



Jackie Dawson  
University of Ottawa  
60 University Pvt.  
Ottawa Ontario K1N6N5  
Canada  
☎: 6135050303, 📠: 6135050303

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ᖃᓚᓂᓂᓐ: Our project is focused on understanding risks from climate change and growth in shipping across Inuit Nunangat and to identify ways to manage these issues that support Inuit self-determined shipping and oceans governance. Our project objectives include to: 1. Analyse past and future ship traffic in Nunavut; 2. Model current and future underwater noise caused by ships; 3. Sample potential air and water pollution from ships; 4. Evaluate potential for non-indigenous species introduction from ships, and; 5. Develop risk maps and evidence-based recommendations. Fieldwork: We will opportunistically conduct water samples from on board ships (Amundsen, Adventure Canada, Students on Ice), transiting Nunavut waters from July-September, 2024, and 2025. We will also opportunistically conduct water and sediment samples at shore locations along cruise ship routes (where appropriate). Shore locations may include Dundas Harbour, Fort Ross, Gjoa Haven, Beechey Island, Resolute, and Cambridge Bay. We will also conduct community-based sampling of air, water, and sediment, led by Inuit in Arviat and Pond Inlet from June – September, 2024 and 2025. Methods: Onboard the ships, we will sample seawater from the inlet in the hull and filter it through a mesh to collect plastic and other sediments. We will set up onboard air sampling arrays, where particles in the air will be collected on filters. We will take water samples for eDNA to identify any non-indigenous species upstream and downstream of the ship and at shore locations. At shore locations, we will take sediment samples (100g) in a metal bottles and take pictures of any plastic debris. Community-based sampling in Arviat and Pond Inlet will include setting up air sampling arrays near the communities, water sampling for plastic and eDNA by boat and Remotely Operated Vehicle (ROV). Impacts: There are no expected impacts to the environment, wildlife, or people. Data Storage and Management: The research team follows all procedures for data management and storage that is outlined in the Tri-Council protocols and the National Inuit Strategy on Research. All data and samples are saved and/or stored in locked facilities and password protected computers/servers. Physical samples (air, water, and sediment) will be stored at locked facilities in Ottawa and Cambridge, UK. Nunavut residents involvement: Nunavut residents have been involved in the project since the beginning. We have partnered with Ikaarvik (Pond Inlet, NU) and Aqqiumavvik Society (Arviat, NU) to develop the original project proposal and research questions. In May, 2022 all southern team members attended training on Inuit Qaujimajatuqangit (IQ). In December, northern team members received training on how to collect acoustic data using hydrophones, and, in February, training on water and plastics sampling and analysis. In 2023-24, we plan to conduct similar community researcher sampling training and workshops. Results Sharing: Results validation and sharing workshops in Arviat and Pond Inlet are planned for 2025. These events will be co-led by Inuit Youth. Results will also be shared with Nunavut partners throughout the project.

▷ΔΑΝΩ: N/A

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ajuiqhanirmik ajuiqhaqatigiikhutik. Qanuriniit Uqautiginikkut: Qanuriliningit naamainaqtut atuqtilugilu ajuiqhaviujut Arviani Mitimatalingmilu upalugaiqtaujuut ukiungani 2025. Hapkuat hulipkaidjutikhat hivulliuqtauniaqtut Inuit Inulrammiinit. Qanuriliningit uqautauniarmijurlu Nunavumi ikajuqtiriinik atuqtilugu havaakhaq.

**Personnel**

Personnel on site: 7

Days on site: 21

Total Person days: 147

Operations Phase: from 2022-04-01 to 2026-03-31

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Pond Inlet - community-based sampling	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within the community and near the community (approximately 20km radius).
Arviat - community-based sampling	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within the community and near the community (approximately 20km radius).
Dundas Harbour (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
King William Island (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Arctic Bay (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Gjoa Haven (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Cambridge Bay (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the

					community depending on where the ship goes.
Fort Ross (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Resolute Bay (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Devon Island (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Prince Leopold Island (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Kugluktuk (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Grise Fiord (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Smith Sound (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Iqaluit (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on

					where the ship goes.
Kimmirut (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Kinngait (potential shore location)	Sampling sites	Municipal	N/A	N/A	We will be sampling the shoreline within or near the community depending on where the ship goes.
Resolution Island (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Hantzsch Island (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A
Tookoolito Inlet (potential shore location)	Sampling sites	Crown	N/A	N/A	N/A

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ᓇᓕᓯᓪᓐ	Eric Soloman	Ikaarvik	2024-06-18
ᓇᓕᓯᓪᓐ	Shelly Elverum	Ikaarvik	2024-06-18
ᓇᓕᓯᓪᓐ	Justin Milton	Ikaarvik	2024-07-03
ᓇᓕᓯᓪᓐ	Michael Milton	Ikaarvik	2024-09-16
ᓇᓕᓯᓪᓐ	Kukik Baker	Aqqiumavvik Society	2024-09-17
ᓇᓕᓯᓪᓐ	Shirley Tagalik	Aqqiumavvik Society	2024-08-15
ᓇᓕᓯᓪᓐ	Jamie Enook	ECCC	2022-09-20
ᓇᓕᓯᓪᓐ	Jimmy Muckpah	Aqqiumavvik Society	2024-09-17





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0		



$$\nabla^b C d \zeta \rho \sigma \nabla^a \sigma^{\zeta b}$$

$\triangleleft \nabla \cap \Gamma \triangleright C^{\circ} J^C \triangleleft^b J^{cb} C \triangleright L^c$

Waste: We expect waste to be minimal, limited to small amounts of garbage from sampling equipment. Sampling equipment will be unpacked in the South to reduce waste brought to Nunavut. Any waste produced while sampling will be packed out and transported South for disposal. Wildlife disturbance: All sampling activities will be accompanied by local residents and/or vessel operators trained in the local marine and terrestrial wildlife, in order to reduce any potential disturbances. Environmental disturbance: All research staff are trained in sampling protocols in order to minimize any potential disturbance to the environment. Physical samples taken will be small, and we will not be taking more than is needed for laboratory analysis. Local residents: Our research is being conducted in partnership with local organizations and relies on IQ in order to be of maximum benefit to local residents. Before any research activities are undertaken, we will consult with our Inuit partners, local hunters, and local residents to ensure our activities will not disrupt any traditional practices (e.g. hunting activities).

# **Additional Information**

**SECTION A1: Project Info**

**SECTION A2: Allweather Road**

**SECTION A3: Winter Road**

**SECTION B1: Project Info**

**SECTION B2: Exploration Activity**

**SECTION B3: Geosciences**

**SECTION B4: Drilling**

**SECTION B5: Stripping**

**SECTION B6: Underground Activity**

**SECTION B7: Waste Rock**

**SECTION B8: Stockpiles**

**SECTION B9: Mine Development**

**SECTION B10: Geology**

**SECTION B11: Mine**

**SECTION B12: Mill**

**SECTION C1: Pits**

**SECTION D1: Facility**

**SECTION D2: Facility Construction**

**SECTION D3: Facility Operation**

**SECTION D4: Vessel Use**

**SECTION E1: Offshore Survey**

**SECTION E2: Nearshore Survey**

**SECTION E3: Vessel Use**

## SECTION F1: Site Cleanup

## SECTION G1: Well Authorization

## SECTION G2: Onland Exploration

## SECTION G3: Offshore Exploration

## SECTION G4: Rig

## SECTION H1: Vessel Use

## SECTION H2: Disposal At Sea

## SECTION I1: Municipal Development

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**L<sup>e</sup>a AENP<sup>c</sup> bMACTCCLDσ<sup>sL</sup>: BLT<sup>b</sup>C<sup>b</sup>σ<sup>sL</sup>**

**L'e <EN>' bma<sup>C</sup>D'cna<sup>s</sup>: amas<sup>r</sup>j<sup>e</sup>l'-Ae'atnas<sup>r</sup>j<sup>e</sup>l'**

### Miscellaneous Project Information

[illegible]

Waste: We expect waste to be minimal, limited to small amounts of garbage from sampling equipment. Sampling equipment will be unpacked in the South to reduce waste brought to Nunavut. Any waste produced while sampling will be packed out and transported South for disposal. Wildlife disturbance: All sampling activities will be accompanied by local residents and/or vessel operators trained in the local marine and terrestrial wildlife, in order to reduce any potential disturbances. Environmental disturbance: All research staff are trained in sampling protocols in order to minimize any potential disturbance to the environment. Physical samples taken will be small, and we will not be taking more than is needed for laboratory analysis. Local residents: Our research is being conducted in partnership with local organizations and relies on IQ in order to be of maximum benefit to local residents. Before any research activities are undertaken, we will consult with our Inuit partners, local hunters, and local residents to ensure our activities will not disrupt any traditional practices (e.g. hunting activities).

## Cumulative Effects

## Impacts

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( $P = \langle b \rangle \dot{\cup} P \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq C$ ,  $N = \langle b \rangle \dot{\cup} \Gamma \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq \langle C \rangle \dot{\cup} \Gamma \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq \langle C \rangle \dot{\cup} \dot{\mathcal{A}}^{\mathcal{B}} \supseteq C$ ,  $M = \langle b \rangle \dot{\cup} \Gamma \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq \langle C \rangle \dot{\cup} \Gamma \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq \langle C \rangle \dot{\cup} \dot{\mathcal{A}}^{\mathcal{B}} \supseteq C$ ,  $U = \dot{\mathcal{B}} \cap \dot{\mathcal{A}}^{\mathcal{B}} \supseteq C$ )

1	polyline	Potential ship route
2	polyline	Potential ship route
3	polyline	Potential ship route
4	polyline	Potential ship route
5	polyline	Potential ship route
6	point	Pond Inlet - community-based sampling
7	point	Arviat - community-based sampling
8	point	Dundas Harbour (potential shore location)
9	point	King William Island (potential shore location)
10	point	Arctic Bay (potential shore location)

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|----|----------|--|
| 1  | polyline | Potential ship route                           |
| 2  | polyline | Potential ship route                           |
| 3  | polyline | Potential ship route                           |
| 4  | polyline | Potential ship route                           |
| 5  | polyline | Potential ship route                           |
| 6  | point    | Pond Inlet - community-based sampling          |
| 7  | point    | Arviat - community-based sampling              |
| 8  | point    | Dundas Harbour (potential shore location)      |
| 9  | point    | King William Island (potential shore location) |
| 10 | point    | Arctic Bay (potential shore location)          |

11	point	Gjoa Haven (potential shore location)
12	point	Cambridge Bay (potential shore location)
13	point	Fort Ross (potential shore location)
14	point	Resolute Bay (potential shore location)
15	point	Devon Island (potential shore location)
16	point	Prince Leopold Island (potential shore location)
17	point	Kugluktuk (potential shore location)
18	point	Grise Fiord (potential shore location)
19	point	Smith Sound (potential shore location)
20	point	Iqaluit (potential shore location)
21	point	Kimmirut (potential shore location)
22	point	Kinngait (potential shore location)
23	point	Resolution Island (potential shore location)
24	point	Hantzsch Island (potential shore location)
25	point	Tookoolito Inlet (potential shore location)