

Preliminary Screening Report Form

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| <p>Preliminary screener: MVLWB</p> <p>Reference / File number: MV2018X0017</p> <p>TITLE: Miscellaneous – Groundwater Monitoring ORGANIZATION: G360 Institute for Groundwater Research</p> <p>MEETING DATE: December 10, 2018</p> | <p>EIRB</p> <p>Reference number:</p> |
|--|--|

Type of Development:
 (CHECK ALL THAT APPLY)

- New
- Amend, EIRB Ref. #
- Requires permit, licence, or authorization
- Does not require permit, licence, or authorization

Project Summary:

On July 30, 2018, G360 Institute for Groundwater Research, a research institute located at the University of Guelph, submitted an application for a new Type A Land Use Permit for a groundwater monitoring program in the Fort Liard area. The goal of this project is to improve understanding of groundwater in the transboundary area of the NT portion of the Liard Basin. It is anticipated that this project could assist Indigenous and community governments, industry, regulators, decision makers, and the public to make environmentally sustainable decisions about future industrial development and groundwater use in the Fort Liard area.

The proposed activities include use of a truck-mounted drill rig to drill a maximum of 9 boreholes at up to three separate locations in the Fort Liard area for long-term groundwater monitoring of the freshwater zone. The boreholes will be 4-inches in diameter and extend to depths between 100 and 149 metres. Down-hole geophysical logging (using geophysical equipment including logging probes, winch, and tripods), along with coring and rock sampling will occur in each borehole to collect vertical profile data. Boreholes will have pressure and temperature transducers installed; some will be grouted in place to be kept in permanently for long-term monitoring, while others will be installed temporarily using a removable flexible liner. Depth-discrete multi-level groundwater sampling systems will be installed in one or two of the boreholes at each location for groundwater samples to be taken at specific depth intervals to characterize water quality. Pumping tests will be conducted at boreholes and each location may have temporary shallow instrumentation installed to measure soil gas and near-surface methane emissions.

The period of operation is approximately 2 weeks a season, commencing in the spring of 2019. Each year’s work is reliant on available funding and resources. Most likely, the summer or fall months is when the bulk of the work will occur, although drilling could occur in the winter.

Waste generated as a result of this project are expected to be non-hazardous. During the drill process rock cuttings and drill water waste will be generated. Drill cuttings and rock waste that are not transported offsite for analysis will be disposed of in a low-lying gully or depression at least 100 m away from any water source. Freshwater may be used as a lubricant for drilling, with water usage being less than 44 m³ per day. Returns of excess drilling fluid will be tested for total dissolved solids (TDS) to ensure the returning fluid is not in excess of 2500 mg/L. If the fluid does exceed this, it will be stored in intermediate bulk container tanks and transported off-site for disposal at an approved facility in British Columbia. Once drilling is complete, an above-ground well will remain at each borehole location. If the wells are no longer needed, the casing will be removed and site re-contoured as necessary. Minor clearing or brush cutting may be required to access specific well installation locations, but sites will be selected to minimize the need for brush clearance. Cleared Brush will be removed for disposal, or if quantities are small will be placed in a local wooded area. Efforts will be taken to minimize the disturbance to flora and fauna.

No camp is proposed as accommodations in Fort Liard will be used. Activities will use existing roads.

Diesel refueling will be done via a 100-gallon pickup mounted tank using an electric pump and hoses. Gasoline refueling will be done via 5-gallon Jerry cans transferred to the Honda generator using funnels. All fuel transfer will be conducted on spill contaminant mats. Spill kits will be placed in each vehicle transporting fuel. No on-site fuel storage has been proposed.

Scope:

- a) Drilling Boreholes for long-term groundwater monitoring;
- b) Use of drill equipment and vehicles; and
- c) Brush clearing and disposal.

Land Use Eligibility - Section 18 Mackenzie Valley Land Use Regulations:

18(b)

Type of Disposition

Disposition Number(s)

- Mineral Claims
- Prospecting Permit (s)
- Mineral Leases
- Oil and Gas: EL/SDL/PL
- Quarry Permit
- Timber Permit
- Other:

Reserve 095B03019
 Reserve 095B03017
 Reserve 095B06006

Principal Activities (related to scoping) (CHECK ALL THAT APPLY)

- | | | |
|--|--|---|
| <input type="checkbox"/> Construction | <input type="checkbox"/> Exploration | <input type="checkbox"/> Decommissioning |
| <input checked="" type="checkbox"/> Installation | <input type="checkbox"/> Industrial | <input type="checkbox"/> Abandonment |
| <input type="checkbox"/> Maintenance | <input type="checkbox"/> Recreation | <input type="checkbox"/> Aerial |
| <input type="checkbox"/> Expansion | <input type="checkbox"/> Municipal | <input type="checkbox"/> Harvesting |
| <input type="checkbox"/> Operation | <input type="checkbox"/> Quarry | <input type="checkbox"/> Camp |
| <input type="checkbox"/> Repair | <input type="checkbox"/> Linear / Corridor | <input checked="" type="checkbox"/> Scientific/ |
| <input checked="" type="checkbox"/> Research | <input type="checkbox"/> Sewage | <input type="checkbox"/> Solid Waste |
| <input type="checkbox"/> Water Intake | | |
| <input type="checkbox"/> Other: | | |

Principal Development Components (related to scoping) (CHECK ALL THAT APPLY)

- | | |
|---|---|
| <input type="checkbox"/> Access Road | <input checked="" type="checkbox"/> Waste Management |
| <input type="checkbox"/> construction | <input type="checkbox"/> disposal of hazardous waste |
| <input type="checkbox"/> abandonment/removal | <input checked="" type="checkbox"/> waste generation |
| <input type="checkbox"/> modification e.g., widening, straightening | <input type="checkbox"/> sewage |
| <input type="checkbox"/> Automobile, Aircraft or Vessel Movement | <input type="checkbox"/> disposal of sewage |
| <input type="checkbox"/> Blasting | <input type="checkbox"/> Geoscientific Sampling |
| <input type="checkbox"/> Building | <input type="checkbox"/> Trenching |
| <input type="checkbox"/> Burning | <input type="checkbox"/> Diamond drill |
| <input type="checkbox"/> Burying | <input type="checkbox"/> Borehole core sampling |
| <input type="checkbox"/> Channelling | <input type="checkbox"/> Bulk soil sampling |
| <input type="checkbox"/> Cut and Fill | <input type="checkbox"/> gravel |
| <input checked="" type="checkbox"/> Cutting of Trees or Removal of Vegetation | <input type="checkbox"/> hydrological Testing |
| <input type="checkbox"/> Dams and Impoundments | <input checked="" type="checkbox"/> Site Restoration |
| <input type="checkbox"/> construction | <input type="checkbox"/> fertilization |
| <input type="checkbox"/> abandonment/removal | <input type="checkbox"/> grubbing |
| <input type="checkbox"/> modification | <input type="checkbox"/> planting/seeding |
| <input type="checkbox"/> Ditch Construction | <input type="checkbox"/> reforestation |
| <input type="checkbox"/> Drainage Alteration | <input type="checkbox"/> scarify |
| <input type="checkbox"/> Drilling other than Geoscientific | <input type="checkbox"/> spraying |
| <input type="checkbox"/> Ecological Surveys | <input checked="" type="checkbox"/> re-contouring |
| <input type="checkbox"/> Excavation | <input type="checkbox"/> Slashing and removal of vegetation |
| <input type="checkbox"/> Explosive Storage | <input type="checkbox"/> Soil Testing |
| <input type="checkbox"/> Fuel Storage | <input type="checkbox"/> Stream Crossing/Bridging |
| <input checked="" type="checkbox"/> Topsoil, Overburden or Soil | <input type="checkbox"/> Tunnelling/Underground |
| <input type="checkbox"/> fill | <input type="checkbox"/> Other: |
| <input checked="" type="checkbox"/> disposal | |
| <input checked="" type="checkbox"/> removal | |
| <input type="checkbox"/> storage | |

NTS topographic map sheet numbers:

095B

Latitude / longitude and UTM system:

NAD 1983 UTM Zone 10V

NE corner: 60.32952 °N, 123.26577 °W

SW corner: 60.21320 °N, 123.38380 °W

Nearest community and water body:

Fort Liard, Liard River

Land Status (consultation information)

Free Hold/Private Commissioner's/Territorial Lands Federal Crown Land Municipal Land

Transboundary/Transregional Implications

British Columbia Alberta Saskatchewan Yukon
 Nunavut National Park Inuvialuit Settlement Region
 Wek'èezhii Gwich'in Sahtu

Type of transboundary implication: Impact / Effect Development

Public concern: _____
(Describe.)

Physical - Chemical Effects

Impact

1) Ground Water

Mitigation

water table alteration

Should a flowing artesian well be encountered during drilling, there is a standard land use permit condition that could be included in the Land Use Permit to mitigate this issue.

water quality changes

Excess Borehole drilling wastewater (freshwater used as a lubricant for drilling) may be contaminated. Excess drilling fluid will be tested for total dissolved solids (TDS). If TDS > 2500 mg/L the drilling fluids will be collected in tanks and removed off-site for disposal.

infiltration changes

Drilling Boreholes may allow ground or surface water to flow into the holes. Flexible (FLUTE®) liners will be used as temporary seals until permanent groundwater monitoring infrastructure is installed to prevent water from entering the holes.

other:

N/A

Impact

2) Surface Water

Mitigation

flow or level changes

water quality changes

The possible drilling site located north of Fort Liard on Highway is approximately 1.3 km from a small lake and 1 km from Liard River. Land use permit conditions that could be included in the Land Use Permit are included to mitigate possible water quality changes to these water bodies. Fuel storage, drilling near water, and non-toxic drilling waste disposal must be at least 100 m from the Ordinary High Water Mark for any Watercourse.

water quantity changes

drainage pattern changes

temperature

wetland changes/loss

other:

N/A

Impact
3) Noise

Mitigation

noise in/near water

noise increase

Drilling activities will occur approximately 2 weeks a year, thus noise increase is short-term and temporary. No mitigations proposed.

other:

N/A

Impact
4) Land

Mitigation

geologic structure changes

soil contamination

Freshwater used as a lubricant for drilling could be contaminated. If total dissolved fluids (TDS) >2500 mg/L the drilling fluid will be collected in tanks and removed off-site for disposal at an appropriate wastewater facility so as not to contaminate soil.

buffer zone loss

soil compaction and settling

destabilization/erosion

permafrost regime alteration

explosives/scarring

other:

N/A

Impact
5) Non-renewable natural resources

Mitigation

resource depletion

other:

N/A

Impact
6) Air/climate/atmosphere

Mitigation

other:

N/A

BIOLOGICAL ENVIRONMENT

Impact

1) Vegetation

species composition

Mitigation

Minor clearing or brush cutting may be necessary for access to drilling locations, however current potential drill locations are in areas where minimal brush clearance is required, very near to road ways. If the groundwater wells are no longer needed for monitoring purposes, the casing stick-up will be removed and the site re-contoured as necessary. No mitigation is proposed.

species introduction

The invasive species Scentless Chamomile (*Matricaria perforate*) is found at one of the potential drilling sites (located approximately 15 km south of Fort Liard along Highway 7). In order to prevent the spread of this invasive species, equipment will be decontaminated between sites, and decontamination fluid will be collected and disposed of appropriately.

toxin/heavy accumulation

other: Linear Migration routes, habitat fragmentation

N/A

Impact

2) Wildlife and Fish

Mitigation

effects on rare, threatened or endangered species

fish population changes

waterfowl population changes

breeding disturbance

population reduction

species diversity change

health changes

behavioural changes

Wildlife in the area could be attracted to food and food waste. All domestic waste will be collected in portable tamper-resistant containers and emptied and cleaned at the end of each day.

habitat changes / effects

It is possible that bear dens, beaver lodges, muskrat push-ups, and hibernacula could be near potential drilling sites. If work occurs between September 30 and March 30, pre-activity surveys will be conducted to identify active bear dens in the area. If an active Bear den is identified, an 800 m exclusion zone will be maintained around the bear den. No beaver lodges, muskrat push-ups and hibernacula will be disturbed, if encountered. A standard condition could be included in the Land Use Permit to ensure the Permittee will take all reasonable measures to prevent damage to wildlife and fish Habitat during this land-use operation.

game species effects

toxins/ heavy metals

forestry changes

agricultural changes

other:

N/A

Interacting Environment

Impact

1) Habitat and Communities

predator-prey

wildlife habitat/ecosystem composition changes

reduction/removal of keystone or endangered species

removal of wildlife corridor or buffer zone

other:

N/A

Mitigation

It is possible that bear dens, beaver lodges, muskrat push-ups, and hibernacula could be near potential drilling sites. If work occurs between September 30 and March 30, pre-activity surveys will be conducted to identify active bear dens in the area. If an active Bear den is identified, an 800 m exclusion zone will be maintained around the bear den. No beaver lodges, muskrat push-ups and hibernacula will be disturbed, if encountered.

Impact

2) Social and Economic

planning/zoning changes or conflicts

increase in urban facilities or services use

rental house

airport operations/capacity changes

human health hazard

impair the recreational use of water or aesthetic quality

affect water use for other purposes

affect other land use operations

quality of life changes

public concern

other:

N/A

Mitigation

Impact

3) Cultural and Heritage

Mitigation

- effects to historic property
- increased economic pressure on historic properties
- change to or loss of historic resources
- change to or loss of archaeological resources
- increased pressure on archaeological sites
- change to or loss of aesthetically important sites
- effects to aboriginal lifestyle
- other:
- N/A

- Pursuant to Schedule 4.1 of the **Northwest Territory Métis Nation (NWTMN)** Interim Measures Agreement, the MVLWB determined that written notice was given to the NWTMN and that a reasonable period of time was allowed for NWTMN to make representations with respect to the application.
- Pursuant to section 27, paragraphs (a) and (b) of the **Dehcho First Nations (DCFN)** Interim Measures Agreement, the MVLWB has determined that written notice was given to the DCFN, and that a reasonable period of time was allowed for DCFN to make representations with respect to the application.

Preliminary Screener / Referring Body Information

| | |
|---|--|
| Acho Dene Koe First Nation | GNWT - Lands - North Slave Region |
| Athabasca Denesuline Council CO Prince Albert Cou | GNWT - Lands - South Slave Region - Fort Smith |
| CanNor NWT Region | GNWT - MACA |
| Deh Cho Land Use Planning Committee | Hamlet of Fort Liard |
| Deh Cho Land Use Planning Committee | Hamlet of Fort Providence |
| Deh Gah Got'ie Dene Council | INAC - CARD |
| Dehcho First Nations | INAC - NWT Inspectors |
| Dene Nation | Ka'a'gee Tu First Nation |
| Dene Tha' First Nation | Katlodeeche First Nation |
| Digaa Enterprises Ltd. | Liard First Nation (Yukon) |
| Environment and Climate Change Canada | Liidlii Kue First Nation (Ft Simpson) |
| Fisheries and Oceans Canada | Mackenzie Valley Environmental Impact Review Board |
| Fort Providence Metis Council #57 | MVLWB |
| Fort Providence Resource Management Board | Naha Dehe Dene Band |
| Fort Simpson Metis Local 52 | North Slave Metis Alliance |
| Forward Mining | NWT- OROGO |
| GNWT - ECE | Pehdzeh Ki First Nation (Wrigley) |
| GNWT - ENR | Ross River Dena Council |
| GNWT - ENR - Deh Cho Region | Sambaa Ke First Nation (Trout Lake) |
| GNWT - ENR - North Slave Region | Snap Lake Environmental Monitoring Agency - SLEMA |
| GNWT - ENR - South Slave Region – Fort Smith | Transport Canada |
| GNWT - Health | TthedzehK?edeli First Nation (JMR) |
| GNWT - INF | West Point First Nation |
| GNWT - Lands | WLWB |
| GNWT - Lands – Dehcho Region | Wood |
| GNWT - Lands - Hay River Region | Workers' Safety and Compensation Commission |

Reasons For Decision

(List all reasons and supporting rationales for preliminary screening decision)

DECISION

The Mackenzie Valley Land and Water Board (the Board) is satisfied that the preliminary screening of Application MV2018X0017, G360 Institute for Groundwater Research, Groundwater monitoring, Fort Liard area has been completed in accordance with section 125 of the *Mackenzie Valley Resource Management Act* (MVRMA).

The Board is satisfied that communities and First Nations affected by the Application have been notified and provided adequate time to provide comment on the Application as required by land claim and self government agreements, the MVRMA, policy directions relating to Interim Measures Agreements, and any other applicable legislation and agreements.

Having reviewed all relevant evidence on the Public Registry, including the submissions of the Applicant, the written comments received by the Board and any Staff Reports prepared for the Board, the Board has decided that in its opinion:

- The proposed development will not have a significant adverse impact on the environment; and
- The proposed development is not a cause of public concern.

The Board is also of the opinion that the Application can proceed through the regulatory process and that any impacts of the development on the environment can be mitigated through the imposition of the terms and conditions in the attached Land Use Permit.

As a result, the Board, having due regard to the facts and circumstances, the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA and the Mackenzie Valley Land Use Regulations has decided that this Land Use Permit be issued subject to the terms and conditions contained therein.

| Preliminary Screening Decision | |
|---------------------------------------|--|
| <input checked="" type="checkbox"/> | Outside Local Government Boundaries |
| <input type="checkbox"/> | The development proposal might have a significant adverse impact on the environment, <i>refer it to the EIRB.</i> |
| <input checked="" type="checkbox"/> | <i>Proceed with regulatory process and/or implementation.</i> |
| <input type="checkbox"/> | The development proposal might have public concern, <i>refer it to the EIRB.</i> |
| <input checked="" type="checkbox"/> | <i>Proceed with regulatory process and/or implementation.</i> |
| <input type="checkbox"/> | Wholly Within Local Government Boundaries |
| <input type="checkbox"/> | The development proposal is likely to have a significant adverse impact on air, water or renewable resources, <i>refer it to the EIRB.</i> |
| <input type="checkbox"/> | <i>Proceed with regulatory process and/or implementation.</i> |
| <input type="checkbox"/> | The development proposal might have public concern, <i>refer it to the EIRB.</i> |
| <input type="checkbox"/> | <i>Proceed with regulatory process and/or implementation.</i> |

Preliminary Screening Organization

Mackenzie Valley Land and Water Board

December 10, 2018

Signatures

Mavis Cli-Michaud, Chair