

Letter: Request for use of water or deposit of waste without a license

The Sources and Fate of Glacially-Derived Nutrient, Microbes and Vegetation

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In accordance with Guide 9, approval for use of water or deposit of waste without a license is requested for the research project 'The Sources and Fate of Glacially-Derived Nutrient, Microbes and Vegetation'. Activities pertaining to the project are carried out in the Sverdrup Pass, Nunavut (79° 8'32.59"N; 79°32'20.76"W) by the University of Alberta

Timeframe: Jul 23 – Aug 1, 2017

Project Description:

The research will investigate the ongoing retreat of Teardrop Glacier, central Sverdrup Pass, Ellesmere Island. The investigation concerns the state of recently exposed vegetation released from the glacier following ice entombment for the past 300-400 years. Additional studies will be conducted on the glacial meltwater exiting Teardrop Glacier in order to measure glacially-derived nutrients and microbes. This will include documenting the concentration and speciation of major nutrients (nitrogen, phosphorus, and carbon); the structure of the microbial community, and determining the diversity and potential for regrowth of the formerly ice-covered vegetation. This research will rely on small sample collections around the recently exposed terrain adjacent to teardrop Glacier and of meltwater emerging from across the ice surface and from beneath the glacier itself.

Field work related to this project will occur over approximately 10 days and will involve collecting up to 20 small samples of water and ice (~1L each), sediment (~10 grams each) and vegetation vouchers (~ 50-100 small moss samples). Water and ice samples will be filtered in the field and the filtrate and filtride collected. Soil and vegetation samples will be collected using sterile spatulas and gloves and will be placed in sterile bags. All samples will be frozen in the field in a small (~1 ft³) portable freezer (powered by a small 1000W generator when needed).

Description of Water use: While working in the Sverdrup Pass, every effort will be made to minimize our impacts on the ice and watershed. Our field party conducted a similar project on the subglacial vegetation in 2007 and 2009, and did so without impact. The 2017 field party will consist of 4 people from July 23 to Aug 1 with an additional five people for Jul 28 – Aug 1. The camp will be evacuated on August 1. Our camp will be minimal in size (sleeping tents and one cook tent) and therefore includes no permanent buildings or structures. Every effort will be made to keep the camp clean. For 2017, a single greywater pit will be dug and buried at the end of the field campaign. Glacier meltwater/ice will be collected from the nearby stream/glacier for domestic use and human waste will be hackhauled to Resolute Bay at the end of the field campaign. The only fuel on site will include a 5-gallon jerry can of gasoline to power the generator and two propane tanks for cook stoves.