SCIENTIFIC RESEARCH LICENCE APPLICATION
LAND, FRESHWATER & MARINE BASED RESEARCH

NRI strongly recommends that applicants review the following documents prior to submitting an application: *Scientific Research Licencing Guidelines* and *Negotiating Research Relationships in Inuit Communities: A Guide for Researchers.*
For more information about the Nunavut Research Institute (NRI) please visit our web site www.nri.nu.ca

IMPORTANT
This application fulfills the requirements for the NIRB environmental screening.
Please be advised that your application will not be processed until the application form, project summary, and maps are received.

SECTION 1: APPLICANT INFORMATION

1a. Project Title **Long-term limnological and paleolimnological monitoring of Nettilling Lake, central Baffin Island, Nunavut, Canada**

1b. Project Number

Please indicate if applicant has submitted any previous application(s) to NRI related to this project proposal? Yes **X** No ___
If yes, please indicate the previous NRI licence number: **01-035-09R-M 01-006-12N-M**

Please indicate if applicant has submitted any previous application(s) to NIRB related to this project proposal? Yes ___ No ___
If yes, please indicate the previous NIRB project number(s): **10YN041**

2. Applicant's full name and mailing address:

Dr. Reinhard Pienitz
Centre d'Études Nordiques, Université Laval
Pavillon Abitibi-Price, local 1232
2405, rue de la Terrasse
Québec, QC, G1V 0A6

Phone: 418-656-2131 ext. 7006
Fax: 418-656-2978
Email: reinhard.pienitz@cen.ulaval.ca

3. Field Supervisor's name and mailing address:

Mr. Denis Sarrazin
Centre d'Études Nordiques, Université Laval
Pavillon Abitibi-Price, local 1210
2405, rue de la Terrasse
Québec, QC, G1V 0A6

Phone: 418-656-2131 ext. 4299
Fax: 418-656-2978
Email: denis.sarrazin@ce.ulaval.ca

4. Other Personnel list (name, position, affiliation)

Mrs. Biljana Narancic, PhD candidate, CEN
Mrs. Anne Beaudoin, MSc candidate, CEN
Dr. Bernhard Chapligin, AWI Potsdam, Germany

SECTION 2: AUTHORIZATION NEEDED

1. Indicate <u>all</u> authorizations associated with the project proposal:

	Regional Inuit Association (RIA)
	Nunavut Water Board (NWB)
	Nunavut Planning Commission (NPC)
	Department of Indian And Northern Development (DIAND)
	Department of Fisheries and Oceans (DFO)
	Community Government & Services (CG&S)
X	Nunavut Research Institute (NRI/GN)
	Department of Culture, Language, Elders, and Youth (CLEY/GN)
	Canadian Launch Safety (CLS)
	Environment Canada (EC)
	Department of Environment (GN)
	Department of National Defense (DND)
	Hamlet
	Parks Canada (PC)
	Canadian Wildlife Service (CWS)
	Other (please specify):

_____

2. List the <u>active</u> permits, licences, or other rights related to the project proposal and their expiry date:

_____

_____

3. Have you applied for all authorizations required to conduct the project proposal activities?

X YES ☐ **NO**

SECTION 3: PROJECT PROPOSAL DESCRIPTION

1. Indicate the activities related to the project proposal:

	Temporary camp (to be removed at end of field season)
	Permanent camp (to remain for life of authorization)
	Construction of recreational or safety cabin
X	Temporary fuel storage (to be removed at end of field season)
	Permanent fuel storage (to remain for life of authorization)
	Placement of structures for life of permit (other than camp or cabin – i.e. scientific instruments)
	Placement of permanent structures (other than camp or cabin – i.e. scientific instruments)
	Air surveys (i.e. geophysical, wildlife)
X	Use of aircraft/watercraft/land vehicle for personnel drop-off and pick-up to project location
X	Use of on-site mechanized vehicles (i.e. atv, snowmobile, truck, zodiac)
	Sewage or grey water disposal via sump
	Hazardous waste storage or disposal
	Solid waste disposal
	Chemical storage
	Explosives storage
	Soil testing
	Soil disposal/ soil storage
X	Incineration of combustible wastes and removal of non-combustible wastes
X	River/ stream/ lake crossing or work/ bridge
	Drainage alteration
	Geoscientific sampling by diamond drilling
X	Geoscientific sampling by soil sampling
	Geoscientific sampling by trenching
	Geoscientific sampling by borehole core
	Blasting
	Channeling
	Excavation
	Hydrological testing
	Abandonment and restoration
	Site restoration (fertilization/ grubbing/ scarification/ spraying/ recontouring)
X	Research
X	Ecological survey
	Harvesting
	Removal of vegetation for scientific purposes
X	Other: **Lake sediment sampling**

2. Personnel

Total No. of personnel on site = (A)	**4**	Total No. of days on-site = (B)	**5**	**Total No. of Person days (A) × (B) = 20**

3. Timing

Period of operation: **1 August 2013** *to* **5 August 2013**

Proposed term of authorization: **2013** *to* **2014**

Please outline the phases of the proposed project (construction/ operation/ decommissioning) including the timing and scheduling of each phase.

1) Research team would fly with commercial carrier from Ottawa or Montreal to Iqaluit on 30 July 2013 and spend 2 nights at Frobisher Inn in Iqaluit. Research team members will meet with NRI and Environment Canada representatives to inform them about research project plans and objectives.

2) Ferry research team and gear from Iqaluit to CWS field camp on Nikko Island, Nunavut. Transportation on fixed wing aircraft (Twin Otter) chartered by PCSP on 1 August 2013.

3) Transport of research team members between CWS camp and sampling sites within Nettilling Lake catchment. Transportation on Bell 206L helicopter provided by PCSP between 2 to 4 August 2013. Helicopter stays at CWS camp on Nikko Island for 3 consecutive days of fieldwork.

4) Ferry research team and gear from CWS field camp on Nikko Island back to Iqaluit. Transportation on fixed wing aircraft (Twin Otter) chartered by PCSP on 5 August 2013.

5) Research team would spend another 2 nights at Frobisher Inn in Iqaluit, report to NRI and Environment Canada representatives, and then fly home with commercial carrier from Iqaluit to Ottawa or Montreal on 7 August 2013.

4. Location(s) of data collection:

Location Name	**Region** North Baffin, South Baffin, Kivalliq, Kitikmeot	**Co-ordinates** Lat (degree / minute), Long (degree / minute)	**NTS Map Sheet #**	**Land Status** Crown, Commissioners', Inuit Owned
Lake Nettilling	**South Baffin**	**66°31'N; 70°41'W**	**26L and 26K**	**Inuit Owned**

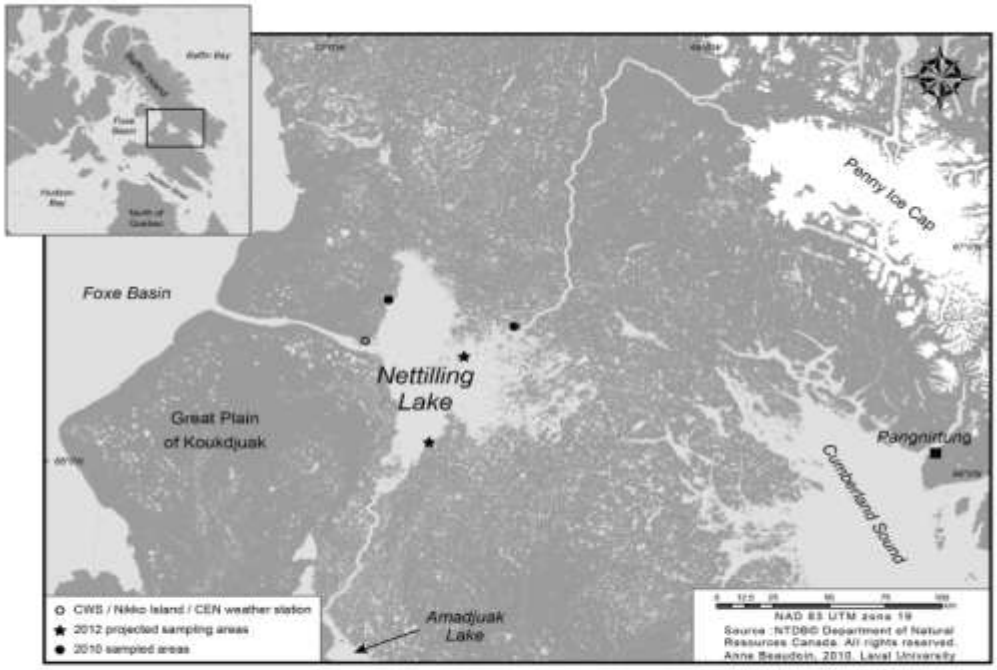
If the project proposal includes a **camp**, please provide the coordinates of the camp location

Lat (degree/minute) 66°36'N Long (degree/minute) 71°33'W

NTS Map Sheet # (if different from above) 26L

PLEASE REFER ALSO TO FIGURE 1 BELOW

The Nunavut Impact Review Board may require additional location information in a subsequent Project Specific Information Requirement (PSIR) submission. This may take the form of a digital Geographic Information Systems (GIS) file.



SECTION 4: NON-TECHNICAL PROJECT PROPOSAL DESCRIPTION

Please attach a non-technical description of the project proposal, no more than 500 words, in English and Inuktitut (+Inuinnaqtun, if in the Kitikmeot). The project description should outline the following:

- Project Title
- Researcher's Name and Affiliation
- Project Location
- Timeframe
- Project Description
  - purpose
  - goals & objectives
  - method of transportation
  - any structures that will be erected (permanent / temporary)
  - restoration / abandonment plans
- Methodology
  - collection protocol
  - collection mechanisms
  - indicate why specific communities or individuals were selected for your research
- Data
  - short term & long term use of data
  - other uses of data
- Reporting
  - How will the research results be communicated to the individual participants, communities, regional and Nunavut organizations?
  - Will the research result in a publication?

PLEASE REFER TO FILE NRI_Non-technical Project Proposal Description_ 2013_Pienitz (translation into Inuktitut is underway!)

SECTION 5: MATERIAL USE

1. List equipment (including drills, pumps, aircrafts, vehicles etc.):

Equipment type and number	Size – dimensions	Proposed use
Fixed wing Aircraft	Twin Otter	Ferry team and gear in from Iqaluit
Helicopter	Bell 206L	Complete water sample survey of Nettilling Lake and sample small lakes in catchment
Sediment corer	Length = 1 m ; diameter = 9 cm	Retrieve short sediment cores
Inflatable zodiac with paddles	Length = 2m	Travel on small lakes and in nearshore areas of Nettilling Lake to take lake water and sediment samples

2. Detail fuel and hazardous material use:

Fuel	Number of Containers and Capacity of Containers	Total Amount of Fuel (in Litres)	Proposed Storage Methods
Diesel			
Gasoline	5 gal	20 Litres	Plastic gas can
Aviation fuel	10 x 65 gal	10 x 200 Litres	Drum of Jet B Fuel cached at CWS Nikko Island camp by PCSP
Propane	20 lbs		Propane tank
Other			
Hazardous Materials and Chemicals		**Total Amount of Hazardous Materials and Chemicals (in Litres)**	
None			

3. Detail daily water consumption rates

Daily amount (in Litres)	Proposed water retrieval methods	Proposed water retrieval location
< 200	Manually scooped	Nettilling Lake

4. Have you applied for a Class A License with the Nunavut Water Board?

☐ **YES** **X NO**

SECTION 6: WASTE DISPOSAL AND TREATMENT METHODS

1. List the types of waste:

Type of waste	Projected amount generated	Method of Disposal	Additional treatment procedures
Sewage (human waste)	10 kg	Incinerated	Brought back and disposed of in Iqaluit
Greywater			
Combustible wastes	15 kg	Incinerated	Brought back and disposed of in Iqaluit
Non-Combustible wastes	2 kg	Cleaned and crushed	Brought back and disposed of in Iqaluit
Overburden (organic soil, waste material, tailings)	None		
Hazardous waste	None		
Other:			

2. Will you be incinerating combustible waste, removing all solid waste, and removing the ash generated from incineration?

X YES ☐ **NO**

SECTION 7: COMMUNITY INVOLVEMENT & REGIONAL BENEFITS

1. List the community representatives that have been contacted and provide the minutes of the meetings if available:

Community	Name	Organization	Date Contacted
Iqaluit	Mosha Coté	NRI	While on visit in Iqaluit

2. How will the proposed project benefit Nunavut?

The long-term observations (time-series) of limnological and paleolimnological changes generated through this initiative will enable us to closely track the response of Nettilling Lake aquatic biota and its physical and chemical characteristics to shifts in environmental conditions, such as changes in climate and trophic loading. In addition, the maintenance and retrieval of basic weather data from the meteorological station at CWS camp on Nikko Island (maintained by Centre d'Études Nordiques) allows for the long-term monitoring of climate variability and trends in an extremely remote part of Nunavut, thereby allowing for climate impact assessments.

This project-specific monitoring effort in the Nettilling Lake area will be complementary to those conducted for other regions of the Canadian North by colleagues at other institutions (e.g., J. Smol- Queen's U; M. Douglas- UAlberta; W. Vincent- ULaval; D. Muir- Env. Can.), and therefore offers the potential to be merged into larger databases that will be used for climate calibrations and made available to others.

This project has contributed and will continue to contribute to long-term monitoring efforts of ArcticNet and other northern research initiatives (AMAP-SWIPA) and to the Polar Database (Polar Data Catalogue). This data serves as background and reference for long-term monitoring environmental assessments against which the impacts of forthcoming environmental and climatic changes can be assessed.

This information will be made available to environmental management and protection agencies (NRI, Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Environment and Parks Canada) and policy makers throughout the ArcticNet compendium and Integrated Regional Impact Studies (IRIS) 2 and 3 (Hudson Bay and Eastern Arctic).

To assure the continued success of the long-term lake monitoring activities and fieldwork, local Inuit community representatives will be involved and trained (as well as several of my graduate students) in all aspects of the research program, including the water column profiling and sampling (data logger and sediment trap recovery) procedures. Since its initiation in July 2004, our research activities were greeted with great interest, enthusiasm and support by the residents from the local Inuit communities who have been regularly involved in our field operations as guides and assistants in the Foxe Basin region.

4. Describe and attach documentation regarding community support or concerns for the proposed project:
For 2013, our team will stay four nights at the Frobisher Inn in Iqaluit and four nights at the CWS Nikko Island camp. Due to the extreme remoteness of this site (distance between CWS camp and Pangnirtung and Iqaluit approx. 300 km and 350 km, respectively), community support will be neither available nor requested for this part of our research.

5. Is there a traditional knowledge component to this research project? If yes, please explain:
Within our research project, we will pursue our attempts at gathering and integrating traditional knowledge of the region, in particular via elders and members of Iqaluit and/or Pangnirtung. If possible and as done before, we will be available to present our project to local community representatives through talks and discussions at Environment Canada and/or NRI offices while on stay in Iqaluit, and we will be delighted to learn from the elders' and community members' knowledge of the landscape accessibility, water quality, ice cover on Nettilling Lake, and any obvious changes in the weather/precipitation regime observed over the last decades.

SECTION 8: GENERAL QUESTIONS

☐ **Do you give NRI permission to publish project information in the Nunavut Research Institute Annual Compendium of Research Undertaken in Nunavut?**

X YES ☐ **NO**

3. In addition to the application form, applicants are required to submit additional information in an electronic format to the Manager, Research Liaison, cfilion@nac.nu.ca. Please check that the following have been submitted to NRI:

☐ **Project Summary** -in English and Inuktitut (+Inuinnaqtun, if in the Kitikmeot)
☐ **NTS Maps** of the project PLEASE REFER TO FILES ATTACHED TO THIS APPLICATION

Applicant:

Signature	Professor **Title**	28 February 2013 **Date**

P.O. Box 1720 Iqaluit, NU, X0A 0H0 • PHONE: 867-979-7279 • FAX: 867-979-7109 • email mosha.cote@arcticcollege.ca