

October 19, 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: October 13-15, 2015

The following memo is a brief field update from EDI's October 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:	October 13 - 15, 2015
EDI Field Staff:	Scott Dilling, Brodie Smith and Danny Skookum
Weather conditions during monitoring:	Conditions for the three days included air temperatures from -5 to 3°C, with clear to partly cloudy skies and calm to light wind conditions.
Any changes to project scope, schedule or budget:	The next trip is scheduled for November 16-18, 2015, and will represent the beginning of the winter season (end of the open water season Oct 15, 2015). The October 2015 trip included additional sampling in the Upper Dome Creek/Mill Site area, where 6 additional samples were collected. This sampling 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. Placer mining construction works have stopped on Pony Creek, upstream of the WQ-PC-U site. The settling pond remains in place with a constant flow of water over the embankment. No pumping of water from the pond was observed. Multiple pieces of heavy equipment remain on site.
Wildlife Sightings:	None.
Site concerns (safety):	None.



Table 1. Summary of hydrometric program tasks completed and station conditions during the October 13-15, 2015 sampling event.

HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
ATM-VC5	None	Barometric logger was downloaded. Small lens of ice at bottom of logger within the storage tube. Logger sensor not affected and data record was intact thus no concerns.
H-DC-DX+105	Volumetric	Volumetric discharge measurement was collected using volumetric method. Water level moderate with clear water. Some ice forming along the stream banks. 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. Water level moderate with light turbidity. Some ice forming along stream banks.
H-DC-B	Salt Tracer	Salt tracer measurement was collected. Water level low with clear water. The stilling well, logger and benchmarks were removed for the winter. Most of channel full of ice with a few small open leads.
H-DC-M-WP	Volumetric	Volumetric discharge measurement was made at downstream end of weir. Water level low with light turbidity. Some ice forming along stream banks above and below the weir pond. A large volume of sediment has accumulated in the weir pond, and a small channel has formed containing all the flow. Sediment outside of main channel was frozen and could not be excavated. One hour was spent excavating sediment within the channel in the weir pond. Sediment was flushed from inside the stilling well.
H-DC-R	Salt Tracer	Flowrate too high for a volumetric flow measurement. Salt tracer measurement was completed. Moderate flowrate with light turbidity and channel covered with a thin layer of ice. The stilling well, staff gauge and logger were removed for the winter period.
H-VC-U	ADV	Velocity-area discharge measurement completed using an ADV. Water level low with clear water. Some ice forming along stream banks. Direct read cable installed. Two additional horizontal support arms were installed on the stilling well.
H-BC	Salt Tracer	Salt tracer measurement was completed. Water level was low with light turbidity. Ice forming along stream banks, and fully covering channel in some places. Ice was cleared from channel before conducting discharge measurements.
H-VC-DBC	ADV	Velocity-area discharge measurement completed using an ADV. Water level low, and water was clear. Some ice forming along the stream banks.
H-VC-UMN	ADV	Velocity-area discharge measurement completed using an ADV. Water level moderate with clear water. Some ice forming along stream banks.
H-VC-R	ADV	Velocity-area discharge measurement completed using an ADV. Water level moderate, and water was clear. Some ice forming along the stream banks. Sediment was purged from the well. This station will remain in place until spring 2016 to collect concurrent data with H-VC-R+290.
H-VC-R+290	ADV	Velocity-area discharge measurement completed using an ADV. Water



HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
		level moderate, and water was clear. A direct read cable was installed, and the logger was re-winterized. Newly installed well was very stable and no modifications were needed. The sediment in the well was purged.
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. The entire tailings pond was covered in ice at least 5 cm thick.
H-PC-DSP	Volumetric	Water flowing through culvert with low flow and light turbidity. Placer mining activity upstream of road has stopped. No water being pumped from pond at time of station visit. Volumetric measurement was collected. Thick ice at culvert and downstream of culvert, with multiple layers of overflow.
H-PW	Volumetric	Volumetric discharge measurement was made at end of discharge pipe. Some ice forming at pipe outflow.

Table 2. Summary of water quality program tasks completed and site conditions during the October 13-15, 2015 sampling event.

WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-SEEP	Yes	Moderate flow rate from pipe. No ice forming at site.
WQ-TP	Yes	Very low water level in pond, although slightly higher than last trip (September 2015). Light turbidity. Entire pond covered with ice, approximately 5 cm thick.
WQ-DC-DX	Yes	Water level very low with clear water. Channel is covered with ice.
WQ-DC-DX+105	Yes	Moderate flow with clear water. Minimal algae growth in channel. Some ice forming along stream edges.
WQ-MS-S-08	No	No surface flow.
WQ-DC-D1b	Yes	Moderate flow with light turbidity. Some ice forming along stream banks.
WQ-DC-B	Yes	Low flow with light turbidity. Most of channel covered with ice.
WQ-DC-U	Yes	Low flow with light turbidity. Some ice forming along stream banks.
WQ-DC-R	Yes	Moderate flow in channel with light turbidity. Some ice forming along stream banks.
WQ-CH-P-13-01	Yes	Low flow with light turbidity. Some ice forming along stream banks.
WQ-LW-SEEP-01	No	Seep dry; no samples collected. No evidence of recent flow.
WQ-DESS-01	Yes	Low flow with light turbidity. Some ice forming around sample site.
WQ-DESS-02	No	Insufficient water to collect sample. Soil is wet, but no surface flow.
WQ-DESS-03	No	No surface flow.



WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-BC	Yes	Low flow with light turbidity. Some ice forming along stream banks.
WQ-VC-U	Yes	Low flow with clear water. Some ice forming along stream banks.
WQ-VC-DBC	Yes	Low flow with clear water. Some ice forming along stream banks.
WQ-VC-UMN	Yes	Moderate flow with clear water. Some ice forming along stream banks.
WQ-VC-R	Yes	Moderate flow with clear water. Some ice forming along stream banks.
WQ-VC-R+150	No	This is the winter/early spring sampling location - samples collected from WQ-VC-R until ice thickness becomes prohibitive for sampling.
WQ-PW	Yes	Drinking water sample and bacteriological sample collected from pipe outlet. Some ice forming at pipe outflow.
WQ-ADIT-SEEP	No	Seep dry; no samples collected.
WQ-PC-U	Yes	Low flow with light turbidity. Some ice forming along stream banks.
WQ-PC-D	Yes	Low flow with light turbidity.
Quality Assurance/Quality Control Samples		
Field Replicate 1	Yes	Collected from WQ-VC-UMN-r
Field Replicate 2	Yes	Collected from WQ-DC-B-r
Field Replicate 3	Yes	Collected from WQ-DC-DX+105-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 with clear water. Some ice forming along stream banks.
WQ-DC-8	Yes	Site is upstream of WQ-DC-D1b. Moderate flow with light turbidity. Channel covered with ice, approximately 3 cm thick.
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. Ice is forming on the pipe and along some the stream edges.
WQ-DC-11	Yes	Site is downstream of WQ-DC-DX+105. Moderate flows with clear water. Some ice forming along stream banks.
WQ-DC-12	No	Sampling not scheduled for this trip.
WQ-DC-13	No	Sampling not scheduled for this trip.
WQ-DC-14	No	Site is upstream of WQ-DC-DX+105. No surface flow. Thin layer of ice in channel.
WQ-MS-S-A	Yes	Low flow with moderate turbidity, orange colour deposits on substrate. Channel mostly covered with ice.
WQ-DC-15	Yes	Site is between WQ-DC-14 and WQ-DC-DX+105. Located at site of possible groundwater seepage. Moderate flows with clear water. Some ice forming along stream edges.