

NPC 150680: Mars Exploration through Analog-site Drilling (MEAD)

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**Proposal Status: Conformity Determination Issued**

[Overview Documents](#)

[Project Overview](#)

Type of application: New

Proponent name:

Brian J. Glass

Proponent company:

NASA Ames Research Center

Project Description:

Use a low-power, shallow (<1m depth) drill to excite the local surface, the vibrations then are sensed with geophones to create a shallow seismic map. This enables future Mars and lunar missions to generate target maps before drilling and sampling. MEAD drilling will also bring up small ~50gm samples that will be fed to two prototype Mars life-detection instruments and contribute to a study of microbial population changes in a polar desert (Haughton impact crater) in summer, above and below the frozen boundary (active layer, about 0.6m deep). MEAD results will improve our knowledge of where to look for possible Mars life, how to target it for sampling, and the efficacy of two potential life-detection instruments.

[Project Schedule](#)

Start Date:

2025-08-01

End Date:

2025-08-11

[Project Map](#)

List of project geometries:

Id

Geometry

Location Name

[15598](#)

polygon

Proposed Study Range

[15599](#)

point

Base Camp Location

[15600](#)

point

Existing Airstrip Location

NPC Planning regions:

**North Baffin**

[Project Land Use and Authorizations](#)

Project Land Use:

Scientific Research

Licensing Agencies:

Qikiqtani Inuit Association

Nunavut Impact Review Board

Nunavut Water Board

Nunavut Research Institute

[Material Use](#)

Equipment:

Type

Quantity

Type

Use

Kawasaki Bayou ATVs

4

1m x1m

Visit sites of scientific interest in the study area; logistics to/from airstrip.

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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.

Fuel Use:

Type

Container

Capacity

Use

Gasoline

2

205

ATVs, 2kW generators

Propane

2

20

Cooking

Other

1

1

motor oil for ATVs

Hazardous Material and Chemical Use:

Type

Container

Capacity

Use

No data found

Water Consumption:

Daily Amount (m<sup>2</sup>)

Retrieval Method

Retrieval Location

0

Haughton River

buckets (manual)

## Waste and Impacts

### Environmental Impacts:

There is a dedicated secure emplacement in the camp to store fuel, and we will have mats and spillkits where fuel is stored. Greywater sump into permafrost will be dug and then refilled upon departure.

### Waste Management:

Waste Type

Quantity Generated

Treatment Method

Disposal Method

Greywater

100L

Use of biodegradable detergents (sanitation and dishwashing)

Grey and used water will be sink in a pit dug in the permafrost, about 1 km from the river, to prevent possible contamination.

Non-Combustible wastes

2 m<sup>3</sup>

bagged and sealed

back-hauled

Sewage (human waste)

0.1 m<sup>3</sup>

solids and paper wrapped in bags