



Mackenzie Valley Land and Water Board  
 7th Floor - 4922 48th Street  
 P.O. Box 2130  
 YELLOWKNIFE NT X1A 2P6  
 Phone (867) 669-0506  
 FAX (867) 873-6616

RECEIVED  
 APR 22 2015  
 MV2015X0006  
 Mackenzie Valley Land  
 and Water Board  
 Yellowknife, N.T.

Application for:  
 New Land Use Permit  Amendment  to \_\_\_\_\_

1. Applicant's name and mailing address: <i>Dr. Sally Petersson Geological Survey of Canada          601 Booth Street Ottawa Ont K1A 0E8</i>	Fax number: <i>613-992-5694</i>
2. Head office address: <i>same as above</i> <i>Director Dr. Bernard Vignault</i> Field supervisor: <i>Same as above</i> Radiotelephone: <i>N/A.</i>	Telephone number: <i>613-943-8883</i>  Fax number: <i>613-992-5694</i>  Telephone number: <i>613-943-0037</i>
3. Other personnel (subcontractor, contractors, company staff etc.) <i>see attached word document.</i> TOTAL: (Number of persons on site) <i>and pdf.</i>	
4. Eligibility: (Refer to section 18 of the Mackenzie Valley Land Use Regulations)  a)(i)    a)(ii)    a)(iii) <b>b)</b>	
5. a) Summary of operation (Describe purpose, nature and location of all activities.)  <i>see attached word document</i>  b) Please indicate if a camp is to be set up. (Please provide details on a separate page, if necessary.)  <i>See attached word document and pdf.</i>	

6. Summary of potential environmental and resource impacts (Describe the effects of the proposed land-use operation on land, water, flora & fauna and related socio-economic impacts. Use separate page if necessary.)

See attached.

7. Proposed restoration plan (please use a separate page if necessary).

Due to the minimal impact on the land and water and flora and fauna a restoration of the site is not required. All efforts will be made to ensure as little disturbance as possible during the work. With adequate and careful handling no impact is expected. Surficial sampling, as noted, will include replacing the organic layer on the small holes dug. No drilling will be done.

8. Other rights, licences or permits related to this permit application (mineral rights, timber permits, water licences, etc.)

Aurora Research Science Applied for.

Roads: *N/A* Is this to be a pioneered road? Has the route been laid out or ground truthed?

9. Proposed disposal methods.

To complete this section of the application form, a Waste Management Plan for the proposed activities is to be developed in accordance with the Board's *Guidelines for Developing a Waste Management Plan* (click [here](#) to access) and submitted as an attachment to the application form. A template for this Plan is provided in the *Guidelines*.

- a) Garbage: c) Brush & trees:  
b) Sewage (Sanitary & Grey Water): d) Overburden (Organic soils, waste material, etc.):

10. Equipment (includes drills, pumps, etc.) (Please use separate page if necessary.)

Type & number	Size	Proposed use
water pump	5 horsepower	Twice daily for 10 minutes
Generator-gasoline	2000 watts	7am-7pm daily

11. Fuels	( )	Number of containers	Capacity of containers	Location
Diesel				
Gasoline		10	25 L	Main camp with rubber boots
Aviation fuel		17	205 L	adjacent to camp in a berm
Propane		2	100 Lb	adjacent kitchen tent
Other				

12. Containment fuel spill contingency plans.

A spill contingency plan for the proposed activities is to be developed in accordance with INAC's *Guidelines for Spill Contingency Planning, April 2007* (accessible [here](#)). This plan is to be submitted as an attachment to the application form.

*See attached*

13. Methods of fuel transfer (to other tanks, vehicles, etc.)

*By hand pump (aviation fuel) Propane - NA - will not be transferred to another container*  
*By hand/sput included in container (gasoline)*

14. Period of operation (includes time to cover all phases of project work applied for, including restoration)

*June 16 - July 25 in each of 2015, 2016, 2017*

15. Period of permit (up to five years, with maximum of two years of extension).

*Three years*

16. Location of activities by map co-ordinates (attach maps and sketches) - NAD83

*see attached map for project scope*

Minimum latitude (degrees, minutes, seconds)	Maximum latitude (degrees, minutes, seconds)
<i>camp 60 degrees, 10'40" N</i>	<i>same</i>

Minimum longitude (degree)	Maximum longitude (degrees, minutes, seconds)
<i>camp 105 degrees 52' 50 W</i>	<i>same</i>

Map Sheet no.

17. Applicant  
 Print name in full *Dr. Sally Petersson*  
 Signature *[Signature]*  
 Date *April 20, 2015*

18. Fees

Type A - \$150.00 \*\*      Type B - \$150.00 \*\*      (\*\*Application Fees are Non-Refundable\*\*)

Land use fee: \_\_\_\_\_ hectares @ \$50.00/hectare      \$ \_\_\_\_\_  
 Assignment fee \$50.00      \$ \_\_\_\_\_ Total application

*MA Federal Agency*

**Please make all cheques payable to "Receiver General for Canada"**

## **Section 5:**

### *Purpose*

The Geological Survey of Canada, as part of its Geo-Mapping for Energy and Minerals Program, in partnership with the Northwest Territories Geoscience Office and the Saskatchewan Geological Survey will conduct a three-year geology research project in southeasternmost Northwest Territories, commencing in late June, 2015. For each of the 2015, 2016, 2017 field seasons a group of geologists and university students will conduct bedrock geological and surficial mapping.

The aim of the project is to fill in major gaps in geoscience understanding in Canada's north where geological data does not currently exist. Presently, it is unknown what the geology of the area comprises. The bedrock has never been mapped, it was last examined in 1958 with a single helicopter landing every five miles. The surficial geology, relating to the transport of surficial sediments by glaciers, has never been studied.

### *Nature*

The work will involve two concurrent activities. The first is collecting fist-sized rock samples and making observations that are selected on the basis of visual elements that can help tell how the rocks were formed and what happened to them. The research will be conducted by walking and collecting samples in the areas of interest from set-out locations accessed by helicopter. The mapping crews will be picked up by helicopter at the end of the day's work. Some sampling will be conducted by flying between selected sampling sites, either by helicopter or float plane. Surface samples will be collected with a geological hammer or a sledgehammer for more resistant rocks with precise GPS location. No drilling will be done.

The second activity involves collecting glacial sediment samples at various sites. In this process, using shovels and 5 gallon pails to store the samples, the scientists will collect sediments (dirt) from shallow, hand dug pits less than 1 meter deep. Care is taken when digging the small pits to cut the surface organic layer away and then place it back on top of the site once the sample has been collected, leaving minimal disturbance.

All information and data created through this project will be publically available to communities, governments, industry professionals and to interested individuals.

### *Location*

The project will run from a temporary field camp situated on a beach on a peninsula in central Wignes Lake, NWT. The camp location will be at: 105degrees 52 minutes, 50 seconds west and 60 degrees, 10 minutes and 40 seconds north. The camp will comprise individual nylon sleeping tents, a canvas office tent (10x15 feet), a canvas kitchen tent (10X20 feet) and a shower/wash tent (10X14 feet). Due to the proximity to the Saskatchewan border, (just 20 kilometres south) logistics will be handled out of Stoney Rapids, Saskatchewan, which is 100 km south.

The area of geological study includes parts of a region shown in the attached figure (South Rae project location and camp.pdf), covering parts of NTS 75A, B, G, H and 65E. During the 2015 season the focus of study will be in 75A and B; during 2016 it will be 75G, H and during 2017 it will be 65E.

## **Section 6:**

Land: The project at the camp will not be constructing any works that disturb the land surface. No roads or trails will be built. No ATV will be used. No material, equipment, debris or garbage will be left at the site. No sand or soil will be dug for permanent removal at the site. Garbage will be flown out. All empty fuel containers will be backhauled and removed from the site by the end of August, 2015. Latrine pits will be treated according to NWT guidelines and the pits filled in again afterwards and the organic layer laid back over. The surficial soil sampling away from the camp site will follow the minimally-invasive procedure discussed above. The bedrock mapping project leader (E. Martel) will take training on identification of archeological sites from the Prince of Wales Northern Heritage Centre so that she can train the crew and if any such sites are in the camp vicinity they can be properly identified, documented and left undisturbed.

Water: No effluent will be generated in the study, other than a small amount of grey water stemming from dish washing and personal showers. Grey water will be properly disposed of and treated per Section 9. All care will be taken to avoid any fuels or other substances entering the water through training of the crew and proper fuel handling and storage procedures (see Section 11). A minimal amount of water (< 0.5 cubic metres per day) will be taken from the adjacent lake for food preparation and occasional showering.

Flora and fauna: Impact of the camp on flora is limited to temporary coverage of small grassy spaces by the tents. It is expected that given the short duration of said coverage there grasses will grow uninhibited afterwards. No boardwalks or trails will be constructed and no roads. No trees need to be cut to make camp space. Proper grey water handling and fuel storage should mitigate any possible impact on fish in the adjacent lake. The camp will follow our organization's best practises on predator defense and mitigation in order to avoid bear issues and any impacts on the local bear population. None of the crew will be allowed to engage in hunting, wildlife harassment or disturbance of fauna of any kind. Project policy will be to change helicopter flight path in the event that we see wildlife, to minimize any impact on wildlife.

Socio-economic impact: The activity is non-recurring after the project ends in 2017. At this time the socio-economic impacts are uncertain as the state of geological understanding is so limited. If any aspects arise that could have such an impact the communities will be advised directly by our Engagement co-ordinator Kathryn Clark.

## **Section 9:**

Proposed disposal methods:

- a) Garbage. All garbage will be flown out of camp on a weekly basis
- b) Sewage: Sanitary and grey water will be disposed of via natural filtration through local peat and sand deposits.
- c) Brush and trees: No brush and trees will be disturbed and hence will not be disposed of
- d) Overburden will not be disturbed, hence no waste will need to be disposed of.

## Section 12: Containment fuel spill contingency plan:

The project's Containment fuel spill contingency plan has been developed following the INAC's guidelines. It is broadly outlined here (excluding site map and MSDS sheets for hazardous material) and a copy of the plan will be kept on site and at the Geological Survey of Canada head office-601 Booth Street, Ottawa.

The Geological Survey of Canada (company name, hereafter GSC) will operate a camp at Wignes Lake, NWT (location: 105degrees 52minutes 50 seconds west; 60degrees, 10 minutes, 40 seconds N). The date of this plan is April 20, 2015 and will be updated and revised as needed yearly. Copies of this plan are to be distributed to Dr Bernard Vigneault (Program head GSC), Dr Don Desnoyer (Project leader) and the GSC, and Mr Scott Cairns of the NWT Geoscience Office. Its purpose is to outline the plan for dealing with a fuel spill at the South Rae project camp. The project is subject to the Federal Government's policy on regulatory compliance, environmental protection and safety. The program will have an immediate response to any spill and clean-up all materials per the Federal policy.

The project description is found in section 5 above. The site is sparsely treed and flat, with the exception of an esker about 500 m to its north. It is bounded by the shore of Wignes Lake to the south. The camp site size is approximately 250 m X 250 m. There is no infrastructure and the accommodations are temporary nylon and canvas tents. There are no parks or game preserves at the site and the nearest communities (Lutsel K'e and Fort Resolution) are 360 and 437 km away, respectively. There is a private seasonal hunting lodge on the lake away from the proposed camp site that is occupied briefly in the fall.

The hazardous material to be stored at the site includes aviation fuel, gasoline, propane, and 20 individual canisters of personal cayenne pepper spray. The amount of aviation fuel stored at the site at the start of the project will be < 3485 L (17 drums) and will reduce rapidly through the 5 weeks of each year's field work. Secondary containment for the fuel drums will be a temporary plastic berm erected at the site and removed at the end of the field season, along with the empty drums. Handling will be by hand and transfer of fuel into the helicopters will be by hand pump. Propane and gasoline amounts are listed in section 11 of this application. The risk of a spill is considered very low due to the small volume involved and the limited transport distances and care in drum handling. All fuel drums used will be new, sealed drums.

The final document will summarize the instructions for when and how to report spills to the NWT 24-Hour Spill Report Line (1-867-920-8130) and will follow the INAC Guidelines for Spill Contingency Planning and include a copy of the required relevant information to be reported.

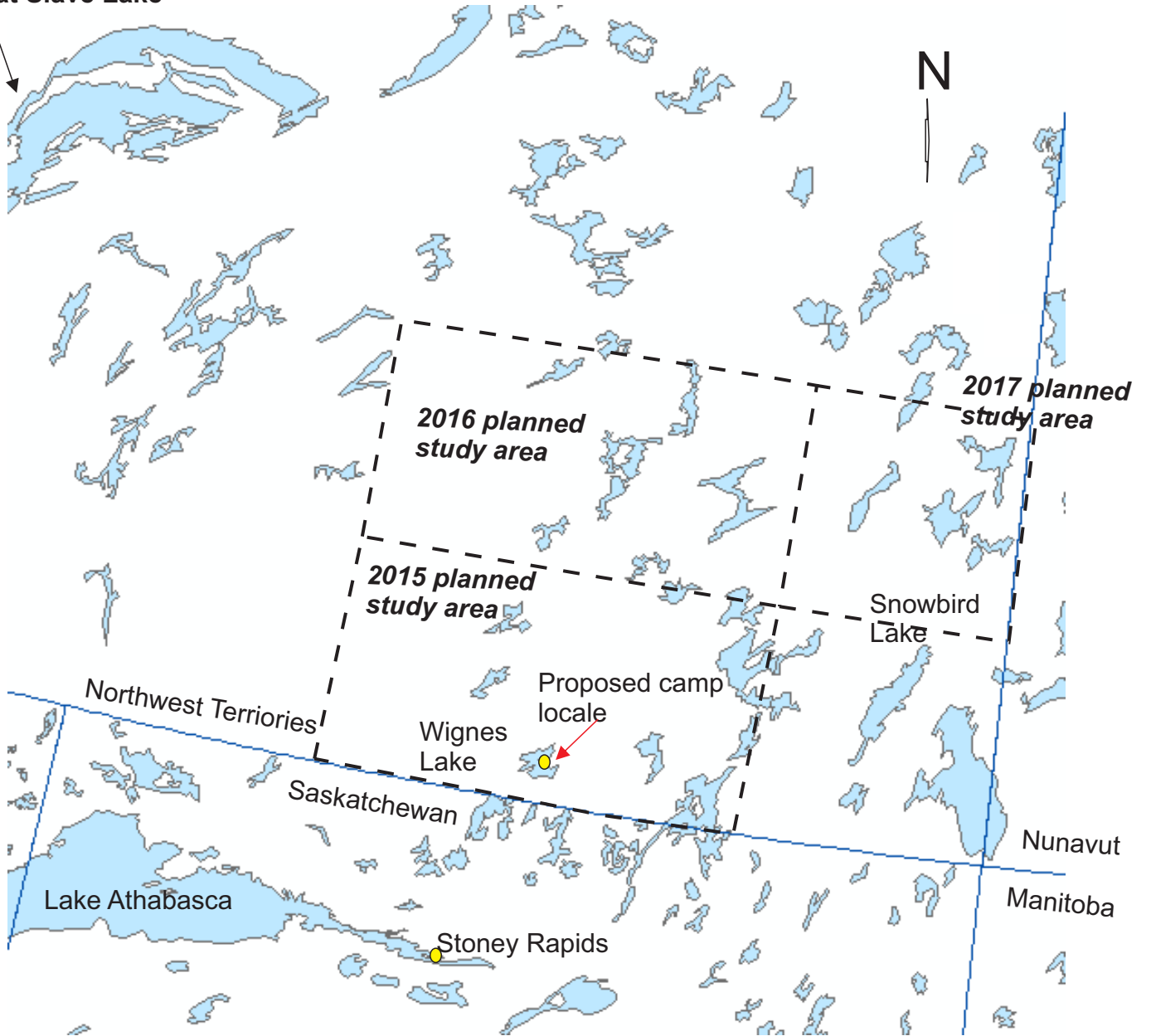
Additional copies of the plan can be obtained by contacting Dr. Don Desnoyers, GSC (613-995-4093). Public enquiries about the plan can be addressed to Ms. Kate Clark, Engagement Officer GSC (416-655-2391). Media enquiries are directed to Ms Pascale Groulx, Natural Resources Canada (613) 947-8538.

**Groups already contacted about the planned project:**

Prince Albert	Prince Albert Grand Council	Ron Michel	Grand Chief
Fort Resolution	Akaiicho Territory Government	Annie Boucher	Executive Director
Fort Smith	Northwest Territory Metis Council	Garry Bailey	President
Fort Resolution	Deninu K'ue First Nation	Louis Balsillie	Chief
Yellowknife	Yellowknives Dene First Nation, Ndilo	Ernest Betsina	Chief
Yellowknife	Yellowknives Dene First Nation, Dettah	Ed Sangris	Chief
Lutsel K'e	Lutsel K'e Dene First Nation	Felix Lockhart Stephanie Poole Peter Hunger	Chief
Fort Resolution	Fort Resolution Métis Council	Kara King	President
Fort Smith	Fort Smith Métis Council	Ken Hudson	President
Hay River	Hay River Métis Government Council	Wally Schumann	President
Fort Smith	Smith's Landing First Nation	Andrew Wanderingspirit	
Fond du Lac	Fond du Lac Denesuline First Nation	Earl John Lidguerre	Chief
Salt River	Salt River First Nation	Frieda Martselos	

Note a meeting with the Lutsel K'e Dene First Nation has been scheduled for April 29<sup>th</sup> 2015

East Arm  
Great Slave Lake



Northwest Territories

Saskatchewan

Nunavut

Manitoba

Lake Athabasca

Wignes Lake

Proposed camp locale

Stoney Rapids

Snowbird Lake

2016 planned study area

2015 planned study area

2017 planned study area

N