream of the confluence with Kona Creek (Figure 1).

At Kona Creek, eight of the 10 minnow traps were compromised by bear activity (e.g., smashed, pulled from water, and missing). One Dolly Varden was captured and retained from the second set in Kona Creek. We returned to camp after pulling the second set of traps. After storing our gear in the tool shed Connex and completing the camp shut down procedures (e.g., boarding up buildings, shut down generator, turn off propane, ect.) we departed for Anchorage. We returned to Merrill Field around 2:30 pm.

Citations:

Bradley, P. T. 2017. Methods for Aquatic Life Monitoring at the Red Dog Mine Site. Alaska Department of Fish and Game. Technical Report No. 17-09. Fairbanks, Alaska.



Photograph 1 – Setting minnow traps in Johns River side channel.



Photograph 2 – Juvenile coho salmon from upper Johnson River side channel.



Photograph 3 – Dolly Varden retained for analysis from Johnson River.



Photograph 4 – BMI sampling with Hess sampler in the Johnson River.



Photograph 5 – Kona Creek monitoring reach looking downstream.



Photograph 6 – Johnson River monitoring reach looking upstream.



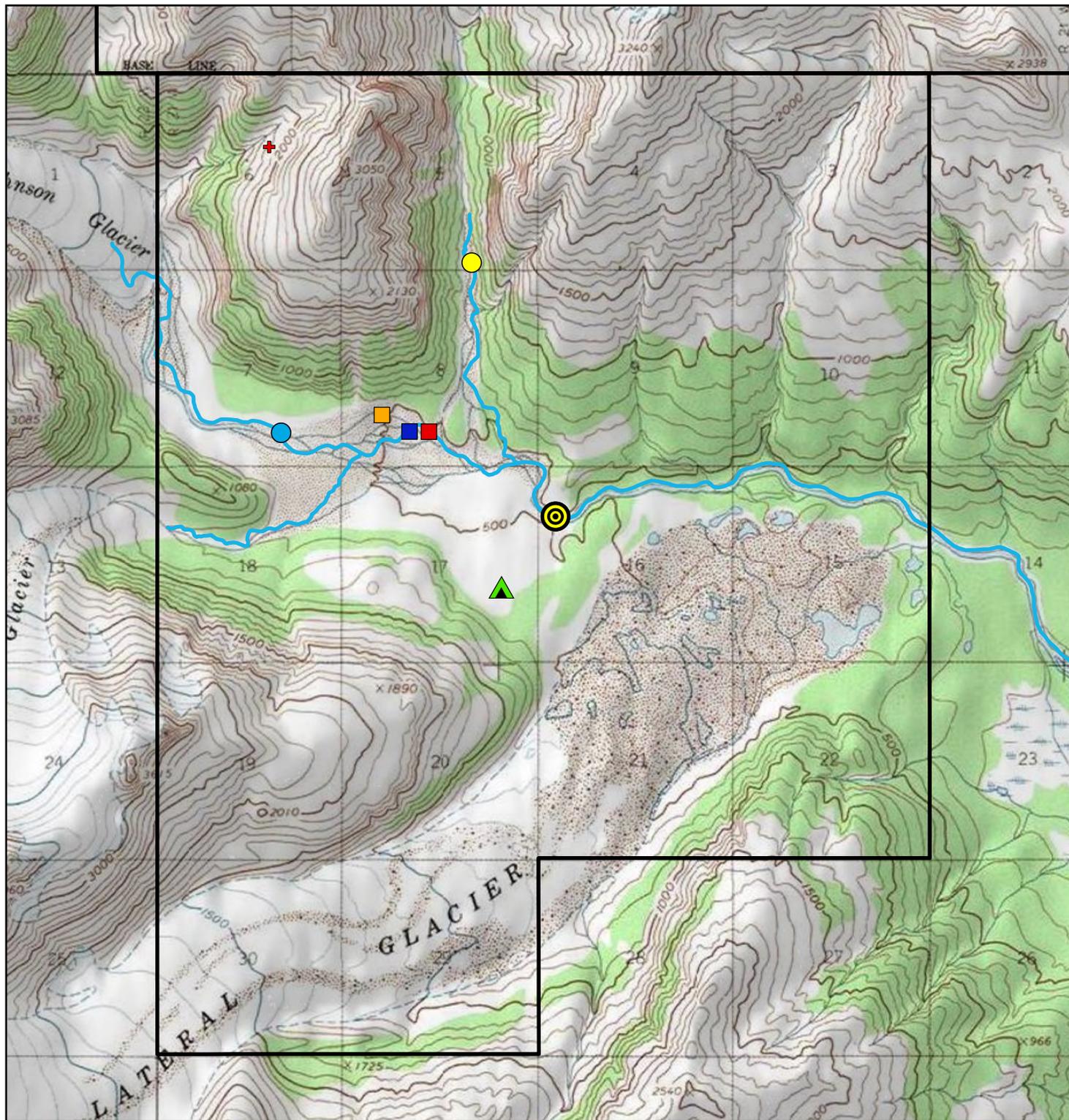
Photograph 7 – Minnow trap set in Kona Creek.



Photograph 8 – Compromised traps from Kona Creek.

Johnson Tract Aquatic Studies 2025

Figure 1



ADF&G Biomonitoring Locations

-  Johnson River
-  Kona Creek
-  Streamgage (JR-1)
-  Johnson Tract Camp
-  Anadromous Waters
-  Johnson Tract Lease Boundaries
-  Johnson Tract Deposit
-  Adult Coho
-  Juvenile Coho
-  YOY Dolly Varden



Map Produced by
the Department of Fish & Game
8/27/2025