

# Environmental Impact Assessment

Project Name: The B.I.G. (Before It's Gone) Expedition

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Date of Document: 28 November 2023

Description of Project: A 5-woman ski expedition from Borden Island to Isachsen on Ellef Rignes Island across the Prince Gustav Adolph Sea, camping on sea ice and collecting small-volume surface snow, surface ice and water samples.

Date of Project: 10th April – 22<sup>nd</sup> April 2024

## DESCRIPTION OF THE BENEFITS AND PURPOSE OF THE PROPOSED ACTION:

The samples collected by the expedition team will be analysed at the University of Colorado in the US and by the National Oceanography Centre/University of Southampton in the UK. The samples will be analysed for black carbon, microplastic and heavy metal content as part of research projects exploring the distribution across the Arctic region by the atmosphere of these materials and pathways from northern Europe and North America. Similar expedition projects have been completed in Svalbard, Greenland and Iceland.

## Section 1: SCOPE AND FOCUS OF ACTIVITY

### PHYSICAL ENVIRONMENT:

1. TOPOGRAPHY: Are there unusual geologic features in area of activity? .....No

2. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Are fragile, compactible or unstable soils present? .....No

Are there special reclamation considerations? .....No

3. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Are important surface or groundwater resources present? .....No

Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality? .....No

4. AIR QUALITY:

Will pollutants or particulate be produced? .....Yes

(Emissions from plane used for transport into and out of the area; emissions from camping stoves)

Is the project influenced by air quality regulations? .....No

5. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Will the project use resources that are limited in the area? .....No

Are there other activities nearby that will affect the project? .....No

6. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:

Are there other studies, plans or projects in this area? .....No

7. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Is there substantial use of the area by important wildlife, birds, or fish? .....Yes

8. VEGETATION COVER, QUANTITY AND QUALITY:

Will vegetative communities be permanently altered? .....No

Are any rare plants or cover types present? .....No

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Are any listed threatened or endangered species or identified habitat present? .....Yes

Any wetlands? .....No

Any species of special concern? .....Yes

10. HISTORICAL AND ARCHEOLOGICAL SITE:

Are any historical, archeological or paleontological resources present? .....No

11. ASTHETICS:

Is the project on a prominent topographical feature? .....No

Will it be visible from populated or scenic areas? .....No

Will there be excessive noise, light or odors? .....No

12. AGRICULTURE: Will grazing lands, irrigation waters or crop production be affected? .....No

HUMAN ENVIRONMENT:

1. SOCIAL STRUCTURES AND MORES:

Is some disruption of native or traditional lifestyles or communities possible? .....No

2. CULTURAL UNIQUENESS AND DIVERSITY:

Will the action cause a shift in some unique quality of the area? .....No

3. DENSITY AND DISTRIBUTION OR POPULATION AND HOUSING:

Will the project add to the population and require additional housing?.....No

4. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area? .....No

5. COMMUNITY AND PERSONAL INCOME: Will the project generate or degrade income? .....No

6. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Will the project create, move or eliminate jobs? .....No

7. LOCAL AND STATE TAX BASE REVENUES: Will the project create or eliminate tax revenue? .....No

8. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? .....No

Will other services (fire protection, police, schools, etc.) be needed? .....Yes

(RCMP inspection of firearm to be taken on the expedition)

9. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

Will the project add to or alter these activities? .....No

10. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Are wilderness or recreational areas nearby or accessed through this tract? .....Yes

Is there recreational potential within the area? .....Yes

11. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

Are there state, county, city, tribal, zoning or management plans in effect? .....Yes

12. TRANSPORTATION: Will the project affect local transportation networks and traffic flows? .....No

13. PUBLIC INVOLVEMENT: Describe how you think the public might become involved:

Due to the remote location, there is little opportunity for public involvement but it is hoped that the contribution of the expedition to collecting samples for scientific research might inspire other 'citizen science' type initiatives from visiting expeditions/extreme tourism/adventure activities.

14. ALTERNATIVES CONSIDERED to this project:

In order to trace the distribution by the atmosphere of certain materials from North America and Europe it is necessary to collect snow, ice and water samples for analysis and to do that in a way that doesn't risk contaminating the collected sample material – hence the use of a ski expedition rather than motorized transport.

**Section 2: IMPACT AND MITIGATION**

OUTPUT/ACTIVITY	Description of potential impact	Evaluation of Impact	Measures to reduce impact
Plane Transport	Noise – Plane engine noise Emissions – aviation fuel Disturbance to snow cover – caused by plane on landing and taking off	Extent: Disturbance to snow cover restricted to immediate area of landing and take off. Noise and Emissions relevant on route between Resolute Bay and Prince Gustav Adolph Sea.  Duration: Temporary - approximately 2 hour flight between Resolute Bay and Prince Gustav Adolph Sea.  Significance: Low	Number and duration of flights reduced to minimum possible.  Pick up landing will take place on existing air strip in order to reduce disruption to pristine or fragile ground or vulnerable ground flora.  Drop off landing to be on fast ice if possible to prevent any disruption to snow cover on land or any underlying flora.
Ski Travel	Noise – Ski equipment and people  Disturbance to snow cover – caused by ski tracks	Extent: Restricted to immediate area around ski party and an area constantly moving with progress of ski party.  Duration: Temporary - 10 days of ski travel	Efforts will be made to avoid unnecessary noise while travelling and to reduce physical disturbance to ground cover by, for example, skiing in single file where possible.

	<p>Disturbance to fauna – by smell, noise or physical presence</p>	<p>Significance: Low</p>	<p>The route taken by the ski expedition will be restricted wherever possible to sea ice to avoid disturbance to snow cover on land. Extra care will be taken to minimise disturbance when travelling on snow on land – for example, by sticking to thick snow cover.</p> <p>Storage and preparation of food has been planned to reduce aroma as far as possible by, for example, using dehydrated meals prepared in sealed packaging.</p> <p>Food will not be discarded (deliberately or accidentally). Instead, waste will be sealed and carried with the expedition. Care will be taken when eating on the move that debris is not dropped.</p> <p>Grey water will be reduced as much as possible and will be sufficiently buried if unavoidable.</p> <p>Human waste will be sufficiently buried.</p>
Camping	<p>Noise – Equipment noise (particularly stoves and tent fabric) and people</p> <p>Emissions – from fuel used in camping stoves.</p> <p>Disturbance to snow cover – caused by securing tents to the ground with snow, protective snow walls around tents and burying human waste.</p>	<p>Extent: Restricted to immediate area around tents but will be in a different location each day along the expedition's 150km route</p> <p>Duration: Temporary - approximately 8 hours a day for 10 days</p> <p>Significance: Low</p>	<p>Any unnecessary noise or disturbance to snow cover will be avoided.</p> <p>Storage and preparation of food has been planned to reduce aroma as far as possible by, for example, using dehydrated meals prepared in sealed packaging.</p> <p>Food will not be discarded (deliberately or accidentally). Instead, waste will be sealed and carried with the expedition.</p>

	<p>Disturbance to fauna – by smell, noise or physical presence.</p> <p>Disturbance to flora.</p>		<p>Grey water will be reduced as much as possible and will be sufficiently buried if unavoidable.</p> <p>Human waste will be sufficiently buried.</p> <p>Snow mounds, such as walls around tents will be flattened before leaving the area to ensure as much as possible that any disturbance to snow cover is remediated.</p> <p>If camping on land care will be taken to minimise any impact to any flora by, for example, pitching tents on thick snow cover and finding appropriate locations for human waste.</p>
Sampling of snow, ice and water for science	<p>Disturbance to snow or ice cover</p> <p>Disturbance to fauna – caused by lengthened presence of people in one location</p>	<p>Extent: limited to the area immediately around 5 locations on sea ice along the route of the ski party</p> <p>Duration: Temporary – approximately 2 hours in each of the five sampling locations</p> <p>Significance: Low</p>	<p>Volume of samples to be collected are very small (maximum of 500ml of material).</p> <p>Sample collection and methodology has been rehearsed in order to ensure maximum efficiency and the shortest amount of time possible in any one location.</p> <p>Any unnecessary disturbance to snow cover will be avoided.</p>

I certify that the information presented above is accurate and complete to the best of my knowledge.



Signature: Ms F Aston (Expedition leader)

Date: 28 NOV 2023