

DETAILS

Non-technical project proposal description

English: Who: Lorraine Lebeau, Regional Mapping Geoscientist, Canada-Nunavut Geoscience Office (CNGO) What: The Izok Lake camp is currently owned by MMG Limited (mid-tier mining company), and lies on surface-rights Inuit Owned Lands (IOL). The CNGO, in collaboration with the Northwest Territories Geological Survey (NTGS), wishes to stay at the camp from ~July 26th to August 9th, 2022. The CNGO has been granted permission by MMG to stay on the property. This is a small-scale project with 3-4 people, two lead geologists (one from the CNGO, and one from the NTGS) and 1 to 2 assistants. On a daily basis, the geologists and assistants will re-examine the drill core on-site drilled by MMG to gain insight into the mineralization style of the deposit. In addition, the crew will traverse 10-15 km away from the camp to get a sense of the regional geology. There are three days of helicopter time planned with a Bell 206LR. This helicopter will tentatively arrive at the camp from Yellowknife on August 2nd and return to Yellowknife on August 6th. Eight fuel drums will be brought to the camp by a Twin Otter and all drums, full or empty, will be returned to Yellowknife. The helicopter will allow the crew to visit sites outside of the camp, to look at the regional geology around the Izok Lake deposit and have quick visits to the neighboring Gondor and Hood deposits (also owned by MMG). The crew will use small individual sleeper tents, and use the weather havens already in place by MMG for daily office work – nothing permanent will be erected at the camp. Two Twin Otter flights are planned for July 28th to bring the fuel drums to the camp. The Twin Otter will transport the crew to and from camp on July 26th and on August 9th (weather dependent, dates are approximate, plus or minus a couple days). Why: The Izok Lake deposit hosts what are considered critical minerals, specifically zinc, copper, lead, and silver. This deposit lies within a long north-south trending greenstone belt that stretches along the border of Nunavut and the NWT. The Izok Lake deposit has already been drilled at depth, and gaining insight on the mineralization style, will help geologists gain an understanding of the nature of the greenstone belt, how it is mineralized at a regional scale, and how geologists can apply this knowledge to better understand lesser known deposits (e.g., the Gondor and Hood properties in Nunavut, and showings in the NWT to the south) within the Slave geological craton. Completing this research will add value to the entire greenstone belt from Nunavut to the NWT, and help exploration companies target VMS style deposits in the Slave craton. As such, this land may become more attractive for investment and employment opportunities. Where: The Izok Lake camp is approximately 280 km south-southeast of Kugluktuk, and ~360 km northeast of Yellowknife. Coordinates of the Izok Lake camp are 65°41'25N; 112°53'02W. When: This is a planned single year project, to occur from ~July 29th to August 9th, 2022. Timing may change plus or minus a week depending on air support availability and weather.

French: n/a

Inuktitut: n/a

Inuinnaqtun: Nunavut Avatilikiyin Katimayit Ajurnanngittumik Havaarijaujukhaq Nainaaqhimajuqlzok Tahiq hivunigijaujuq ujararjuat uunnaktut qagalaagtut ilaurutilik (VMS) ujaralgit uvani Slave nunanganit utuqqarjuangujut qaanganiittut nunami, 2022 Kina: Lorraine Lebeau, Aviktuqhimajumi Nunaujaliqinirnut Qaujahaqti, Kanata-Nunavut Nunaliqiniq qaujihaijuq Havagvia (CNGO) Huna: Una Izok Tahiq najugaat taja nanminirijangit ukunangat MMG Limited (qitiani-ujaraqtarviujuq timinganit), qulaaniittuni pijunnautingit Inuit Nanminirijaat Nunat (IOL). Una CNGO, havaqatigivluniuk ukunangat Nunatsiarmi Nunaliqinirnut Qaujihaijut (NTGS), niriugijaat najurvingmiittumajut uvannat ~Taaqhivalirvia 26 uvunga Niqiliqivik 9, 2022 mi. Una CNGO naammagijaat atuqtittijut ukunangat MMG tahamani ujaraqtarvingmiilaaqtut. Una mikijuuq-uuktuutigijangit havaaq 3-4 nit inuqaqtut, malruk hivuliqtiujut ujaraliqijijut (atauhiq uvannat CNGO, unalu aippaattaq NTGS) unalu 1 uvvaluuniit 2 ikajuqtiujut. Ubluq tamaat, ujaraliqijit ikajuqtingillu ihivriuffaarmijukhat hauvikhangit havagvianit hauhijaujuq ukunangat MMG naunairiami haffumani ujararnut ilitquhiita ujaraqhiurnirnut. Ilagijangillu, havaktit ikaaqpangniaqtut 10-15 km unghingnia ahinit najurvingnit qanuq naunaijariami nunanganit ujaraliqinirnut. Pingahunit ublunganit halikaaptakktut hannaijariiqhimajaat aturlugit Bell 206LR. Una halikaapta tikinniarungnaqhiujuq havagviannut Yalunaimit uvani Niqiliqivik 2 utirmilutik Yalunaimut uvani Niqiliqivik 6 mi. Arvinilik pingahut uqhurjuat qattarjuat agjaqtaulutik havagvingnut Twin Otter-kkut tamaat qattarjuat, imaqaqtut imaittulluuniit, utiqtauniaqtut Yalunaimut. Una halikaapta agjaqiatarlutik havaktit najugaanut hilataaniittut najugaanut, ihivriurlugit nunanganit ujaqqat haniani Izok Tahiq ujararnit pulaaffunnuarlutik uvunga Gondor unalu Hood ujaraqtarviujut (nanminirijaat ukunangat

MMG). Havaktit atuqhimaniaqtut ahiittut tupinnuanit, atuqhimalugillu hilahiutit uqquumavingit nappariiqhimajut ukunanngat MMG ubluq tamaat havagiami – ahviqtailiniaqtut najugaanit. Malruk Twin Otter-ngnit tingiakkuurlutik hannaijariiqhimaniaqtut uvani Taaqhivalirvia 28 mi agjaqtuilutik uqhurjulingnit qattarjuit najugaanut. Una Twin Otter agjaqtuinaqtut havaktit uvunga hamanngat najugaanit uvani Taaqhivalirvia 26 mi uvanilu Niqiliqivik 9 mi (hila naammakpat, ubluit qanurikmik, ilalugit uuminngaluuniit ilanngitkumiluuniit qaffinnuit ublunganit). Huuqtauq: Una Izok Tahiq ujaragtavik ilittuqtukhaujut qanuq ujararaaluit, haffuminngat qirnarivjaktut qirnariktut, kannujaq, qirnariktut unalu havigalik. Una ujaragtavik uvaniittut iluani takkarjuaq tununnganit-hivuraanit ilagijaujut hungajaaqtut ujaralgit tahijaaqtuq hinaanit kiglianit Nunavut unalu Nunatsiarmi. Una Izok Tahiq ujaragtavik hauhimagaluaqtuq hitijumik, ilitturnaqhunilu ujarait ilitquhiit, ikajuutauniaqtuq ujaraliqijit kangiqhittaarlugit ilitquhianit haffumani hungajaaqtut ujarait, qanuq ujaranikhuni uvani nunangani uuktuutigijaat, qanurlu ujaraliqijit ilihimajaamingnit ujarait ilitquhiita hungajaaqtut ujarangit, qanuq ujaranikkamik angijaaqtumik nunanganit, qanuq ujaraliqijit ilitturvigijaanganit kangiqhittiaqhimalugit ujaragtarniagut (haffuminngatut una Gondor unalu Hood nanminiit Nunavut iluani, takukhauvlutik Nunatsiamilu hivuraanut) iluani Slave ujaraningit ilaanit. Iniqhimalugit hamna qaujihaqtut taimaa ikajuutauniaramik tamainnut hungajaaqtut ujarangit uvanngat Nunavut uvunga Nunatsiami, ikajuutaunilulu nalvaaqhiuqtut ujaqqangit hivunigijaat VMS ilitquhirnut ujaragtaviujuut iluani Slave ujaraningit ilaanit. Taimaattauq, una nuna takunnarniaqhunilu maniliurahaqtunut havaktittijunullu hailijakhangit. Humi: Una Izok Tahiq najugaat uvaniittukhaujungnaqhijuq 280 km hivuraanit kivataangani Kugluktuk mi, unalu ~360 km tununngani kivataanit Yalunaimit. Aulapkaqhimajangit haffumani Izok Tahiq najugaat uvaniittut 65°41'14.36" Tununngani; 112°52'43.89" Uataani. Una Hood (66°03'59.83" Tununngani; 112°47'07.40" Uataani); unalu Gondor (65°33'42.71" Tununngani; 111°47'58.09" Uataani) nanmingit pulaaqtaulaaqtut ubluinnaani halikaaptakut. Qakugu: Una upalungaiqhimaajuq avaliqanngittuq ukiungani havaaq, havaktauniaqtuq uvanngat ~Taaqhivalirvia 26 uvunga Niqiliqivik 9 mut, 2022 mi. Hulivikhangit ikaarnigut aallanngulaaqtuq ilalugu naahimaattumik qanuq tingmiaq angmaumanniqqat hilalu naammakkumi.

Personnel

Personnel on site: 4

Days on site: 15

Total Person days: 60

Operations Phase: from 2022-07-26 to 2022-08-09

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Izok Lake camp (location of project camp)	Camp	Inuit Owned Surface Lands	The crew for this project will sleep here, and perform 12/15 days of work here. This area has an established infrastructure with several weather havens installed by MMG Resources Inc. MMG has left drill core on site for the exploration of zinc-copper-lead and silver	none	~275 km southeast from Kugluktuk~500km southwest of Cambridge Bay~370 km north-northeast of Yellowknife
Izok Lake greenstone belt	Researching	Inuit Owned Surface Lands	This area will be hiked from the Izok camp site. This area has received mineral exploration attention since the 1970's by prospectors, government surveys, and larger exploration and mining companies. This is an area of caribou migration.	Not indicated as area of archeological/paleontological interest by NPC community priorities and values map	~275 km southeast from Kugluktuk; ~500km southwest of Cambridge Bay; ~370 km north-northeast of Yellowknife
Gondor property	Researching	Inuit Owned Sub-Surface Lands	This area will be visited by helicopter for 1-2 days for this project. Area has been drilled and explored for mineral potential, property owned by MMG Resources.	Not indicated as area of archeological/paleontological interest by NPC community priorities and values map	~300 km from Kugluktuk~500km from Cambridge Bay~370 km from Yellowknife
Hood property	Researching	Inuit Owned Sub-Surface Lands	This area will be visited by helicopter for 1-2 days for this project. Area	This area intersects an area with known artifacts. indicated by NPC interactive map of community priorities and values.	~275 km southeast from Kugluktuk; ~500km southwest of Cambridge Bay; ~370 km north-northeast of

		has been drilled and explored for mineral potential, property owned by MMG Resources.	Yellowknife
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Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Kugluktuk	There is no community involvement with such a small scale project	n/a	2022-02-03

Authorizations

Indicate the areas in which the project is located:

Kitikmeot

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Water Board	requesting NWB approval without a license. Using less than 50 m3 of water daily.	Not Yet Applied		
Nunavut Research Institute	Will request research license	Not Yet Applied		
Kitikmeot Inuit Association	Request for access to Inuit Owned Land	Applied, Decision Pending		
Other	MMG Resources Inc. permission to stay at their camp	Active	2022-01-09	

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Twin Otter charter plane, Bell206LR helicopter	
Land	walking	

Project accomodation types

Temporary Camp

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
generator	1	2000kw	power electronics (computers, gps et.c)
Bell206LR helicopter	1	12.92 x 3.14 m	3 days transport accross Izok greenstone belt, to Gondor and Hood properties
Charter Plane Twin Otter	1	15.77 x 19.8 m	transport crew, equipment, fuel to and from Izok camp from Yellowknife
Fire arms (12 gauge shot gun)	2-3	n/a	Emergency use only (wildlife self defense)

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	8	45	360	Gallons	helicopter use
Gasoline	fuel	10	5	50	Gallons	generator
Propane	fuel	2	20	40	Lbs	heater and Coleman stove

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	manually by bucket	Itchen Lake (lake next to camp)

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Researching	Combustible wastes	~20 lbs	small contained burning	n/a
Researching	Greywater	<0.15m ³ daily	small amounts will be disposed in sandy land areas for easy infiltration into the earth. Biodegradable soaps will be used.	n/a
Researching	Non-Combustible wastes	~20 lbs	to be sealed in an animal proof container and transported back to Yellowknife for disposal. e.g., plastics, metals	n/a
Researching	Sewage (human waste)	~50 lbs	burial with shovel	n/a

Environmental Impacts:

The land will be left in the state it was before this project. All temporary structures (i.e., sleeper tents), field equipment, garbage, and fuel (empty or full drums) will be returned to Yellowknife. The helicopter (only 3 days) creates noise that can be alarming to wildlife. When the cloud ceiling allows, the helicopter will fly high above the land as to not stress out the wildlife below. If large mammals are spotted (e.g., polar bear, muskox, caribou heard) the helicopter will reroute or fly away from the wildlife to avoid stressing the animals.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

Mineral exploration is for research only. We will be research the mineralization of zinc-copper-lead and silver.

SECTION B2: Exploration Activity

logging old drill core left by MMG Resources Inc. Geological mapping of the surrounding Izok Lake greenstone belt. 1-2 day visits to Hood and Gondor properties (which have the same minerals).

SECTION B3: Geosciences

A substantial amount of drill core has been left on the Izok Lake property that is available for observation. This project involves core logging of mineralized zones that will build on previous years of bedrock mapping projects in the greenstone belt from the NTGS, and will act as a baseline for VMS mineralization in greenstone belts of the Slave craton in Nunavut. This work will help evaluate the tectonic setting, volcanic architecture, and facies distribution in volcanogenic massive sulfide (VMS) deposits within the belt. Understanding the fundamental geological processes of the belt will aid in the understanding of the evolutionary processes responsible for mineral endowment across the Slave craton. In addition, this work will assist in the scientific understanding of those involved in policy decisions, including local stakeholders. This work will also build on 3D inversions completed following a 65,000 line-km high-resolution aeromagnetic survey that was flown in 2019 that has provided for the first time, detailed magnetic data of the greenstone belt and surrounding granitoid basement complex.

SECTION B4: Drilling

n/a

SECTION B5: Stripping

n/a

SECTION B6: Underground Activity

n/a

SECTION B7: Waste Rock

n/a

SECTION B8: Stockpiles

n/a

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

The landscape is relatively flat with a height variation in the range of 20-40m. The topography is characterized by low eskers and flat boulder fields or outcrop, soil cover is thin, 1-5 metres thick (MMG Resources Inc. assessment report 085582). Several large lakes are in the vicinity.

Description of Existing Environment: Biological Environment

10. The natural vegetation is muskeg with scattered sedges and willows along waterways. Arctic birch, bearberry, Labrador tea, lichen and moss is present in all areas. Animals of the area consist of muskox, caribou, wolves, foxes, Arctic hares, wolverines, grizzly bears, ground squirrels, and ptarmigan. Larger lakes support fish and bird life (citation: MMG assessment report number 085582).

Description of Existing Environment: Socio-economic Environment

Kugluktuk and Cambridge Bay are the closest communities, Kugluktuk is ~274 km and Cambridge Bay is ~500 km distance from the Izok Lake camp site. Considering the areas of community priorities and values, the Rocking Horse Lake, Contwoyto Lake, Napaktulik Lake, and Itchen Lake are considered areas for fishing, camping, and hunting for caribou, muskox, wolves, and grizzlies. Artifacts have been located around the Napaktulik Lake and Contwoyto Lake areas. There is approximately a 20 km buffer zone around the Contwoyto Lake in which there are outpost camps and historic sites.

Miscellaneous Project Information

n/a

Identification of Impacts and Proposed Mitigation Measures

The land will be left in the state it was before this project. All temporary structures (i.e., sleeper tents), field equipment, garbage, and fuel (empty or full drums) will be returned to Yellowknife. The helicopter creates noise that can be alarming to wildlife. When the cloud ceiling allows, the helicopter will fly high above the land as to not stress out the wildlife below. If large mammals are spotted (e.g., polar bear, muskox, caribou heard) the helicopter will reroute or flying away from the wildlife to avoid stressing the animals. - The camp will be left as we found it.

Cumulative Effects

It is only a 15 day project for one summer (2022).

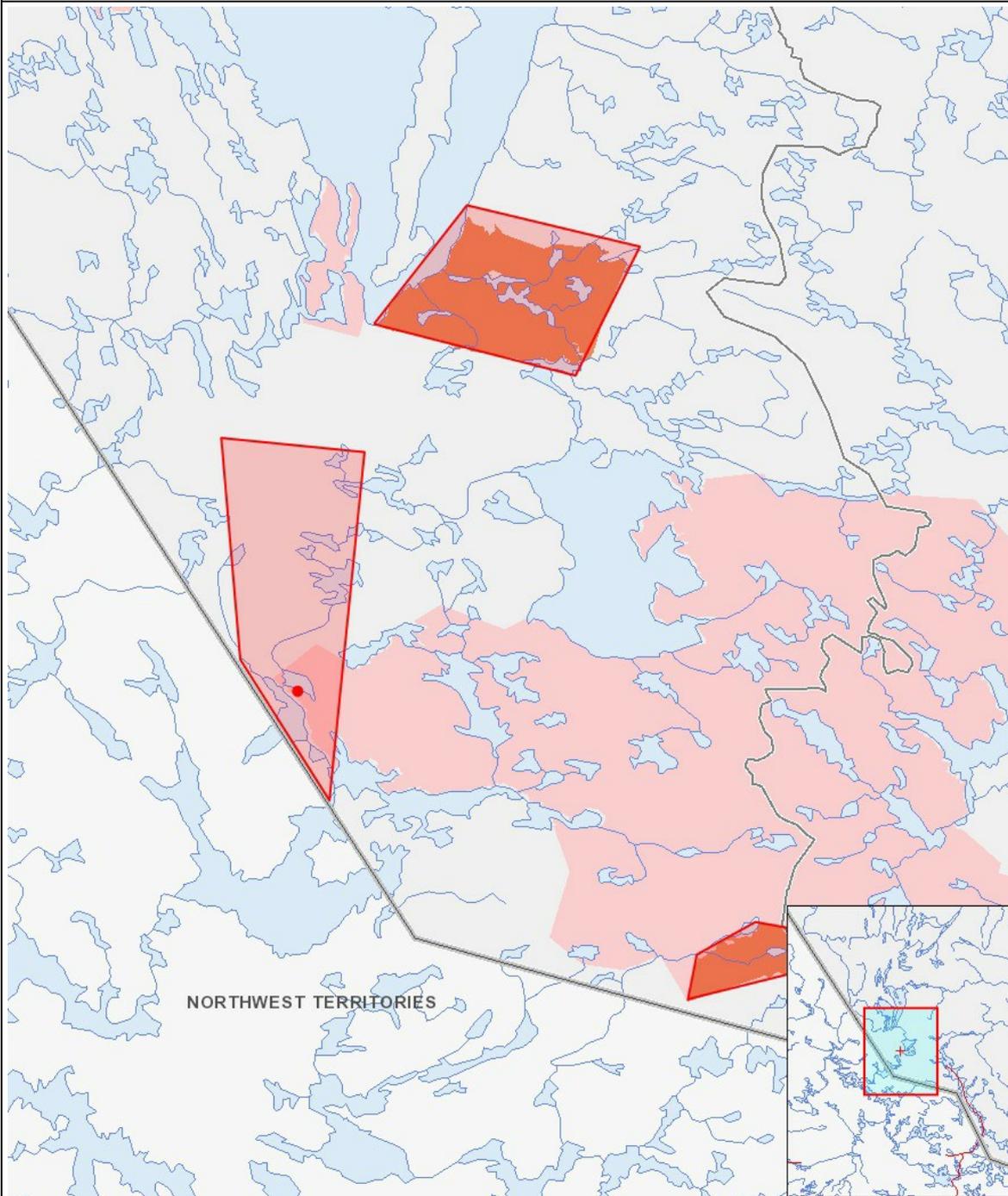
Impacts

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																									
Researching	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	-	-	-	-	-	-	-	-	-	-
Decommissioning																									
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Project Location



List of Project Geometries

- | | | |
|---|---------|---|
| 1 | polygon | Gondor property |
| 2 | polygon | Izok Lake greenstone belt |
| 3 | polygon | Hood property |
| 4 | point | Izok Lake camp (location of project camp) |