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NUNAVUT IMALIRIYIN KATIMAYINGI
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

WATER LICENCE
SCHEDULE III - APPLICATION FORM

Application for: (check one)

x **New** ☐ **Renewal** ☐ **Amendment** ☐ **Assignment** ☐ **Cancellation**

LICENCE NO:
(for NWB use only)

1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

Martin Sharp
Earth and Atmospheric Sciences
1-26 Earth Science Building
University of Alberta
Edmonton, Alberta, T6G 2E3

Phone: 780 492 5249
Fax: 780 492 2030
e-mail: martin.sharp@ualberta.ca

2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Phone:
Fax:
e-mail:

3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

Devon Island ice cap, Nunavut

Latitude: **75° 33.46' N** Longitude: **81° 29.68'**
NTS Map Sheet No. 48H 48E Scale: 1:250,000

4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

Scientific study of the dynamics and recent changes in the Devon Island ice cap, with a particular focus on the surface hydrology and flow of the Belcher Glacier. Work is conducted largely by parties of 2 people from small camps. In the spring, these camps are highly mobile and parties usually spend only a few days in each spot. In summer (June and July), camps may be occupied for several weeks at a time. Water use is for domestic consumption only.

5. TYPE OF PRIMARY UNDERTAKING (A supplementary questionnaire **must** be submitted with the application for undertakings listed in **"bold"**)

☐ **Industrial**
☐ **Mining and Milling**(includes exploration/drilling)
☐ **Municipal** (includes camps/lodges)
☐ Power
☐ Agricultural
☐ **Conservation**
☐ Recreational
x **Miscellaneous** (describe below):

Small field research camps with domestic water use and disposal of domestic waste. Installation of hydrological monitoring equipment in some lakes and streams on ice cap surface

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

6. WATER USE

X To obtain water
☐ To cross a watercourse
☐ To modify the bed or bank of a watercourse
☐ Flood control
☐ To divert a watercourse
☐ To alter the flow of , or store, water

☐ Other (describe): **Temporary installations to monitor water level (pressure transducers) and quality (sensors for electrical conductivity, pH, dissolved oxygen, temperature) are set up on a small number of streams and lakes on the ice cap surface**

7. QUANTITY OF WATER INVOLVED (cubic metres per day including both quantity to be used and quality to be returned to source)

Water use x $100m^3$/day or less
☐ Greater than $100m^3$/day; if greater, indicate quantities to be used for each purpose (camp, drilling, etc.)

Water returned to source
0 m^3/day

8. WASTE (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

x Sewage
x Solid Waste
☐ Hazardous
☐ Bulky Items/Scrap Metal
☐ Waste oil
x Greywater
☐ Sludges
☐ Other describe):_____

All solid waste is bagged and removed from site; Greywater is disposed of by pouring into crevasses (<5L per day max); In spring sewage is collected, frozen and removed from site for disposal; In summer, this is not always possible, in which case all toilet paper is burned and waste is disposed of down crevasses to avoid direct input to surface water.

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)

Every year we obtain a research license from the Nunavut Research Institute. The licensing process involves environmental impact screening by NIRB. No research activities take place on Inuit owned lands. Camps are not occupied for long enough for a DIAND land use permit to be needed.

Land Use Permit

DIAND	☐ Yes	☐ No	If no, date expected _____
Regional Inuit Association	☐ Yes	☐ No	If no, date expected _____
Commissioner	☐ Yes	☐ No	If no, date expected _____

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

Every effort is made to minimize impacts. Bear safety dictates that we keep clean camps. We try to remove all garbage and as much human waste as possible. Camps are small and mobile to minimize impact at single sites. Grey water and some sewage are disposed of down crevasses away from streams to avoid any possibility of surface water contamination.

NIRB Screening x Yes ☐ No If no, date expected _____

11. INUIT WATER RIGHTS

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

NO

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

NONE

13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

Burgess, D.O. and Sharp, M. Recent changes in thickness of the Devon Island ice cap, Canada. Journal of Geophysical Research (Solid Earth). Accepted 8 April 2008.

Colgan, W., Davis, J. and Sharp, M. 2008. Is the high elevation region of the Devon Island ice cap thickening? Journal of Glaciology 186, 428-436.

Bell, C, Mair, D., Burgess, D., Sharp, M., Demuth, M.N., Cawkwell, F., Bingham, R.G. and Wadham, J. 2008. Spatial and temporal variability in the snowpack of a high Arctic ice cap: implications for mass change measurements. Annals of Glaciology 48, 159-170.

Colgan, W. and Sharp, M. 2008. Combined oceanic and atmospheric influences on net accumulation on the Devon Island Ice Cap, Nunavut, Canada. Journal of Glaciology 54, 28-40.

Mair, D., Burgess, D. and Sharp, M., 2005. 37-year mass balance of the Devon Island Ice Cap, Nunavut, Canada, determined by shallow ice coring and melt modelling. *Journal of Geophysical Research (Earth Surface)* 110, F01011, doi:10.1029/2003JF000099.

Burgess, D., Sharp, M., Mair, D., Dowdeswell, J. and Benham, T. 2005. Flow dynamics and iceberg calving rates of the Devon Ice Cap, Nunavut, Canada. *Journal of Glaciology* 51, 219-230.

Dowdeswell, J.A., Benham, T.J., Gorman, M.R., Burgess, D., and Sharp, M. 2004. Form and flow of the Devon Island Ice Cap, Canadian Arctic. *Journal of Geophysical Research (Earth Surface)*. 109, F02002, doi:10.1029/2003JF000095.

Burgess, D. and Sharp, M. 2004. Recent changes in areal extent of the Devon Island Ice Cap, Nunavut, Canada. *Arctic, Antarctic and Alpine Research* 36, 261-271.

14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) X Yes ☐ No If no, date expected _____

Inuktitut and/or Innuinaqtun/English Summary of Project X Yes ☐ No If no, date expected _____

Application fee of $30.00 (Payee Receiver General for Canada) ☐ Yes X No If no, date expected July 31, 2008_____

Water Use fee of $30.00 (unless otherwise indicated in Section 9 of the *NWT Waters Regulations;* Payee Receiver General for Canada) ☐ Yes X No If no, date expected July 31, 2008_____

15. PROPOSED TIME SCHEDULE (unless otherwise indicated, the NWB will consider the application for a five (5) year term)

☐ one year or less (or) x Multi Year

Start Date: 2004 Completion Date: Uncertain

Martin Sharp	Professor		July 3 2008
Name (Print)	Title (Print)	Signature	Date

For Nunavut Water Board office use only

APPLICATION FEE **Amount: $**_____ **Pay ID No.:** _____

WATER USE DEPOSIT **Amount: $**_____ **Pay ID No.:** _____