



NIRB Application for Screening #125811

OPP 2.0 Baseline Shoreline Mapping

Application Type: New

Project Type: Scientific Research

Application Date: 5/12/2023 3:26:34 PM

Period of operation: from 0001-01-01 to 0001-01-01

Proposed Authorization: from 0001-01-01 to 0001-01-01

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DETAILS

Non-technical project proposal description

English: Proponent Description. The Geomatics Research Section is focused on the use of geospatial data and information to support Environment and Climate Change Canada's wildlife conservation and protection mandate. The Geomatics Research Section contributes to a number of priority departmental programs, including Species at risk critical habitat delineation and Migratory bird conservation. 2.SummaryNon-technical Project SummaryThe overall health of Canada's oceans is strongly influenced by the coastal marine environment. Through the Oceans Protection Plan (OPP), Environment and Climate Change Canada is working to protect, preserve, and restore Canada's marine environment. Under the OPP, our team has been funded to collect baseline shoreline data for oil spill preparedness. The main purpose of the shoreline segmentation process is to collect information to help emergency responders plan and prepare for potential marine pollution incidents. A pre-spill shoreline dataset includes baseline coastal information such as the shoreline type and form, the substrate and vegetation type. •To collect key shoreline information, low-altitude helicopter overflights are conducted at the study sites to capture geotagged video and photos of the shoreline characteristics. •Once the shoreline data is collected, that information is recorded within a GIS database. •Shoreline interpretation is performed by reviewing the oblique videography and geotagged photos. The final product is a detailed vector geodatabase which describes each shoreline segment and its associated intertidal zones.Using shoreline data in environmental response The vector shoreline characterization database can be used to identify environmentally sensitive shoreline types, support a rapid response to pollution incidents, and aid in effective clean-up efforts. By presenting the data on an interactive map, we are aiming to improve decision-making during oil-spill responses. With the inclusion of information from satellite and drone imagery, we hope to provide broader coverage of Canadian shorelines to support spill response and protect marine ecosystems.Beyond supporting oil spill response, datasets and imagery have been used by local communities and environmental managers for project planning, marine safety & response preparedness, assessment of areas for marine restoration, marine planning, food security, among others.Date(s) and TimingWe hope to perform mapping activities during two different time periods in the summer of 2023. 1)August 15-23, 2023 (based out of Gjoa Haven, NU)2)September 7-13, 2023 (dates to be confirmed; based from a Canadian Coastguard vessel)RemediationNA – This project will not include any sampling or modification of the landscape. Project AlternativesThe remote and vast Canadian shoreline has made shoreline mapping via helicopter and manual techniques sometimes challenging. As a result, a Canada-wide shoreline classification has never been completed for the entire country. This represents a major information gap, and risk for oil spill risk preparedness. Newer, high-resolution satellite imagery offers a good opportunity to start exploring options for coast-wide shoreline mapping and classification. As an alternative to helicopter mapping, we will be developing shoreline classification methodologies using a variety of remote sensing technologies. This includes high resolution satellite imagery, as well as very high-resolution drone imagery. We would like to compare remote sensing techniques to helicopter methods to determine if remote sensing methods will prove to be as reliable, and informative as helicopter methods.In order to validate and develop new methods, we may also like to fly a drone in the Gjoa Haven area to capture coastal images.

French: Description du promoteurLa Section de recherche en géomatique se concentre sur l'utilisation de données et d'informations géospatiales pour soutenir le mandat de conservation et de protection de la faune d'Environnement et Changement climatique Canada. La Section de recherche en géomatique contribue à un certain nombre de programmes ministériels prioritaires, notamment la délimitation de l'habitat essentiel des espèces en péril et la conservation des oiseaux migrateurs. 2.Résumé du projetRésumé non technique du projetLa santé globale des océans du Canada est fortement influencée par l'environnement marin côtier. Dans le cadre du Plan de protection des océans (PPO), Environnement et Changement climatique Canada s'efforce de protéger, de préserver et de restaurer l'environnement marin du Canada. Dans le cadre du PPO, notre équipe a été financée pour recueillir des données de base sur le littoral en vue de la préparation aux déversements d'hydrocarbures. L'objectif principal du processus de segmentation du littoral est de collecter des informations pour aider les intervenants d'urgence à planifier et à se préparer à d'éventuels incidents de pollution marine. Un ensemble de données sur le littoral avant la marée noire comprend des informations côtières de base telles que le type et la forme du littoral, le substrat et le type de végétation. - Pour recueillir les principales informations sur le littoral, des survols en hélicoptère à basse altitude sont effectués sur les sites d'étude afin de capturer des vidéos et des photos géolocalisées des caractéristiques du littoral.- Une fois les données recueillies, elles sont enregistrées dans une base de données SIG. - L'interprétation du trait de côte est réalisée en examinant la vidéographie oblique et les photos géolocalisées. Le produit final est une géodatabase vectorielle détaillée qui décrit chaque segment du littoral et les zones intertidales qui lui sont associées.Utilisation des données sur le littoral dans le cadre d'une intervention environnementale La base de données vectorielle de caractérisation du littoral peut être utilisée pour identifier les types de littoraux sensibles du point de vue de l'environnement, soutenir une réponse rapide aux incidents de pollution et contribuer à l'efficacité des efforts de nettoyage. En présentant les données sur une carte interactive, nous visons à améliorer la prise de décision lors des interventions en cas de déversement d'hydrocarbures. Avec l'inclusion d'informations provenant d'images satellites et de drones, nous espérons fournir une couverture

[illegible]

Personnel on site: 3
Days on site: 10
Total Person days: 30
Operations Phase: from 2023-08-10 to 2023-09-25

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Southern Coastline of Lancaster Sound (This polygon shows the approx. extent of the mapping area) This mapping work will be performed from a Canadian Coast Guard vessel. (Timing - Sept 7-13, 2023)	Aerial surveys	Inuit Owned Surface Lands	NA	NA	Proximity to nearest communities: Arctic Bay, Pond Inlet and Resolute Bay. Proximity to nearest protected areas: Simirlik National Park, Bylot Island NBS, Prince Leopold MBS.
Southern Coastline of Lancaster Sound (This polygon shows the approx. extent of the mapping area) This mapping work will be performed from a Canadian Coast Guard vessel. (Timing - Sept 7-13, 2023)	Aerial surveys	Crown	NA	NA	Proximity to nearest communities: Arctic Bay, Pond Inlet and Resolute Bay. Proximity to nearest protected areas: Simirlik National Park, Bylot Island NBS, Prince Leopold MBS.
Coastline around Gjoa Haven and Taloyoak (This polygon shows the approx. extent of the mapping area) This mapping work will be performed based out of Gjoa Haven. (Timing - Aug 15-23, 2023)	Aerial surveys	Inuit Owned Surface Lands	NA	NA	Proximity to nearest communities: Gjoa Haven and Taloyoak. Proximity to nearest protected areas: Queen Maud Gulf MBS
Coastline around Gjoa Haven and Taloyoak (This polygon shows the approx. extent of the mapping area) This mapping	Aerial surveys	Crown	NA	NA	Proximity to nearest communities: Gjoa Haven and Taloyoak. Proximity to nearest protected areas: Queen Maud Gulf MBS

work will be performed based out of Gjoa Haven. (Timing - Aug 15-23, 2023)					
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Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Gjoa Haven	Gjoa Haven HTO	Gjoa Haven HTO	2023-04-06
Arctic Bay	Arctic Bay HTO	Arctic Bay HTO	2023-04-06
Pond Inlet	Pond Inlet HTO	Pond Inlet HTO	2023-04-06
Taloyoak	Taloyoak HTO	Taloyoak HTO	2023-04-06
Resolute Bay	Resolute Bay HTO	Resolute Bay HTO	2023-04-06
Gjoa Haven	Hamlet of Gjoa Haven	Hamlet of Gjoa Haven	2023-04-06
Arctic Bay	Hamlet of Arctic Bay	Hamlet of Arctic Bay	2023-04-06
Pond Inlet	Coreen Green	Hamlet of Pond Inlet	2023-04-06
Taloyoak	Hamlet of Taloyoak	Hamlet of Taloyoak	2023-04-06
Resolute Bay	Hamlet of Resolute Bay	Hamlet of Resolute Bay	2023-04-06

Authorizations

Indicate the areas in which the project is located:

Kitikmeot
North Baffin

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Canadian Wildlife Service	Seeking permission to fly over Bylot Island MBS and Prince Leopold MBS to capture geotagged videos and photos.	Applied, Decision Pending		
Kitikmeot Inuit Association	Seeking permission to place one fuel cache on Inuit owned lands. Fuel cache will allow the helicopter to refuel during helicopter surveys.	Applied, Decision Pending		
Nunavut Research Institute	Application submitted for a scientific research license to conducting shoreline videography in Nunavut.	Applied, Decision Pending		
Parks Canada	Parks Canada notified me that I do not require a National Park permit for Simirlik National Park as I will not be landing in the park. They provided me with some flight guidelines for flying over the park.	Active	2023-03-30	
Aboriginal Affairs and Northern Development Canada	CIRNAC - Lands administration office. Permission to cache fuel on crown lands.	Active	2023-05-04	

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air		

Project accomodation types

Community
Other,

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Helicopter	1	20 X 8	To collect key shoreline information and establish a shoreline database, low-altitude helicopter overflights (approximately 60-70 knots, 200-300 feet elevation above the water, and 300ft off the shoreline) are conducted at the study site to capture video of the shoreline characteristics.
Video camera	1	24 x 6	Video camera on a gimbal to collect geotagged videos.
Camera	1	6 x 4	Digital camera to collect geotagged photos.
GPS	2	2 x 3	GPS to record our flight path.
Tough book tablet	1	4 x 6	Toughbook tablet to display map and to record our flight path.
Drone	2	2x2	Fly drone along the coastline to see if we can collect high resolution imagery suitable to doing a remote sensing classification.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Aviation fuel	fuel	0	208	0	Liters	Access to aviation fuel from the Gjoa Haven and Taloyoak Airports.
Aviation fuel	fuel	0	208	0	Liters	Access to aviation fuel from the coastguard ship for mapping in Lancaster Sound.
Aviation fuel	fuel	5	208	1040	Liters	We have applied to the Polar Continental Shelf Program for logistical research support in the Arctic. They have proposed one fuel caches with 5 drums at Cape Sydney - Cabin

						(69 50.667 N; 97 39.159 W) - and planned removal of drums by August 27th, 2023.
Aviation fuel	fuel	6	208	1248	Liters	We have applied to the Polar Continental Shelf Program for logistical research support in the Arctic. They have proposed one fuel caches with 6 drums at Kinngaak Peninsula (68 03.470 N; 95 24.250 W) - and planned removal of drums by August 27th, 2023.

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0		

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Information is not available				

Environmental Impacts:

We anticipate the low-altitude helicopter overflight will have a relatively low potential impact of wildlife and the environment. Wildlife may be impacted by: Noise, sudden movements, physical contact with helicopter (unlikely). Anticipated wildlife impact may include: brief periods of alertness while maintaining activities, animals may watch the aircraft, minor changes in animals existing travel speeds, methods and routes, and no change in animal group size or movements. Some moderate impacts might include flight to escape terrain, or flocks of birds taking flights or other changes in animal behavior. Mitigation measures: - Prior to initiation, identify and map sensitive sites (such as breeding, nesting, calving, migration) so we are aware of their location. - Seasonally (mid May-mid-July) avoid caribou birthing/rearing habitats by limiting helicopter flights altitudes to a minimum of 400m above the ground. - Select particular routes, heli-pads, heli-spots for all helicopter activities to avoid caribou birthing/rearing areas. - Avoid landing sites on or near critical seasonal caribou habitats. - No circling above wildlife if spotted. - Avoid bear feeding sites, by limiting helicopter flights altitudes to a minimum of 400m above the ground and avoid general bear habitat by limiting helicopter flights altitudes to a minimum of 200m above the ground. - Limiting helicopter overflights to a minimum of 400m above the ground in areas around waterfowl and shorebirds, and no circling over wetlands and flocks of birds. - Utilizing existing airstrips or using existing disturbed areas for helicopter takeoff and landings. - Predetermine suitable flight routes to: maintain avoidance distance, visual screening and reduced frequency of flights near critical areas. - Identify suitable landing sites in advance. - Plan fieldwork outside of calving/nesting/birthing season. - Convey the mitigation measures to all staff.

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

Description of Existing Environment: Physical Environment

We will be planning to map the coastline of two Migratory Bird Sanctuaries (please note that we are seeking permits with CWS to do this work above the MBS). We will be flying past the coast of Simirlik National Park. We have contacted Parks Canada and they told us that we do not need a permit as we will not be landing in the park. We will be flying past the coast of Tallurutiup Imanga National Marine Conservation Area (NMCA), and Parks Canada told us a research permit from Parks Canada is not required for the coming field season, but we will be submitting project documents to the co-management committee.

Description of Existing Environment: Biological Environment

We will be planning to map the coastline of two Migratory Bird Sanctuaries (please note that we are seeking permits with CWS to do this work above the MBS). The identified species at risk at Prince Leopold Island MBS include Polar bear, peary caribou and the species at risk at Bylot Island MBS include Peregrine falcon, red knot, bowhead whale (eastern arctic population), polar bear.

Description of Existing Environment: Socio-economic Environment

This work will be taking place in a) Lancaster Sound/Parry Channel and the nearest communities will be Resolute Bay, Pond Inlet and Arctic Bay. We plan to fly past and map the coastline of Arctic Bay, and b) Around St Roch Basin, Rasmussen Basin and Chantry Inlet. The nearest communities will be Gjoa Haven and Taloyoak and we plan to map the shoreline of these communities. We anticipate that the overall impact of this work will be positive on the socioeconomic environment as it will equip communities with resources/information about the coastline to support decisions about shoreline management during an environmental emergency.

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

The helicopter does a single pass along the shoreline and moves along the coast. We typically fly at 110km an hour, so we pass by sites fairly quickly, reducing and limiting impact to the wildlife present. We anticipate the low-altitude helicopter overflight will have a relatively low potential impact of wildlife and the environment. Wildlife may be impacted by: Noise, sudden movements, physical contact with helicopter (unlikely). Anticipated wildlife impact may include: brief periods of alertness while maintaining activities, animals may watch the aircraft, minor changes in animals existing travel speeds, methods and routes, and no change in animal group size or movements. Some moderate impacts might include flight to escape terrain, or flocks of birds taking flights or other changes in animal behavior. As we are doing a single pass in the helicopter, past the coastline, we do NOT anticipate the single flight having an impact on changes in animal activity periods, change in animal bedding and feeding areas, lower productivity or abandonment of preferred habitats. Aircraft are noisy machines that travel at high speed with the ability to approach wildlife closely. All

aircraft approaches will invoke some kind of reaction from animals. It is difficult to assess the impact of short-term reaction on populations, productivity and habitat use. Helicopters are also associated with rotor downwash and brownouts: high velocity wind vortices are generated by helicopter blades when the machine is hovering above a runway or bushland. This generates blankets of airborne dust particles, reduces habitat values and exposes vegetation and wildlife to lethal wind velocities. Direct physical damage such as to hearing or vegetation being shredded by rotor downwash. Mitigation measures:-Prior to initiation, identify and map sensitive sites (such as breeding, nesting, calving, migration) so we are aware of their location.-Seasonally (mid May-mid-July) avoid caribou birthing/rearing habitats by limiting helicopter flights altitudes to a minimum of 400m above the ground. -Select particular routes, heli-pads, heli-spots for all helicopter activities to avoid caribou birthing/rearing areas. -Avoid landing sites on or near critical seasonal caribou habitats.-No circling above wildlife if spotted.-Avoid bear feeding sites, by limiting helicopter flights altitudes to a minimum of 400m above the ground and avoid general bear habitat by limiting helicopter flights altitudes to a minimum of 200m above the ground. -Limiting helicopter overflights to a minimum of 400m above the ground in areas around waterfowl and shorebirds, and no circling over wetlands and flocks of birds.-Utilizing existing airstrips or using existing disturbed areas for helicopter takeoff and landings. -Predetermine suitable flight routes to: maintain avoidance distance, visual screening and reduced frequency of flights near critical areas. -Identify suitable landing sites in advance.-Plan fieldwork outside of calving/nesting/birthing season.-Convey the mitigation measures to all staff.

Cumulative Effects

Disturbance for wildlife is an additive effect. While the occasional disturbance may be of limited short-term impact (such as this shoreline mapping project), each successive disturbance (other projects in the area) can escalate the impact. The duration of disturbances can be of escalating importance. Wildlife initial response to disturbance is to flee to a secure area, so the ability to have a security area available where there is no disturbance is crucial for mitigation for short-term and long-term impacts. The following may be considered to mitigate cumulative impacts:-Where aircraft operations impact wildlife, impacts should be restricted to a minority of their habitat use areas. -For anticipated cumulative impacts, consider implementing protocols which can identify: oOnly one flight path to be used. oHelicopter will not standby in or around higher elevation habitats oWhere possible flight paths will be restricted to lower elevation corridors oIn the event of an emergency situation, helicopter access with no restrictions will be permitted oAircraft meeting stricter noise standards be allowed to fly in a special incentive corridor.

Impacts

Identification of Environmental Impacts

		PHYSICAL																									
		Designated environmental areas																									
		Ground stability																									
		Permafrost																									
		Hydrology / Limnology																									
		Water quality																									
		Climate conditions																									
		Eskers and other unique or fragile landscapes																									
		Surface and bedrock geology																									
		Sediment and soil quality																									
		Tidal processes and bathymetry																									
		Air quality																									
		Noise levels																									
		BIOLOGICAL																									
		Vegetation																									
		Wildlife, including habitat and migration patterns																									
		Birds, including habitat and migration patterns																									
		Aquatic species, incl. habitat and migration/spawning																									
		Wildlife protected areas																									
		SOCIO - ECONOMIC																									
		Archaeological and cultural historic sites																									
		Employment																									
		Community wellness																									
		Community infrastructure																									
		Human health																									
Construction																											
-			-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-
Operation																											
Aerial surveys			-	-	-	-	-	-	-	-	-	-	-	M		M	M	M		M		-	-	-	-	-	-
Decommissioning																											
-			-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

- 1 polygon Southern Coastline of Lancaster Sound (This polygon shows the approx. extent of the mapping area) This mapping work will be performed from a Canadian Coast Guard vessel. (Timing - Sept 7-13, 2023)
- 2 polygon Coastline around Gjoa Haven and Taloyoak (This polygon shows the approx. extent of the mapping area) This mapping work will be performed based out of Gjoa Haven. (Timing - Aug 15-23, 2023)