

QUARRY MANAGEMENT PLAN

Quarry sites- KM 8,15,16,18,20

Rankin Inlet, Nunavut



Prepared for:
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INTRODUCTION

Quarries KM 8,15,16,18 and 20 are newly proposed quarry sites located near the community of Rankin Inlet. The name of the quarries is derived from their distance from Rankin Inlet. For example, KM8 is located 8 kilometres from Rankin Inlet. Quarries provide aggregate used by both the local Hamlet and private contractors. Aggregate is necessary for road maintenance, construction projects, and landscaping for the community of Rankin Inlet. The total area and estimated volume of aggregate is as follows:

KM 8: Area: 102,838 square metres (m²) | Volume: 70,000 cubic metres (m³)

KM 15: Area: 497,841 m² | Volume: 75,000 m³

KM 16: Area: 168,284 m² | Volume: 75,000 m³

KM 18: Area: 103,864 m² | Volume: 140,000 m³

KM 20: Area: 472,958 m² | Volume: 800,000 m³

All sites have no prior use except for KM 8 and 16, currently used for recreational cabins.

The purpose of this Quarry Management Plan (QMP) is to outline the management, execution, and closure of quarrying activities for the above sites. The QMP outlines practices to be followed to ensure safe and environmentally responsible extraction and storage of aggregate.



FIGURE 1: An image all quarry sites in relation to the community of Rankin Inlet

DESIGN

The Hamlet of Rankin Inlet and the Government of Nunavut - Department of Community and Government Services (CGS) hired a private firm, Journeaux Assoc., to conduct a desktop study and field investigation program in 2016 determining the Hamlet's aggregate needs for the next 20 years. Journeaux Assoc. identified, evaluated, and recommended new aggregate sources to meet those needs. A copy of this desktop study and field investigation is uploaded alongside this Nunavut Planning Commission (NPC)/ Nunavut Impact Review Board (NIRB) application. The location and design of each quarry is based upon this study.

QUARRY DEVELOPMENT

All quarry sites are within the Rankin Inlet municipal boundary had no prior use except for KM 8 and 16. These two sites have recreational cabins located within or just outside of the quarry boundary.

Journeaux Assoc. consulted with various stakeholders, including the Hamlet council, regarding site selection. Full details of this consultation are outlined in their study under section 4.3. There was no further community consultation and the Hamlet has no plans for future consultation regarding quarry sites. If the residents have any concerns or issues regarding KM 8, 15, 16, 18 and 20, the Planning and Lands Administrator at the Hamlet office can be contacted by phone at (867) 645-2895 or by email at Lands@RankinInlet.ca.

Access to the sites will be via an existing road that connects Rankin Inlet to a recreational area known as "Diane River". To accommodate two-way heavy equipment traffic, the road will be widened from its current width of 3 metres to 8 metres. This existing road will be sufficient to access all quarry sites except KM 8 & 15. KM 8 will require a new road be constructed approximately 132 metres long and 8 metres wide. KM 15 will require a new road approximately 1.3 kilometres long and 8 metres wide off a branch intersection. A small culvert will be installed to ensure natural drainage is not hindered.



FIGURE 2: Image of the Diane Road to all sites

KM8 contains 4 private cabins within the boundary. The Hamlet will be contacting each cabin owner to assist them in relocating. Approximately 75 metres south of the boundary, there is a white cross planted in the ground signifying a grave. Engravings on the cross are shown in FIGURE 3.



FIGURE 3: Image of a grave located near Quarry KM 8

The Hamlet will place large boulders at access routes 30 metres away from the grave to deter quarrying activity in the vicinity. 4-6 boulders will also be placed closer to the grave to mark the location of the grave as added protection. A depiction of the boulder locations is shown in FIGURE 4.

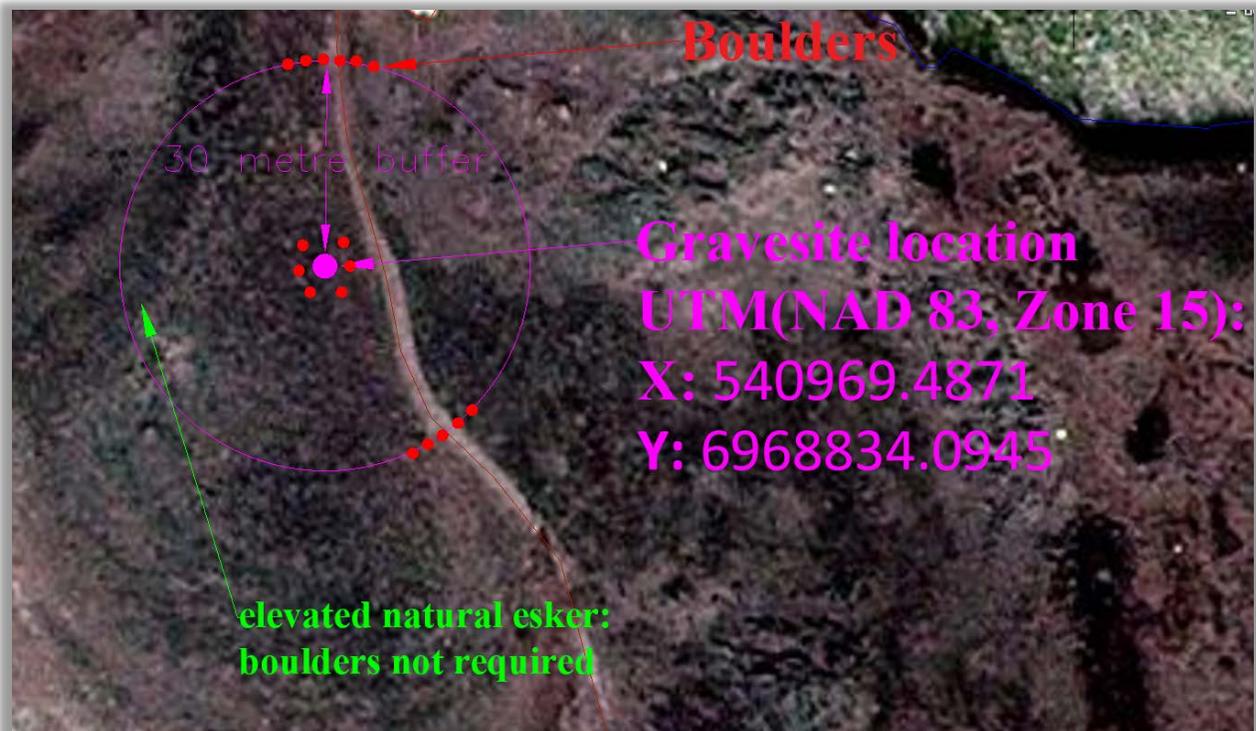


FIGURE 4: Image depicting the estimated location of the grave and boulder placement

Quarry permits issued for KM8 will contain provisions requiring private contractors maintain a 30-metre buffer zone from the grave. The Hamlet will adhere to the buffer zone. A new road 132 metres long and 8 metres wide that branches off the main road to access KM8 will be constructed. The road will be located 64 metres west of the grave. Traffic using this road will not be permitted to deviate from this road ensuring the grave is protected from quarry activity and as an added barrier, a natural esker lays between the new road the grave.

KM 15 contains no cabins, but it does have a possible Thermokarst pond. The depth and the marine biology of the pond is not known. It has an approximate diameter of 100 metres. A buffer of 31 metres between the pond and aggregate extraction will be enforced.

KM 16 contains 1 private cabin. The Hamlet will be contacting the cabin owner to assist them in relocating.

All sites have similar terrain characteristics; they are well drained, have no evidence of ice lensing, contain natural vegetation typically found in Nunavut's Arctic, and no signs of significant wildlife except for KM 15 and 20. Sand cranes and other waterfowl were observed approximately 500 metres south-east of KM 15. Animal tracks were observed near KM 20, but no visible wildlife noted.

QUARRY EXCUTION

Any unsuitable overburden material encountered will be stripped from the working area and stockpiled in separate, designated areas, or discarded. Excavation depth will depend on the

terrain features but will typically involve digging 1 to 2 metres down from the surface. Proper drainage of the sites will be maintained to ensure medium to large size puddles/ponds do not form. The extraction face will maintain a safe angle to prevent landslides and personnel or public injury.

Since each site contains a varying mixture of gravel, sand, and silt; a screener will filter aggregate to its desired specifications. Stockpiling will be permitted within the sites, but such piles will adhere to the restrictions outlined in the Dust Management Plan.

All mobile equipment will not refuel on site, but instead will use the local gas station in Rankin Inlet, which is located on lot 934 plan 4608. There will be no petroleum stored on site, but a screener and other mobile equipment may be parked overnight. These types of equipment are equipped with diesel tanks. The capacity of each tank is outlined in the Spill Contingency Plan.

The Diane road runs through KM 16,18, and 20 which will result in public traffic in proximity to quarry activity. To minimize any hazards or injury to the public, and if the Hamlet deems it necessary, boulders will be placed along the road within the quarry boundary to prevent traffic from entering the extraction area. The Hamlet has no set operating times regarding quarry extraction but activates usually cease at approximately 9:00PM. This prevents the possibility of traffic collisions during the night when visibility is low.

The Hamlet extracts material using their own mobile equipment under an assumed municipal permit, but private individuals and contractors are required to obtain a quarry permit from the Hamlet. Once a permit is obtained, the private individual(s) or contractor(s) extract aggregate to the permitted amount using their own mobile equipment. Due to limited municipal personnel and resources, supervision of extraction by private individuals or contractors may not occur. Annual extraction quantities are not known due to the sporadic nature of both the public and private sector construction projects.

QUARRY PERMITS AND RECORD KEEPING

Subject to few exceptions, all lands within the municipal boundary are municipal land as outlined in the Nunavut Land Claims Agreement (NLCA). All sites are on untitled municipal land. Therefore, any private individual or contractor requiring aggregate must first obtain a quarry permit from the Hamlet.

Permits contain following information:

1. Name and address of the Permittee(s)
2. Location of the extraction site, the type of material being extracted, and the extraction amount in cubic metres
3. Permit expiry date
4. Fees and payments made to the Hamlet for the quarry material
5. Permit terms and conditions

Each permit contains several terms and conditions. Permittees must not excavate nor store any petroleum fuel or chemical containers within 31 metres of any waterbody, and contractors must

adhere to the Quarry Management, Spill Contingency and Dust Management Plans. Permit proceeds will be deposited in a municipal financial account and used to cover administrative costs as well as quarry remediation. The terms and conditions of the permit will be used to enforce Hamlet quarry plans when not able to supervise extraction.

REMEDIATION

Once the quarry is depleted of useable material, quarry operations cease. Steep slopes will be levelled to a safe angle by the Hamlet. Any ditches will be filled and levelled with the quarry base. All mobile equipment will be removed. Unnatural waste, debris, scrap, and other garbage will be removed. Due to limited capacity and resources, replanting is not feasible.