NIRB Application for Screening #126161
Mars Exploration through Analog-site Drilling (MEAD)

Application Type: New

Project Type: Scientific Research

Application Date: Friday, March 21, 2025

Period of operation: from 2025-07-24 to 2025-08-03

Project Proponent:
Brian Glass
NASA Ames Research Center
Bldg N269, Rm 136
Moffett Field California 94035
United States
Phone Number:: 6502794141, Fax Number:: 6506044036

DETAILS

Non-technical project proposal description

English: The Haughton Impact Structure (HIS) is a 22 km wide crater on Devon Island, NU, formed by a meteor impact 31 million years ago. It has conditions similar to Mars, including icy ground, a cold desert climate, and signs of ancient and present life. The MEAD project will drill shallow holes (less than 1 meter) to search for tiny life signs using a special tool called SOLID. Another tool, ARIA, will test how well it can detect minerals and organic changes in crater rocks. MEAD will also test new drilling imaging methods to avoid hazards and find underground targets. These studies will help scientists look for life under the surface of Mars in the future. MEAD is supported by NASA's Mars Exploration Program. We are planning for our base camp to be at an existing camp location in the Haughton River Valley, accessible by Twin Otter flights to an existing landing strip near the camp. Transportation of people and equipment to scientific sites within the crater will rely on All Terrain Vehicles (ATVs), trailers, and walking, staying on existing trails where possible. ATV fuel will be safely stored within a spill-secured platform a safe distance from our camp tents. Propane will be used for cooking. MEAD is a new project, but its leader Brian Glass has been known by many members of the Resolute Bay community since the late 1990s. MEAD will reach out and contact both the Resolute and Grise Fiord communities and ask for their concerns or requests. we are aware of the following possible concerns expressed during previous consultations and discussions. The Haughton Crater site is located far from protected areas and parks. Nevertheless, wildlife may be present, such as polar bears, foxes or migratory birds. If found or sighted, nests, dens or animals of any type will not be disturbed nor interacted with. No archeological sites are known to be located in the area – if we find a site, the location will be recorded and communicated to proper authority for further investigation. If using ATV's and an animal is sighted, alternative paths will be used. We plan to be in the field for 11 days at Haughton, in the first two weeks of August. Most field supplies will be brought up from the south, but others such as ammunition and fresh food will be bought at the Tudjaat Co-op store at Resolute. Water for camp use (approx. 0.1 m3 per day) will be collected from the nearby Haughton River. Solid waste will be backhauled to Polar Continental Shelf or approved (landfill) facilities for disposal. Following our deployment at the Haughton site, the campsite area and study sites will be restored to their condition upon arrival.

French: La structure d'impact de Haughton (HIS) est un cratère de 22 km de large situé sur l'île Devon, au Nunavut, formé par l'impact d'une météorite il y a 31 millions d'années. Ses conditions sont similaires à celles de Mars, avec un sol gelé, un climat désertique froid et des traces de vie ancienne et actuelle. Le projet MEAD forera des trous peu profonds (moins d'un mètre) à la recherche de minuscules traces de vie à l'aide d'un outil spécial appelé SOLID. Un autre outil, ARIA, testera sa capacité à détecter les minéraux et les modifications organiques dans les roches du cratère. MEAD testera également de nouvelles méthodes d'imagerie par forage afin d'éviter les dangers et de trouver des cibles souterraines. Ces études aideront les scientifiques à rechercher la vie sous la surface de Mars à l'avenir. MEAD est soutenu par le programme d'exploration de Mars de la NASA.Nous prévoyons d'installer notre camp de base sur un site existant dans la vallée de la rivière Haughton, accessible par Twin Otter depuis une piste d'atterrissage existante à proximité du camp. Le transport des personnes et du matériel vers les sites scientifiques du cratère se fera en véhicules tout-terrain (VTT), en remorque et à pied, en restant autant que possible sur les sentiers existants. Le carburant des VTT sera stocké en toute sécurité sur une plateforme sécurisée contre les déversements, à une distance sécuritaire de nos tentes. Le propane sera utilisé pour la cuisson.MEAD est un nouveau projet, mais son responsable, Brian Glass, est connu de nombreux membres de la communauté de Resolute Bay depuis la fin des années 1990. MEAD contactera les communautés de Resolute et de Grise Fiord pour recueillir leurs préoccupations ou leurs demandes. Nous sommes conscients des préoccupations suivantes, exprimées lors de consultations et de discussions précédentes. Le site du cratère Haughton est situé loin des zones protégées et des parcs. Néanmoins, des animaux sauvages, tels que des ours polaires, des renards ou des oiseaux migrateurs, peuvent y être présents. S'ils sont trouvés ou aperçus, les nids, les tanières ou les animaux de toute sorte ne seront ni dérangés ni interagis. Aucun site archéologique n'est connu dans la région ; si nous en trouvons un, son emplacement sera enregistré et communiqué aux autorités compétentes pour une enquête plus approfondie. Si nous utilisons des VTT et qu'un animal est aperçu, des sentiers alternatifs seront empruntés.Nous prévoyons de rester sur le terrain pendant 11 jours à Haughton, au cours des deux premières semaines d'août. La plupart des fournitures de terrain proviendront du sud, mais d'autres, comme les munitions et les aliments frais, seront achetées à la coopérative Tudjaat de Resolute. L'eau nécessaire au campement (environ 0,1 m³ par jour) sera

collectée dans la rivière Haughton toute proche. Les déchets solides seront acheminés vers le plateau continental polaire ou vers des installations agréées (décharge) pour y être éliminés. Après notre déploiement sur le site de Haughton, le camping et les sites d'étude seront remis en état à leur arrivée.

Inuktitut: Hᐋᑐᓐ ᐊᒃᑐᐃᓂᐅᔪᖅ ᐋᖅᑭᒃᓯᒪᓂᖓ (HIS) 22 ᑭᒑᒥᑐᓂᒃ ᓯᕕᑐᓂᓕᒃ ᖁᐊᖑᔪᖅ ᑎᐊᕚᓐ ᕿᑭᖅᑕᖓᓂ, NU, ᓴᖅᑭᑕᐅᓚᐅᖅᑐᖅ ᓯᓚᕐᔪᐊᑉ ᐊᒃᑐᐃᓂᖓᓄᑦ 31 ᒥᓕᐊᓐ ᐊᕐᕌᒍᐃᑦ ᐊᓂᒍᖅᓯᒪᓕᖅᑐᑦ. ᖃᓄᐃᓐᓂᖃᖅᐳᖅ ᐊᔾᔨᐸᓗᒋᓐᓂᒃ ᓯᓚᕐᔪᐊᑉ ᖃᖓᓃᑦᑐᓂᒃ, ᐃᓚᖃᖅᖢᓂ ᓯᑯᖃᖅᑐᒥᒃ ᓄᓇᒥᒃ, ᓂᓪᓚᓱᒃᑐᒥᒃ ᓯᑯᖃᙱᑦᑐᒥᒃ ᓯᓚᒥᒃ, ᐊᒻᒪᓗ ᓇᓗᓇᐃᒃᑯᑕᖃᖅᖢᓂ ᑕᐃᔅᓯᒪᓂᑐᖃᖅ ᐊᒻᒪᓗ ᐅᓪᓗᒥᐅᔪᖅ ᐃᓅᓯᖃᓚᐅᕐᓂᖓᓂᒃ. MEAD ᐱᓕᕆᐊᖑᔪᖅ ᐃᑰᑕᕐᓂᐊᖅᑐᖅ ᐃᑎᔪᓂᒃ (1 ᒦᑕ ᑐᖓᓂ) ᕿᓂᕐᓗᑎᒃ ᒥᑭᔪᑯᓐᓂᒃ ᐃᓅᓯᕐᒧᑦ ᓇᓗᓇᐃᒃᑯᑕᓂᒃ ᐊᑐᕐᓗᑎᒃ ᐱᑐᐃᓐᓇᐅᖏᑦᑐᒥᒃ ᓴᓇᕈᑎᒥᒃ ᑕᐃᖓᐅᔪᒥᒃ SOLID. ᐊᓯᐊᑦᑕᐅᖅ ᓴᓇᕈᑎᐅᔪᖅ, ARIA, ᖃᐅᔨᓴᕐᓂᐊᖅᑐᖅ ᖃᓄᑎᒋ ᖃᐅᔨᔪᓐᓇᕐᒪᖔᖅ ᐅᔭᕆᓐᓂᐊᕈᒃᓴᓂᒃ ᐊᒻᒪᓗ ᐆᒪᔪᐃᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓂᖓᓐᓂᒃ ᐅᔭᕋᐃᑦ ᖄᖓᓃᑦᑐᑦ. MEAD-ᑯᑦ ᖃᐅᔨᓴᕐᓂᐊᕐᒥᔪᑦ ᓄᑖᓂᒃ ᐃᑰᑕᕐᓂᕐᒧᑦ ᐊᔾᔨᓕᐅᕈᑎᓂᒃ ᐊᑦᑕᕐᓇᖅᑐᒦᑦᑕᐃᓕᒪᕐᑯᓪᓗᒋᑦ ᐊᒻᒪᓗ ᓇᓂᓯᕐᑯᓪᓗᒋᑦ ᓄᓇᐅᑉ ᐊᑖᓂ ᑐᕌᓚᒃᓴᓂᒃ. ᑖᒃᑯᐊ ᖃᐅᔨᓴᕈᑏᑦ ᐃᑲᔪᕐᓂᐊᖅᑐᑦ ᑭᓪᓕᓯᓂᐊᖅᑎᓂᒃ ᕿᓂᕈᓐᓇᕐᑯᓪᓗᒋᑦ ᐃᓅᓯᕐᒥᒃ ᓯᓚᕐᔪᐊᑉ ᐊᑖᓂ ᓯᕗᓂᒃᓴᒥ. MEAD ᐃᑲᔪᖅᑐᖅᑕᐅᔪᖅ NASA-ᑯᑦ ᓯᓚᕐᔪᐊᑉ ᖄᖓᓂ ᕿᓂᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᒧᑦ.ᐸᕐᓇᒃᐸᓪᓕᐊᔪᒍᑦ ᑐᐱᕐᕕᒋᓂᐊᖅᑕᕗᑦ ᑐᐱᕐᕕᐅᕙᒌᖅᑐᒥ Hᐋᑕᓐ ᑰᖓᑕ ᖃᓂᒋᔮᓂ, ᒪᕐᕈᓕᓐᓄᑦ ᖃᖓᑕᓲᓄᑦ ᑎᑭᑕᐅᔪᓐᓇᕐᓗᓂ ᒥᙵᐅᕙᒌᖅᑐᒧᑦ ᑐᐱᕐᕕᐅᑉ ᖃᓂᒋᔮᓂ. ᐃᖏᕐᕋᔾᔪᑎᖏᑦ ᐃᓄᐃᑦ ᐊᒻᒪᓗ ᓱᓇᒃᑯᑖᑦ ᑭᓪᓕᓯᓂᐊᕐᓂᕐᒧᑦ ᐃᓂᐅᔪᓄᑦ ᐃᓗᐊᓂ ᖃᐅᒻᒪᖅᑯᑎᐅᑉ ᑐᙳᕋᕐᓂᐊᖅᑐᑦ ᓄᓇᒥᐅᑕᓕᒫᓄᑦ ᓄᓇᓯᐅᑎᓄᑦ (ATVs), ᑲᓕᒐᕐᓄᑦ, ᐊᒻᒪᓗ ᐱᓱᓐᓂᒃᑯᑦ, ᑕᐃᑳᓐᖏᓐᓇᕐᓗᑎᒃ ᒫᓐᓇᐅᔪᖅ ᐊᖅᑯᑎᐅᔪᓂ ᐊᔪᕐᓇᙱᑐᐊᕌᖓᑦ. ᑎᓴᒪᓕᓐᓄᑦ ᐅᖅᓯᐊᓗᒃ ᑐᖅᑯᖅᑕᐅᓯᒪᑦᑎᐊᕐᓂᐊᖅᑐᖅ ᑯᕕᑦᑕᐃᓕᒪᕝᕕᒥ ᐅᖓᓯᓐᓂᖃᑦᑎᐊᕐᓗᓂ ᑐᐱᑦᑎᓐᓂᑦ. ᐳᓛᓕᒃ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᖅ ᓂᕿᓕᐅᕈᑕᐅᓗᓂ.MEAD ᓄᑖᖑᔪᖅ ᐱᓕᕆᐊᖑᔪᖅ, ᑭᓯᐊᓂᓕ ᓯᕗᓕᖅᑎᖓ ᐳᕋᐃᐊᓐ ᒋᓛᔅ ᖃᐅᔨᒪᔭᐅᓯᒪᓕᖅᑐᖅ ᐊᒥᓲᓄᑦ ᐃᓚᒋᔭᐅᔪᓄᑦ ᖃᐅᓯᐃᑦᑐᒥ ᓄᓇᓕᐅᔪᒥ ᑕᐃᒪᙵᓂ 1990-ᖏᓐᓂ. MEAD-ᑯᑦ ᑎᑭᐅᑎᓂᐊᖅᑐᑦ ᖃᐅᔨᒋᐊᕐᓗᑎᓪᓗ ᑕᒪᒃᐲᓐᓂᒃ ᖃᐅᓯᐃᑦᑐᒥ ᐊᐅᓯᐃᑦᑐᒥᓪᓗ ᓄᓇᓕᓐᓂᒃ ᐊᐱᕆᓗᑎᓪᓗ ᐃᓱᒪᓘᑎᖏᓐᓂᒃ ᑐᔾᓯᕋᐅᑎᖏᓐᓂᓪᓘᓐᓃᑦ. ᖃᐅᔨᒪᔪᒍᑦ ᐅᑯᓂᖓ ᐃᓱᒪᓘᑕᐅᑐᐃᓐᓇᕆᐊᓕᖕᓂᒃ ᓴᖅᑭᑕᐅᓯᒪᔪᓂᒃ ᑐᓴᕋᓱᐊᕐᓂᐅᓚᐅᖅᑐᓂ ᐅᖃᖅᑎᒌᖕᓂᐅᓚᐅᖅᑐᓂᓗ. Hᐋᑭᕐᕕᒃ ᐅᖓᓱᒃᑑᒻᒪᑦ ᓴᐳᔾᔭᐅᓯᒪᔪᓂᒃ ᒥᕐᖑᐃᖅᓯᕐᕕᖕᓂᓗ. ᑕᐃᒪᐃᒃᑲᓗᐊᖅᑎᓗᒍ, ᐆᒪᔪᖃᑐᐃᓐᓇᕆᐊᓕᒃ, ᓃᕐᓗ ᓇᓄᐃᑦ, ᑎᕆᒐᓂᐊᑦ ᐅᕝᕙᓘᓐᓃᑦ ᓄᒃᑖᖅᐸᒃᑐᑦ ᑎᖏᒥᐊᑦ. ᓇᓂᔭᐅᓐᓂᖅᐸᑕ ᑕᑯᔭᐅᓐᓂᖅᐸᑕᓘᓐᓃᑦ, ᕿᒻᒥᖃᕐᕕᐅᔪᑦ, ᕿᒻᒥᖃᕐᕕᐅᔪᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐆᒪᔪᐃᑦ ᖃᓄᐃᑦᑐᑐᐃᓐᓇᐃᑦ ᐸᕝᕕᓴᒃᑕᐅᔾᔭᖏᑦᑐᑦ ᐅᕝᕙᓘᓐᓃᑦ ᑲᒪᒋᔭᐅᔾᔭᖏᑦᑐᑦ. ᖃᐅᔨᒪᔭᐅᔪᖃᙱᓚᖅ ᐃᑦᑕᕐᓂᓴᖃᕐᕕᐅᔪᓂᒃ ᑕᐃᑲᓂ - ᓇᓂᓯᒍᑦᑕ ᐃᓂᐅᔪᒥᒃ, ᓇᒦᓐᓂᖓ ᑎᑎᕋᖅᑕᐅᓂᐊᖅᑐᖅ ᐊᒻᒪᓗ ᑐᓴᖅᑎᑕᐅᓗᓂ ᓈᒪᒃᑐᓄᑦ ᐱᔪᓐᓇᕐᓂᖃᖅᑐᓄᑦ ᖃᐅᔨᓴᖅᑕᐅᒃᑲᓐᓂᕐᑯᓪᓗᒍ. ᐊᑐᕈᑦᑕ ᑎᓴᒪᓕᓐᓂᒃ ᐊᒻᒪᓗ ᐆᒪᔪᕐᒥᒃ ᑕᑯᔪᖃᕐᓂᖅᐸᑦ, ᐊᓯᐊᒍᑦ ᐊᖅᑯᑎᐅᔪᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ.ᐸᕐᓇᒃᓯᒪᕗᒍᑦ ᐅᓪᓗᓄᑦ 11-ᓄᑦ Hᐋᑕᓐᒥ, ᐱᓇᓱᐊᕈᓰᑦ ᒪᕐᕉᒃ ᓯᕗᓪᓕᖅᐹᒃ ᐋᓪᓕᓯᒥ. ᐊᒥᓲᓂᖅᓴᐃᑦ ᓄᓇᒥ ᓂᐅᕕᐊᒃᓴᐃᑦ ᖃᓪᓗᓈᑦ ᓄᓇᖓᓐᓂᑦ ᑎᑭᑎᑕᐅᖃᑦᑕᕐᓂᐊᖅᑐᑦ, ᑭᓯᐊᓂ ᐊᓯᖏᑦ ᓃᕐᓗ ᓴᒃᑯᐃᑦ ᐊᒻᒪᓗ ᓂᕿᑦ ᓄᑖᑦ ᓂᐅᕕᐊᖑᖃᑦᑕᕐᓂᐊᖅᑐᑦ ᑐᔾᔪᑦ ᑯᐊᐸᒃᑯᑦ ᓂᐅᕕᕐᕕᖓᓂ ᖃᐅᓯᐃᑦᑐᒥ. ᐃᒪᖅ ᓄᓇᓕᕋᓛᓄᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᖅ (ᖃᓂᒋᔮᓂ 0.1 m3 ᐅᓪᓗᖅ ᐊᑕᐅᓯᖅ) ᑲᑎᖅᓱᖅᑕᐅᓂᐊᖅᑐᖅ ᖃᓂᒋᔭᖓᓂ Hᐊᐅᑕᓐ ᑰᖓᓂ. ᑕᖏᓛᑦ ᐊᑦᑕᑯᐃᑦ ᐅᑎᖅᑎᑕᐅᓂᐊᖅᑐᑦ ᑕᕆᐅᕐᔪᐊᑉ ᐊᑭᐊᓄᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐊᖏᖅᑕᐅᓯᒪᔪᓄᑦ (ᐊᑦᑕᕐᕕᙵᓄᑦ) ᐃᒋᑕᐅᓂᐊᕐᒪᑕ. ᑕᐃᒪᓕ Hᐋᑕᓐᒥ ᐃᓕᔭᐅᓚᐅᖅᑎᓪᓗᑕ, ᑐᐱᕐᕕᐅᑉ ᖃᓂᒋᔮ ᐊᒻᒪᓗ ᖃᐅᔨᓴᕐᕕᐅᔪᑦ ᐅᑎᖅᑎᑕᐅᓂᐊᖅᑐᑦ ᑎᑭᑉᐸᑕ.

Personnel

Personnel on site: 7

Days on site: 10

Total Person days: 70

Operations Phase: from 2025-07-24 to 2025-08-03

Closure Phase: from 2025-08-03 to 2025-08-07

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Base Camp Location	Camp	Inuit Owned Surface Lands	Site previously used by Western University and others	N/A	N/A
Existing Airstrip Location	Airstrip use or construction	Inuit Owned Surface Lands	Previously used strip by Twin Otters near camp	N/A	N/A
Proposed Study Range	Sampling sites	Inuit Owned Surface Lands	Impact melt breccia deposits inside the crater	N/A	N/A

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Information is not available			

Authorizations

Indicate the areas in which the project is located:

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Government of Nunavut, Nunavut Research Institute	Research Permit	Applied, Decision Pending		
Nunavut Water Board	Application for Approval without Licence	Applied, Decision Pending		
Qikiqtani Inuit Association	Land Use #320546	Applied, Decision Pending		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	DHC-6 Twin Otter from Resolute	
Land	4 ATVs on Devon	

Project accomodation types

Temporary Camp

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Kawasaki Bayou ATVs	4	1m x1m	Visit sites of scientific interest in the study area; logistics to/from airstrip.
Kawasaki Bayou ATVs	4	1m x1m	Visit sites of scientific interest in the study area; logistics to/from airstrip.
Shallow 1m TRIDENT drill	1	1.5m x 0.4m	Mars prototype drill (Honeybee Robotics), max 1m depth, 3cm diameter, for sampling and local seismic vibration.
2kW generator	1	1.5m x 0.4m	(a) Base camp instruments and communications (b) field site of interest (drill, instruments); located in spill kit catchments.
2kW generator	2	0.3m x 0.5m	(a) Base camp instruments and communications (b) field site of interest (drill, instruments); located in spill kit catchments.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Gasoline	fuel	2	205	410	Liters	ATVs, 2kW generators
Propane	fuel	2	20	40	Liters	Cooking
Other	fuel	1	1	1	Liters	motor oil for ATVs

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Water pulled by bucket and used for cooking, drinking and camping.	Haughton River bank

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Waste disposal	Greywater	300L total	disposed in a sump dug out far from the river	filled in upon departure
Waste disposal	Non-Combustible wastes	3-4 large 100L trash bags	Backhaul to Resolute	coordinate disposal with Polar Shelf
Drilling	Overburden (organic soil, waste material, tailings)	100-200 gm per 1m sample hole	backfilled into hole after sampling	N/A
Waste disposal	Sewage (human waste)	50L total	disposed in a sump dug out far from the river	filled in upon departure

Environmental Impacts:

2cm x 1m depth boreholes at sampling sites: will be filled in ATV tracks: will stay on existing trails Wastes: gray/blackwater in sump away from river, will be filled in Trash: backhauled to Polar Shelf

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

22 million year old meteor impact crater with well-preserved gray impact rocks and no overburden.

Description of Existing Environment: Biological Environment

Polar desert with almost no plant life and very rare inland sightings of seagulls or foxes. Bears occasionally traverse Devon Island and their tracks or scat are sometimes found (away from camp).

Description of Existing Environment: Socio-economic Environment

Haughton Crater has no settlements or lodges. 7km northwest of the proposed campsite is both the Mars Society habitat camp and Pascal Lee's HMP camp area, but neither is expected to be in use this year.

Miscellaneous Project Information

Re-use of campsite previously used by Western University and others

Identification of Impacts and Proposed Mitigation Measures

This project is primarily observational except for small drilled soil samples (< 200g each, no deeper than 1m, using a low-power electric drill with no lubricants or fluids). Traverses to study sites may leave minor ATV tracks.

Cumulative Effects

Reinforcement of existing ATV trails

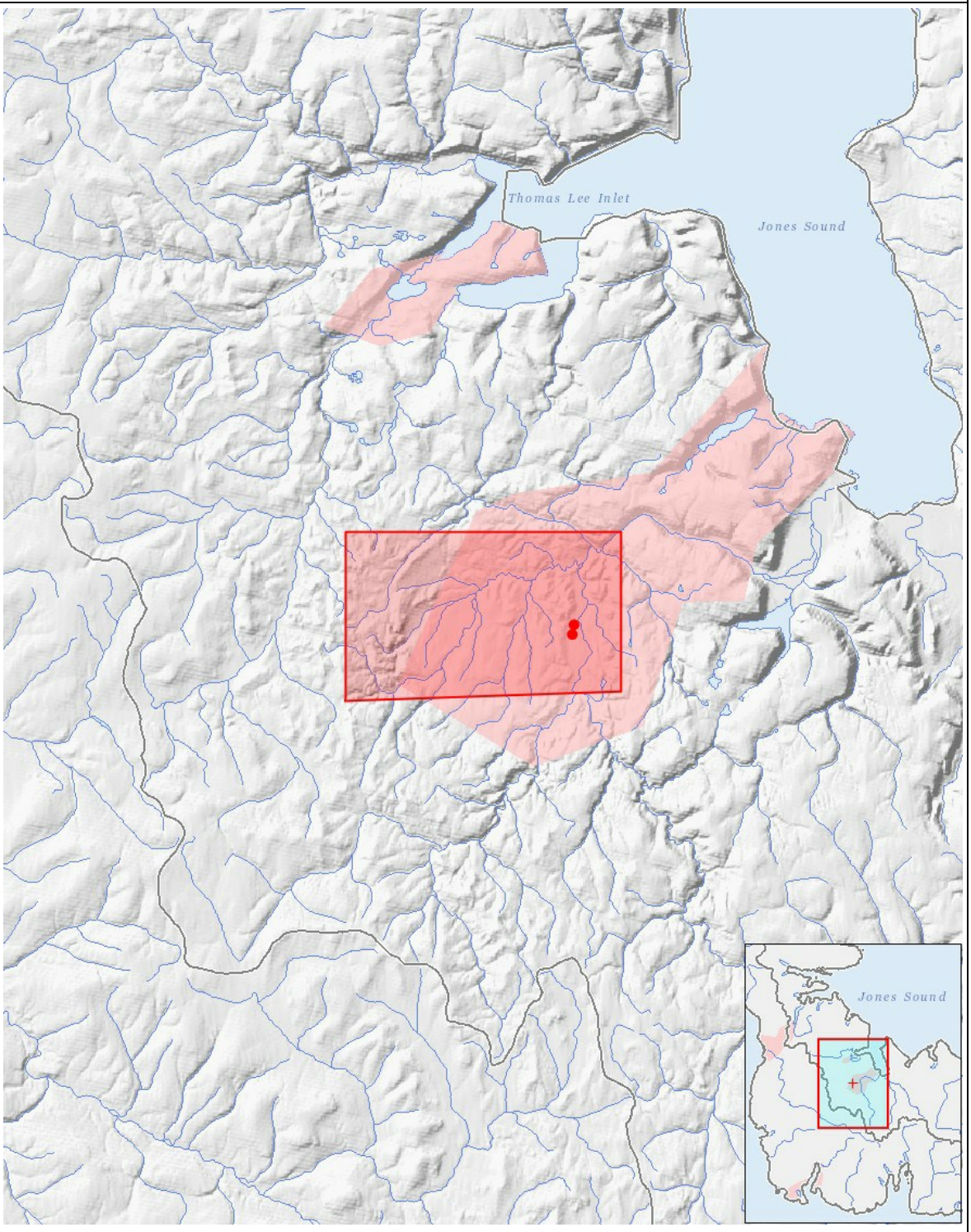
Impacts

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																									
Airstrip use or construction		-	-	-	-	-	-	-	-	-	-	-	N		-	-	-	-	-		-	-	-	-	-
Camp		-	-	-	-	-	-	-	-	N	-	-	-		-	-	-	-	-		-	-	-	-	-
Sampling sites		-	-	M	-	-	-	-	-	M	-	-	-		-	-	-	-	-		-	-	-	-	-
Decommissioning																									
Airstrip use or construction		-	-	-	-	-	-	-	-	-	-	-	N		-	-	-	-	-		-	-	-	-	-

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

Project Location



List of Project Geometries

1	polygon	Proposed Study Range
2	point	Base Camp Location
3	point	Existing Airstrip Location