

April 27, 2015

EDI Job Number: 15-Y-0146

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: Josée Perron, Senior Project Manager

Re: Mount Nansen Water Resources Investigations – Field Memo: April 2015

The following memo is a brief field update from EDI's April 2015 trip to Mount Nansen as part of the 2015/16 Water Resources Investigations. This memo provides a record of site conditions and what tasks were completed at each hydrometric station and water quality site (see attached tables). A more detailed monthly report on the data collected during the trip will be provided once the water quality lab results have been received.

Trip Dates:	April 20-22, 2015
EDI Field Staff:	Joel MacFabe, Brett Pagacz and Danny Skookum
Weather conditions during monitoring:	Weather conditions were mostly cloudy, with light winds and temperatures above zero degrees (up to 4°C).
Any changes to project scope, schedule or budget:	None. All sampling and monitoring was conducted within scope.
Additional Comments:	<p>Conditions are currently transitioning from winter to spring. Ice on upper Victoria Creek has melted and water levels are higher than the previous March 2015 trip. Snow around the Mount Nansen Site has also melted significantly from the previous trip, particularly on south slopes and banks. The Diversion Channel was flowing, while other sites on Dome Creek remain frozen to substrate and were not suitable for sampling.</p> <p>Water is flowing across the Mount Nansen Road crossing of Victoria Creek and through the second smaller culvert, with water pooling in the parking area near the H-VC-R station and entering the creek at the stilling well location. There is still significant ice up and downstream of the road crossing.</p> <p>The Back Creek area is still covered in over 1 m of ice. Some of the ice is still extending towards Victoria Creek at the WQ-VC-U site. More details will be provided in the monthly report.</p>
Wildlife Sightings:	Willow ptarmigan (Dome Creek valley).
Site concerns (safety):	None



Table 1. Summary of hydrometric program tasks completed for the April 20-21, 2015 trip.

HYDROLOGY

Station	Hydrometric Measurement Type	Notes & Comments
ATM-VC5	None	Barometric logger was downloaded.
H-DC-DX+105	None	Channel is frozen to bed – no water present.
H-DC-D1b	None	Frozen to substrate for winter season.
H-DC-B	Salt Tracer	A stream channel was flowing on top of ice surface. Salt tracer measurement was collected.
H-DC-M/ H-DC-M WEIR	None	The weir is entirely under ice and overflow ice extends up and downstream of the weir pond. Some water from the diversion channel and seepage discharge is flowing on top of ice, but in multiple braided channels and through various ice layers. Not suitable for measurement. Weir pond logger was downloaded.
H-DC-R	None	Frozen to substrate (typical of the winter season).
H-VC-U	Mid-Section (ADV)	Water levels have increased from the March 2015 trip and there was more open water. Crew completed discharge measurements with ADV. Also assessed new location for stilling well installation.
H-BC	None	Significant overflow ice is still present at the site. The entire stilling well was below the ice and there is no definition of the channel as the entire area is covered, including adjacent forested areas. Not suitable for measurement.
H-PW	Volumetric	A volumetric measurement was collected from the outflow pipe.
H-VC-DBC	ADV	Water levels have increased from March 2015 trip. Channel still covered in ice and snow. Conducted ADV cross section and downloaded logger.
H-VC-UMN	None	Water flowing over top of ice, creating high water levels (stilling well is nearly underwater). There appears to be a backwatering effect going on (likely from ice build-up at the Victoria Creek crossing). This created conditions not suitable for salt tracers or mid-section method. The logger was downloaded. No staff gauge reading could be collected due to ice effects on water levels.
H-VC-R	ADV	Channel was completely ice covered in the vicinity of the station; however, some water is flowing through the small culvert and into the parking area near the station. ADV cross section was conducted at the same location as the winter previous visits. There was more open water at this location up and downstream of the transect. The water level logger was downloaded, but no staff gauge reading could be collected due to ice effects on water levels.
H-SEEP	Totalizer, Volumetric	Volumetric measurement collected in addition to reading of the flow meter in the seepage pond shack. Overflow conditions continue to be observed downstream of the seep, extending upstream from H-DC-M.
H-TP	None	AAM requested that EDI remain off the pond due to safety concerns with ice.
H-PC-DSP	None	Frozen to substrate (typical of the winter season).



Table 2. Summary of water quality program tasks completed for the April 20-21, 2015 trip.

WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-PIT-1	Yes	Total depth at sampling location 4.3 m, ice 1.11 m thick. Took top sample from below bottom of ice surface using Kemmerer sampler (0.30 m).
WQ-PIT-2	Yes	Took middle sample from 2.0 m below bottom of ice surface using Kemmerer sampler.
WQ-PIT-3	Yes	Took bottom sample from 4.0 m below bottom of ice surface using Kemmerer sampler.
WQ-SEEP	Yes	Conditions normal, water free flowing from pipe outlet. Water also collected for LC50 and LT50 tests.
WQ-TP	No	The pond is covered in ice with some melt water on the surface. AAM requested that EDI remain off the pond due to safety concerns.
WQ-DC-DX	No	Frozen to substrate (typical of the winter season).
WQ-DC-DX+105	No	Creek frozen to substrate.
WQ-MS-S-03	Yes	Open water at site. Ice 2-10 cm thick. Some turbidity.
WQ-DC-D1b	No	Frozen to substrate with overflow ice (typical of the winter season).
WQ-DC-B	Yes	A stream channel was flowing on top of ice surface. Conditions were suitable for sample collection.
WQ-DC-U	No	The water sampling site is completely under ice (old stilling well just barely showing). There is some water from the diversion channel and seepage discharge is flowing on top of ice, but in multiple braided channels and through various ice layers. Not suitable for measurement.
WQ-DC-R	No	Frozen to substrate (typical of the winter season).
WQ-BC	No	Significant overflow still covering the entire channel (stilling well completely under ice, actual stream channel undefined) and extending laterally into the surrounding forest towards both parking area and Victoria Creek. No flow heard or observed – no sampling.
WQ-VC-U	Yes	Sample collected from regular location. Flow levels have increased from the previous trip. Ice on banks is approximately 5 cm thick. Water light grey in colour. Some ice from Back Creek is still present upstream of sample site.
WQ-VC-DBC	Yes	Sample collected from regular location. More open water and higher water levels than March 2015 trip. Water light grey in colour.
WQ-VC-UMN	Yes	Sample collected from regular location. Water flowing over top of ice. Water more clear than upstream sites.
WQ-VC-R	No	Winter samples are collected from the WQ-VC-R+150 site due to thick overflow ice at the WQ-VC-R site during the winter.
WQ-VC-R+150	Yes	Samples were collected from the regular winter sampling location - WQ-VC-R+150 (downstream of road crossing ~150 m). Flow levels had increased from the previous trip. Ice was 3-5 cm thick at sampling location. Water clear.
WQ-PW	Yes	Drinking water samples and bacteriological samples collected.



WATER QUALITY

Site	Sampled? (Yes/No)	Notes / Explanations
WQ-PC-U	No	Frozen to substrate (typical of the winter season).
WQ-PC-D	No	Frozen to substrate (typical of the winter season).
Quality Assurance/Quality Control Samples		
Field Replicate 1	Yes	Collected from WQ-VC-UMN.
Field Blank	Yes	Sample bottles filled with deionized water supplied by ALS. Filtered and preserved as instructed.
Travel Blank	Yes	Samples provided by lab and were transported to and from site.