

Water Quality Monitoring Strategy

Sawmill Creek, Haines, Alaska

As a part of Takshanuk Watershed Council's 2007 Alaska Clean Water Actions Grant on Sawmill Creek, TWC was to determine the data needs of project partners. Locally, TWC's two main partners are the Alaska Department of Fish and Game (ADF&G) and the Haines Borough. Meetings were held with both partners to discuss water quality concerns and possible directions for future assessment work. Additionally, TWC works with the Department of Environmental Conservation and the US Fish & Wildlife Service. All formatting for data should be usable for project partners and this work will continue to refine with a Quality Assurance Project Plan in the project's next phase. An assessment of the potential of the area to provide drinking water for the Haines water is also desired by the Haines Borough as the current source, Lilly Lake, may prove inadequate in the future. Stormwater mapping is also of interest to the Haines Borough. Currently there is no definitive map of the stormwater drainage network. Knowledge of this system would assist in planning ways to address water quality issues. Here, parameters for monitoring are discussed with partner's concerns.

Sediment Accumulation and Turbidity

Sedimentation is a concern as the quality of Sawmill Creek as a spawning ground is dependent on access of adult fish to gravel beds. Currently many of these graveled areas are being smothered with from sediment from the sources discussed elsewhere in this report. An associated concern is the turbidity levels in the creek. TWC sees actions such as mapping the discharge of storm water culverts into the system and developing recommendations for sediment basins or end-of pipe detention. ADF&G and USFWS support further study of the problem and actions being taken to alleviate the problem.

A visual survey of creek branches in different flow states would provide a rough picture of sediment sources. Use of a turbidity meter would provide numerical data. In addition, repeated measurement of substrate embeddedness at set points would provide information on sediment accumulation over time. TWC would also consider a bulk-sample sieve analysis either sieved by hand or sent to an engineering soils lab.

Fecal Coliform Contamination

Horse stabling near the creek has led to dumping of feces laden sawdust in at least four locations along Sawmill Creek. In addition, the presence of household septic systems in the sub-basin may be contributing to fecal pollution of the creek.

The Haines Borough Planning Department is interested in an assessment of the extent and nature of sewage handling beyond that portion of the sub-basin served by the borough's sewage lines. Fecal coliform testing of the creek at several locations would give a picture of the extent and severity of these problems. Such testing is requested by ADF&G and of interest to the borough as well. These issues were similarly evaluated recently with TWC's work on Holgate Creek.

Water Quality Parameters

Dissolved oxygen (DO), water temperature, pH, conductivity and oxidation-reduction potential (ORP) are basic parameters which should be monitored at set sampling points over time using a multimeter. These parameters have bearing on the quality of habitat for fish and invertebrates

Water Temperature

Riparian vegetation influences water quality by reducing water temperature, runoff rates and with it erosion. An assessment of areas which could benefit from revegetation is requested by ADF&G.

Hydrocarbon Levels

Given the extensive road network in the sub-basin runoff almost certainly contains hydrocarbons from automotive fluids. Water quality testing for hydrocarbons at a point downstream of the road network would give a gross indication of the severity of this problem. The possibility of road rerouting and other transportation modifications to avoid negative impacts on fisheries was another request of ADF&G.

Water Quantity

ADF&G is primarily concerned at this time with insuring instream flow levels adequate to support resident fish populations. As such, ADF&G and TWC have been working together to gather data for the past two years at a monitoring site on Sawmill Creek. In the next year's ACWA grant, TWC will be taking full responsibility for these actions and will report data to ADF&G and DEC as requested.

TWC will maintain the continuous recording of stream level information using the in-place data logger near Sawmill Road. We will cross check the accuracy of the logger by monitoring stream levels with a staff gauge and will perform periodic stream flow measurement with a minimeter for correlation with logger output.