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June 27, 2006

Joe Murdock
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
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Nunavut Arctic College Student Accommodations
Drainage Course Relocation

Dear Mr. Murdock:

The Department of Education, Government of Nunavut, propose to construct new student accommodations at the Nunavut Arctic College campus in Iqaluit, on the Northwest corner of Saputi Drive & Qulliq Court, as shown on the attached Site Plan. The site is currently not developed, and surface drainage crosses the site by sheet drainage as well as by a small ditch. In order to proceed with the proposed building construction, the existing drainage paths (sheet drainage and the existing ditch) that transect the site must be diverted around the site, which will include the construction of a drainage ditch along the northeastern boundary of the site.

Please accept the attached Water License Application, this letter report, and accompanying attachments as a request for a Water License for the proposed creation of a diversion ditch along the northeastern boundary of the site. The following letter provides the technical information in support of this request.

Existing Site Condition

The proposed site is sloped from back to front (Northeast to Southwest) towards Qulliq Court. The site is generally covered with limited vegetation, a surficial layer of topsoil, underlain by sandy silt to silty sand with gravel, cobbles and boulders that extends to a depth of 1.5 m to 3.6 m.

Surface water is transported across the proposed site by the existing ditch or sheet drainage during spring melt or a rainfall event, otherwise the site, including the existing ditch are dry, as shown on the attached photograph, Picture #1, taken on June 14, 2006. At the time the photograph was taken, spring melt was not complete and pockets of snow remained on the site, however there was no visible runoff from the site, either as sheet drainage or in the ditch.

The drainage area hydraulically above the site is relatively small with a total area of approximately 1.7 hectares. The site drains to an existing roadside ditch on the northeastern side of Qulliq Court, which outlets to a 900mm CSP culvert at the corner of Qulliq Court and Saputi

Drive. There have been no reported problems with the operation of this culvert, therefore it is assumed that it has adequate capacity to drain the drainage area it services.

Proposed Drainage

To divert surface water from transecting the proposed site, a drainage ditch is proposed to be constructed along the back property (northeast) line. The proposed diversion ditch will have an average slope of 1.0%, the ditch is trapezoidal shape with 2:1 side slope and 0.75m deep. As detailed in the attached Open Channel Flow Computation Form, Manning's equation was used to estimate the maximum flow capacity of 3,017 L/s for the proposed diversion ditch. This ditch capacity is greater than the capacity of the culvert at the corner of Qulliq Court and Saputi drive, which as previously stated has no reported operational problems. Therefore it is concluded that the proposed ditch section is sufficient for the runoff generated from the drainage area it services.

As the proposed ditch diverts runoff generated only during a rainfall event or spring melt, the channel to be abandon is normally dry, and not fish habitat. Downstream of the proposed diversion ditch, the flow enters the roadside ditch system, which again is not fish habitat. Therefore there is no anticipated impact on fish or fish habitat from the proposed diversion ditch.

Construction of the proposed ditch is scheduled for late summer or early fall 2006. Therefore the only flow from the site will be from precipitation. It is anticipated that the construction of the ditch will occur by excavation with a track mounted excavator. Although it is expected that construction will generate minimal sediments, in the form of sand and silt, being remove from the site, appropriate silt protection measures will be in place during construction, including silt fences adjacent to the construction, and a silt fence at the culvert at the corner of Qulliq Court and Saputi Drive. The generation and mitigation of silt during construction will be monitored, and additional silt mitigation measures will be added if required.

The relatively small drainage area is expected to generate relatively low flows. Given the proposed ditch section and slope (approximately 1%), it is expected that these flows will not result in any erosion or bank stabilization problems.

The construction of the proposed student accommodations is schedule to span two seasons. Therefore the owners and consulting team will be on site in 2007 and will undertake an inspection of the diversion ditch, complete with photographs to document the its condition after a year. If any remedial actions are identified after the first year, they will be undertaken as part of the second year construction. The inspection will review, erosion, bank stabilization, and capacity issues. If erosion or bank stabilization issues are discovered, the ditch may be lined as required, with riprap as are to be installed to stabilize the excavation around the proposed buildings.

Summary

To divert surface water from crossing the site of the proposed student residences for the Iqaluit campus of Nunavut Arctic College, a diversionary ditch is required along the back of the site. The diversion ditch will intercept sheet drainage and the flow from an existing small ditch and

direct it around the site. The surface flow to be diverted only exists during snow melt and rainfall events, and the drainage area is relatively small, therefore the flows to be intercepted are periodical and relatively small. The diversion ditch will outlet back to the same culvert where the flow currently goes, therefore there will be no adverse affects downstream of the site due to the proposed ditch. There are no anticipated impacts on fish or fish habitat as there are no watercourses affected, which are considered fish habitat. The proposed work will include the required silt protection during construction, and the project spans 2 years, allowing for an inspection and remedial works after the first spring runoff if required. As outlined above, the proposed works shall not have any qualitative or quantitative effects on the use of water, nor will it have any qualitative or quantitative effects from deposits on water.

If you have any questions, or require additional information, please contact Steven Burden at (613) 225-9940.

Yours truly,

Trow Associates Inc.

REGISTERED PROFESSIONAL ENGINEER
A.R. ABOZARAD
LICENSEE
NWT/NU

Abdal Zarad, P.Eng.
Project Engineer
Civil Engineering Services

REGISTERED PROFESSIONAL ENGINEER
June 24, 2006
S. L. BURDEN
LICENSEE
N.W.T.

Steve Burden, P.Eng.
Senior Project Manager
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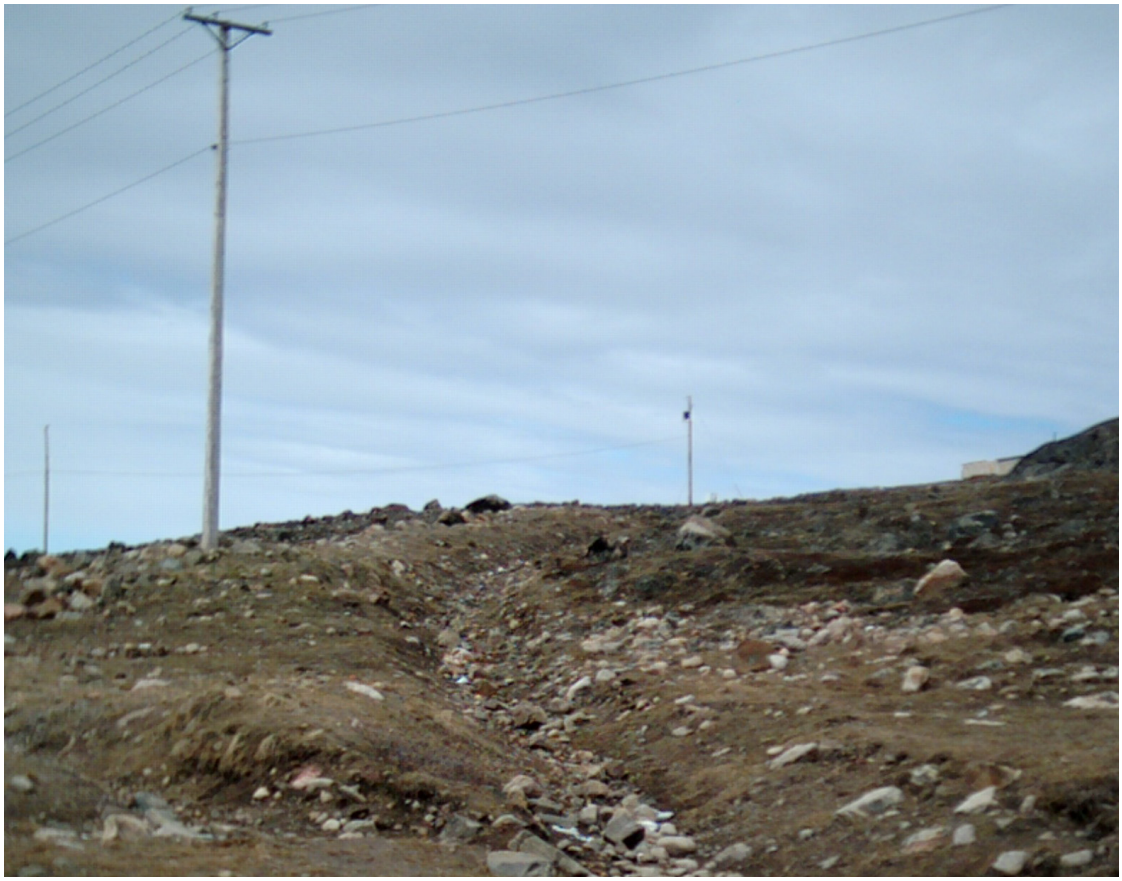
Enclosures: Figure 1 – Proposed Site Plan
Figure 2 – Drainage Plan
Picture #1
Open Channel Calculation Form

PERMIT TO PRACTICE
TROW ASSOCIATES INC.
Signature
Date June 24, 2006
PERMIT NUMBER: P 184
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU



Picture #1 – Ditch Crossing NAC Proposed Student Accommodations

OPEN CHANNEL FLOW COMPUTATION FORM

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	Bottom Width	Left Side Slope	Right Side Slope	Flow Depth	Wetted Perimeter	Top Width	Area	Hydraulic Radius	Boundary Material	Manning's n	Bottom Slope	Average Velocity	Flow Rate	Flow Rate
	m	X horizontal : 1 vertical	X horizontal : 1 vertical	m	m	m	m^2	m			m/m	m/s	m^3/s	L/s
Proposed Swale North of the Site	0.0	2	2	0.75	3.35	3.00	1.13	0.34	Earth, uniform section, clean	0.018	0.0100	2.68	3.017	3017