



## **NIRB Application for Screening #125447**

### **Ancient DNA in lake sediment**

<b>Application Type:</b>	Amendment
<b>Project Type:</b>	Scientific Research
<b>Application Date:</b>	2/10/2019 5:47:16 PM
<b>Period of operation:</b>	from 0001-01-01 to 0001-01-01
<b>Proposed Authorization:</b>	from 0001-01-01 to 0001-01-01
<b>Project Proponent:</b>	Gifford Miller University of Colorado INSTAAR, 4001 Discovery Drive Boulder CO 80309-0450 USA Phone Number:: 303.492.6962, Fax Number:: 303.492.6388

## DETAILS

### Non-technical project proposal description

English: NIRB “Ancient DNA in Lake Sediment” Project Proposal File Number 16YN010Who: Researchers from the University of Colorado, Boulder, the University of Buffalo (New York), and the University of Alaska, Fairbanks. Teams will consist of 4 scientists along with local Inuit guides and/or polar bear guards. What: We propose two short field programs.Lake CF8: The science team will travel to the lake site by snowmobile (May), ATV (July). We will camp at the lake in tents that will be taken with us when the work is completed. The team will be 4 scientists and an full time Inuit guide/polar bear guard, plus Inuit teams to transport the team to the lake and back to Clyde when work is complete. We will obtain sediment cores from the bottom of the lake, During the summer season ecologists will map the vegetation around the lake. We will not leave any permanent facilities at the sites, and expect our camping activities to have no long-term impact on the environment. Lake AFR: The science team will travel to the lake site by helicopter from Pond Inlet (August). We will camp at the lake in tents for 5 days. We will obtain sediment cores from the bottom of the lake, and map the vegetation around the lake. We will not leave any permanent facilities, and expect our camping activities to have no long-term impact on the environment. Why: We will reconstruct how climate and vegetation have changed in the past on Baffin Island by analyzing the sediment record preserved at the bottom of these lakes. The Arctic is changing rapidly and we want to understand how it has changed in the past to learn how much change we might expect in the future. We hope to learn what conditions were like during past warm times to help Nunavut anticipate the future. Where: Lake CF8 is a relatively isolated lake near the town of Clyde. AFR lake is a very isolated site at 800 meters above sea level, ~35 km from Pond Inlet. We will be working on the lake itself and in the immediate surrounding area with no expected impacts on the environment. There are no known archaeological sites around/near either of the lakes we propose to work on.

French: Non-applicable

[illegible]

## Personnel

Personnel on site: 4

Days on site: 21

Total Person days: 84

Operations Phase: from 2019-05-08 to 2019-08-14

## Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
AFR Lake - Research and temporary camp location. No known archaeological sites in the area.	Camp	Crown	No one has visited this lake that we know of. It was covered by ice until about 10 years ago	None known	35 km from Pond Inlet
CF8 Lake - Research and temporary camp location. Visited in Aug. 2017. No known archaeological sites in the area.	Camp	Inuit Owned Surface Lands	We have visited this site previously in August of 2017 to collect a preliminary lake sediment sample.	None known	16 km from Clyde River

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Pond Inlet	Charlie Inuarak, Mayor	Town Council	2019-02-11
Clyde River	Joshua Akavak	Iisaqsivik	2018-11-14

# Authorizations

Indicate the areas in which the project is located:

North Baffin

## Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Research Institute	Request permit for scientific research	Applied, Decision Pending		

## Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	PCSP Helicopter, Ken Borek Twin Otter	
Land	Walking, snowmobile, ATV	

## Project accomodation types

Temporary Camp

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Lake sediment core system	1	1x3 m	This is a hand operated system that pushes a plastic pipe into the mud at the bottom of a lake to recover a continuous sample of lake mud about 7 cm in diameter. Most lakes have 1 to 2 m of mud in them,
Snowmobile	2	1x3 m	Transport team from Clyde River to lake CF8; two snowmobiles to remain in camp for emergencies
Ice Auger	1	0.2 by 2 m	Drill hole in lake ice
PCSP Helicopter	1	3 b 10 m	Transport team of 3 from Pond Inlet to lake AFR and return them to Pond Inlet at end of season. No other way to reach lake AFR

### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
None	hazardous	0	0	0	Gallons	none
Gasoline	fuel	10	1	10	Liters	Stove Fuel
Gasoline	fuel	4	5	20	Gallons	Fuel for snowmobiles and ice auger

### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	From the lake in buckets using hole in lake ice made by ice auger+Total water use of 0.5 m3 per day, 21 days, total water use 10.5 m3	AFR Lake, CF8 Lake

# Waste

## Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Scientific/International Polar Year Research	Sewage (human waste)	4 persons for 21 days (2 different locations)	burial; biodegradable waste paper	Sewage will be buried at least 100 m from nearest water source

## Environmental Impacts:

We will camp in a tent and cook food on a coleman stove. All human waste will be more than 100m from the nearest water. We expect no measurable environmental impact.

# **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**

AFR is a small lake (0.7 x 0.4 km) close to ice caps and 35 km from Pond Inlet. CF8 is also a small lake (0.3 x 0.2 km) located 16 km from Clyde River.

### **Description of Existing Environment: Biological Environment**

Polar desert

### **Description of Existing Environment: Socio-economic Environment**

None known

### **Miscellaneous Project Information**

All our gear and all camp waste other than buried human waste will be taken out by helicopter (AFR lake) or snowmobile (CF8 lake)

### **Identification of Impacts and Proposed Mitigation Measures**

No significant impacts

### **Cumulative Effects**

No cumulative effects expected

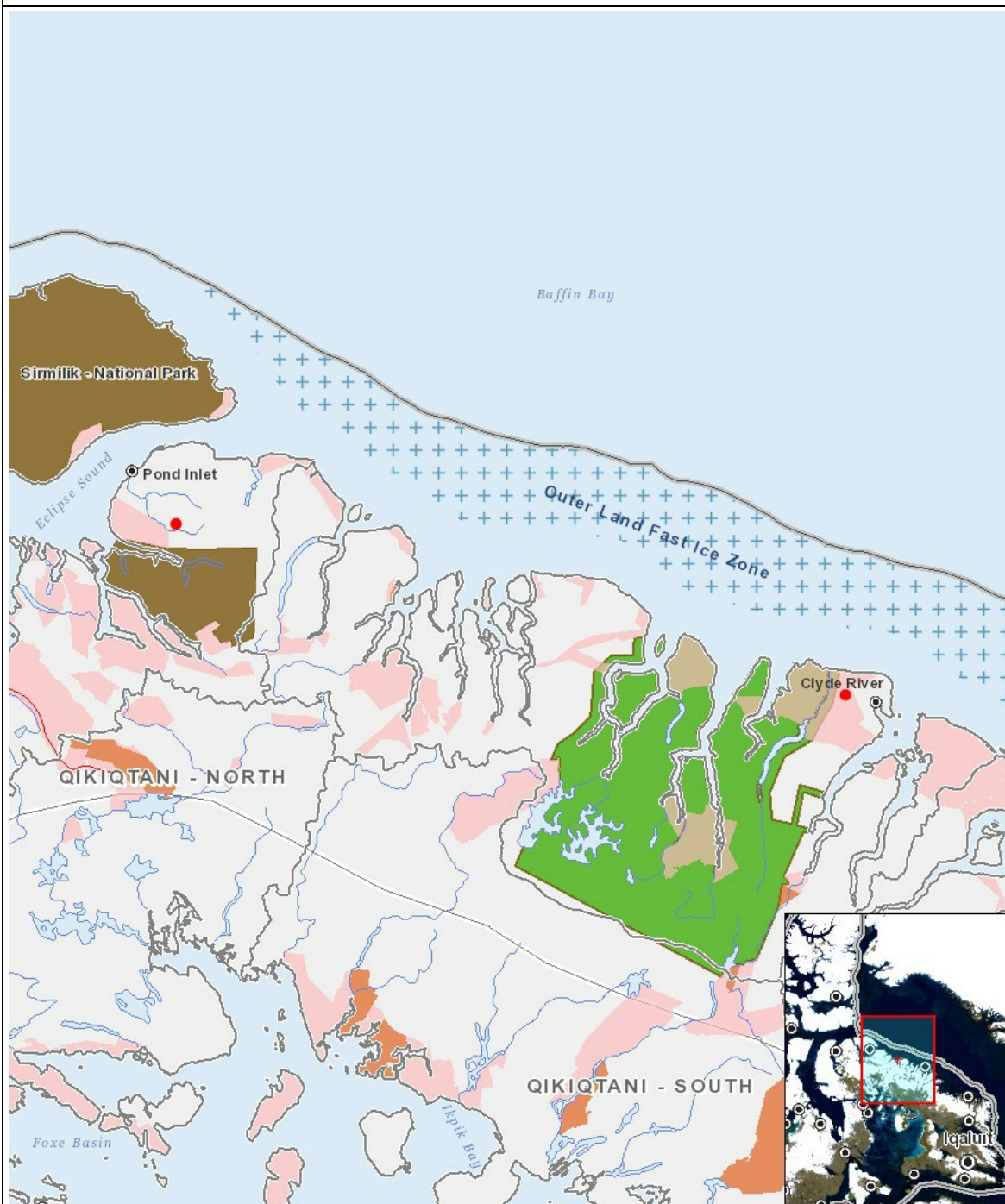
# Impacts

## 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
<b>Construction</b>																										
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operation</b>																										
Camp		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-
<b>Decommissioning</b>																										
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(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

## Project Location



## List of Project Geometries

- 1 point CF8 Lake - Research and temporary camp location. Visited in Aug. 2017. No known archaeological sites in the area.
- 2 point AFR Lake - Research and temporary camp location. No known archaeological sites in the area.
- 3 point New project geometry