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Building *Nunavut* Together
Nunavut iuqatigiingniq
Bâtir le *Nunavut* ensemble

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Government of Nunavut
Nunavut Kavamat
Gouvernement du Nunavut

January 6, 2023

Keith Morrison
Manager Impact Assessment
Nunavut Impact Review Board
P.O Box 1360
Cambridge Bay, NU X0B 0C0

Sent VIA Email: info@nirb.ca

RE: NIRB 22EN057: Screening for Viridis Mining and Minerals “South Kitikmeot Gold Project” Proposal

Dear Keith Morrison,

The Government of Nunavut (GN) would like to thank the Nunavut Impact Review Board (NIRB) for the opportunity to provide comments Viridis Mining and Minerals “South Kitikmeot Gold Project” Proposal.

The GN has reviewed the project information provided by the proponent regarding the above-mentioned project and offers the following comments attached.

Should you have any questions regarding this submission, please contact me at 867-975-7828 or by email at asimonfalvy@gov.nu.ca.

Qujannamiik,

Agnes Simonfalvy
Avatiliriniq Coordinator
Government of Nunavut

GN-01: Archaeological Considerations	
Department	Culture and Heritage
Organization	Government of Nunavut
Subject/Topic	South Kitikmeot Gold Project-Heritage Resources in Area
References	NIRB Notice of Screening: File No. 22EN057
CONCERNS	
<p>The proponent intends to carry out a multi-year (2023-2029) drilling program on seven properties spreading over 11, 000 hectares. The project is located approximately 424 km southeast of Kugluktuk along the border with NWT. The proposed land use activities include the building of a temporary camp (25-60 people) and associated components; drilling, trenching, mapping, sampling and, geophysics studies; the use of airplane and helicopters to transport personal to and from exploration sites to camp; the use of ground vehicles (snowmobiles, all-terrain vehicles, utility-terrain vehicles, Bobcat) and; potentially the use of the Tibbit-Contwoyto Winder Road for supplies/material transportation.</p> <p>A search of the Nunavut Archaeological Site Database indicates that there are 296 recorded archaeological sites within the boundaries of the proposed project area. This however does not preclude the presence of unidentified sites or cultural features as to this day no systematic archaeological reconnaissance has been conducted in this specific area. Several archaeological sites are also reported on exploration properties nearby.</p> <p>The project area may potentially yield significant archaeological/cultural resources as it geographically overlaps three caribou herds: the Beverly, Ahiak and Bathurst herds.</p> <p>CH also notes that the proponent will be mobilizing and demobilizing equipment and supplies during the snow-covered period. This constitutes a concern as not only snow cover might mask unrecorded archaeological sites but the likelihood of vehicles impacting unidentified (unrecognized) protruding cultural features is high (inuksuit, caches, dwellings, etc.).</p>	
RECOMMENDATIONS	
<p style="text-align: center;">A Class 2 Archaeological Permit is required.</p> <p>On the basis that the presence of archaeological sites in the Project Area is high, that no systematic archaeological survey has been conducted and, that the Project Area overlaps with three caribou ranges, the Department of Culture and Heritage considers that there are reasonable grounds to believe that there could be sites of archaeological significance on the lands affected by the current project (NA 33.5.12).</p>	

The Department of Culture and Heritage recommends that a field archaeological assessment program be initiated prior to any land disturbance activities.

CH recommendations are the following:

- (1) A qualified archaeologist must apply for a Class 2 permit in order to conduct a field archaeological assessment of any areas subject to ground disturbance activities (camp and associated components);
- (2) Assessment of any drilling locations (50 m radius) and water-hose route to the closest water intake;
- (3) Assessment of any trenching locations;
- (4) Assessment of any proposed transportation route/track (including winter routes). The proponent must adhere strictly to these routes during the duration of their activities;
- (5) The Department of Culture and Heritage recommends that the applicant avoids conducting activities in the vicinity (50 m buffer zone) of archaeological/historical sites. If archaeological sites or features are encountered, activities should immediately be interrupted and moved away from this location. Each site encountered needs to be recorded and reported to our office.

All archaeological and palaeontological sites in Nunavut are protected by law. The applicant must understand that it is their responsibility to ensure that no heritage resource sites are disturbed in the course of their activities. No person shall alter, or otherwise disturb an archaeological site, or remove any artifact from an archaeological site. Moreover, the building of inuksuit is not recommended.

ADDITIONAL COMMENTS

Pending a Class 2 Archaeological Permit. Deadline for permit application is March 31, 2023.

GN-02: Project Scope Uncertainty - Description

Department	Environment
Organization	Government of Nunavut
Subject/Topic	Project description range of scenarios
References	<ul style="list-style-type: none"> • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal

CONCERNS

The scope and scale of the Proposal varies based on a series of conditional statements. For example, the project may be 25 people or more than double – up to 60, satellite camps may or may not be utilized at unspecified drilling locations, winter overland travel may or may not be employed, a cat train resupply may or may not be used. The Proposal also indicates that camp and activities on the land will happen at different times throughout the year, depending on weather and caribou use of the area, without describing how activities would change Under differing conditions. This ambiguity creates challenges for reviewers in assessing the nature of the Proposal, its potential impacts and mitigation plans.

The Proponent states in the Project Description, “Based on a currently unknown rate of the Program expansion, typical materials and equipment used and waste generation are estimated based on the maximum program magnitude and duration.” However, this maximum program model is not readily described in the Description or supporting documents. No details about satellite camps or cat train use are provided, nor are estimates about project activity, such as expected helicopter use, expected spatial-temporal intensity of aerial surveys, or the frequency of fixed-wing resupply runs.

RECOMMENDATIONS

The GN recommends that the Proponent clearly identify the range of activities required to support the “maximum program magnitude” and include relevant information which details each component and its scale/intensity, its anticipated environmental impacts, and proposed mitigation measures.

Should certain conditions not allow for a project component to proceed, e.g., the Lupin Mine winter road is not built this year and the cat train is not used, reviewers and stakeholders need to have a clear understanding of how the Proponent would proceed (e.g., what is being transported, in what quantity, what safety measures are in place, etc.) should conditions allow for that component to proceed in the future.

GN-03: Project Scope Uncertainty - Extent	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Extent of the Project within the Project Area
References	<ul style="list-style-type: none"> • 22EN057 Revised NIRB Application for the “South Kitikmeot Gold Project” Proposal • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal • 22EN057 Environmental & Heritage Resources Protection Plan for the “South Kitikmeot Gold Project” Proposal
CONCERNS	
<p>The revised NIRB Application for the Proposal does not provide drilling locations or the extent of activity. Some Proposal documents describe a single drill being used (Project Description), while others (Environmental & Heritage Resources Protection Plan) cite “drills” plural, and the Proponent provides a statement indicating that drilling areas may change and claim boundaries may change, based on future prospecting results.</p> <p>The project application does not contain sufficient information about the level of activity in the current claim blocks, and without a clearer picture of what is being proposed in this application, additional activity in other claim blocks (not yet acquired) may be constitute a significant modification of scope, requiring additional assessment and review.</p>	
RECOMMENDATIONS	
<p>The GN recommends that the Proponent provide greater clarity on the extent of activity within the project area for current claims, and a description of expected activities and intensity on future claim blocks, with an aim to describe the total level of expected activity over the project lifespan.</p>	

GN-04: Waste Management Plan	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Waste Management Plan additional information
References	<ul style="list-style-type: none"> • 22EN057 Waste Management Plan for the “South Kitikmeot Gold Project” Proposal • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal
CONCERNS	
<p>The waste management plan requires greater detail and emphasis on secure storage of wastes and certain materials.</p> <p>Segregation and disposal are cited both at camp and drill sites, however instructions /procedures for secure storage or containment of waste prior to disposal at these sites are not included. Secure storage of waste is needed up to the completion of incineration and/or backhaul. This is particularly important for the proposed satellite camps, which have reduced infrastructure and will most likely backhaul all waste to the main camp for subsequent handling.</p> <p>Other project description resources describe use of Pacto toilets, which eliminates blackwater production, though blackwater is still included in the definition of domestic wastewater.</p>	
RECOMMENDATIONS	
<p>The GN makes the following recommendations:</p> <ul style="list-style-type: none"> • All petroleum products and hazardous materials should always be stored within secondary containment; • The secondary containment vessel/structure should be 110% of the total capacity of all the primary containers stored within it; • Certain petroleum products including greases and lubricants can be wildlife attractants and should be placed in secure storage; • All food, food waste, domestic waste, pacto bags, and any other potential wildlife attractants should be placed in secure storage up to the point of incineration or backhaul. List procedures for secure storage of waste for drill sites, main camps, and satellite camps. • Clarify if sewage (blackwater) will be generated at the project sites at any point during its lifetime. If so, provide supporting details on the quantity and handling of sewage 	

ADDITIONAL COMMENTS
The Waste Management Plan and Spill Containment Plan should cross-reference each other where waste handling is concerned, as spills generate waste that requires specific handling, and unintended effluent release from waste storage areas may require spill response and cleanup.

GN-05: Spill Response Plan	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	The Spill Response Plan additional detail
References	<ul style="list-style-type: none"> • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal • 22EN057 Waste Management Plan for the “South Kitikmeot Gold Project” Proposal • 22EN057 Spill Response Plan for the “South Kitikmeot Gold Project” Proposal

CONCERNS	
<p>The GN has identified a range of issues and deficiencies within the Spill Response Plan ranging from the stated definition of a spill to the handling and storage of certain materials.</p> <p>The Project’s Spill Response Plan does not contain a clear definition of a spill. Appendix A instead refers to volumes of material that trigger reporting requirements. While such reporting requirements do exist, the GN recommends that all spills are reported, regardless of volume. This approach is identified on pg. 23 of the Spill Response Plan, in the Spill Response Procedures, which state to call the Nunavut spill line if the spill is reportable.</p> <p>Section 3.2 of the Spill Response Plan lacks details as to what constitutes secondary containment. Secondary containment is an integral component of spill prevention. Inspection details along with roles and responsibilities are also not included in this section.</p>	

Table 2 of the Spill Response Plan is lacking details regarding storage, secondary containment, security, and should be expanded to include items used by the Project in lower volumes, but still pose an environmental hazard e.g. batteries and cleaning supplies.

RECOMMENDATIONS

The description of a spill should be defined as "A spill is any release of a substance that may pose harm to the environment". All spills regardless of size should be reported to the Nunavut spill hotline as it permits comprehensive spill tracking in the territory.

Section 3.2 Material Storage and Inspection should include more information on secondary containment:

- All petroleum products and hazardous materials should be stored within secondary containment
- The secondary containment vessel/structure should be 110% of the total capacity of all the primary containers stored within it.

Section 3.2 Additional information on inspections and accountable positions should be identified for:

- Who conducts inspections within the materials storage areas;
- Where inspection records will be kept;
- Who will be notified if a problem is found; and
- Who is responsible for each storage area and resolving any problems?

Table 2 Petroleum and Chemical Products

- Certain petroleum products including greases and lubricants can be wildlife attractants and should be placed in secure storage
- Coolants, particularly ethylene glycol, can be highly toxic to wildlife in small quantities, and can be an attractant.
 - Any ethylene glycol should be placed in secure storage;
 - Any spills (however small - e.g., leaking coolant hose drips on snow) should be cleaned up immediately; and
 - Where possible, less toxic propylene glycol should be used in place of ethylene glycol.
- Salt is a wildlife attractant, particularly for ungulates (caribou, muskox). To avoid increased wildlife interactions, salts should also be placed in secure storage
- Waste oil and related products should be stored in a similar manner as their parent materials. E.g., Waste oil (un-mixed) should be collected in a barrel designated for that purpose and subsequently stored in secondary containment prior to backhaul.
- Spent spill response materials should be stored in a similar manner as the material they were used to clean up. E.g., used spill mats and soil or snow contaminated with diesel fuel should be stored in secondary containment. While not necessary for all spilled materials, storing spent spill kit materials in secondary containment is considered a best practice.

- Hazardous materials and hazardous waste should be stored within secondary containment with an emphasis on preventing the accumulation of precipitation as these materials may not be easily separated (e.g., via oil/water separator), thus potentially creating additional hazardous waste (contaminated water) which must then be treated or backhauled.
- Table 2 should be expanded to include other materials used for equipment and machinery, including hydraulic fluid, batteries, solvents used for cleaning and maintenance of equipment, etc.

Section 4 Spill Response

- This section should reference a step for inventory and replacement of used spill kit materials, as described in Section.4.5, as well as the position or individual responsible for inspecting spill kits and resupplying them.
- Parts of Section 4 - Spill Response reference the use of tools and equipment that are not available in the spill kits (shovels, chainsaw, plastic sheeting, etc.). In addition to the supplies listed in s.4.5, all kits should include shovels and lined quatrex bags /mega bags (or similar) for the storage of contaminated snow or soil.
- Spill kits and materials brought along during the transportation of materials which may cause environmental harm should be scaled to address the volume of containers or bundles of containers for the material being transported. E.g., if transporting multiple fuel drums (208L each) by helicopter sling load, a typical large spill kit designed to clean up 220L will not be sufficient in the event of an unplanned load release.

Section 5.2 - Spill Reporting

- For a reportable spill, the Project Manager should complete and submit the Spill Reporting Form to the Inspector within 48 hours of the incident not the 7 days currently listed..

Section 6 - Training

- A training log should identify and track which training site staff have received, and how recently.

The Materials SDS list is limited to:

- Jet A, Jet B
- Diesel
- Gasoline
- Propane
- Additional SDS should be provided for products expected to be utilized on site; at a minimum, the materials listed in Table 2 should be included. See the comment above re: Table 2 expansion.

GN-06: Environment & Heritage Resources Protection Plan	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Changes and additions to the Environment & Heritage Resources Protection Plan
References	<ul style="list-style-type: none"> • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal • 22EN057 the Environment & Heritage Resources Protection Plan for the “South Kitikmeot Gold Project” Proposal
CONCERNS	
<p>The GN has identified a range of issues and deficiencies within the Environment & Heritage Resources Protection Plan (EHRPP) ranging from Project Design and camp layout to the need for additional information about the roles and responsibilities of site staff related to wildlife. The issues and recommended solutions are provided below.</p>	
RECOMMENDATIONS	
<p>Site Managers and Supervisors and/or Wildlife Monitors should contact the local GN Conservation Officer and Wildlife Biologist based in Kugluktuk to report wildlife incidents and mortalities per Section 2.2 and 2.3.</p> <p>Section 2.4 - Pilots, where safe to do so, are also responsible for diverting around observed wildlife, particularly wildlife congregations, to minimize disturbance.</p> <ul style="list-style-type: none"> • As a general approach and where safe to do so, Pilots should maintain a minimum altitude of 610m (2000ft) above ground level (AGL). Exceptions to this general approach include low ceilings, takeoffs and landings, and low altitude maneuvering required to support operations (e.g., handling external loads by helicopter/drill moves) • As with other staff and contractors, Pilots should undergo site orientation and wildlife awareness training and regularly report wildlife observations to the Camp Manager per Section 2.1. <p>Section 4.1.1 Policy on prohibition of hunting on site by project personnel must be consistent with Inuit hunting rights as set out in Article 5 of the Nunavut Agreement</p>	

Section 4.1.2 Project Design - in addition to camp layout, building construction (tent platforms, cook shack, dining/common areas, etc.) should be designed and constructed to prevent wildlife ingress and from sheltering/living under them. Skirting, fencing, and on-ground construction can prevent wildlife access under project buildings.

- Sources of wildlife attractants (e.g., BBQs, grease traps, dry and cold food storage areas, food and domestic waste storage) should all be secured to prevent wildlife access.
- Proposed schedules for construction, drill setups, air access and locations should be provided to GN wildlife biologists to identify potential conflicts between site activity/operations and sensitive wildlife activity

Section 4.1.3 Waste Management - the GN has recommended changes to the *Waste Management Plan* and *Spill Response Plan* regarding waste handling and secure storage (see GN Comments-03, 04).

Section.4.1.4 Nesting, Denning, and Calving - details are lacking on roles and responsibilities related to designating a Restricted Access Area:

- What metrics or criteria are used to determine a Restricted Access Area, and who makes that determination?
- Where is the documentation of a Restricted Access Area kept? Is this documentation shared or reported? If so, to whom?
- Who maintains the Restricted Access Area status and who determines that a Restricted Access Area is no longer warranted?

Section 6 - Training - A training log should identify and track which training site staff have received, and how recently.

Section 7 - Monitoring and Reporting - Additional detail regarding roles and responsibilities is needed in this section:

- Within 7.1.1, the Wildlife Monitor is tasked with the weekly review of reports to identify risks to wildlife, who is responsible for mitigating any risks or problem areas? (See GN Comment-06 re: Wildlife Surveillance Monitoring Procedures, below)
- 7.1.3 indicates that the Wildlife Monitor handles wildlife observations and incidents; who is responsible for collecting, managing, and storing other environmental logs and reports (e.g., equipment maintenance logs, water use and waste disposal, etc.)?
- Per 7.1.3, the Wildlife Monitor reports internally to the Camp or Operations Managers; who is responsible for reporting and communicating wildlife incidents to GN wildlife staff (Conservation Officer, Wildlife Biologist)?

GN-07: Wildlife Surveillance Monitoring Procedures	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Wildlife Surveillance Monitoring Procedures
References	<ul style="list-style-type: none"> • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal • 22EN057 the Environment & Heritage Resources Protection Plan for the “South Kitikmeot Gold Project” Proposal
CONCERNS	
<p>There are inconsistencies between the Environment & Heritage Resources Protection Plan and the Wildlife Surveillance Monitoring Procedures which should be resolved to support staff comprehension and compliance. The GN also notes that additional detail within the Procedures would increase their efficacy.</p>	
RECOMMENDATIONS	
<p>The GN has the following recommendations for the Wildlife Surveillance Monitoring Procedures:</p> <ul style="list-style-type: none"> • The Procedures should indicate an increase in survey frequency based on the presence of caribou in the Early Warning Area and/or Zone of Influence (as evidenced by observations from site staff or collar data). • Increased survey frequency is also be recommended where the safety of site staff is in question (e.g., grizzly bears are denning or foraging in the vicinity of the camp or work sites). • The Procedures seem to indicate that the Wildlife Monitor would communicate any risks, problem areas, or other wildlife concerns to the Project Manager, but it is not clear who is responsible for resolving these concerns. 	

GN-08: Bathurst Caribou	
Department	Environment
Organization	Government of Nunavut

Subject/Topic	Project disturbance to caribou
References	<ul style="list-style-type: none"> • 22EN057 Project Description for the “South Kitikmeot Gold Project” Proposal • 22EN057 the Environment & Heritage Resources Protection Plan for the “South Kitikmeot Gold Project” Proposal • Conference of Management Authorities. 2020. Recovery Strategy for Barren-ground Caribou (<i>Rangifer tarandus groenlandicus</i>) in the Northwest Territories. Conference of Management Authorities, Yellowknife, NT. (Access) • Government of Northwest Territories. 2019. Bathurst Caribou Range Plan. Dept. of Environment and Natural Resources, Yellowknife, NT. (Access) • Advisory Committee for Cooperation on Wildlife Management. 2014. Taking Care of Caribou: The Cape Bathurst, Bluenose-West, and Bluenose-East Barren-Ground Caribou Herds Management Plan. Yellowknife, NT. (Access) • Alaska Department of Fish and Game. 2022. Caribou. Juneau, AK. (Access)

CONCERNS

The Bathurst caribou herd population has declined by approximately 98% from its historic peak ([CMA 2020](#), Table 3, pg. 29). Barren-ground caribou, including the Bathurst herd were assessed and designated as "threatened" by both COSEWIC and SARC in 2016 and 2017, with industrial development identified as one of several threats, according to traditional and scientific knowledge ([CMA 2020](#), pg. 19).

The project area is situated in Area 1 of the Cumulative Land Disturbance Framework (CLDF) of the Bathurst Caribou Range Plan ([GNWT ENR 2019](#), Fig. 15, pg. 43). The project area also exists on the main migration route(s) for the Bathurst herd ([ACCWM 2014](#), Fig. 3, pg. 16). While Area 1 currently experiences low development density, human disturbance results in both direct and indirect habitat loss, and may result in reduced usage of areas near development and a shift in migratory movements (GNWT ENR 2019, pg. 45). Additionally, the project area overlaps with the southern portions of the Bathurst caribou calving area (as defined by [CMA 2020](#), Fig. 1, pg. 18). The placement of the project in critical habitat consisting of the main migratory routes and portions of the calving and post-calving areas warrants both vigilance and caution to reduce disturbance from Project activity as caribou are moving between important habitats and across their range.

Project activities such as use of aircraft have the potential to cause disturbance to terrestrial wildlife. Minimum altitudes should be utilized and enforced in order to minimize this disturbance. Other projects such as the Baffinland Mary River Iron Mine utilize a minimum flight altitude of 610m.

RECOMMENDATIONS

The GN has the following recommendations for the Environment & Heritage Resources Protection Plan (EHRPP) specific to caribou mitigation measures:

s.4.1.6 - Caribou - Additional detail on implementation of stated mitigation measures is necessary:

- Which staff are responsible for obtaining collar data from the GNWT and at what intervals? Caribou may move up to 80km per day ([Alaska Dept. Fish and Game](#)) so daily collar data are required to assess expected caribou presence within the Early Warning Zone; and
- Which staff are responsible for notifying site staff of changes to operations based on caribou presence in the Zone of Influence?

The "Basic Mitigation" should be modified to indicate:

- a minimum flight altitude of 610m should be used, instead of 300m
- Critical ranges (e.g., water crossings, calving and post-calving areas) should be avoided by work crews and aircraft during periods of known activity. These windows are generally short, calving and post-calving combined last less than a month (EHRPP, Table 3, pg. 12). Caribou presence should be assessed by using multiple detection methods such as collar data or incidental observations made by wildlife monitors or pilots in the event no collared caribou are present in a group. Flying into these areas to assess caribou concentrations increases the possibility of disturbance unnecessarily.

The "Additional Mitigation" should clarify that "avoid initiating or continuing work in areas with caribou" means temporary cessation or scaling back project activities that emit high levels of noise (e.g., drilling, fixed- and rotary-wing aircraft use, etc.) when caribou are within the zone of influence around work areas. It's not clear if this is what is intended in the current EHRPP mitigation language (pg. 12).