

Lynn J. Gillespie, Ph.D.
Research Scientist
Canadian Museum of Nature
PO Box 3443 Stn D
Ottawa, Ontario, Canada K1P 6P4

Nunavut Water Board P.O. Box 119
Gjoa Haven, Nunavut X0B 1J0 Canada

18 March 2020

Dear Nunavut Water Board Manager of Licensing:

RE: Application for the use of water or deposit of waste without a licence

Please find attached a completed and signed application for the use of water or deposit of waste without a licence, in support of botanical research to study and collect plants in Nunavut in July and August 2020.

This document is being submitted electronically (filename: Gillespie NWB Application 2020.pdf).

Included in this file are, in the following order:

- 1) Executive summary of application (in English) [page 1]
- 2) Executive summary of application (in Inuktitut) [page 2]
- 3) Application for the use of water or deposit of waste without a licence [pages 4–14]

In addition to this application, I have included a Spill Contingency Plan and I have submitted an application to the Wildlife Research Section, Nunavut Department of Environment for a Wildlife Research permit.

If the application is missing information, please do not hesitate to contact me for further details.

Thank you for considering this signed application for the use of water or deposit of waste without a licence.

Sincerely,



Lynn J. Gillespie, Ph.D.
Email: lgillespie@nature.ca
Phone: 613.364.4075

EXECUTIVE SUMMARY OF WATER LICENCE APPLICATION

18 March 2020

Applicant: Lynn J. Gillespie

Research Project Title: Flora of the Canadian Arctic

Location of the Undertaking:

1. Clyde River and surrounding area [70.4747N°, -68.5865W°] 5 July – 10 August 2020 (approximate time, before and after fieldwork in the Park).
2. Agguttinni Territorial Park proposed shelter locations opposite Sillem Island on Gibbs Fiord [70.8488°N, -72.2381°W] and at the head of Gibbs Fiord [70.610589°, -72.551060°], 12-18 July 2020.
3. Agguttinni Territorial Park proposed shelter locations at Tingijattut (Walker Arm) [70.6186N°, -71.5923W°] and Swiss Bay on Kangiqtualuk Uquqti (formerly Sam Ford Fiord) [70.5473N°, -71.0296W°], 19-25 July 2020.
4. Agguttinni Territorial Park proposed shelter locations at the head of Arviqtujuq Kangiqtua (formerly Eglinton Fiord) [70.485771°, -70.521922°] and Caribou Pass [70.3718N°, -70.5935W°], 26-1 Aug 2020.

Description of the Undertaking:

The composition and distribution of plants in the Canadian Arctic is likely to experience a major shift in the coming century in response to climate change, but detailed information on lichen and plant diversity, necessary to track future change, is lacking for many Arctic regions. The flora of some Arctic regions have never been explored, and many regions are poorly and incompletely studied.

We plan to conduct field work in the vicinity of Clyde River and Agguttinni Territorial Park in July and August 2020, in collaboration with Nunavut Parks and Special Places. Plant and lichen diversity at these sites has not been studied in detail. We will document plant and lichen biodiversity at all sites by exploring (on foot) different habitats and making collections of all the species we find. Collections will be dried in a plant press or in paper bags, and the specimens will be stored in the plant collection at the Canadian Museum of Nature, Ottawa, where they will contribute to on-going efforts to document all the plants and lichens in the Canadian Arctic. Our research team includes three researchers, one bear monitor and one assistant (both from Clyde River). We will set up small, temporary camps at our last three proposed locations.

Water use: Water will be used only for domestic purposes (drinking, cooking, washing) in our field camps.

Quantity of water involved: 5 people x 5 L/person/day = 25 L/day = 0.025 m³/day

Waste: Grey water (from cooking and washing). Sewage (human excrement; five people)

Other persons or properties affected by the undertaking: n/a

Predicted environmental impacts of the undertaking and proposed mitigation measures: None expected, as we will be using a very small volume of water, only for domestic purposes.



P.O. Box 119

GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338

FAX: (867) 360-6369

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NUNAVUT WATER BOARD

NUNAVUT IMALIRIYIN KATIMAYIT

OFFICE DES EAUX DU NUNAVUT

APPLICATION FOR APPROVAL FOR THE USE OF WATER OR DEPOSIT OF WASTE WITHOUT A LICENCE

Refer to the Guide to the Approval for the Use of Water or Deposit of Waste Without a Licence
(Guide) in completing this Application.

APPLICATION NO: (for NWB use only)									
1. APPLICANT CONTACT INFORMATION (name, address) Dr. Lynn J. Gillespie Canadian Museum of Nature, PO Box 3443, Stn. D, Ottawa, Ontario, K1Y 1X7 CANADA Phone: 1.613.364.4075 Fax: 1.613.364.4027 e-mail: lgillespie@nature.ca	2. APPLICANT REPRESENTATIVE CONTACT INFORMATION if different from Block 1 (name, address) Phone: _____ Fax: _____ e-mail: _____ (Attach authorization letter)								
3. NAME OF THE OWNER OF THE LAND THAT WILL BE USED IN RELATION TO THE WATER TO BE USED OR THE WASTE TO BE DEPOSITED Crown land; Nunavut Parks and Special Places									
4. NAME OF PROJECT (consistent with the name of the project issued by other regulatory agencies) Project title: Flora of the Canadian Arctic									
5. LOCATION OF UNDERTAKING Project Extents <table style="width: 100%;"> <tr> <td>NW: Latitude: (71°14'N)</td> <td>Longitude: (71°51'W)</td> </tr> <tr> <td>NE: Latitude: (70°31'N)</td> <td>Longitude: (68°15'W)</td> </tr> <tr> <td>SE: Latitude: (69°55'N)</td> <td>Longitude: (69°49'W)</td> </tr> <tr> <td>SW: Latitude: (70°48'N)</td> <td>Longitude: (73°14'W)</td> </tr> </table> Camp Location(s): Project location: 1. Clyde River and surrounding area [70.4747N°, -68.5865W°] 5 July – 10 August 2020 (approximate time, before and after fieldwork in the Park).		NW: Latitude: (71°14'N)	Longitude: (71°51'W)	NE: Latitude: (70°31'N)	Longitude: (68°15'W)	SE: Latitude: (69°55'N)	Longitude: (69°49'W)	SW: Latitude: (70°48'N)	Longitude: (73°14'W)
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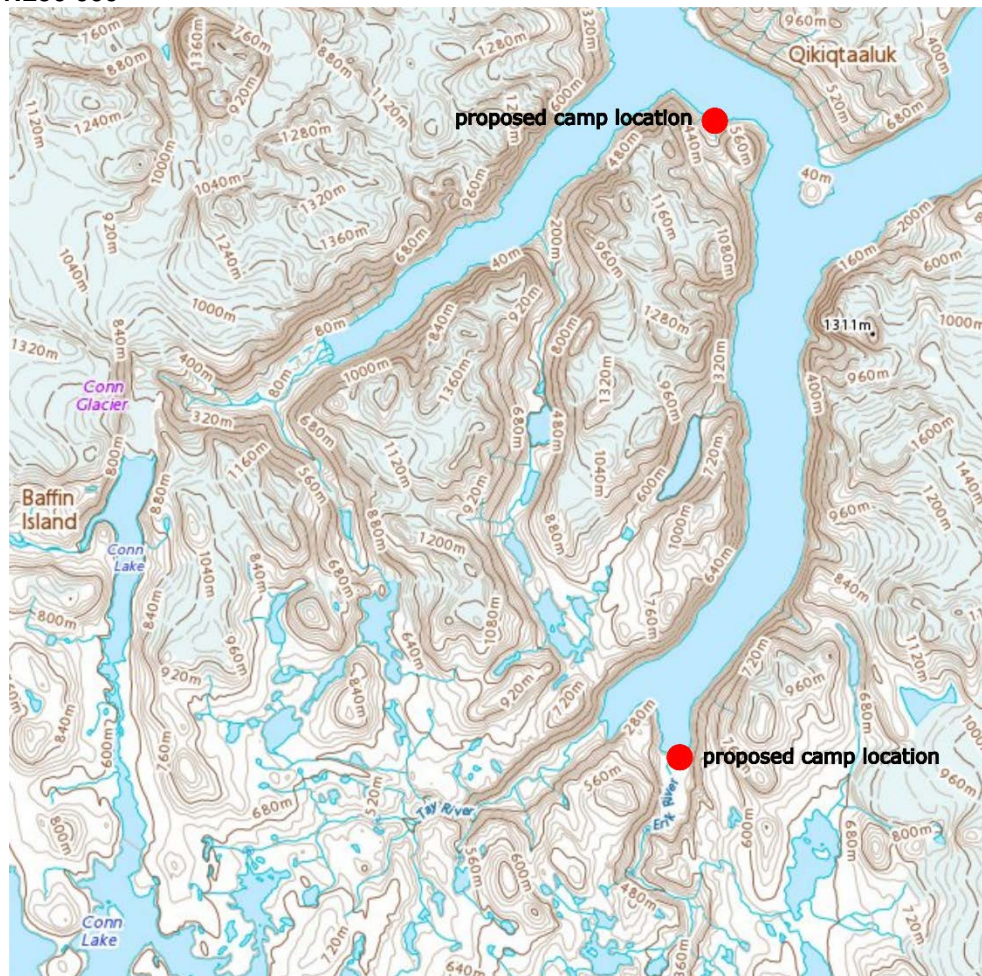
2. Agguttinni Territorial Park proposed shelter locations opposite Sillem Island on Gibbs Fiord [70.8488°N, -72.2381°W] and at the head of Gibbs Fiord [70.610589°, -72.551060°], 12-18 July 2020.
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MAP - Attach a topographical map, indicating the main components of the undertaking.

Map 1: **Sillem Island and Gibbs Fiord**

NTS Map Sheet No.: **37E** Map Name: **CONN LAKE**

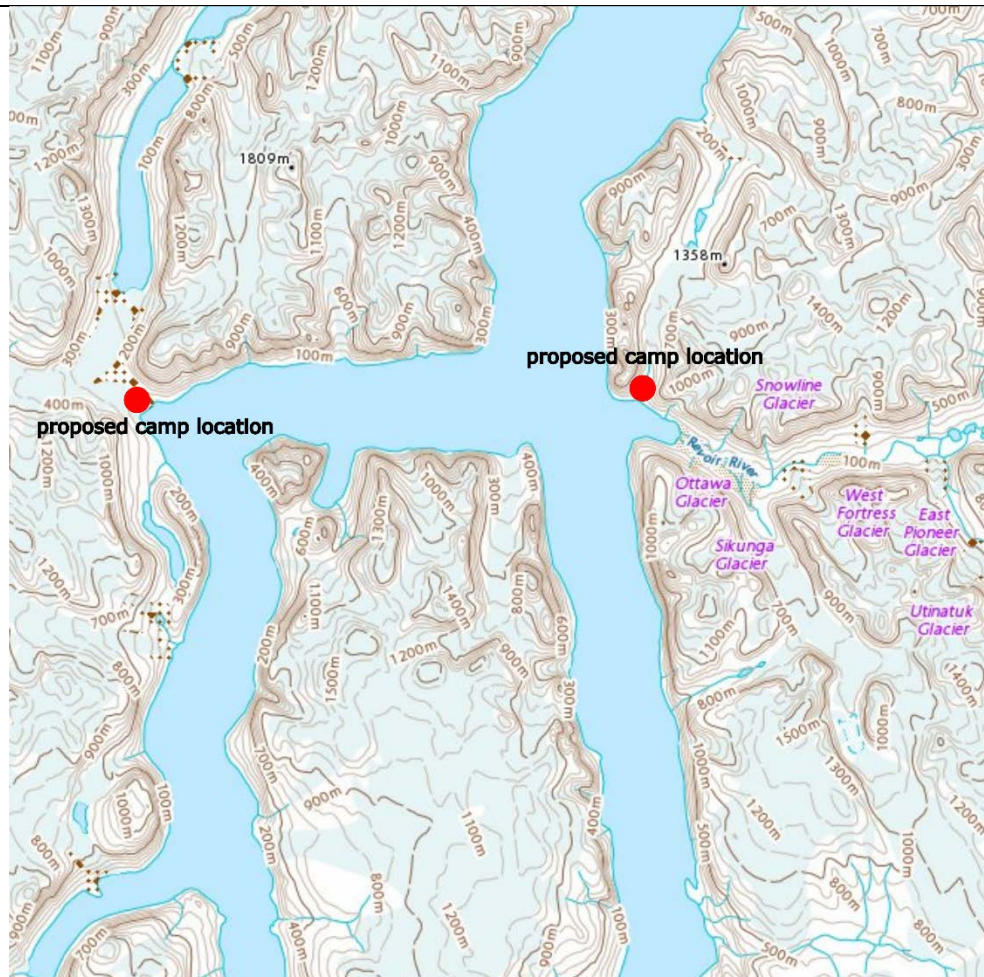
Map Scale: **1:250 000**



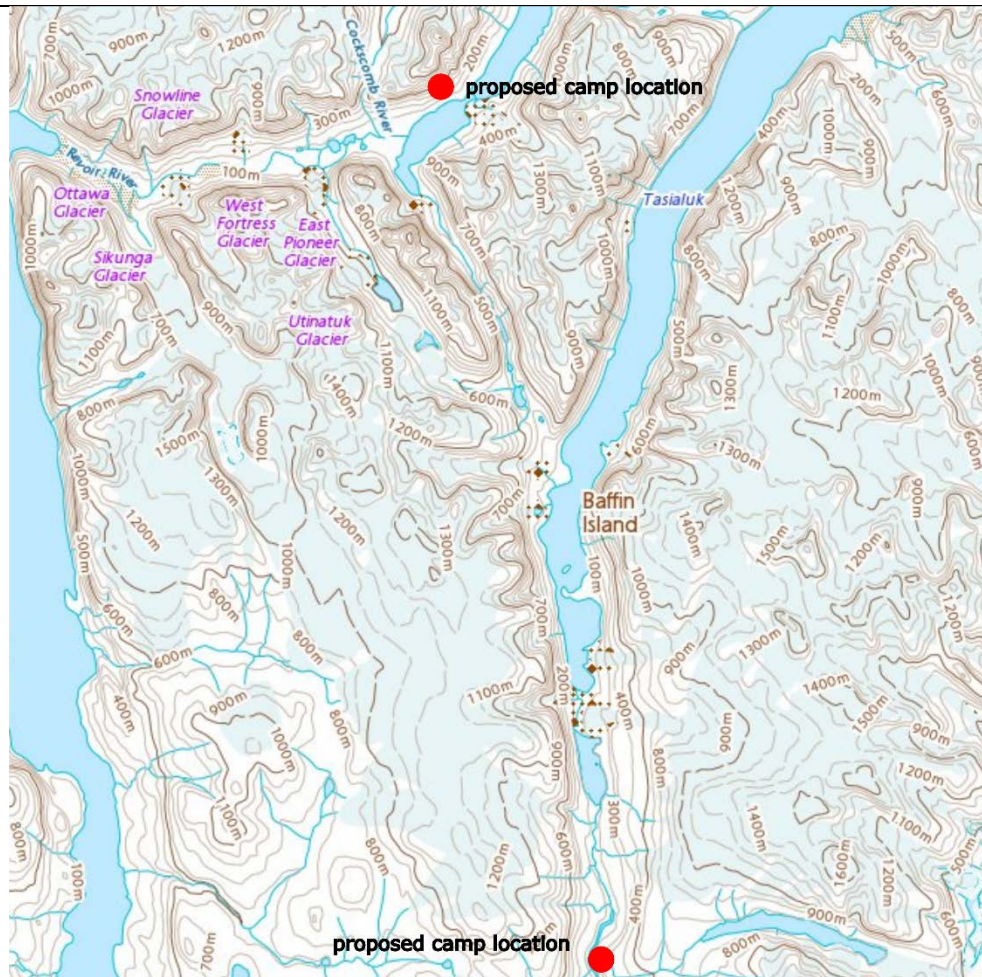
Map 2: **Tingijattut and Swiss Bay**

NTS Map Sheet No.: **27F** Map Name: **CLYDE INLET**

Map Scale: **1:250 000**



Map 3: Arviqtujuq Kangiqtua and Caribou Pass
 NTS Map Sheet No.: 27F Map Name: CLYDE INLET
 Map Scale: 1:250 000



Name of the Water Management Area in which the Undertaking is located. (Please see Appendix D of the Guide):

49. Southwestern Baffin Bay Watershed

6. CLASSIFICATION OF UNDERTAKING - Indicate the classification of undertaking by checking one of the following boxes.

- ☐ Industrial
- ☐ Mining
- ☐ Conservation
- ☐ Municipal

- ☐ Agricultural
- ☐ Recreational
- ☐ Power
- ☒ Other: (describe)

We will be conducting botanical research and collecting lichen and plant specimens to document the biodiversity and distribution of the flora in the regions in which we plan to work (see project proposal above).

7. DESCRIPTION OF UNDERTAKING AND EQUIPMENT USED – Provide a brief description of the undertaking including a description of any equipment that will be used in using water or depositing waste.

Vascular Plant and Lichen Biodiversity of the Canadian Arctic

Arctic regions of the world are among the most rapidly changing on the planet, in response to global climate change, substantial changes to Arctic vegetation are being documented by scientists. Understanding the composition and distribution of the Arctic flora in the past and present is critical to documenting change in the future. This research program aims to increase our knowledge of the Canadian Arctic flora through floristic and systematic studies of Arctic vascular plants and lichens. We are working to document where Arctic vascular plant and lichen species occur in time and space, to increase knowledge of their identities (i.e., taxonomy), building on the substantial body of work that has been contributed by researchers in the past, and to understand the evolutionary history of a subset of the flora. Such research is essential in serving as a basis for biodiversity, ecological, conservation, and environmental impact studies. This project will provide comprehensive baseline data on Arctic lichens and vascular plants (taxonomy, distribution, ecology), with the goal of producing a complete flora. It builds on our extensive, ongoing work on the Arctic flora (see summary of our recent research progress in Appendix B), and continues the strong, century-long tradition of Arctic botany at the Canadian Museum of Nature (CMN), the only Canadian institution with major plant and lichen systematic research activities in the Arctic.

Arctic Flora

Detailed information of the taxonomy and distributions of Arctic flora is necessary to understand potential impacts of environmental change on Arctic terrestrial ecosystems. Unfortunately, most previous regional Arctic floras are now out of print and very out of date, and there is no single publication or digital resource available that can provide up-to-date knowledge on the Canadian Arctic flora.

Although the Arctic region is a major part of Canadian natural heritage, with the area above tree line in Canada comprising approximately 40% of the country, a flora treating all the vascular plants across the whole Canadian Arctic region has never been produced. The objectives of our research are to revise, develop, increase and disseminate the taxonomic knowledge base for the Arctic flora. Our research focus is broad, examining the "big picture" of understanding Arctic plant and lichen biodiversity in Canada: what are the species, and where do they occur? Our immediate objective is to synthesize existing collection-based knowledge, and to gather new knowledge on Arctic plants and lichens by undertaking work in areas of the Canadian Arctic that are botanically poorly known.

Arctic Floristics

Vascular Plants: We are conducting field work in botanically understudied areas of the Canadian Arctic to develop new and comprehensive baseline data for these areas, contributing to our understanding of species distributions and diversity in the Canadian Arctic as a whole. Our eight Arctic field seasons since 2008 have resulted in over 10000 new plant collections, which are deposited in the National Herbarium and other herbaria in Canada and internationally. We also collect silica-gel dried material for every collection of Arctic plant and lichen for use in molecular research. For each area we work in, we aim to produce a detailed floristic account of the vascular plants of the area, based on all collections made there, including ours and those made by previous researchers.

Lichens: In the Canadian Arctic, many lichens are conspicuous and abundant. As a result, the large charismatic species have been somewhat widely collected by expedition teams sampling opportunistically, but most of the region has not been examined by a professional lichenologist. Many lichen species are inconspicuous and often overlooked, and while 1750 lichens have been reported in the circumpolar Arctic, only 1026 species are known from the North American Arctic. The similar large-scale environmental

conditions throughout the Arctic suggest that the 724 species occurring elsewhere are likely in the Canadian Arctic. Substantial work remains in order to understand lichen diversity in the Canadian Arctic.

2020 Fieldwork in Nunavut

In 2020 we will partner with Nunavut Parks and Special Places to conduct a botanical inventory of Agguttinni Territorial Park near Clyde River, Baffin Island. We plan to conduct field work in July and August studying the plants and lichens in the Park and in the vicinity of the community of Clyde River (see map in Appendix A). Specifically, we will work in and around:

1. Clyde River and surrounding area [70.4747N°, -68.5865W°] 5 July – 10 August 2020 (approximate time, before and after fieldwork in the Park).
2. Agguttinni Territorial Park proposed shelter locations opposite Sillem Island on Gibbs Fiord [70.8488°N, -72.2381°W] and at the head of Gibbs Fiord [70.610589°, -72.551060°], 12-18 July 2020.
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At sites 2, 3, and 4, we will camp at one (or both) of the proposed shelter sites and comprehensively survey the area during the week we plan to spend in that part of the park.

Previous collecting within the proposed park boundaries has been very limited. During the 1950 Baffin Island Expedition led by P.D. Baird, V.C. Wynne-Edwards made scattered collections at the head of Arviqtujuq Kangiqtua (formerly Eglinton Fiord), while Hans Rothesberger and Pierre Dansereau made a few collections at Swiss Bay, Arviqtujuq Kangiqtua, and Gee Lake in the interior of the proposed park.

In 2012, Julian Starr, then with the Canadian Museum of Nature, made two collections of *Carex* in the areas around Swiss Bay, while on a Students on Ice Expedition. In 2017 Yemisi Dare, a Canadian Museum of Nature Scientist on the Canada C3 expedition, made 36 vascular plant and 32 lichen collections at Tingijattut on the western arm of Kangiqtualuk Uquqti (formerly Sam Ford Fiord) and at Ravenscraig Harbour on the eastern shore of Arviqtujuq Kangiqtua (formerly Eglinton Fiord), representing the most intense collecting effort in the park area to date.

This proposal therefore focuses on providing the first comprehensive documentation on the vascular plant and lichen diversity of Agguttinni Territorial Park. Comprehensive botanical knowledge of the park is important to understand the natural history of the area and track future changes in species distribution, as well as to inform management decisions.

References

1. Baird, P.D., Kranck, E.H., Goldthwait, R.P., Eade, K.E., Ward, W.H., Riley, G.C., Orvig, S., Montgomery, M.R., Dansereau, P. and Hale, M.E., 1950. Baffin Island expedition, 1950: a preliminary report. *Arctic*, 3(3), pp.130-149.

Objectives:

Our overall goals are to gain a more complete understanding of the present state of the distribution and composition of the Canadian arctic flora and to expand the knowledge base for understanding the broad-scale impacts of environmental change on the arctic flora. Specifically in 2020 our goal is to initiate a detailed botanical inventory of Agguttinni Territorial Park.

The data and specimens collected on this trip will be used in support of several research projects:

1. a floristic study of the collected areas, published in a peer-reviewed journal;
2. the Arctic Flora of Canada and Alaska project, led by the Canadian Museum of Nature, which will treat all vascular plants in the entire Canadian Arctic and the North Slope of Alaska (<http://arcticplants.myspecies.info/>);
3. DNA barcoding studies of the Arctic flora (e.g., Saarela et al. 2013);
4. Ongoing and future taxonomic/systematic studies of Arctic lichen and plant species. Once incorporated into herbaria, the specimens will be available to all scientists for study, and the data will be shared internationally through digital biodiversity repositories, such as the Global Biodiversity Information Facility and the Collections Online website at the Canadian Museum of Nature.

Management Implications: Our research will provide new and up-to-date information on vascular plant and lichen diversity in Agguttinni Territorial Park, all of which will be made available to Nunavut Parks and Special Places and the community of Clyde River. This baseline information will inform future land management plans related to plants in the region and will provide data crucial to measuring the effects of climate change and development within the studied areas.

Management Implications

Our research will provide new and up-to-date information on lichen and vascular plant diversity in the Canadian High Arctic. This baseline information will inform future land management plans related to plants in the region, providing data crucial to measuring the effects of climate change and development within the studied areas.

Specimen Collecting Methods

We will undertake research in the vicinities of each site by foot, complete plant inventories of all lichens and vascular plants, and collect data on conservation status, ecology, distribution, and population variation as appropriate. All of these data will be useful for long-term monitoring of potential changes in species diversity in the future.

Approximately 1000 vascular plant specimens will be collected, photographed, and studied. Collections will be deposited at the National Herbarium of Canada (Canadian Museum of Nature), and duplicate specimens will be provided to Nunavut Parks and Special Places and also distributed to national and international herbaria, all contributing to the permanent scientific record documenting the distributions of Arctic lichen and plant species in time and space. As time permits we will make occasional collections of algae, fungi and bryophytes.

Lichen specimens are collected from the environment by hand, using a small knife, or by using a hammer and chisel for crustose (rock-growing) specimens. These lichens are dried in the field in paper bags. Vascular plant specimens are collected and placed in a plant press, the standard method that botanists have used for several centuries. Once collected, plant specimens are arranged onto sheets of newspaper, placed between two pieces of cardboard, piled up, placed in a plant press, and tightened with two straps. The specimens are flattened and dried in the press; once dry they will last for centuries when stored in a

herbarium (dried plant collection).

For each collection event we:

- Collect one to several individuals of a species (depending on the size of an individual, and how common the species is locally). If a species is not common, we collect only enough material to properly document its occurrence at the site. If a species is rare, we do not collect any specimens, and document its occurrence only with photographs.
- Record detailed notes on the location of the species, its local growing conditions, and other species that grow at the site. For most collections we take photographs of the species growing in its natural state.
- Preserve a small amount of tissue from the specimen in silica gel (a desiccant), which rapidly dries the genetic material in the leaf tissue in a way that is suitable for later study (e.g., DNA sequencing) in the molecular laboratory.

8. SCHEDULE – Applicants are advised that approvals without a licence are issued for a one year term.

Proposed Start Date: **5 July 2020**
(Month/Year)

Proposed Completion Date: **10 August 2020**
(Month/Year)

9. TYPE OF USE OF WATER WITHOUT A LICENCE PROPOSED - Check the box that applies to the type of water use proposed. If none of the water uses listed below applies to the proposed water use, an application for a water licence will be required. See the NWB's *Guide 4 – Completing and Submitting a Water Licence Application for a New Licence*.

- ☐ For an undertaking other than a Power undertaking and for a use of water related to the construction of a structure across a watercourse that is less than 5 metres wide at the ordinary high water mark at the point of construction.
- ☐ For an undertaking other than a Power undertaking and for a use of water related to the training of an intermittent watercourse.
- ☐ For an undertaking other than a Power undertaking and for a use of water related to the training of a watercourse that involves the infilling of the watercourse, if the watercourse has no inflow or outflow and a surface area of less than 0.5 hectares.
- ☐ For an undertaking other than a Power undertaking and for a use of water related to the training of a watercourse that involves removal or placement of less than 100 m³ of material.
- ☐ For an undertaking other than a Power undertaking and for a use of water related to the construction of a temporary structure in a watercourse for the purpose of flood control.
- ☐ For an undertaking other than a Power undertaking and for any use of water related to the storage of 2,500 m³ or less.



For an undertaking other than a Power undertaking and for any use of water less than 50 m³ per day.

- 10. QUANTITY AND QUALITY OF WATER INVOLVED** - For each type of water use indicated in Block 9, provide the source of water, the estimated quantity to be used in cubic metres per day, and the periods during which water will be extracted.

Type of Water Use indicated in Block 9	Name of water source	Estimated quantity of water to be used in cubic metres per day	Periods during which water will be extracted
For an undertaking other than a Power undertaking and for any use of water less than 50 m ³ per day.	Unnamed streams or lakes in study region	0.025 m ³ /day	5 July-10 August 2020

- 11. TYPE OF DEPOSIT OF WASTE PROPOSED** - Check the box that applies to the type of deposit of waste proposed. If none of the deposits of waste listed below apply to the proposed deposit of waste, an application for a water licence will be required. See the NWB's Guide 4 – Completing and Submitting a Water Licence Application for a New Licence.



For an Industrial undertaking, for an activity related to hydrostatic testing or cleaning of storage tanks and pipelines, and for any deposit of waste resulting from hydrostatic testing or cleaning of unused storage tanks or pipelines.



For an Industrial undertaking, for an activity related to quarrying and gravel washing, and for any deposit of waste that is not deposited to surface water and that results from quarrying or gravel washing above the ordinary high water mark.



For a Mining undertaking, for an activity related to exploratory work, any deposit of sewage to a sump.



For a Power undertaking, any deposit of sewage to a sump.



For an Agricultural undertaking, any deposit of sewage to a sump.



For a Recreation undertaking, any deposit of sewage to a sump.



For any Other type of undertaking not listed above, other than Municipal, any deposit of sewage to a sump.

- 12. QUANTITY AND QUALITY OF WASTE INVOLVED** – For each type of waste indicated in Block 11, describe the quantity in cubic metres/day, measures to avoid or mitigate adverse impacts, and periods of deposition.

Type of Waste indicated in Block 11	Quantity to be deposited in cubic metres per day	Measures to avoid or mitigate any adverse impacts	Periods during which waste will be deposited
For any Other type of undertaking not listed above, other than Municipal, any deposit of sewage to a sump. (Greywater)	0.025 m ³ /day	Will dump grey water at least 50 m from water sources	5 July-10 August 2020
For any Other type of undertaking not listed above, other than Municipal, any deposit of sewage to a sump. (Sewage)	Minimal (five people)	Will be buried	5 July-10 August 2020

13. SIGNATURE

I, Lynn Gillespie (print name), certify that the information given on this form is, to the best of my knowledge, correct and complete.

☒ Yes

☐ No

OR

I, _____ (print name), as an authorized representative of the Applicant, _____, certify that the information given on this form is, to the best of my knowledge, correct and complete.

☒ Yes

☐ No

I certify that the Nunavut Planning Commission's land use planning requirements under Article 11 of the Nunavut Land Claims Agreement have been met.

☒ Yes

☐ No

I certify that the Nunavut Impact Review Board's development impact review requirements under Article 12 of the NLCA have been met.

☒ Yes

☐ No

I certify that the proposed water use is of a type set out in column 2 of Schedule 2 of the Regulations that is further specified by column 3, in respect of an undertaking set out in column 1. See list in Block 9.

☒ Yes

☐ NA

☐ No

I certify that the proposed deposit of waste is an activity that is set out and then further specified in columns 2 and 3 of Schedule 3 of the Regulations, in respect of an undertaking that is set out in column 1 of Schedule 3. See list in Block 11.

☒ Yes

☐ NA

☐ No

I certify that the proposed water use or deposit of waste will not substantially affect the quality, quantity or flow of the watercourse whose waters are used.

☒ Yes

☐ No

I certify that the proposed water use or deposit of waste will not substantially affect the quality, quantity or flow of waters flowing through Inuit Owned Lands.

☒ Yes

☐ No

I certify that the proposed water use or deposit of waste will not affect the use of waters by a person who would be entitled to compensation under sections 58 or 60 of the Nunavut Waters Nunavut Surface Rights Tribunal Act (Act) if their use of these waters were to be adversely affected by an applicant for a licence.

☒ Yes

☐ No

I certify that a licence is not required for another use of water, or deposit of waste in respect of the proposed undertaking.

☒ Yes

☐ No

I have read and agree to comply with the following conditions outlined in sections 4(3), 5(4), 5(5) and 6 of the Nunavut Waters Regulations:

1. In the case of an applicant who has a mineral right and who intends to use waters or deposit waste in relation to that right, the applicant shall respect the priority conferred on Inuit by section 62 of the *Act* as if that applicant had a licence for the use or deposit.
2. Measures must be taken prior to using water to minimize any alteration to the bed or banks of a watercourse whose waters are to be used, and the measures shall be maintained during the operation of the undertaking.
3. No waste is to be deposited to surface water or within 31 metres of the ordinary high water mark of any body of water.
4. The waste shall not contain more than 15 milligrams per litre of petroleum or petroleum product and must not have a visible hydrocarbon sheen.
5. Prior to the closure or abandonment of the undertaking or end of the period authorized for the use of water or deposit of waste without a licence, whichever occurs first, the site shall be restored — to the extent practicable — to the state in which it was before the water was used or the waste was deposited.^a
6. An applicant who is authorized under the Regulations to use waters or deposit waste without a licence shall:
 - a. maintain accurate and detailed books and records of:
 - i. the quantity of water, in cubic metres, used each day,
 - ii. the quantity, in cubic metres, of waste deposited each day,
 - iii. the type of waste deposited each day,
 - iv. where the waste is deposited,
 - v. the concentration of the substance, or substances, in the deposited solid or liquid that has the effect of making the deposit waste,
 - vi. the methodology used to calculate or determine the information referred to in items (i) to (iv), and
 - vii. the measures that were taken to avoid or mitigate any adverse impacts of the deposit of waste.
 - b. keep the books and records on the site of the undertaking during the period of its operation and make them available during that period to an inspector on request;
 - c. submit to the Board a report containing a summary description and supporting photographs of the restoration of the site of the undertaking within 30 days after the earliest of (i) the day on which the undertaking is closed or abandoned, and (ii) the last day of the period authorized for the use or deposit without a licence;^b and
 - d. keep the books and records for two years after submitting the report describing the restoration of the site of the undertaking.

Notes:

a) A site need not be restored prior to the end of the period authorized for the water use or deposit of waste without a licence, as required by Item 5, if the Board issues a licence for the use of water or deposit of waste on that site prior to the end of that period.

b) An applicant need not submit the report referred to in Item 6 (c), to the Board if the applicant obtains the Board's approval for a use of water or deposit of waste without a licence, or a licence for a use of water or deposit of waste, on the same site within thirty (30) days after the last day of the period authorized for the use or deposit.

☒ Yes

☐ No

I understand that any approval granted by the Board for the use of water or deposit of waste without a licence will be authorized for a period of one year after the day on which the Board approves the Application. The use or deposit is not authorized until the Board approves the Application and it is only valid as long as the applicant is in compliance with the conditions set out in the declaration above.

☒ Yes

☐ No

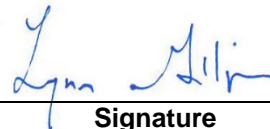
I understand that if I have answered "No" to any of the above statements a water licence is required from the Nunavut Water Board prior to the use of water or deposit of waste.

☒ Yes

☐ No

Lynn. J. Gillespie

Research Scientist



**18 March
2020**

Name (Print)

Title (Print)

Signature

Date

Spill Contingency Plan
Botany Research Team, Canadian Museum of Nature
16 March 2020

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1) Introduction and Project Details

This contingency plan is based on:

Water Resources Division, Indian and Northern Affairs Canada (2007) Guidelines for Spill Contingency Planning. 30 pp. <http://www.aadnc-aandc.gc.ca/eng/1100100024236>
[accessed 15 March 2012]

i) Company name, location and mailing address

Canadian Museum of Nature
PO Box 3443, Stn D
Ottawa, Ontario K1P 6P4, Canada

Project Leader: Lynn J. Gillespie, PhD
Email : lgillespie@nature.ca
Phone: 1.613.364.4075
Fax: 1.613.364.4027

Research Site Names, Locations and Periods.

- Clyde River and surrounding area [70.4747N°, -68.5865W°] 5 July – 10 August 2020 (approximate time, before and after fieldwork in the Park).
- Agguttinni Territorial Park proposed shelter locations opposite Sillem Island on Gibbs Fiord [70.8488°N, -72.2381°W] and at the head of Gibbs Fiord [70.610589°, -72.551060°], 12-18 July 2020.
- Agguttinni Territorial Park proposed shelter locations at Tingijattut (Walker Arm) [70.6186N°, -71.5923W°] and Swiss Bay on Kangiqtualuk Uquqti (formerly Sam Ford Fiord) [70.5473N°, -71.0296W°], 19-25 July 2020.
- Agguttinni Territorial Park proposed shelter locations at the head of Arviqtujuq Kangiqtua (formerly Eglinton Fiord) [70.485771°, -70.521922°] and Caribou Pass [70.3718N°, -70.5935W°], 26-1 Aug 2020.

ii) Effective date of spill contingency plan: 16 March 2020

iii) Last revision to spill contingency plan: 16 March 2020 (this version)

iv) Distribution List

The latest version of the plan has been distributed to:

- Paul Sokoloff, Senior Research Assistant, Canadian Museum of Nature

- Geoff Levin, PhD, Research Associate, Canadian Museum of Nature
- Nunavut Water Board
- Wildlife Management, Nunavut Department of Environment

v) Purpose and Scope:

The purpose of this plan is to outline response actions for potential fuel spills, of any size, including a worst case scenario for the Canadian Museum of Nature at their Arctic field camps in July and August, 2020. The plan identifies key response personnel and their roles and responsibilities should there be a spill. The plan also identifies the equipment and other resources available to respond to a spill. It details response procedures that aim to minimize all potential health and safety hazards, damage to the environment, and clean-up efforts. The plan has been prepared to ensure quick and effective access to all required information for responding to a spill.

vi) Company Environmental Policy

The mandate of the Canadian Museum of Nature (CMN) is to increase, throughout Canada and internationally, interest in, knowledge of and appreciation and respect for the natural world by establishing, maintaining and developing for research and posterity, a collection of natural history objects, with special but not exclusive reference to Canada, and by demonstrating the natural world, the knowledge derived from it and the understanding it represents.

As such, the Museum is committed to understanding and protecting the natural environment, recognizing that protecting the environment requires scientific knowledge of the environment so sound decisions can be made.

The Museum does not have an explicit environmental policy for field research conducted by its staff. However, environmental policy at the CMN is reflected in the Museums Value and Ethics Code:

CMN employees are guided in their work and their professional conduct by a balanced framework of core institutional values: *Honesty and Integrity, Respect for People and Nature, the Pursuit of Excellence, and Continuous Learning.*

Honesty and Integrity: *In all actions and relationships, both to the public and to each other.*

- CMN employees work within the laws of Canada and maintain the tradition of political non-partisanship of employees within federal institution.
- CMN employees support both individual and collective accountability and provide Parliament and Canadians with the results of their work.
- At the Canadian Museum of Nature, the manner in which ends are achieved is as important as the achievements themselves;
- CMN employees endeavour to ensure the proper, effective and efficient use of assets and resources.

- CMN employees act at all times in a manner that will bear the closest public scrutiny; an obligation that is not fully discharged by simply acting within the law.
- CMN employees perform their duties and arrange their private affairs so that public confidence in the integrity, objectivity and impartiality of a federal institution are conserved and enhanced.

Respect for People and Nature - *Demonstrating respect, fairness and courtesy in all dealings with the public and fellow CMN employees, as well as demonstrating a deep respect for the natural world.*

- Respect for human dignity and for the value of every person governs the exercise of authority and responsibility, and reinforces the wider range of CMN values.
- CMN business is conducted openly, with respect for diversity and for both official languages of Canada.
- The CMN promotes an attitude of environmental awareness and sensitivity that supports and expresses the principles of conservation and environmental stewardship.

The Pursuit of Excellence: *Striving to achieve exceptional performance and provide outstanding service.*

- CMN employees constantly renew their commitment to serve Canadians by providing quality of service, by adapting to changing needs through innovation, and by seeking to improve the efficiency and effectiveness of CMN programs and services wherever possible.
- CMN employees, in fulfilling their official duties and responsibilities, make decisions in the public interest and behave in accordance with codes of professional practice.
- CMN employees support teamwork, cooperation, collaboration and open communication.

vii) Project Description

The Museum Research team will travel to 3 field research stations in Nunavut (see list above) from 5 July – 10 August 2020 (dates approximate). The team will stay at these stations and explore the plant and lichen diversity of the region in and around each camp by foot (within a radius of 5-10 km from the camp, i.e., walking distance). Permit applications have or will be submitted to the following agencies, for approval to conduct botanical studies in this region:

- Nunavut Water Board
- Wildlife Management, Department of Environment, Nunavut

The research team will be transported to these research stations via a boat chartered by Nunavut Parks and Special Places, who are supporters of this research.

viii) Site Description

During our fieldwork we will document the flora of Clyde River and up to six proposed shelter sites within Agguttinni Territorial Park; within each park area we plan on working in there are two proposed shelter sites, we will camp at one and possibly both sites. We plan on erecting a small temporary camp (two-four sleeping tents, a cooking tent, and a working tent) within the vicinity of the proposed shelter sites (Fig. 1, 2, 3). All project materials will be removed at the end of this field season.

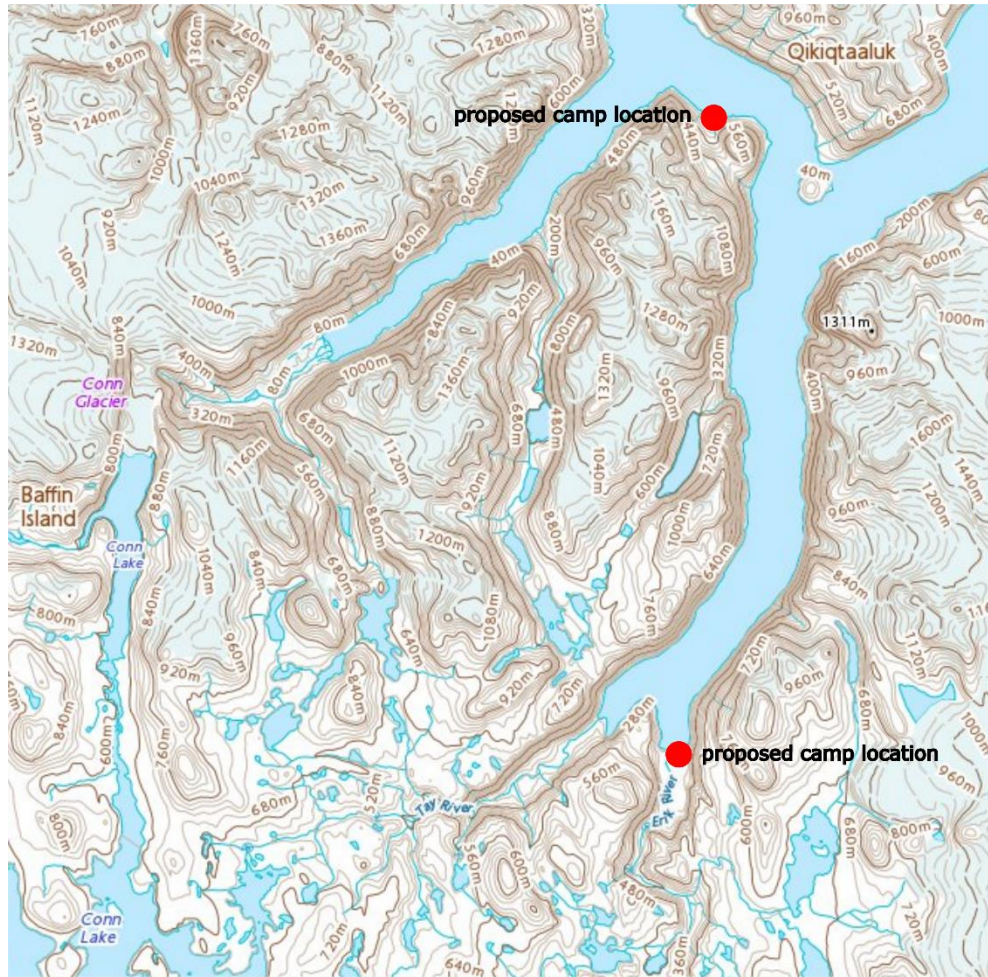


Figure 1. Location of the proposed camps near Sillem Island and Gibbs Fiord, Baffin Island, Nunavut.

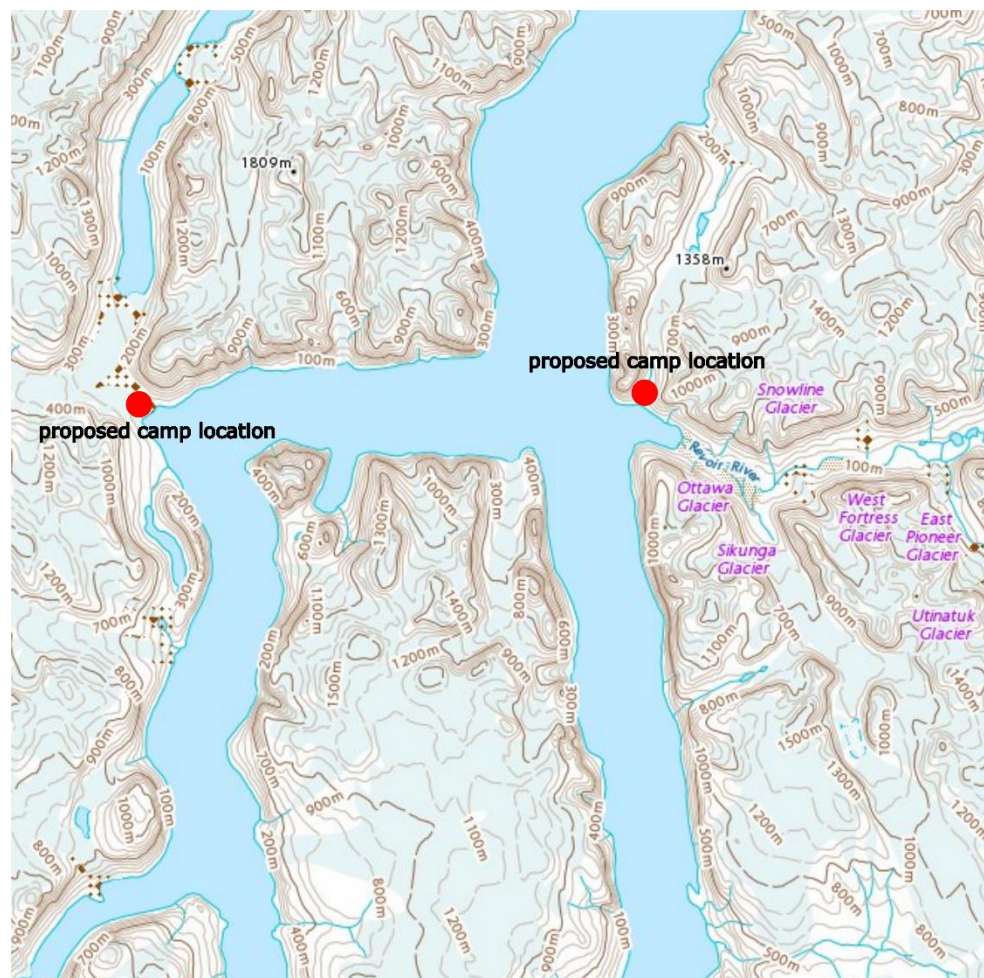


Figure 2. Location of the proposed camps near Tingijattut and Swiss Bay, Baffin Island, Nunavut.

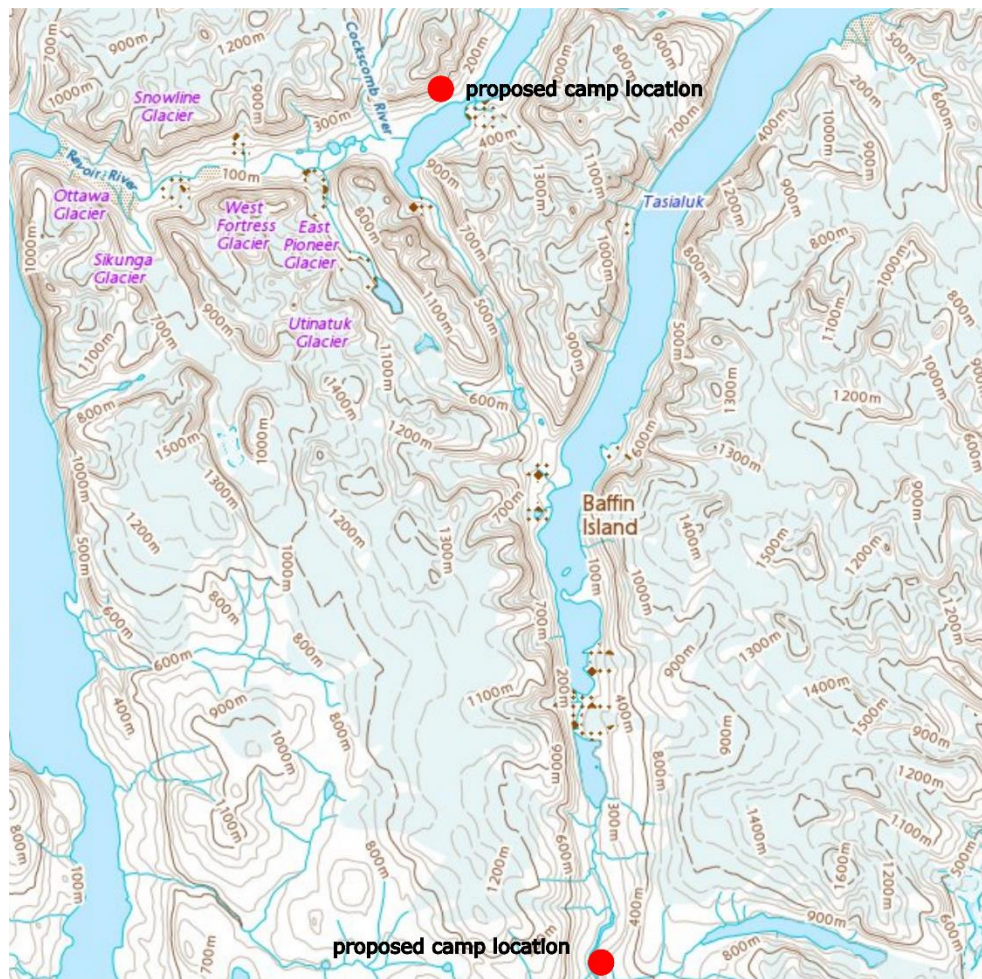


Figure 3. Location of the proposed camps near Arviqtujuq Kangiqtua and Caribou Pass, Baffin Island, Nunavut.

ix) List of Hazardous Materials on Site

When camping in vicinity of our three field stations, the fuel storage area will be around a tent designated as our kitchen tent. Here we will store camp fuel (white gas) to fuel our small camp stoves. The exact location for these fuel storage area is not known in advance. It will be established when we arrive at the site to set up the temporary camp. Table 1 lists the hazardous materials that will be stored on site, type of storage container, the normal and maximum storage quantities, and storage locations. Material safety data sheets (MSDS) for these fuels are included in Appendix 1.

Table 1: List of hazardous materials stored on site, type of storage container, the normal and maximum storage quantities, and storage locations.

Material	Storage Container	Normally On-site	Maximum On-site	Storage Location and Uses
White gas (naphtha) [Coleman camp fuel]	3.8 L (1 can)	7.4 L (2 cans)	11.2 L(3 cans)	Near kitchen tent, used to fuel camp stoves for cooking

x) Existing preventative measures

Planning for an emergency situation is of utmost importance due to the nature of the hazardous materials stored on site, and the remoteness of the proposed sites.

White gas (naphtha) will be stored in the containers it comes in, and in fuel bottles for camp stoves.

The project leader and camp manager will monitor fuel storage daily to check for leaks and other damage to the fuel containers.

Grey water from cooking (this will be minimal) will be dumped at least 100 m from all water sources.

xi) Additional copies

Hard copies of this spill contingency plan will be kept on-site, in a binder that contains hard copies of research permits and licences. In the field, digital copies will also be kept on laptop computers and tablet devices. A hardcopy will be held at the Canadian Museum of Nature in Ottawa. Copies can be obtained by contacting Lynn Gillespie (contact details above).

xii) Process for staff response to media and public inquiries

We do not expect there to be any media interest should a spill occur at our site (the volume of hazardous materials is extremely low), but should media interest arise, all inquiries will be directed to Mr. Dan Smythe, Senior Media Relations Officer, Communications Services,

Canadian Museum of Nature, Ottawa. The project leader and/or camp manager will keep the media relations officer informed of any news of potential interest to the media relating to spills.

2) Response Organization

Response personnel:

Project Leader: Lynn Gillespie, PhD

Research Team: Paul Sokoloff, Geoff Levin, PhD

All members of the research team will be working together at the camp.

The research team will have two satellite telephones in camp for communicating externally. We will not know the phone numbers until these phones are activated in June 2017. Upon receipt, the numbers will be written into this guide:

Satellite Phone 1 Number: _____

Satellite Phone 2 Number: _____

3) Action Plan

i) Potential spill sizes and sources for each hazardous material on site

A list of potential spill events and associated discharge volumes is presented in Table 2. The most likely discharge volume is indicated. The spill clean-up procedures focus on the quantity of the most likely discharge. Discharge rates are not given; these could vary depending on the source of the leak or puncture (e.g., a small puncture could discharge over days, whereas a larger puncture could discharge in minutes to hours).

Material (sources)	Potential Discharge Event	Discharge Volume (worst case)	Direction of Potential Discharge
White gas / naphtha (cooking stoves)	1) Leak while connected to camp stoves. 2) Minor leaking can in or outside fuel storage area. 3) Large puncture, fast leaking can in/outside fuel storage area. 4) All cans punctured and leaking at once (very unlikely).	Likely under 3.8 L / 1 can (max 11.2 L / 3 cans)	Fuel will be stored on flat ground, and discharge would be localized to the fuel storage area. There may be potential for long distance underground dispersal into adjacent water sources.

ii) Potential environmental impacts

White gas / naphtha

Environmental impacts: White gas may be harmful to wildlife and the surrounding environment. It is not readily biodegradable. White gas is volatile and flammable.

Worst case scenario: All cylinders were punctured or failed simultaneously and contents leaked into the surrounding environment and ignited leading to an explosion. This could cause serious environmental impacts in the immediate surroundings.

iii) Procedures

A. Procedures for initial actions

- Ensure safety of all personnel.
- Assess spill hazards and risks.
- Remove all sources of ignition.
- Stop the spill if safely possible e.g. shut of pump, replace cap, tip drum upward, patch leaking hole.
- No matter what the volume is, notify camp manager immediately.
- Contain the spill – use contents of spill kits to place sorbent materials on the spill, or use shovel to dig dike to contain spill. Methods will vary depending on the nature of the spill. See Section C for more details.

B. Spill reporting procedures

Report spill to project leader and/or camp manager. They will determine if the spill is to be reported to the spill report line.

Fill out a copy of the NWT Spill Report Form (see Appendix 2 for the form). Submit the completed form to the staff at the 24 Hour spill line ASAP.

Nunavut / NWT 24-hour Spill Report Line:

Phone: (867) 920 – 8130

Fax (867) 873 – 6924

Email: spills@gov.nt.ca

Report spill to AAND Manager of Field Operations at 867-975-4289 (phone) and/or 867-975-6445 (fax).

Report spill in an annual report.

C. Procedures for containing and controlling the spill on land

- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of spill and cause of movement (water, wind and slope).
- Determine best location for containing spill, avoiding any water bodies.

- Have a contingency plan ready in case spill worsens beyond control or if the weather or topography impedes containment.

Specific spill containment methods for land, water, ice and snow are outlined below.

1) Containment of Spills on Land

Spills on land include spills on rock, gravel, soil and/or vegetation. Soil is a natural sorbent, thus spills on soil are generally less serious than spills on water, as contaminated soil can be more easily recovered. Generally spills on land occur during the late spring, summer or fall when snow cover is at a minimum. It is important that all measures be undertaken to avoid spills reaching open water bodies.

Dykes

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled fuel. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of fuel that may reach it. A plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill.

Trenches

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels, pick axes or plant collecting knives/diggers, etc. can be used, depending on the size of trench required. It is recommended that the trench be dug to the bedrock or permafrost, which will then provide containment layer for the spilled fuel. Fuel can then be recovered using a pump or sorbent materials.

2) Containment of Spills on Water

Spills on water such as rivers, streams or lakes are the most serious types of spills as they can negatively impact water quality and aquatic life. All measures need to be undertaken to contain spills on open water.

Weirs

Weirs can be used to contain spills in streams and to prevent further migration downstream. Plywood or other materials found on site can be placed into and across the width of the stream, such that water can still flow under the weir. Spilled fuel will float on the water surface and be contained at the foot of the weir. It can then be removed using sorbents, booms or pumps and placed into barrels or plastic bags.

Barriers

In some situations barriers made of netting or fence material can be installed across a stream, and sorbent materials placed at the base to absorb spilled fuel. Sorbents will need to be replaced as soon as they are saturated. Water will be allowed to flow through. This is very similar to the weir option discussed above. Note that in some cases, it may be appropriate to burn fuel or to let volatile fuels such as gasoline evaporate after containment

on the water surface. This should only be undertaken in consultation with, and after approval from the Aboriginal Affairs and Northern Development Canada (AANDC) or lead agency Inspector.

D. Procedures for transferring, storing, and managing spill related wastes

In most cases, spill clean-ups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small spill clean-up. Hand tools – whatever is available in the field camp (pots and pans, plant diggers, etc.) – can be effective for small spills.

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are available in the spill kits located at the research camp. Following clean up, any tools or equipment used will be properly washed and decontaminated, or replaced if this is not possible. For most of the containment procedures outlined in Section C, spilled petroleum products and materials used for containment will be placed into empty waste fuel containers and sealed for proper disposal at an approved disposal facility.

E. Procedures for restoring affected areas

Once a spill of reportable size has been contained, the Museum research team will consult with the AANDC or lead agency Inspector assigned to the file to determine the level of clean-up required. The Inspector may require a site specific study to ensure appropriate clean up levels are met. Criteria that may be considered include natural biodegradation of oil, replacement of soil and re-vegetation

4) Resource Inventory

i) On-site resources

We will have hand tools and sorbent materials available in camp should the need to clean up a small spill arise.

ii) Off-site resources / Emergency Contact Numbers

Nunavut / NWT 24-hour Spill Report Line	Phone: (867) 920 – 8130 Fax (867) 873 – 6924 Email: spills@gov.nt.ca
Aboriginal Affairs and Northern Development Canada Inspector	(867) 669-2761
Environment Canada (Emergency) Yellowknife	(867) 669-4725
Nunavut Department of Environment Conservation Office (Iqaluit)	(867) 979-7800
RCMP (Yellowknife)	(867) 669-1111
RCMP (Iqaluit)	(867) 979-0123

RCMP (Kimmirut)	(867) 939-0123
Lory Beaudoin, Canadian Museum of Nature Research Office	(613) 364-4033

5) Training Program

The following training/orientation is delivered by the project leader and/or camp manager to all members of a research team staying in a camp where hazardous material is present. All members of the research team read this spill kit contingency plan before heading into the field.

All members of the research team participate in an orientation session in the field. During this session, the location of the spill kit and fuel storage areas are shown to the team. An overview of the spill action is reviewed when the camp is set up. All Museum personnel are required to have up-to-date first aid training before they can go in the field.

Appendix 1 – Material Safety Data Sheets

Appendix 2 – NU NT Spill Report Form

(forms also available at <http://env.gov.nu.ca/node/66> [accessed 15 March 2012])

Material Safety Data Sheet

Product: Coleman® Camp Fuel

1. Chemical Product and Company Identification

Trade Name of this Product: Coleman® Camp Fuel

Manufacturer

HOC Industries, Inc.
3511 N. Ohio
Wichita, KS 67219

Contact Name

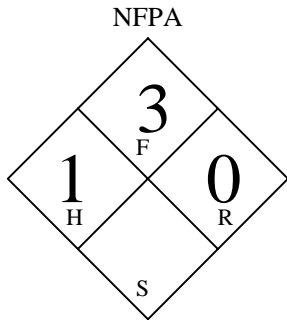
Don Poschen

Phone Number

(316) 838-4663

Emergency Phone

(800) 633-8253



2. Composition and Information on Ingredients

Ingredient

Light Hydrotreated
Distillate

CAS Number

68410-97-9

Weight %

100

ACGIH

TWA

300 ppm

STEL

500 ppm

3. Hazard Identification

*****EMERGENCY OVERVIEW*****

- * WARNING: Flammable Liquid and Vapor. The Flash Point is <0 degrees F.
- * This product is a clear, green, light hydrocarbon liquid.
- * It has a solvent petroleum odor. The product floats on water.
- * When burned the product produces carbon monoxide and other asphyxiants during combustion.
- * Harmful if inhaled and may cause delayed lung injury.
- * Aspiration hazard if swallowed - can enter lungs and cause damage.
- * Keep away from heat, sparks, and flame.

- * Avoid breathing vapor. Use ventilation to keep vapor below exposure limits.
 - * Avoid contact with eyes, skin and clothing. Material splashed into the eyes will irritate tissues. Gently flush material from eyes with clean water.
 - * Unprotected exposure to this product will cause skin dryness.
 - * Remove product soaked clothing and wash with mild soap.
 - * As with any petroleum product, avoid mixing this product with strong oxidizers.
 - * This product is not listed on the NTP, IARC, OSHA, or ACGIH lists of suspected/confirmed carcinogens.
 - * This product may be toxic to fish but will be toxic to birds and wildlife through ingestion during pelage cleaning.
 - * This product is readily biodegradable in the presence of air and sunlight.
 - * Spilled material is slippery and may cause falls.
- *****END OF EMERGENCY OVERVIEW *****

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTE(S) OF ENTRY: Skin.

EYES

Tests on similar materials suggest acute irritation can be expected.

SKIN

Tests on similar materials indicate acute irritation is expected to occur upon short-term exposure, chronic dermatitis on prolonged contact.

INGESTION

ACUTE ASPIRATION HAZARD. Tests on similar materials indicate possibility of the following symptoms: headache, nausea, drowsiness, fatigue, pneumonitis, pulmonary edema, central nervous system depression, convulsions, and loss of consciousness.

INHALATION

Tests on similar material indicate the possibility of the following symptoms: headache, nasal and respiratory irritation, nausea, drowsiness, breathlessness, fatigue, central nervous system depression, convulsions, and loss of consciousness.

CHRONIC

Prolonged and/or repeated contact with this material may produce skin irritation and inflammation.

CANCER INFORMATION

Carcinogen listed by:

National Toxicology Program: No

I.A.R.C.: No

OSHA: No

ACGIH: No

This product does not require a cancer hazard warning in accordance with the OSHA Hazard Communication Standard.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Personnel with pre-existing skin disorders should avoid contact with this product.

4. First Aid Information

EYES

Flush eyes immediately with water for at least 15 minutes or until irritation subsides, occasionally lifting lower and upper lids. Get medical attention promptly.

SKIN

Wash thoroughly with soap and water. Immediately remove contaminated clothing and wash before reuse. If irritation or rash develops, obtain medical assistance. Immediately remove soaked clothing.

INGESTION

CALL PHYSICIAN IMMEDIATELY. Do not induce vomiting except at the instruction of a physician. Never give anything by mouth to an unconscious person.

INHALATION

Remove person to fresh air and consult a physician. If breathing is difficult, give oxygen. If not breathing give artificial respiration.

5. Fire Fighting Measures

FLAMMABLE PROPERTIES

FLASH POINT: <0°F (<-18°C) Tag Closed Cup

AUTOIGNITION: not available

FLAMMABILITY CLASS: IB

LOWER EXPLOSIVE LIMIT (%): not available

UPPER EXPLOSIVE LIMIT (%): not available

FIRE AND EXPLOSION HAZARDS

Can form flammable mixtures with air and flash at room temperature or upon slight heat application. Vapors are heavier than air and may travel considerable distance. Explosion hazard in confined spaces if exposed to ignition source. Mists or sprays may be flammable below fuel's normal flash point. Keep away from heat or open flame.

EXTINGUISHING MEDIA

Dry Chemical, carbon dioxide, and foam. NOTE: Water, fog and foam may cause frothing and spattering. Water stream may spread fire.

FIRE FIGHTING INSTRUCTIONS

Use water to cool containers exposed to flames. Do not enter enclosed or a confined work space without proper protective equipment. Fire fighting personnel should wear respiratory protection (positive pressure if available). If leak or spill has not ignited, use water spray to disperse the vapors.

Products of combustion include fumes, smoke and carbon monoxide.

6. Accidental Release Measures

Evacuate area and shut off ignition source. Contain spill and keep from entering waterways or sewers. Use personal protective equipment. Advise EPA or state agency if required. Absorb with inert material. Shovel or sweep spill and place in closed container for disposal.

7. Handling and Storage

HANDLING: Keep product away from high energy ignition sources, heat, sparks, pilot lights, static electricity, and open flame. Avoid contact with skin. Avoid inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Store in a cool area. Store as OSHA Class IB flammable liquid

SPECIAL PRECAUTIONS: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to national, state, or local regulations covering safety at petroleum handling and storage areas for this product.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

WORK/HYGIENIC PRACTICES

Wash hands with soap and water before eating, drinking, smoking or use of toilet facilities. Do not use harsh abrasive skin cleaners for washing exposed skin areas. Take a shower after work if general contact occurs. Remove fuel-soaked clothing and launder before reuse. Launder or discard contaminated shoes and leather gloves.

8. Exposure Controls and Personal Protection

ENGINEERING CONTROLS

Use adequate ventilation to keep fuel mists of this material below applicable standard(s). See Section on occupational exposure limits.

EYE/FACE PROTECTION

Safety glasses, splash goggles, or face shield as appropriate. Have suitable eye wash water available.

SKIN PROTECTION

Avoid prolonged and/or repeated skin contact. If prolonged contact cannot be avoided, wear protective impervious gloves and clothing. Acceptable materials for gloves are neoprene, nitrile, or viton.

RESPIRATORY PROTECTION

Up to 1000 ppm, half mask organic vapor respirator. Up to 5000 ppm, full face organic vapor respirator or full face supplied air respirator. Greater than 5000 ppm, fire fighting, or unknown concentration, self contained breathing apparatus with positive pressure should be used.

OTHER/GENERAL PROTECTION

If there is a likelihood of splashing, an oil resistant clothing should be worn. Never wear oil soaked clothing. Launder or dry clean before wearing. Discard fuel soaked shoes. Affix warning labels on containers in accordance with 29 CFR 1910.1200 (Hazard Communication Standard).

Maintain local or dilution ventilation to keep air concentration below 100 ppm. Loading, unloading, tank gauging, etc., remain upwind. Request assistance of safety and industrial hygiene personnel to determine air concentrations.

INGREDIENT NAME, CAS #, EXPOSURE LIMITS, PERCENT BY VOLUME

Hydrotreated Light Distillate, CAS # 68410-97-9, OSHA-500 ppm, 100.0

This product contains:

*Cyclohexane, CAS # 110-82-7, OSHA-300 ppm, ACGIH-300 ppm

*Nonane, CAS # 111-84-2, ACGIH-200 ppm

*Octane, CAS # 111-65-9, OSHA-400 ppm, ACGIH-300 ppm

*Heptane, CAS # 142-82-5, OSHA-500 ppm, ACGIH-400 ppm

*Pentane, CAS # 109-66-0, OSHA-1000 ppm, ACGIH-600 ppm

9. Physical and Chemical Properties

APPEARANCE

Clear, green liquid.

ODOR

Petroleum Naphtha.

ODOR THRESHOLD

N.D.

BASIC PHYSICAL PROPERTIES

PHYSICAL STATE: Liquid

BOILING POINT: IBP >100°F (>38°C)

MELTING POINT: N/A

VAPOR PRESSURE: (Reid) 5.3 psi @ 100°F

VAPOR DENSITY (AIR=1): 3

SPECIFIC GRAVITY @ 60°F (water=1): 0.7

MOLECULAR WEIGHT: not available

SOLUBILITY (H₂O): negligible

PERCENT VOLATILES: 100%

VISCOSITY: not available

Physical data may vary slightly to meet specifications.

10. Stability and Reactivity

STABILITY: Stable.

CONDITIONS TO AVOID

Sources of ignition.

INCOMPATIBLE MATERIALS

Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS

Incomplete combustion may produce fumes, smoke, carbon monoxide and other asphyxiants.

HAZARDOUS POLYMERIZATION: will not occur.

11. Toxicological Information

Skin effects

May cause irritation or dermatitis with prolonged and repeated contact.

Oral effects

Tests on similar materials indicate an order of acute oral toxicity.

Inhalation effects

Acute toxicity expected on inhalation.

Medical conditions aggravated by overexposure

Dermatitis and sensitive skin. This product is not listed as carcinogenic or a potential carcinogen by the national toxicology program, by the I.A.R.C. monographs or by OSHA. Nevertheless, good industrial hygienic practices are recommended.

12. Ecological Information

If applied to leaves, this product may kill grasses and small plants by interfering with transpiration and respiration. This product is not toxic to fish but may coat gill structures resulting in suffocation if spilled in shallow, running water. Product may be moderately toxic to amphibians by preventing dermal respiration. This product may cause gastrointestinal distress to birds and mammals through ingestion during pelage grooming.

This product is rapidly biodegradable. Biodegradation is possible within 90 to 120 days in aerobic environments at temperatures above 70°F (21°C).

13. Disposal Considerations

RCRA hazardous waste if discarded in its present form. EPA hazardous waste number D001. State and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14. Transportation Information

PROPER SHIPPING NAME: Petroleum Distillates, n.o.s., Class 3, UN 1268, PG II

HAZARD CLASS: Class 3 Flammable Liquid

DOT IDENTIFICATION NUMBER: UN1268

DOT SHIPPING LABEL: DOT Hazardous material

15. Regulatory Information

U.S. FEDERAL REGULATORY INFORMATION

SARA 302 Threshold Planning Quantity: NOT APPLICABLE

SARA 304 Reportable Quantity: NOT APPLICABLE SARA TITLE III - Section 311/312 Hazard classes:

Immediate/Acute Health Effects: no

Delayed/Chronic Health Effects: yes

Fire Hazard: yes

Sudden Release of Pressure Hazard: no

Reactivity Hazard: no

EPA/TSCA Inventory: The components of this product are listed on the EPA/TSCA inventory of chemicals.

SARA TITLE III - Section 313 Supplier notification:

The following chemicals are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

* Cyclohexane 110-82-7 up to 10%

Comprehensive Environmental Response Compensation and Liability Act (CERCLA): The following chemicals in this product are subject to the reporting requirements of CERCLA Section 101(14)(F): Cyclohexane

When this product is used in a mixture, or as an ingredient in another product, or in a manufacturing operation, the petroleum exclusion may terminate and an accidental spill may require reporting to the National Response Center.

STATE LIST DATA - This product contains chemicals which are on the following state lists:

Florida Toxic Substance

Massachusetts Hazardous Substance

Pennsylvania Hazardous Substance

Minnesota Hazardous Substance

STATE LIST DATA - This product contains chemicals which are on the following state lists (continued):

New Jersey RTK Hazardous Substance

New York List of Hazardous Substances

Washington Air Contaminant

16. Other Information

DATE MADE: 2/12/04

DATE REVISED: 6/19/07

The information contained herein is based upon data available to us and reflects our best professional judgment. However, no warranty of merchantability, fitness for any use, or other warranty is expressed or implied regarding the accuracy of such data, the results to be obtained from the use thereof, or that any such use does not infringe any patent. Since the information contained herein may be applied under conditions of use beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of such application. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME	<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # TO THE ORIGINAL SPILL REPORT	REPORT NUMBER -
	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)		WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION			REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR	
E	LATITUDE DEGREES MINUTES SECONDS		LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS				
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION Station operator	EMPLOYER	LOCATION CALLED Yellowknife, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					