

September 22, 2015

EDI Project No: 15Y0146

Assessment and Abandoned Mines Branch (AAM) K-149
Department of Energy, Mines and Resources, Yukon Government
Room 2C Royal Center, 4114-4th Avenue
PO 2703, Whitehorse, YT, Y1A 2C6

Attention: Erik Pit, Type II Project Manager

RE: Mount Nansen Water Resources Investigations – Field Memo: September 14-16, 2015

The following memo is a brief field update from EDI's September 2015 trip to Mount Nansen; sampling conducted as part of the 2015/16 Water Resources Investigations. This memo provides a record of site conditions and tasks that were completed at each hydrometric station and water quality site (see attached tables). A detailed monthly report on the data collected during the trip will be provided once the water quality lab results are received and all data has been checked for quality assurance/quality control.

Trip Dates:	September 14 - 16, 2015
EDI Field Staff:	Scott Dilling, Brodie Smith and Danny Skookum
Weather conditions during monitoring:	Conditions for the three days included air temperatures from 1 – 10 °C, with partly cloudy to overcast skies and calm to light wind conditions.
Any changes to project scope, schedule or budget:	The next trip is scheduled for October 13-15. This trip included additional sampling in the Upper Dome Creek/Mill Site area, where 7 additional samples were collected. These will be covered by the contingency fund in the budget.
Additional Comments:	Water levels appeared higher than last trip at most sites and stations. Back Creek continues to have flow, along with WQ-DC-DX+105. Active placer mining construction works continue along Pony Creek, upstream of the WQ-PC-U site, resulting in high sediment loads downstream to the two water quality sites and hydrometric station. A constant flow of water over the dam embankment was present during the site trip and no pumping from the settling pond was observed.
Wildlife Sightings:	None.
Site concerns (safety):	None.



Table 1. Summary of hydrometric program tasks completed and station conditions during the September 14-16, 2015 sampling event.

HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
ATM-VC5	None	Barometric logger was downloaded.
H-DC-DX+105	Volumetric	Volumetric discharge measurement was made. Water level moderate with some light turbidity. Minimal algae growth in channel
H-DC-D1b	Volumetric	Volumetric discharge estimate was made with a minor portion of the flow unable to be captured due to channel conditions. Water continues to go to ground downstream of measurement site.
H-DC-B	Salt Tracer	Salt tracer measurement was collected. The logger was winterized.
H-DC-M WP	Volumetric	Volumetric discharge measurement was made at downstream end of weir. Large volume of sediment has accumulated in the weir pond, and a small channel has formed containing all the flow. The staff gauge and logger were buried in sediment above the water level. An effort was made to excavate accumulated sediment around the staff gauge and weir. Sediment was flushed from inside the stilling well. Additional excavations are required prior to winter. There was evidence of water flowing around weir pond from a recent high flow event. The logger was winterized.
H-DC-R	Salt Tracer	Flow too high for a volumetric flow measurement. Salt tracer measurement was completed. The logger was winterized.
H-VC-U	ADV	Velocity-area discharge measurement completed using an ADV. Water level moderate. The logger was winterized. This station requires direct read cable, which will be installed in October, 2015.
H-BC	Salt Tracer	Water flow was moderate with turbid water. Salt tracer measurement was completed for discharge measurement. The logger was winterized.
H-VC-DBC	ADV	Velocity-area discharge measurement completed using an ADV. Water level moderate, and water was moderately turbid from Back Creek influence. The logger was winterized.
H-VC-UMN	ADV	Velocity-area discharge measurement completed using an ADV. Water level continues to be moderate. The logger was winterized.
H-VC-R	ADV	Velocity-area discharge measurement completed using an ADV. Flushed sediment from well. The logger was winterized. Station will remain in place until spring 2016 to collect concurrent data with H-VC-R+290.
H-VC-R+290	None	A new station was established downstream of the H-VC-R station, using data logger sourced from H-PC-DSP and a stilling well, staff gauge and 3 benchmarks. The logger was winterized. This station requires a direct read cable, which will be installed in October, 2015.
H-SEEP	Volumetric	Volumetric measurement collected in addition to reading of the flow meter in the seepage pond shack.
H-TP	None	Water level remains low, but has risen since the last visit. Staff gauges were still above water level elevation, but now less than 1



HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
		m of dry material is present behind staff gauges.
H-PC-DSP	Volumetric	Water flowing through culvert with moderate flow and moderate turbidity. Volumetric measurement was collected. The logger, well and staff gauge were removed. Active placer mining activity upstream of road including operation of settling pond. No water being pumped from pond at time of station visit. Water flowing over top of pond embankment and through channel. Large amount of accumulated fine sediment in the rock weir pond and within the stilling well. Station was removed for the winter season and logger was moved to the H-VC-R+290 station.
H-PW	Volumetric	Volumetric discharge measurement was made at end of discharge pipe.

Table 2. Summary of water quality program tasks completed and site conditions during the September 14-16, 2015 sampling event.

WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-SEEP	Yes	Moderate flow rate from pipe; regular sample and LC50 sample collected.
WQ-TP	Yes	Very low water level in pond, although slightly higher than last trip (August 2015). Light turbidity.
WQ-DC-DX	Yes	Water level moderate with some moderate turbidity.
WQ-DC-DX+105	Yes	Water level moderate with some light turbidity. Minimal algae growth in channel.
WQ-MS-S-03	Yes	Sampled as part of extra sampling (not scheduled for regular sampling). See section below for information.
WQ-MS-S-08	No	No surface flow.
WQ-DC-D1b	Yes	Moderate flow in channel with light turbidity.
WQ-DC-B	Yes	Moderate flow in channel with moderate turbidity.
WQ-DC-U	Yes	Moderate flow in channel with moderate turbidity.
WQ-DC-R	Yes	Moderate flow in channel with light turbidity.
WQ-CH-P-13-01	Yes	Moderate flows with clear water.
WQ-LW-SEEP-01	No	Seep dry; no samples collected. No evidence of recent flow.
WQ-DESS-01	No	Sampling not scheduled for this trip. Site is scheduled for October 2015 trip.
WQ-DESS-02	No	Sampling not scheduled for this trip. Site is scheduled for October 2015 trip.
WQ-DESS-03	No	Sampling not scheduled for this trip. Site is scheduled for October 2015 trip.
WQ-BC	Yes	Water level high with high turbidity. Likely related to placer mining



WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
		operations upstream.
WQ-VC-U	Yes	Water levels moderate, with light turbidity. Higher turbidity water visible at confluence with Back Creek downstream of sampling site.
WQ-VC-DBC	Yes	Water levels moderate, with moderate turbidity.
WQ-VC-UMN	Yes	Water levels moderate, with moderate turbidity.
WQ-VC-R	Yes	Water level moderate with moderate turbidity.
WQ-VC-R+150	No	This is the winter/early spring sampling location - samples are collected from WQ-VC-R during the open water season.
WQ-PW	Yes	Drinking water sample and bacteriological sample collected from pipe outlet.
WQ-ADIT-SEEP	No	Seep dry; no samples collected.
WQ-PC-U	Yes	Moderate flow with moderately turbid water.
WQ-PC-D	Yes	Moderate flow with moderately turbid water.
Quality Assurance/Quality Control Samples		
Field Replicate 1	Yes	Collected from WQ-DC-R-r.
Field Replicate 2	Yes	Collected from WQ-VC-U-r.
Field Blank	Yes	Sample bottles filled with deionized water supplied by ALS; samples were filtered and preserved as instructed. Collected at WQ-DC-B.
Travel Blank	Yes	Samples provided by lab and were transported to and from site.
Additional Upper Dome Creek/Mill Site Investigations		
WQ-MS-S-03	Yes	Moderate flow at site with significant algae growth along channel.
WQ-DC-8	Yes	Site is upstream of WQ-DC-D1b. Moderate flow, light turbidity, surrounding vegetation and sediment orange in colour.
WQ-DC-10	Yes	Site is downstream of WQ-DC-11 and WQ-MS-S-03. Moderate flow with clear water, orange colour deposits on substrate.
WQ-DC-11	Yes	Site is downstream of WQ-DC-DX+105. Moderate flows, clear water.
WQ-DC-12	No	Sampling not scheduled for this trip.
WQ-DC-13	No	Sampling not scheduled for this trip.
WQ-DC-14	Yes	Site is upstream of WQ-DC-DX+105. Low flows, clear water.
WQ-MS-S-A	Yes	Moderate flow with clear water, orange colour deposits on substrate.
WQ-DC-15	Yes	Created new site between WQ-DC-14 and WQ-DC-DX+105. Located at site of possible groundwater seepage.