May 14, 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: Erik Pit, Type II Project Manager

**Re: Mount Nansen Water Resources Investigations – Field Memo: Early-May Trip 2015**

The following memo is a brief field update from EDI’s early-May 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 detailed monthly report on the data collected during the trip will be provided once the water quality lab results are received.

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| **Trip Dates:** | May 4-6, 2015 |
| **EDI Field Staff:** | Dawn Hansen, Brett Pagacz and Danny Skookum |
| Weather conditions during monitoring: | Weather conditions were a mix of sun and cloud, light winds and temperatures above zero degrees (0 to 7°C). |
| **Any changes to project scope, schedule or budget:** | None. All sampling and monitoring was conducted within scope. |
| **Additional Comments:** | Conditions were representative of early-spring, with many sites and stations now flowing and with higher water levels than the previous trip. Site has not reached peak flows yet. Peak freshet will likely occur in the following week. Ice cover has melted significantly since the last trip.  Portions of Back Creek are now flowing over the ice and ground surface into Victoria Creek upstream of the regular confluence (at multiple locations); with potential impacts to the WQ-VC-U sample collected this trip. |
| **Wildlife Sightings:** | Black Bear seen during drive from Carmacks to Mount Nansen Site. |
| **Site concerns (safety):** | None |

1. Summary of hydrometric program tasks completed for the May 4-6, 2015 trip.

| HYDROLOGY | | |
| --- | --- | --- |
| Station | **Hydrometric Measurement Type** | **Notes & Comments** |
| ATM-VC5 | None | Barometric logger was downloaded. |
| H-DC-DX+105 | Volumetric | Volumetric measurement was collected. Some ice upstream and downstream of sample site. Open lead at site. |
| H-DC-D1b | None | Still significant ice at station. Water flowing through multiple braided channels – not suitable for discharge measurement. |
| H-DC-B | Salt Tracer | Salt tracer measurement was collected. Water was flowing through main channel with only some ice present on right downstream bank. New well and staff gauge installed and measured (Latitude 62.04293, Longitude -137.11277), surveyed, and installed new Solinst Edge logger. |
| H-DC-M/ H-DC-M WEIR | None | The weir is still encased under the ice and overflow ice extends up and downstream of the weir pond. Some water from the diversion channel and seepage discharge is flowing under the ice, but in multiple braided channels and through various ice layers. Not suitable for measurement. Weir pond logger was downloaded. |
| H-DC-R | None | Not suitable for measurement, due to multiple braided channels running above and under ice surface. |
| H-VC-U | ADV | Water levels have increased from the April 2015 trip and there was more open water. Ice remains along the sides of the channel. Crew completed discharge measurements with ADV. |
| 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. Upstream of the station there is some melt water flowing across the valley area, and entering Victoria Creek in several spots upstream of the regular confluence. |
| H-PW | Volumetric | Volumetric measurement was collected from the outflow pipe. |
| H-VC-DBC | ADV | Water levels have increased from the April 2015 trip. Channel still covered in ice and snow in some sections. Conducted ADV cross section, downloaded logger, conducted staff gauge reading, and replaced logger with new Solinst Edge. |
| H-VC-UMN | ADV | Some of the ice downstream of the sample site has melted from the previous trip, however there may still be some backwater effect (impacting the stage recorded by the logger). Downloaded logger. Found suitable location for ADV cross section that appears to be unaffected by backwater effect. |
| H-VC-R | ADV | Channel was mostly ice covered in the vicinity of the station; however, some water was flowing through the small culvert and into the parking area near the station (similar to last trip). The amount of water in the parking lot was more than the April 2015 trip. ADV cross section was conducted in open water areas a few meters down from regular location. The water level logger was downloaded, staff gauge reading collected, and the logger was replaced with a new Solinst Edge logger. |
| 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 | Staff gauge reading could not be completed, because the staff gauge is not in the water. |
| H-PC-DSP | Volumetric | Volumetric measurement was collected. Good flow was present out of the culvert. |

1. Summary of water quality program tasks completed for the May 4-6, 2015 trip.

| **WATER QUALITY** | | |
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| **Site** | Sampled?  (Yes/No) | Notes / Explanations |
| WQ-PIT-1 | No | Sampling not scheduled for May – ice safety concerns. |
| WQ-PIT-2 | No | Sampling not scheduled for May – ice safety concerns. |
| WQ-PIT-3 | No | Sampling not scheduled for May – ice safety concerns. |
| WQ-SEEP | Yes | Conditions normal, water free flowing from pipe outlet. LC50 could not be collected due to lab not having sufficient fish stock for the test. |
| WQ-TP | Yes | The pond is covered in ice with some melt water on the surface. Chipped through multiple layers of ice to collect sample. |
| WQ-DC-DX | Yes | Ice covering sample site. Had to chip away ice to access water flowing beneath. |
| WQ-DC-DX+105 | Yes | Some ice upstream and downstream of sample site. Open lead at site. |
| WQ-MS-S-03 | Yes | Some ice upstream and downstream of sample site. Open lead at site. |
| WQ-MS-S-08 | No | Site was frozen – not suitable for sampling. |
| WQ-MS-S-A | Yes | Opportunistic mill seep sample. Sample collected from narrow open channel present on slope down valley from mill (seep flows northwest to southeast across a bench). UTM 08V E 387951.8, N 6881103.4. |
| WQ-DC-D1b | Yes | Ice cover still at site. However, water was flowing under a thin layer at the sample location and was easily removed to expose water for sample collection. |
| WQ-DC-B | Yes | Channel mostly open, with some ice along right downstream bank. |
| WQ-DC-U | Yes | Sample taken from open channel in middle of stream near regular location. Stream is flowing over ice. Thick ice and snow still covering areas (stilling well top just exposed). |
| WQ-DC-R | Yes | Ice covering sample site. Had to chip away ice to access water. Good flow beneath ice. |
| WQ-CH-P-13-01 | Yes | Small trickle of water present at sample site– suitable for collection. Similar flow to WQ-DESS-01. |
| WQ-DESS-01 | Yes | Small trickle of water present at sample site – suitable for collection. Flow estimated at 0.22 L/s. |
| WQ-DESS-02 | No | Frozen to substrate – not suitable for sampling. |
| WQ-DESS-03 | Yes | Slow trickle of water present at sample site– suitable for collection. Flow estimated at 0.37 L/s. |
| WQ-ORE | Yes | Small seep, with water flowing down the road leading into the Pit – sample collected. |
| WQ-L1 | Yes | Water in pipe with approximately 2 cm of ice on top. Layers of ice/slush present. Successfully collected sample with peristaltic pump. Total volume in L1 was 7.8 L (including samples). |
| WQ-L2 | Yes | Water in pipe with ice plug on top. Successfully collected sample with peristaltic pump. Total volume in L2 was 8.8 L (including samples). |
| WQ-LW-SEEP-01 | No | Frozen to substrate – not suitable for sampling. |
| WQ-NW-SEEP-02 | Yes | Site covered with ~40 cm snow. Ice up to and creeping over the barrel. Placed Ziploc bag over pipe outlet on May 4, 2015 and returned to collect water sample on May 5, 2015. Approximately 1.1 L of water over a 19.7 hr period. There was not enough water to collect the cyanide or cyanate samples (all other samples were collected). |
| WQ-WR-SEEP-A | Yes | Opportunistic sample (UTM 08V E 388723.0, N 6881359.9 – flagged with yellow flagging) collected from water seepage at base of waste rock, approximately 15 metres south-southeast from WQ-LW-SEEP-01. No flow estimate possible, as seep is within a small depression that is recharged slowly from ground. |
| WQ-WR-SEEP-B | Yes | Opportunistic sample (UTM 08V E 388863.2, N 6881259.4 – flagged with yellow flagging) collected from water seepage at base of waste rock, approximately 170 metres south-southeast from WQ-WR-SEEP-A. Larger seep than WQ-WR-SEEP-A, flow estimate of 0.12 L/S. |
| WQ-BC | Yes | Still ice covered at regular sample location. However, creek was found flowing upstream of regular site, towards and into Victoria Creek upstream of the normal confluence – sample was collected. |
| WQ-VC-U | Yes | Sample collected from regular location. Flow levels have increased from the previous trip. Samples likely affected by Back Creek which is entering Victoria Creek in several areas upstream of the regular confluence. |
| 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. Channel more open than previous trip. |
| 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. |
| WQ-PW | Yes | Drinking water samples and bacteriological samples collected. |
| WQ-PC-U | Yes | Water flowing with no ice present at sample site. Thin ice over pond area just downstream. |
| WQ-PC-D | Yes | Some ice and snow present on edges of channel. |
| WQ-ADIT-SEEP | No | No water present at sampling site. High amount of snow on north facing slope. |
| Quality Assurance/Quality Control Samples | | |
| Field Replicate 1 | Yes | Collected from WQ-VC-UMN-r. |
| Field Replicate 2 | Yes | Collected from WQ-VC-R+150-r. |
| Field Replicate 3 | Yes | Collected from WQ-DC-R-r. |
| 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. |