

## Comment Index

Project Name: Gabarus Quarry Expansion  
Registration March 3, 2020

### Government

Number	Source	Date Received
1	NSE Resource Management Unit	March 23, 2020
2	NSE Air Quality Branch	March 24
3	NS Transportation and Infrastructure Renewal	March 25
4	NSE Protected Areas and Ecosystems	March 25
5	NS Agriculture	March 27
6	NS Fisheries and Aquaculture	March 27
7	NSE Inspection Compliance Enforcement Division	March 21
8	Health Canada	March 31
9	Environment and Climate Change Canada	March 31
10	NSE Wetlands	April 2
11	NS Communities Culture and Heritage	April 2
12	Department of Municipal Affairs & Housing	April 2
13	Fisheries and Oceans Canada	April 2
14	NSE Regional Environmental Health Consultant	April 2
15	NS Office of Aboriginal Affairs	April 2
16	NSE Senior Hydrogeologist, Water Management Unit	April 2
17	NS Department of Business	April 2
18	NS Lands and Forestry	April 2
19	NSE Senior Surface Water Quality Specialist, Water Management Unit	April 2
20	NSE Senior Water Resources Engineer, Water Resources Management Unit	April 2

### Public

Number	Source	Date Received
1	Anonymous	March 11
2		

## Tutty, Bridget R

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**To:** McKenna, Chuck W  
**Subject:** RE: Gabarus Quarry Expansion EA Reminder

**From:** McKenna, Chuck W <Chuck.McKenna@novascotia.ca>  
**Sent:** March 23, 2020 12:54 PM  
**To:** Tutty, Bridget R <Bridget.Tutty@novascotia.ca>  
**Subject:** RE: Gabarus Quarry Expansion EA Reminder

Bridget,

If I have not already stated. RMU will not have comments.

Thanks

Chuck

## Tutty, Bridget R

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**Subject:** FW: Gabarus Quarry Expansion EA Reminder

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**From:** Vervaet, Sharon <Sharon.Vervaet@novascotia.ca>

**Sent:** March 24, 2020 2:22 PM

**To:** Tutty, Bridget R <Bridget.Tutty@novascotia.ca>

**Subject:** RE: Gabarus Quarry Expansion EA Reminder

Hi Bridget,

We have reviewed the air related aspects of the proposed project and have no comments. Any air quality related issues that may arise with the project should be able to be addressed within the Part V Approval.

If you have any questions, please let me know.

Regards,

Sharon

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**NS Environment**

March 25, 2020

Attn: Bridget Tutty, Environmental Assessment Officer  
Nova Scotia Environment  
Suite 2085 1903 Barrington St  
Halifax, NS

**RE: NSTIR Comments on the Gabarus Quarry Expansion Project Environmental Assessment (EA)**

TIR staff have reviewed the Environmental Assessment for the Gabarus Quarry Expansion Project and prepared the following:

Section 6.3 Human Uses of the Environment: 6.3.14 Transportation

1. On Page 60 of the report, there is a picture of the quarry entrance at Grand Mira Gabarus Road. The proponent has indicated that the sightlines are not hazardous here (Page 61), however there are bushes at the intersection that would need to be regularly trimmed back so that this good sightline is maintained.
2. In Section 6.3.14 Transportation on Pg. 60, a statement is made that Grand Mira Gabarus Road “supports traffic mainly from the quarry, and some local traffic”. The quarry would be either seasonal or busy on a project basis, with local traffic being there all year, so it would be more accurate to say that the traffic is mainly local, with occasional or as required quarry traffic.
3. Also, on Page 60, the proponent has indicated that there would be some heavy equipment traffic associated with the quarry. Typically, the heavy equipment traffic would be loaded on the trucks themselves, and not be traffic on their own.
4. On Page 60-61, there is a mention of the intersection at the Crossroads at Rte 327/Forchu Road causing a slowing of traffic and potential safety issues. In looking at the intersection, the intersection is stop controlled at Rte 327 and has guide signs to indicate direction, so it is unclear as to why there would be a safety issue, especially given the low volumes, both of trucks and local traffic.

Section 7.3 Socioeconomic Impacts: 7.3.7 Transportation

1. In section 7.3.7 Transportation (Page 64), the proponent has indicated that the quarry generates a low level of truck traffic, but that activity levels are not expected to change the existing volumes significantly. The volumes coming out of the quarry will fluctuate depending on demand at the quarry, so this will be a significant intermittent impact on the volumes on the road. Because this is a low volume level road, the volume of the trucks relative to the total volume of the road may not be large in terms of actual numbers, but they would be large in terms of the proportion of the total volume on the road itself. Also, the proponent in Section 7.3.8 under Residential Use, on Page 65, states that traffic from the site is indicated to be moderate, which is contradictory to the

statement that it is low level of truck traffic.

2. Also, in this section, on Page 64, the proponent has indicated the need for suitable signage for truck and equipment operators. Typically, equipment operators would not require signage, however what is the signage that is being proposed here? The situation here would most likely resemble a Temporary Conditions situation and signing for it could be obtained from the Nova Scotia Temporary Workplace Traffic Control Manual (NSTWTCM), such as Haul Road or Truck Entrance signage that could be deployed on a daily or project basis. Appropriate guide signage should be placed at this intersection.
3. Also, on Page 64, the proponent has indicated the need for warning and speed limit signs to improve safety. These would not be warning signs in the traffic engineering context (yellow, diamond shaped, warning of a specific condition), but more signage for a Temporary Condition as indicated above in Point 2. Temporary regulatory speed limit signs would not be appropriate here. The proponent may wish to advise truckers to be reduce speed, but it could not be anything regulatory, and any discipline for violating these types of speed limits would not be legal, but more internal to the proponent.
4. With regards to signage indicated in Points 2 and 3, if anything beyond normal temporary workplace specific signage is required, the proponent would need to contact the local Area Manager so that our District Traffic Authority could assess before any signage could be erected as these are provincially owned roads. This would fall under the jurisdiction of the Cape Breton Area Office, and their contact information is (902) 563 2240, however, I have provided the link to our Area Manager's contact information. <https://novascotia.ca/tran/highways/areaoffices.asp>
5. Finally, with regards to the safety and signage issues indicated in the report, the tenses in the report indicate that the above actions in 2, 3 and 4 should be done. However, since this is a currently operating quarry, with similar truck volumes as to what would be expected after the expansion, would these actions have not been taken already, particularly if there is a potential safety issue? Have there been any safety related issues while the quarry has been in operation?

Thank you for the opportunity to review and comment this document.

Sincerely,



Rebecca MacQuarrie  
Environmental Analyst

## **MEMORANDUM**

**DATE:** March 31, 2020

**TO:** Bridget Tutty

**FROM:** Neil Morehouse, Manager of Protected Areas and Ecosystems

**SUBJECT:** Gabarus Quarry Expansion

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The Protected Areas and Ecosystems Branch have reviewed the Gabarus Quarry Expansion Environmental Assessment

### **Protected Areas Comments:**

- The existing quarry is 1 km from Gabarus Lake and about 2.5 km from the nearest portion of Gabarus Wilderness Area at Gabarus Lake. The quarry is also 8 kms from the Gull Cove Trail at it's closest point, and more than 6 kms from the beach at Belfry Gut.
- The main impact on the wilderness area will be from noise effects caused by day-to-day blasting and operation. According to the registration document, the level of ongoing activity due to the expansion is not likely to increase from current levels.
- Aside from this, the quarry is an industrial activity which could detract from the existing and potential nature-based tourism experience of this part of Nova Scotia, which includes significant NSE administered protected areas. This could be partly mitigated by developing the quarry in a manner that minimizes visual impact to the traveling public. The registration document claims the existing quarry is not presently visible from the Gabarus Grand Mira Road and that the overall impacts on viewscape and tourism of the expansion are expected to be negligible. We would encourage use of adequate buffers
- There is a small brook immediately north of the quarry that empties into Gabarus Lake. It is proposed that a 30-metre buffer on the brook will be maintained, however, they will need to insure that adequate controls are in place to address dust and surface water run-off from the quarry.

**Agriculture**

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Date: April 2, 2020

To: Bridget Tutty, Nova Scotia Environment

From: Executive Director, Policy and Corporate Services  
Nova Scotia Department of Agriculture

Subject: Gabarus Quarry Expansion Project - Environmental Assessment

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Thank you for the opportunity to review the Gabarus Quarry Expansion Project documents.

The Nova Scotia Department of Agriculture has no comment respecting this project.



Barrington Place  
1903 Barrington Street  
Suite 2085  
Halifax, Nova Scotia  
Canada B3J 2P8

## Fisheries and Aquaculture

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Date: April 2, 2020

To: Bridget Tutty, Nova Scotia Environment

From: Executive Director, Policy and Corporate Services  
Nova Scotia Department of Fisheries and Aquaculture

Subject: Gabarus Quarry Expansion Project - Environmental Assessment

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Thank you for the opportunity to review the Gabarus Quarry Expansion Project documents.

The Nova Scotia Department of Fisheries and Aquaculture has no comment respecting this project.



**Environment**

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Date: March 31, 2020

To: Bridget Tutty, Environmental Assessment Officer  
 Nova Scotia Environment

From: Inspection Compliance and Enforcement, Sydney Regional Office  
 Malcolm MacNeil, Regional Engineer  
 Ian Campbell, Regional Hydrogeologist

Subject: Gabarus Quarry Expansion Project

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Please find comments below related to our review of the Environmental Assessment Registration Document for the proposed Gillis Lake Quarry Expansion Project:

Item	Document Reference	Comment
1	Existing Quarry Operations, Page 15, Para 2; Hydrology, Page 68, Para 1; Monitoring, Page 70	A surface water/drainage management and monitoring plan should exist for the site and be part of the Part V application.
2	Future Quarry operations, Page 16, Para 3; Groundwater, Page 67, Para 2; Monitoring, Page 70	It is possible that groundwater was present in the base of the quarry when Dexter was issued under 4-hectre Approval and rock from the first blast was used to raise the elevation of the quarry floor a minimum of one metre above the potential groundwater elevation. A groundwater monitoring and management plan is required to ensure, among other things, that a minimum separation distance of one metre is maintained during expanded quarry operations. The plan shall be devised by a P. Geo or P. Eng., who is licensed to practice in Nova Scotia.
3	Hydrology, Page 23, Para 2 ; Figure 27, Page 38 ; Freshwater Aquatic Environments and Wetlands, Page 68	The proposed quarry footprint includes wetlands referred to in this paragraph. Additional wetlands exist throughout the project site. A wetland management plan should be submitted with the Part V

		application and should be developed by a qualified person.
4	Hydrogeology, Page 25, Para 1	Authorization must be provided from landowners for all wells and other structures within 800 m of the working face as per the Pit and Quarry Guidelines and Site Inspections must also be performed.
5	General	Document does not appear to include a reclamation plan. A Reclamation Plan and bond are required as part of the Part V Application
6	Appendix E, Cultural and Resource Management Report	EAA should state that a Condition of the EA and/or IA requires clear stop work conditions if archaeological resources are found.
7	General	EAA should state that a Condition of the IA application requires submission of a site-specific Sedimentation and Erosion Control Plan

Environmental Health Program  
Regulatory Operations and Regions Branch  
1505 Barrington Street, Suite 1817  
Halifax, NS B3J 3Y6

March 31, 2020

Bridget Tutty MSc  
Environmental Assessment Officer  
Nova Scotia Environment  
Suite 2085 1903 Barrington St  
Halifax, NS

Subject: Health Canada's Response – Gabarus Quarry Expansion Environmental Assessment Registration Document<sup>1</sup>

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Dear Ms. Tutty:

Thank you for your e-mail dated March 1<sup>st</sup>, 2020, requesting Health Canada's review of the above-mentioned Environmental Assessment (EA) Registration document<sup>1</sup> with respect to issues of relevance to human health. Health Canada has reviewed the document and is providing the following information with respect to receptor location(s), noise, air quality, water quality and country foods for your consideration.

**Project Location and Characteristics:**

The proposed project is an 13 ha expansion of an existing 4 ha quarry, referred to as the Gabarus Lake Quarry, located approximately 500m northwest of Gabarus Lake, 6 km northwest of the community of Gabarus, and approximately 30 km south of Sydney. Gabarus Lake is located in the Cape Breton Regional Municipality (CBRM). The expansion proposes to operate over the next 20 to 40 years. With anticipated future operations involving the extraction of approximately 25,000 to 50,000 tonnes/year.

**Receptor Location(s):**

The EA does not state how many residences are within a 1 km radius of the outer edge of the Quarry Development Area (QDA). A farm or multi-building cottage development is located approximately 495 m east of the QDA. In reviewing maps provided both in the EA (Appendix A

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<sup>1</sup> Dexter Construction Company Ltd Environmental Assessment Registration for the Gabarus Lake Quarry Expansion. Prepared on behalf of Dexter Construction Company Ltd. 2020. March

Figure 1) and satellite imagery available online, it appears the project study area is located between 500 to 900m from two residential receptors (Receptor #1, Receptor #2). The study area includes both the existing quarry area and the expansion (QDA). This is shown in Figure 1 (below).



Figure 1. Gabarus Lake Quarry expansion project receptors

- It is important to clearly describe the location and distance from the project site(s) to all potential human receptors (permanent, seasonal or temporary), taking into consideration the different types of land uses (e.g. residential, recreational, industrial, etc.), and identifying all sensitive people (e.g. in schools, hospitals, retirement complexes or assisted care homes). Note that the types of residents and visitors in a particular area will depend on land use, and may include members of the general public and/or members of specific population subgroups (Indigenous peoples, campers, hunters, etc.)

Further, Section 6.3.1 states:

*The nearest First Nations communities to the study area are Eskasoni, situated in Cape Breton County along the eastern side of the Bras d'Or Lakes about 32 km west of the study area, as the crow flies; and Membertou First Nation, located in Cape Breton Regional Municipality near Sydney, about 34 km north, as the crow flies.*

*Table 1. Gabarus Quarry Environmental Assessment - Stakeholder Engagement Summary* discusses the stakeholder engagement. Although early engagement was initiated the nearest First

Nations (through provision of the Project Description and an invite to the Information Session), meetings with the nearest Mi'kmaq Community bands have not yet occurred. Meetings with Office of Aboriginal Affairs and Native Council of Nova Scotia have occurred.

- If future Mi'kmaq engagement sessions occur and human health issues are identified, these additional concerns should be addressed and additional mitigation may be required.

### **Noise:**

Noise can be created from multiple quarry sources including the use of heavy equipment, hauling of material by trucks, quarry processing equipment, the asphalt plant and trucking of quarry rock. Blasting and quarry rock trucking are the primary sources of noise and vibration that can act as a nuisance for adjacent residents.

### **Blasting:**

Section 5.1 notes “Blasting, crushing and trucking of aggregate products have occurred on an as-required basis, with blasting occurring on an average of one to two times per year for years in which the site is active.” Section 5.2 notes, “During load and haul activities the site is typically operated during daylight hours (approx. 12 hours per year), possibly 7 days per week.” Section 5.2 also notes “During crushing activities the site may be operated 24 hours per day, possibly 7 days per week”.

The EA report states there are no anticipated changes to blasting frequency, with a maximum of 6 days of blasting per year; however, here are concerns from the public regarding blasting, as stated in Section 8.1:

- If the frequency of blasting does increase, there may be need for further consultation or mitigation

### **Truck traffic:**

Table 1. Stakeholder Engagement Summary stated multiple local residents are concerned with the noise from existing and future truck traffic in the neighbourhood.

The EA notes that truck traffic likely won't change as a result of the expansion, however Section 5.2 states that “The number of trucks hauling aggregate will be determined on a job by job basis, however as the site is not expected to increase in level of activity, trucking activity is not expected to increase from past use.”

- If truck traffic does increase as a result of the expansion, further consultation and mitigation may be required, as there is existing public concern about truck traffic. Due to the proximity between receptors and the proposed quarry, noise may become a concern if loud noises reach the neighbouring properties. The *Nova Scotia Pit and Quarry Guidelines*<sup>2</sup> provides

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<sup>2</sup> *Nova Scotia Environment. Pit and Quarry Guidelines. Revised 1999.*

guidance on acceptable noise levels.

For a detailed description of Health Canada's guidance for evaluating noise in EAs, please see the attachment.

*Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

### **Air Quality:**

Section 7.4.1 states: "Monitoring of airborne particulate emissions will be conducted at the request of NSE and in accordance with the Pit and Quarry Guidelines and the Nova Scotia Air Quality Regulations."

- Due to the proximity between receptors and the proposed quarry, air quality may become a concern if dust reaches the nearest neighbouring properties. If actual particulate levels exceed the *Nova Scotia Pit and Quarry Guidelines*<sup>3</sup> at the nearest residence, particulate monitoring and/or additional mitigation may be required, particularly in the event of public complaints.
- The quarry will operate a mobile asphalt plant. Section 7.4.1 states that dust and particulate matter will be monitored at the property boundary of the quarry but does not discuss monitoring of NO<sub>x</sub>, SO<sub>2</sub>, CO, (PAHs) or (VOCs). Further, the mitigation measures only discuss dust and not other air pollutants, therefore it may be necessary to monitor other air pollutants and develop mitigation if there are public complaints.

Further, as discussed above in relation to noise, Table 1 indicates The greatest concern raised by multiple local residents, politicians was in relation to existing and future truck traffic in the neighbourhood. Concern for the potential effects related to truck traffic including dust and noise from trucks.

- As discussed above, if truck traffic does increase and there are public complaints about resulting dust, further mitigation may be required.

For a detailed description of Health Canada's guidance for evaluating air quality in EAs, please see the attachment.

*Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

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<sup>3</sup> Nova Scotia Environment. *Pit and Quarry Guidelines*. Revised 1999.

## **Water Quality:**

The use of ammonium nitrate in the blasting process has the potential to leave residual nitrogen that can leach into groundwater. Processing of aggregate and rock at a quarry (notably crushing and exposure of rock to water and oxygen), can create dissolved solids and metals which could potentially make their way to water wells or surface water features.

Section 6.3.3 states:

*Both drilled and dug wells are used as drinking water sources in the Gabarus Lake area. Two homes, which would use groundwater wells, are located within 1 km of the study area, including one of which is a drilled well belonging to the residents of 769 Grand Mira Gabarus Road. Dexter Construction has a blasting waiver agreement with both.*

- It may be necessary to determine whether water sampling will be conducted prior to and during the operation of the quarry. As well determine what water quality indicators (WQIs) and contaminants that will be tested

## **Country Foods:**

Section 6.3.1 states:

*Presently, no significant Mi'kmaq cultural activities occur in or around the study area although traditional fishing and hunting continues in the general area of Gabarus Lake.*

Section 6.3.7 notes:

*The study area itself is not particularly important for freshwater recreational fishing but rivers in the area (e.g. Mira River), are fished recreationally, and Gabarus Lake supports ice fishing for Rainbow Smelt and trout (F. Carswell, resident of Gabarus, pers. comm. 2019; A.M. MacLean, Gabarus Lake, pers. comm. 2019), Striped Bass fishing, and a recreational fishery from April 15 – 30 for landlocked salmon (NS Anglers Handbook 2018). Mi'kmaq residing in the area likely use the limited recreational fishing resource as well. Other streams in the area are either too small, are not accessible, or have too steep a gradient to promote fishing*

- There is no discussion in the document concerning the potential for contamination of the country foods harvested in the area.

For a detailed description of Health Canada's guidance for evaluating country foods in EAs, please see the attachment.

*Health Canada. 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

If you have any comments/questions, please contact the undersigned at your convenience.

Sincerely,

A handwritten signature in blue ink that reads "Lance R-P". The letters are cursive and somewhat stylized.

Lance Richardson-Prager  
Health and Environment Specialist  
Health Canada, Atlantic Region

e-mail: [lance.richardson-prager@canada.ca](mailto:lance.richardson-prager@canada.ca)



cc: Rick O'Leary, Manager, Environmental Health Program, Health Canada, Atlantic Region

Attachments:

*Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

*Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

*Health Canada. 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*

*Health Canada. 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Water Quality. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*



Environmental Protection Branch  
16<sup>th</sup> Floor Queen Square  
45 Alderney Drive  
Dartmouth, NS B2Y 2N6

March 31, 2020

Bridget Tutty  
Environmental Assessment Officer  
Nova Scotia Environment  
1903 Barrington St, Suite 2085  
Halifax, NS B3J 2P8

Dear Bridget Tutty:

**RE: Gabarus Quarry Expansion Project EAS# 20-NS-003**

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Environment and Climate Change Canada (ECCC) has reviewed the Environmental Assessment Registration document (registered on March 03, 2020) for the above-noted project proposal and has provided the following comments:

### **Water Quality**

Pollution prevention and control provisions of the Fisheries Act are administered and enforced by ECCC. Subsection 36(3) of the Fisheries Act prohibits “anyone from depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter such water”.

It is the responsibility of the proponent to ensure that activities are managed so as to prevent the release of substances deleterious to fish. In general, compliance is determined at the last point of control of the substance before it enters waters frequented by fish, or, in any place under any conditions where a substance may enter such waters.

Section 6.2.3 Water Quality (page 36) indicates that surface water quality sampling was conducted on one day in June 2019 and included three measurements from the unnamed stream (WS1, WS2, and WS3), one from a tributary (WS4) as a reference site, and one from a quarry pond (WS5). Please justify why sampling efforts are sufficient to provide an accurate representation of current water quality. The decision to sample once and the use of WS4 as the one reference site should be justified.

In addition, is there any historical data that can be used to supplement this sampling program? Can raw data be provided in an appendix? Please describe any other contaminants of potential concern in runoff.

Section 6.2.3 Water Quality (page 36) states “Surface water quality measured in the unnamed stream (WS1; WS2; and WS3), which flows along the northeast perimeter of the quarry site, as well as in a tributary, which joins the unnamed stream below the quarry site (WS4), were typical of relatively undisturbed natural environments in upper watershed areas of northern Nova Scotia.” Is there a reference for what constitutes water quality in relatively undisturbed natural environments in upper watershed areas of northern Nova Scotia?

Section 6.2.3 Water Quality (page 36) states “Site WS4 is a tributary that combines with the unnamed stream below the quarry site and was used as a reference site with which to compare water quality of the unnamed stream”. This section indicates that the elevated suspended sediment of 84.5 mg/L at WS4 “...are not associated with quarry operations and reflect recent runoff from Grand Mira Gabarus Road adjacent to the stream and forest clearing”. The use of WS4 as the only reference site should be justified given that it was directly beside a road and water quality was impacted by runoff and upstream disturbance.

Section 6.2.3 Water Quality (page 36) states that “Water quality measurements for pH and dissolved oxygen levels were within guideline ranges for the protection of freshwater aquatic life for downstream sites WS2 and WS3 (CCME 1992) (Table 1).” The CCME Water Quality Guidelines for the Protection of Aquatic Life (1999) in freshwater cite a guideline pH of 6.5 to 9.0 and guideline dissolved oxygen (DO) between 6 and 9.5 mg/L depending on water temperature and life stage. Measurements for sites WS2 and WS3 include pH levels below 6.5 and DO concentrations below 9.5 mg/L (a conservative minimum DO concentration for cool water fish). This statement is inconsistent with the CCME Water Quality Guidelines for the Protection of Aquatic Life (1999).

Section 7.4.4 Water Quality (page 68) states “Contaminants arising from operations of the quarry are expected to be exceedingly low”. What are these potential contaminants arising from quarry operations and what concentrations are considered “exceedingly low”?

Section 7.4.5 Freshwater Aquatic Environments and Wetlands (page 68) states “Surface runoff from the quarry floor is managed on site to control sediment levels before leaving the site. Quantities of runoff arising from the site in future will be approximately the same as at present and will remain in the same watershed. The quarry is unlikely to generate significant quantities of contaminants or suspended sediments that could impact any freshwater habitat.” What are present quantities of runoff and quantities of contaminants from the site? Please explain or provide reference to why an increase in quarry footprint from less than 4 ha to 13.0 ha (page 7) would not result in an increase in runoff or contaminants.

Appendix D, Section 4.2.2 Water Quality (page 24) states that “... all locations with the exception of the reference Site WS4 had TSS levels less than 10 mg/L”. Table 1 reports

that site WS5 (surface water from grubbed area) had a TSS of 12.0 mg/L. The statement is inconsistent with the information in Table 1.

## **Wildlife and Wildlife Habitat**

ECCC's Canadian Wildlife Service (CWS) requests a full description of the point count survey methodology and sampling strategy. ECCC-CWS requires details on how the proponent chose the breeding bird survey locations. Map A-2 (Appendix D) shows that the majority of survey locations are clustered along the road bordering the existing quarry, while only Point 1 and Point 7 were within the northern expansion area. This Northern Area is where the detection of Olive-sided Flycatcher occurred. Additional survey effort in those habitats would have been beneficial. ECCC-CWS has also attached standard guidance for the proponent on this project.

### Migratory Birds

The *Migratory Birds Convention Act* (MBCA) protects migratory birds, their eggs, nests, and young. Migratory birds protected by the MBCA generally include all seabirds (except cormorants and pelicans), all waterfowl, all shorebirds, and most landbirds (birds with principally terrestrial life cycles). The list of species protected by the MBCA is at <https://www.canada.ca/en/environment-climate-change/services/migratory-birds-legal-protection/convention-act.html>. Bird species not listed may be protected under other legislation. The MBCA protects these migratory birds, their nests and eggs anywhere they are found in Canada, including ocean waters, and prohibits the dumping of substances harmful to birds in waters or areas frequented by them. Bird species not listed may be protected under other legislation.

Section 5.1 of the MBCA describes prohibitions related to depositing substances harmful to migratory birds:

- “5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.
- (2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance – in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area - that is harmful to migratory birds.”

Sections 5 and 6 of the *Migratory Birds Regulations* (MBR) describes hunting and taking of migratory birds:

- 5 (1) No person shall hunt a migratory bird except under authority of a permit therefor.
  - hunt means chase, pursue, worry, follow after or on the trail of, lie in wait for, or attempt in any manner to capture, kill, injure or harass a migratory bird, whether or not the migratory bird is captured, killed or injured;

- 6 Subject to subsection 5(9), no person shall
  - disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or
  - have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefor.

The proponent must manage their activities to ensure they are compliant with the MBCA and associated regulations.

### Vegetation Clearing

Vegetation clearing may disturb migratory bird species, nests, and eggs. Birds may use trees, brush, deadfalls, low-lying vegetation, and substrates to nest, feed, and take shelter and cover. Birds may use terrestrial habitats (e.g. forests, meadows) and wetlands (e.g. marshes, fens). Clearing vegetation is most detrimental during the breeding period. This region's breeding season is generally between April 15th and August 15th. Some migratory species do nest outside of this period. Review the "Nesting Periods" (Environment and Climate Change Canada. 2018. Nesting periods. <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html>) and "Bird Nesting Calendar Query Tool" (Rousseu, F. and B. Drolet. 2015. Prediction of the nesting phenology of birds in Canada. In: J. Hussell and D. Lepage. 2015. Bird Nesting Calendar Query Tool. Project NestWatch. Bird Studies Canada / Études d'Oiseaux Canada. Accessed at: [www.birdscanada.org/volunteer/pnw/rnest](http://www.birdscanada.org/volunteer/pnw/rnest)) for migratory bird breeding periods.

### Recommendations:

- Avoid activities like clearing, grubbing and vegetation removal during the bird breeding season.
- Active nesting outside of regional nesting periods is possible. Be aware of signs of nesting birds during shoulder seasons.
- Install measures that will reduce the risk of impacting nests, eggs, chicks, and birds, such as:
  - establishing buffer zones around nests;
  - minimizing activities around nests until chicks have migrated from the area.
- Identify the best approach, based on circumstances, to avoid incidental take.
- While most migratory bird species nest in trees and shrubs, they may also nest on the ground and cliffs. Some birds may nest in human-influenced landscapes or infrastructure, such as:
  - hayfields, crops, orchards;
  - exposed quarry or mine dig faces, overburden piles;

- slash piles;
- impounded water;
- buildings or bridges.
- Develop management plans that identify measures to avoid risks of impacting migratory birds. Management plans should include steps to follow to mitigate active nests at any time of the year. When developing plans on avoiding incidental take of migratory birds nests and eggs, please review:
  - 'Avoiding harm to migratory birds: guidelines to reduce risk to migratory birds' (Environment and Climate Change Canada. 2017. Avoiding harm to migratory birds: reducing risk to migratory birds. <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html>)
  - 'Avoidance Guidelines' (Environment and Climate Change Canada. 2017. Avoiding harm to migratory birds: avoidance guidelines. <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/guidelines.html>)
- Vegetation maintenance has to avoid incidental take of birds and nests. These activities include:
  - trimming, mowing;
  - danger tree removal;
  - weed removal and reduction.

### Nest Surveys

Migratory birds can nest in a variety of habitats and locations. Depending on the species, nests may be found at many heights in trees, in tree cavities, in shrubs, on the ground (including in hayfields, crops, and pastures), on cliffs, and in burrows. Adult birds conceal nests and avoid approaching their nests in a manner that would attract predators to their eggs or young.

The amount and complexity of habitat will limit nest survey effectiveness. Few species nests are easy to locate, mainly nests in isolated trees, on human-made structures or in colonies. Flushing nesting birds increases the risk of predation of the eggs or young or may cause the adults to abandon the nest or the eggs. Therefore, except when the nests are known to be easy to locate without disturbing them, active nest searches are generally not recommended; they have a low probability of finding all nests, and are likely to cause disturbance to nesting birds. In many circumstances, incidental take will likely still occur from industrial activities even when conducting nest searches before these activities.

To determine the likelihood that migratory birds, their nests or eggs are present in a particular location, use a scientifically sound approach that considers the available bird

habitats, which migratory bird species are likely to be encountered in such habitats, and when the birds would likely be present.

Recommendations:

- In some cases, proponents may be able to carry out nest searches successfully, if:
  - They are conducted by skilled and experienced observers using appropriate methodology
  - They are searching simple habitats (often in human-made settings) with only a few likely nesting spots or a small community of migratory birds. Examples include:
    - An urban park consisting mostly of lawns with a few isolated trees;
    - A vacant lot with few possible nest sites;
    - A previously cleared area where there is a lag between clearing and construction activities (and where birds may be nested on the cleared ground or in stockpiles, for instance);
    - A structure such as a bridge, a beacon, a tower or a building (often chosen as a nesting spot by robins, swallows, phoebes, Common Nighthawks, gulls and others).
- Proponents may use nest searches when looking for:
  - Conspicuous nest structures (such as nests of Great Blue Herons, Bank Swallows, Chimney Swifts);
  - Cavity nesters in snags (such as woodpeckers, goldeneyes, nuthatches);
  - Colonial-breeding nesters that are detectable from a distance (such as a colony of terns or gulls).
- If the proponent is required to determine the presence of breeding birds, they should consider conducting an area search for evidence of nesting (e.g., presence of birds in breeding habitat through observation of singing birds, alarm calls, distraction displays) using non-intrusive search methods to prevent disturbance to migratory birds. In the case of songbirds, for example, “point counts” (a technique to locate singing territorial males) may provide a good indication of the presence of nests of these birds in an area. Please contact ECCC-CWS office for further technical information about investigation methods for non-song bird species (notably, waterfowl, waterbirds and shorebirds).

Stockpiles, Pits, and Quarries

Certain species of migratory birds (e.g. Bank Swallows) may nest in unattended/vegetated soil/material stockpiles and banks in pits and quarries during the most critical period of the breeding season (April 15th through August 15th).

#### Recommendations:

- Install measures to cover or to deter birds from large piles of unattended soil or exposed banks/faces during the breeding season.
- Establish alternate measures to protect the nests of migratory birds that take up occupancy in piles/exposed banks. Measures should include delaying industrial activities (e.g. hydroseeding) and prevent erosion. Nests need to be protected until chicks have fledged and naturally left the area.
- Measures need to protect the entire active nesting period. This period includes when birds are incubating eggs, taking care of flightless chicks, and while chicks are learning to fly.
- Develop a mitigation plan for nesting birds. Review the following guidelines when designing mitigation measures:
  - 'Bank swallow (*Riparia riparia*) in sandpits and quarries' (Environment Climate Change Canada. 2017. Migratory bird conservation: publications: Bank swallow (*Riparia riparia*) in sandpits and quarries. Last Update: 2017-May-03. Accessed at: <https://www.canada.ca/en/environment-climate-change/services/migratory-bird-conservation/publications/bank-swallow-riparia-sandpits-quarries.html>);
  - 'Bank Swallows in Pits & Quarries: Guidance for Aggregate Producers' (Ontario Stone, Sand, & Gravel Association. 2013. Bank Swallows in Pits & Quarries: Guidance for Aggregate Producers);
  - 'Bank Swallow (*Riparia riparia*) Know Your Legal Obligations' (Environment Canada. 2011. Bank Swallow (*Riparia riparia*) Know Your Legal Obligations (CW66-297/1-2011E-PDF). Retrieved from [http://publications.gc.ca/collections/collection\\_2011/ec/CW66-297-1-2011-eng.pdf](http://publications.gc.ca/collections/collection_2011/ec/CW66-297-1-2011-eng.pdf)).

#### Contaminant Spills, Leaks, and Releases

Contaminant leaks and spills may directly or indirectly cause incidental take if released into areas frequented by migratory birds. Biodegradable alternatives to petroleum-based chainsaw bar oil and hydraulic fluid for heavy machinery are commonly available from major manufacturers. Such biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices.

#### Recommendations:

- Take all precautions to prevent fuel leaks from equipment and prepare a contingency plan in case of oil spills.



- Ensure that contractors are aware that under the MBR, “no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.”
- Ensure that fueling and servicing of equipment do not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands.
- During site remediation, ensure that no contaminated soils are permitted to enter any water bodies frequented by migratory birds. If there is any noticeable change in numbers of any migratory bird species at the project site, contact ECCC-CWS for further advice.
- Prepare, and implement, a Spill Prevention and Response Plan, which includes:
  - mitigation measures to deter migratory birds from coming into contact with contaminants;
  - response measures to be undertaken if migratory birds or sensitive habitat becomes contaminated;
  - the type and extent of monitoring conducted during various spill events.
- Review the guidance below when preparing the plan;
  - “Birds and Oil – CWS Response Plan Guidance” (Canadian Wildlife Service. 2017. Birds and Oil - CWS Response Plan Guidance. 3 pp.)

### Artificial Lights and Light Attraction

Bird collisions at lit and floodlit structures are a known problem. In Atlantic Canada, including coastal areas of New Brunswick and the Bay of Fundy, nocturnal migrants and night-flying seabirds (e.g. storm-petrels) are the birds most at risk of attraction to lights and lighting structures. Attraction to lights may result in a collision with lit structures or their support structures, or with other birds. Disoriented birds are prone to circling a light source and may deplete their energy reserves and either die of exhaustion, drop into the ocean, or drop to the ground (or a hard surface) where they are at risk of depredation.

#### Recommendations:

- Use the minimum amount of pilot, warning and obstruction lighting needed on tall structures. Warning lights should flash and completely turn off between flashes.
- Use the fewest number of site-illuminating lights possible in the project area. Only use strobe lights at night, at the lowest intensity and the smallest number of flashes per minute allowable by Transport Canada.
- Reduce lighting levels during severe weather events that may force migratory birds to land to prevent birds from landing in areas that would cause injury, harm, or death.
- Avoid or restrict the time of operation of exterior decorative lights such as spotlights and floodlights whose function is to highlight features of buildings or to

illuminate an entire building. These lights, especially on humid, foggy or rainy nights, can draw birds from far away. Turn off these lights during the migratory season when the risk to birds is highest and during periods when birds are dispersing from their nests or colonies.

- Shield safety lighting so that the illumination shines down. Only install safety lighting where it is needed, without compromising safety.
- Shield street and parking lot lighting so that little escapes into the sky, and it falls where it is required. Consider using LED lighting fixtures as they are generally less prone to light trespass.
- The proponent should make all reasonable attempts to limit construction activities to the day and avoid illuminating the habitat adjacent to the worksite.

### Noise Disturbance

Anthropogenic noise produced by construction and human activity can have multiple impacts on birds, including causing stress responses, avoidance of important habitats, changes in foraging behaviour and reproductive success, and interference with songs, calls, and communication. Activities that introduce loud or random noise into habitats with previously low levels of anthropogenic noise are particularly disruptive.

#### Recommendations:

- Develop mitigations for programs that introduce very loud and random noise disturbance (e.g. blasting programs) during the migratory bird breeding season.
- Prioritize construction works in areas away from natural vegetation while working during the migratory bird breeding season. Conducting loud construction works adjacent to natural vegetation should be completed outside the migratory bird breeding season.
- Keep all construction equipment and vehicles in good working order, and muffle loud machinery if possible.
- Where possible, use sound reduction technology on equipment that creates loud, intermittent, or random noise.

### Revegetation, Reclamation, and Restoration

- Reseed or revegetate using a variety of species of plants native to the general project area.
- If there are no seed mixes for herbaceous native species for the area available, the proponent should ensure that plants used in revegetation efforts are not invasive.

### Invasive Species

Measures to diminish the risk of introducing invasive species should be developed and implemented during all project phases.

Recommendations:

- Clean and inspect construction equipment before transport to ensure that no vegetative matter is attached to the machinery (e.g., use a pressure water hose to clean vehicles).
- Regularly inspect equipment before, during and immediately following construction in areas found to support Purple Loosestrife to ensure that vegetative matter is no transported from one construction area to another.
- Prepare a weed management strategy that would describe when and how invasive plant species will be prevented from establishing on their site/lease.

Killdeer

Killdeer (*Charadrius vociferous*) are attracted to open gravel habitats. However, Killdeer may also place nests in human-built or human-modified environments such as parking lots, recently cleared lands, and gravel pits.

Recommendations:

- Ensure project staff are aware of the potential of killdeer nests in active industrial or development areas.
- If a nest is suspected or discovered, conduct no activities around the nest that might cause the nest to be destroyed or abandoned. Activities should be suspended until the chicks have fledged and naturally left the area.

Species at Risk

Federally listed species at risk protected under the *Species at Risk Act* (SARA). The list of species protected by the SARA is on the Species at Risk Public Registry. Under S79. (1) of the SARA, "every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted, and every authority who makes a determination under paragraph 67(a) or (b) of the Canadian Environmental Assessment Act, 2012 in relation to a project, must, without delay, notify the competent minister or ministers in writing of the project if it is likely to affect a listed wildlife species or its critical habitat."

The person must also identify the adverse effects of the project on listed species and their critical habitat. The person must take measures to avoid or lessen adverse effects and that monitor for any effects caused by the project. Mitigation measures must be consistent with recovery strategies and action plans for the species.

Section 32 of the SARA describes general prohibitions related to listed wildlife species:

- 32 (1) No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.

- 32 (2) No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual.
- 32 (3) For the purposes of subsection (2), any animal, plant or thing that is represented to be an individual, or a part or derivative of an individual, of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species is deemed, in the absence of evidence to the contrary, to be such an individual or a part or derivative of such an individual.

Section 33 of the SARA describes general prohibitions related to the damage or destruction of residences of listed wildlife species:

- 33 No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.

The proponent must manage activities to ensure compliance with the SARA and associated regulations.

#### Presence of Species at Risk and Residences

Species at risk (as listed on Schedule 1 of the SARA) may occur within the study area; if the species, or its residence, has been detected within the project area, the proponent should mitigate to avoid or minimize impacts to these individuals:

Recommendations:

- Submit observations of species at risk and their residences within the project footprint to ECCC-CWS.
- Submit any injuries, contamination, or mortality of listed species-at-risk to ECCC-CWS.
- Prepare a mitigation plan to ensure impacts to the species at risk, and its residence, are avoided.

#### Bank Swallow

Bank Swallows (*Riparia riparia*) are listed as Threatened under Schedule 1 in the SARA. They are small insectivorous and highly social birds and tend to breed in a wide variety of natural habitats, but also at artificial sites with vertical banks (e.g. aggregate pits, road cuts, and stockpiles of soil). They tend to breed in colonies ranging from several pairs to a few thousand. The MBCA protects Bank Swallows, including its nests and eggs.

Additionally, under the SARA, Bank Swallows have one type of residence: the occupied burrow. Therefore, any activity that damages or destroys the functions of an occupied burrow would constitute damage or destruction of the residence. These activities include, but are not limited to:

- damaging or destroying the burrow;

- blocking access to the burrow;
- changing the slope of the vertical face used for nesting;
- adding, moving or removing material from the vertical face causing the burrow to collapse or fill; or
- any other activity that would destroy the function of the burrow.

The presence of a nesting colony should be confirmed from the bottom of the vertical face, or otherwise in front of the face, as the occurrence and size of the colony can be overlooked from the top of the bank above the colony. The presence of a residence requires one or more Bank Swallows entering or leaving a burrow, or the presence of young at the burrow entrance. Confirm burrow occupancy using the same method described above.

#### Recommendations:

- Be aware of the risk of nesting bank swallows in their project footprint, and educate site workers about this risk, and what constitutes a contravention of the SARA and the MBCA.
- Manage site activities to reduce the risk of bank swallows initiating a colony within their project footprint.
- Understand what constitutes an active bank swallow residence. (Government of Canada. Species at Risk Act Public Registry. Residence Descriptions. Description of residence for Bank Swallow (*Riparia riparia*) in Canada. May 2019)
- Protect bank swallow colonies that establish within their project footprint until such a time the colony is no longer active, and fledglings have naturally left the area.

#### Barn Swallow

Barn Swallows (*Hirundo rustica*) are listed as Threatened under Schedule 1 in the SARA. It is a medium-sized songbird and is closely associated with rural human settlements and human-built infrastructure. Barn Swallows are social throughout the year but may nest individually or in groups. Nests in small, loose colonies that usually contain no more than about ten pairs. Nests are built mainly of mud pellets. Regional surveys in the Maritimes show significant population declines over the long term. The MBCA protects Barn Swallows, including its nests and eggs, in Canada.

Additionally, under the SARA, Barn Swallows have one type of residence: the nest. Any activity that damages or destroys the functions of the nest would constitute damage or destruction of the residence. Under SARA, the nest, occupied or not, is considered a residence from May 1st or the date when the adults are first observed building or occupying the nest, whichever is earlier, to August 31st or the date when a bird is last seen at the nest, whichever is later.

Recommendations:

- Be aware of the risk of nesting barn swallows within their project footprint, and educate site workers about this risk, and what constitutes a contravention of the SARA and the MBCA.
- Understand what constitutes an occupied barn swallow residence. (Government of Canada. Species at Risk Act Public Registry. Description of Residence for Barn Swallow (*Hirundo rustica*) in Canada. May 2019).
- Protect active barn swallow nests within their project footprint until such a time the residence is no longer active, and fledglings have naturally left the area.

Common Nighthawk

Common Nighthawks (*Chordeiles minor*) are a Schedule 1 listed Threatened species under the SARA, and its nests and eggs are protected under the MBCA. Common Nighthawks may choose nest sites in open areas (e.g. gravel or sand) or cleared areas (e.g. forest harvest blocks, recently cleared land, and recent burns) in a wide range of habitats and a variety of substrates. Common Nighthawks may establish nest sites in newly cleared habitats, such as lands cleared for industrial development.

Recommendations:

- The proponent should ensure cleared areas do not have any Common Nighthawk nests.
- The proponent should survey for Common Nighthawks using standard methodology.
- The proponent will have to ensure any Common Nighthawk nests that are established in the project area are protected and that the young can fledge.

Little Brown Myotis, Northern Myotis, Tri-colored Bat

Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) are small, insectivorous bats that are listed as Endangered on Schedule 1 of the SARA. Partial identification of critical habitat has been published in the federal recovery strategy. Outside of the listed critical habitat, other habitat features such as maternity roosts are important to the maintenance and recovery of the species.

Recommendations:

- Although unlikely, if active roosts are encountered in natural or human-built structures within the project area, they should be identified, buffered, and avoided until roosting has been completed.
- Avoid causing any direct mortalities to Little Brown Myotis that choose to roost inside buildings. Little Brown Myotis may use buildings and other anthropogenic structures for roosting (particularly for maternity roosting). Do not block off access of nursing females to their pups or trap bats inside structures.

- Consult fact sheets produced by the Government of Canada about the Emergency Listing Order, the disease threatened bats, the requirements of the Species at Risk Act, and ways to protect and preserve bat populations. The factsheets are available at

### **Accidents and Malfunctions**

Hazardous materials (e.g. fuels, lubricants, hydraulic oil) and wastes (e.g. waste oil) should be managed so as to minimize the risk of chronic and/or accidental releases. For example, the proponent should encourage contractors and staff to undertake refueling and maintenance activities on level terrain, at a suitable distance from environmentally sensitive areas including watercourses, and on a prepared impermeable surface with a collection system.

The proponent is encouraged to prepare contingency plans that reflect a consideration of potential accidents and malfunctions and that take into account site-specific conditions and sensitivities. The Canadian Standards Association publication, Emergency Preparedness and Response, CAN/CSA-Z731-03, reaffirmed 2014), is a useful reference.

All spills or leaks, such as those from machinery or storage tanks, should be promptly contained and cleaned up (sorbents and booms should be available for quick containment and recovery), and reported to the 24-hour environmental emergencies reporting system (Maritime Provinces 1-800-565-1633)

I trust the above comments will be of assistance. Please feel free to contact Michael Hingston (902-426-9152) if you have any questions or concerns.

Yours truly,

Maryam Fazeli  
Environmental Assessment  
Environmental Protection Operations Directorate – Atlantic

Enc: Canadian Wildlife Service 2017 Birds and Oil – CWS Response Plan Guidance  
Government of Canada 2019 Description of Residence for Bank Swallow in Canada  
Government of Canada 2019 Description of Residence for Barn Swallow in Canada  
Ontario Stone Sand & Gravel Association 2013 Bank Swallows in Pits & Quarries Guidance for Aggregate Producers

cc: M. Hingston  
M. Dober  
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J. Mailhiot  
P. Knaga

## **Bank Swallow (*Riparia riparia*): residence description**

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**Official title:** Description of Residence for Bank Swallow (*Riparia riparia*) in Canada

### **Preface**

Section 33 of the *Species at Risk Act* (SARA) prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. SARA defines residence as: "a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating" [s.2(1)]. With respect to a listed wildlife species that is an aquatic species or a species of bird protected under the *Migratory Birds Convention Act, 1994*, the prohibition applies wherever the residences are found. For any other listed wildlife species, the prohibition applies automatically when the residence of the species is on federal lands and will only apply on non-federal lands if an order is made pursuant to sections 34 or 35 of SARA. Under section 97 of SARA every person who contravenes section 33 of the Act commits an offence.

A residence would be considered to be damaged or destroyed if an alteration to the residence and/or its topography, structure, geology, soil conditions, vegetation, chemical composition of air/water, surface or groundwater hydrology, micro-climate, or sound environment either temporarily or permanently impairs the function(s) of the residence of one or more individuals.

The following residence description was created for the purposes of increasing public awareness, and enhancing conservation outcomes by promoting compliance with the above prohibitions.

Under SARA, Bank Swallows have one type of residence: the occupied burrow.

Under SARA, the destruction of this migratory bird species' residence is prohibited automatically on all lands. Under certain conditions, SARA provides that permits may be issued for activities that affect a listed wildlife species, its critical habitat or residences of its individuals. SARA also provides exceptions for certain activities that relate to public safety, health or national security. The Government of Canada will work with landowners and land managers to explore options when situations concerning public health and safety arise.


### **Damage and destruction of the residence**

Any activity that damages or destroys the functions of the occupied burrow would constitute damage or destruction of the residence. These activities include, but are not limited to, damaging or destroying the burrow; blocking access to the burrow; changing the slope of the vertical face used for nesting; adding, moving or removing material from




the vertical face causing the burrow to collapse or to be filled; or any other activity that would destroy the function of the burrow.





 Environment and Climate Change Canada / Environnement et Changement climatique Canada

**Legend**

 Bank Swallow

**WGS 1984 Web Mercator**  
 1:70,000,000

0 750 1,500 3,000 4,500



Kilometers

© 2018. Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change  
 ESRI World Topography Map ArcGIS 10.1 © 2017

Figure 1. Known breeding distribution of the Bank Swallow (*Riparia riparia*) in North America. Note that nesting may occur outside of the currently known distribution; residences are protected wherever they occur. Data Source: BirdLife International (2016)

Long description

## 1. The Burrow

### Physical appearance and context

Any occupied [Footnote1](#) Bank Swallow burrow is considered a residence. The nesting burrow containing the nest is excavated by the birds parallel to ground surface and perpendicular to the bank face (Garrison 1999). The Bank Swallow builds a rudimentary nest made of grasses, feathers, twigs, rootlets, plant stalks, or leaves in a nest chamber at the end of the burrow (Campbell et al. 1997). Horizontal depth of the nest burrow averages 90 cm (range 42–180 cm) in British Columbia (Campbell et al. 1997) and 63.6 cm (range 15–145 cm) in Saskatchewan (Hjertaas 1984). In Ontario, lakeshore burrow depth averaged 71 cm (range 40 to >110 cm; n=70) and pit burrow depth averaged 65 cm (range 25 to >110 cm; n=88; Burke 2017).

In natural settings, Bank Swallows excavate burrows in near-vertical banks composed of exposed and unconsolidated silt or sand deposits (Falconer et al. 2016). Heights of banks at nesting colonies average 1.8 m (range 0.5–6.6 m) in Saskatchewan (Hjertaas 1984; Hjertaas et al. 1988). In Ontario, Bank Swallow colonies in lakeshore banks were found on vertical faces averaging 5.6 m in height (range 1.2–10.8 m; Burke 2017). On southern Ontario rivers (n=41 colonies), colony face length and height averaged 64.2 m (range 2.0–289.5) and 6.3 m (range 0.7–40.9), respectively (M. Cadman and M. Browning, pers. comm.). In Ontario pits, colony face length and height averaged 39.1 m (range 2.5–333.9) and 3.44 m (range 0.5–28.4), respectively (M. Cadman and M. Browning, pers. comm.). Nesting colonies in natural settings are generally located along rivers, streams, lakes, and ocean coasts (Garrison 1999). The location alongside waterbodies generally contributes to the natural erosion of the vertical profile, keeping the bank suitable for nesting (Garrison 1999; Falconer et al. 2016).

Burrows are aggregated into colonies of extremely variable sizes, ranging from a few nesting pairs to several thousand (Garrison 1999; COSEWIC 2013). In British Columbia, Campbell et al. (1997) reported a range of 3 to 3,035 burrows (n=491 colonies). Average size of colonies in Saskatchewan is 5 nests (range 1–48, n=79 colonies; Hjertaas 1984). Colonies along rivers in southern Ontario (n=50 colonies) averaged 100 burrows (range 1–1,256), but the median was 38 burrows (M. Cadman and M. Browning, pers. comm.). Surveys of lakeshore colonies at Lake Erie, Ontario suggest mean and median colony sizes of about 130 and 50 nests, respectively (Falconer et al. 2016). In southern Ontario, average colony size appears smaller in aggregate pit sites ( $112 \pm 17$  burrows) than at lakeshore sites ( $560 \pm 138$  burrows; Burke 2017).

The Bank Swallow often nests in human-made habitats. Burrows can be found in vertical faces in aggregate pits, along road-cuts, and in piles of sand, gravel, or sawdust (Garrison 1999; COSEWIC 2013; Falconer et al. 2016). Bank Swallows may also build nests in holes in human-made structures or occupy artificial faces built as surrogate habitat (Laberge and Houde 2015). Human-related excavation of material can refresh the vertical face and make banks suitable for nesting (Falconer et al. 2016).

Unoccupied burrows are typically present at active nesting colonies (Garrison 1999; Burke 2017). These burrows can remain from previous nesting seasons, result from failed excavation attempts by breeding Bank Swallow pairs, or have been abandoned by males that have not attracted a female (Garrison 1999). Mean burrow occupancy, the percentage of burrows in a colony that contain an active nest, ranges from 43 to 74% and varies annually, seasonally and by habitat characteristics (Garrison 1999; COSEWIC 2013). A recent study in Ontario (n=3205 burrows; Burke 2017) found that burrow occupancy is similar between lakeshore sites (63%) and aggregate pit sites (60%).

The presence of a nesting colony should be confirmed from the bottom of the vertical face, or otherwise in front of the face, as the occurrence and size of the colony can be easily overlooked from the top of the bank above the colony. The presence of a residence can be identified by one or more Bank Swallows entering or leaving a burrow, or the presence of young at the burrow entrance. The occupancy of a burrow can be confirmed from a single observation described above.

## **Function**

The burrow provides thermoregulation of the eggs and nestlings, and protection against predators and harsh weather (Garrison 1999; Burke 2017). From the start of burrow excavation through the beginning of egg-laying, the burrow is used for roosting by both members of the breeding pair (Garrison 1999). The nest itself forms a rudimentary platform on which the Bank Swallow can lay and incubate its eggs and raise its chicks. In Canada, clutch size averages five eggs (range 2–7 eggs; Falconer et al. 2016); eggs are mostly incubated by females (COSEWIC 2013). Both parents feed young in the nest. Young depart the nest usually at about 18–22 days of age (Garrison 1999), but the burrows are still used for roosting for up to one week after fledging (COSEWIC 2013).

Bank Swallows are highly colonial breeders (COSEWIC 2013). Colonial nesting provides protection from predators (Burke 2017) and colonies provide an indication to the species of habitat quality (Garrison 1999; COSEWIC 2013). Large numbers of adult swallows at nesting colonies can more effectively detect, mob and deter potential predators. During post-fledging dispersal, juveniles visit multiple colonies, presumably assessing the suitability of breeding sites for future years (COSEWIC 2013).

## **Period and frequency of occupancy**

In Canada, the possible period occupancy of the residence is about four months, typically from May to late August. Bank Swallows investigate many potential nesting locations, ranging over several kilometers, upon arrival on breeding grounds (Garrison 1999). Peak periods of egg-laying include the first half of June in Ontario (Peck and James 1987); in British Columbia, 55% of nests with eggs were recorded during 14–28 June (Campbell et al. 1997). Second broods may occur in Canada, but limited evidence exists (Falconer et al. 2016).

Bank Swallows exhibit fidelity rates of 55–92% to previous nesting locations (Falconer et al. 2016). The location of colony sites might change because of the ephemeral nature of nesting habitat, while various factors can make previous nesting locations unsuitable for nesting between years. Larger colonies are more likely to be found at the same location (Freer 1977; Garrison 1999) and are more frequently reused than smaller ones. At natural sites along rivers, colonies tend to be found in the same location from year to year, although may be unoccupied some years. Adults that have successfully bred in previous years often return to the same general breeding area (Falconer et al. 2016). However, adults experiencing major nest mortality events, including predation or bank collapse, do not appear to recolonize the same nesting location, although new birds may recolonize these sites in successive years (Freer 1979; Falconer et al. 2016).

Bank Swallows typically dig new burrows each year, as erosion or human activities can cause the vertical face to collapse and expose fresh material (Garrison 1999). The burrow-excavation phase usually occurs over a period of 4–5 days, but can take longer depending on the soil type and composition (Garrison 1999). If old burrows remain, some may be reused, enlarged and deepened with excavation activities that are part of pair-bond formation. Old nests are often removed from reused burrows and new nests constructed (Garrison 1999).

Under SARA, the occupied burrow is considered a residence from the date when adults are first seen entering or leaving the burrow to the date when a bird is last seen at the burrow.

### **Additional information**

For more information on the [Bank Swallow](#).

For more information on [SARA](#).

### **Recommended citation**

Please cite this document as:

Government of Canada. *Species at Risk Act Public Registry*. Residence Descriptions. Description of residence for Bank Swallow (*Riparia riparia*) in Canada. May 2019. (Access date).

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## **Acknowledgement**

T. Burke (M.Sc.) and M. Cadman (Canadian Wildlife Service, Ontario) provided valuable data and comments on Bank Swallow colony monitoring in Ontario. Data from joint work between the Ontario Ministry of Natural Resources and Forestry (M. Browning) and the Canadian Wildlife Service were used in this document.

## **Barn Swallow (*Hirundo rustica*): residence description**

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**Official title:** Description of Residence for Barn Swallow (*Hirundo rustica*) in Canada

### **Preface**

Section 33 of the *Species at Risk Act* (SARA) prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. SARA defines residence as: "a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating" [s.2(1)]. With respect to a listed wildlife species that is an aquatic species or a species of bird protected under the *Migratory Birds Convention Act, 1994*, the prohibition applies wherever the residences are found. For any other listed wildlife species, the prohibition applies automatically when the residence of the species is on federal lands and will only apply on non-federal lands if an order is made pursuant to sections 34 or 35 of SARA. Under section 97 of SARA every person who contravenes section 33 of the Act commits an offence.

A residence would be considered to be damaged or destroyed if an alteration to the residence and/or its topography, structure, geology, soil conditions, vegetation, chemical composition of air/water, surface or groundwater hydrology, micro-climate, or sound environment either temporarily or permanently impairs the function(s) of the residence of one or more individuals.

The following residence description was created for the purposes of increasing public awareness, and enhancing conservation outcomes by promoting compliance with the above prohibitions.


Under SARA, Barn Swallows have one type of residence: the nest.

Under SARA, the destruction of this migratory bird species' residence is prohibited automatically on all lands. Under certain conditions, SARA provides that permits may be issued for activities that affect a listed wildlife species, its critical habitat or residences of its individuals. SARA also provides exceptions for certain activities that relate to public safety, health or national security. The Government of Canada will work with landowners and land managers to explore options when situations concerning public health and safety arise.


### **Damage and destruction of the residence**

During the period of occupancy of the residence, any activity that damages or destroys the functions of the nest would constitute damage or destruction of the residence. These activities include, but are not limited to, moving, damaging or destroying the nest; blocking access to the nest; disturbing the nest; or any other activity that would damage or destroy the functions of the nest.



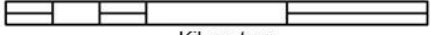

 Environment and Climate Change Canada  
 Environnement et Changement climatique Canada

**Legend**

 Barn Swallow

**WGS 1984 Web Mercator**  
**1:70,000,000**

0 750 1,500 3,000 4,500



Kilometers

© 2018. Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change  
 ESRI World Topography Map ArcGIS 10.1 © 2017

Figure 1. Known distribution of the Barn Swallow (*Hirundo rustica*) in Canada. Areas inhabited in northern extremities of the range are mostly localized to human settlements and are less continuous than depicted. Nesting may occur outside of the known current distribution; residences are protected wherever they occur.

Data Source: BirdLife International (2016)

Long description

Figure shows the Barn Swallow's breeding range in North America. The species' breeding range is shown from the northeast of the Northwest Territories to central Mexico. The breeding range also stretches from Alaska to the east coast of Newfoundland. Nesting may occur outside of the known current distribution.

## 1. Nest

### Physical appearance and context

During the period of occupancy, any Barn Swallow nest, whether occupied [Footnote 1](#) or not, is considered a residence. The half-cup-shaped nest is made of mud pellets interspersed with layers of grass stems (Brown and Brown 1999). The interior of the nest is lined with fine grass stems and other material including feathers during the egg-laying, incubation and nestling periods (Brown and Brown 1999). The nest is approximately 7.5 cm wide (front to back) x 13 cm long (right to left side) x 5 cm deep (Brown and Brown 1999). The Barn Swallow sometimes makes use of artificial nest cups and nesting platforms (Mercadante and Stanback 2011; Richardson 2013; Heagy et al. 2014). Artificial nest cups are generally made of wood (Van Vleck 2013) or plastic mesh. Mud is usually added (Bird Studies Canada 2013) and a source of mud in the vicinity of the nest site is necessary for the birds to line the interior of the artificial nest cup.

Barn Swallow nests are commonly built on human-made structures that provide either a horizontal nesting surface (such as a ledge) or a vertical face made of rough or unfinished material (e.g. concrete, wood) or with a projection of some sort to help support the nest, often with some sort of overhang (Van Vleck 2013). Barn Swallows build their nest in locations that provide shelter from inclement weather and protection from predators (Safran 2006). These structures include buildings, wharves, and bridges. Surrogate nesting structures [Footnote 2](#) generally show lower occupancy rates compared to commonly used nesting structures (Bird Studies Canada 2013).

Prior to European settlement, Barn Swallows are thought to have built nests on Indigenous Peoples' habitations, but likely predominantly used natural nesting sites, such as caves, holes, crevices and ledges associated with rocky cliff faces (Bent 1942; COSEWIC 2011). Land-use changes creating open country habitat near human-made structures suitable for nesting have likely made these sites more attractive to prospecting Barn Swallows than natural sites. A small proportion of Barn Swallows still nest in natural settings such as caves and underneath cliff ledges (Brown and Brown 1999).

The Barn Swallow will nest solitarily, but is more frequently a colonial or semi-colonial species (COSEWIC 2011). During the nesting season, birds accessing or leaving human-made structures may indicate the presence of at least one residence.

### Function

The nest forms a container in which the Barn Swallow can lay and incubate its eggs, and raise its chicks. In Canada, clutch size is generally four to five eggs in the east (Ontario: range: 1–7 eggs; Peck and James 1987), and three to five in the west (British Columbia: range 1–10 eggs; Campbell et al. 1997). Both members of the pair incubate the eggs, but females do more. Both parents feed nestlings (Brown and Brown 1999). At about 20 days (range 19–24; Campbell et al. 1997), the young fledged, but still roost in



the vicinity of the nest, returning to the nest at night for several days after fledging (Brown and Brown 1999).

Nests from previous nesting seasons appear to be an important habitat feature as a cue for yearling females selecting an initial nest site (Safran 2004, 2007; Heagy et al. 2014). Reuse of old nests allows earlier breeding, which increases reproductive success by increasing the likelihood to produce more than one brood per year (Barclay 1988; Safran 2006, 2007).

### **Period and frequency of occupancy**

The possible period of occupancy of the nest is about four months, from the beginning of May to the end of August (Brown and Brown 1999; COSEWIC 2011). Birds investigate many potential nesting sites upon arrival on breeding grounds, and construction of the nest typically begins 5 to 14 days after arrival from spring migration (COSEWIC 2011). Nest construction starts in mid-May in Ontario (Peck and James 1987), but varies geographically, starting later in the northern part of the species' range in Canada. Second broods are common in the southern part of the species' range in Canada (COSEWIC 2011). Young and adults have generally left the nest by the end of August (COSEWIC 2011).

Barn Swallows are closely tied to locations where they have nested before (Shields 1984; Brown and Brown 1999; Heagy et al. 2014; T. Imlay, pers. comm.), with up to 98% of birds returning to previous nesting locations (Bradley et al. 2014; M. Cadman, pers. comm.). Fidelity to nesting locations appears to be greater than fidelity to specific nests (Shields 1984). Studies conducted over short periods (2–3 years) found that 28% of nests were reused during the study (T. Imlay, unpubl. data), 45% of active nests had been used previously (Barclay 1988), and 56% of nests used one year were reused during the next nesting season (Samuel 1971). Longer-term studies (5–11 years) found that 82% of breeding pairs had used an old nest (Safran 2006) and that 82% of active nests had been used in previous years (M. Cadman, pers. comm.). Breeding Barn Swallows might not reuse the same nest in two consecutive years, but will generally reuse another nest found in the same colony (within the nesting location). Despite the likelihood of reuse of old nests between years, the same individuals generally do not reuse the same nest from year to year.

Upon arrival on breeding grounds, Barn Swallows investigate potential nesting sites, often where old nests from previous years are found (Brown and Brown 1999). Birds evaluate the presence of parasites at old nests and avoid heavily parasitized ones (Barclay 1988; Brown and Brown 1999). Barn Swallow nests persist for many years and are frequently reused within a breeding season for a second brood and in subsequent years (Barclay 1988; Safran 2006; Heagy et al. 2014), although they might remain unused during one year and be reused the following year (M. Cadman, pers. comm.).

Under SARA, the nest, occupied or not, is considered a residence:

- in provinces: from May 1<sup>st</sup> or the date when adults are first seen building or occupying the nest, whichever is earlier, to August 31<sup>st</sup> or the date when a bird is last seen at the nest, whichever is later
- in territories: from May 15<sup>th</sup> or the date when adults are first seen building or occupying the nest, whichever is earlier, to August 31<sup>st</sup> or the date when a bird is last seen at the nest, whichever is later

### **Additional information**

For more information on the [Barn Swallow](#).

For more information on [SARA](#).

### **Recommended citation**

Please cite this document as:

Government of Canada. Species at Risk Act Public Registry. Residence Descriptions. Description of residence for Barn Swallow (*Hirundo rustica*) in Canada. May 2019. (Access date).

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## Acknowledgement

T. Imlay (Ph.D.) and M. Cadman (Canadian Wildlife Service, Ontario) provided valuable data and comments on the reuse of nests by Barn Swallows.

## Footnotes

### Footnote 1

[Return to footnote1 Referrer](#)

Occupied is defined as the presence of one or more adult, young or viable egg.

**Footnote 2**

[Return to footnote2 Referrer](#)

Structures built for the purpose of replacing existing or previously occupied nesting sites that are removed or modified.

## Birds and Oil - CWS Response Plan Guidance

In all circumstances where a polluter is identified the burden of cleanup and response lies with the polluter. However, responsibility for government overview of a response to an oil spill depends on the source of the spill. The identified **lead agency** has responsibility to monitor an oil spill response and to take control if an appropriate response is not undertaken by a polluter or their agent.

Lead agency responsibilities lie with:

- **Environment and Climate Change Canada**
  - For spills and incidents on federal lands and from federal vessels.
  - Potentially for land-based incidents in waters frequented by fish.
  - May take lead if environment is not being protected by other leads, Cabinet Directive 1973.
- **Canadian Coast Guard**
  - For spills from ships.
  - All spills of unknown sources in marine environment.
- **Provincial Department of Environment**
  - For spills from land-based sources.
- **Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and Canada-Nova Scotia Offshore Petroleum Board (C-NSOPB)**
  - For spills related to offshore oil and gas exploration and production.
- **Transport Canada**
  - To investigate ship source and mystery spills in the marine environment.

The Canadian Wildlife Service of Environment and Climate Change Canada (ECCC-CWS) has the responsibility for licensing activities which involve the handling or disturbance of birds, and of providing advice and often direction to other agencies, responders and the polluter during oil spill incidents.

### 1. Hazing<sup>1</sup>

*Purpose:* Prevent birds from coming in contact with oil

*Options:*

- Hazing by helicopter.
- Hazing by a fast response cutter (FRC) or other watercraft.
- Release of scare devices (e.g. Breco Buoys, Phoenix Wailer).
- Use of hazing sound makers: propane cannons, whizzers, bangers, pyrotechnic devices etc.

Scare devices have a limited range of influence and likely are not a viable option with a large slick. Use of Breco Buoys and Phoenix Wailers can be used but we consider them to be largely ineffective in the situation of a large slick. Logistically, helicopter hazing would be

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<sup>1</sup> There are several scare techniques which may be effective and do not require a permit, however a permit under the Migratory Bird Regulations **is required** for the use of aircraft or firearms (defined as capable of emitting at projectile at more than 495 feet per second). Propane cannons, blank pistols or pyrotechnical pistols firing crackers shells with **less than 495fps are legal without a permit**. Most scare tactics are relatively short lived in terms of effectiveness as birds acclimatize to the disturbance so scare techniques should be alternated to be effective.

difficult unless it was possible for a helicopter to remain on a platform offshore overnight. Hazing by FRC or other vessels would be ideal.

Short-term focused hazing by the most expedient means should be attempted to move the birds away from the slick, if logistical conditions permit. Vessels at the site should have the ability to use sound makers (propane canons, pyrotechnic devices) to disperse birds in local areas. Such equipment should be deployed immediately to these ships with trained personnel to operate them. The vessels on site should be tasked to actively search and monitor for congregations of birds which could be vulnerable to oiling. If such groups are found then attempts should be made to disperse the birds away from the oil.

## **2. Disperse oil**

*Purpose:* Prevent birds from contacting oil by getting oil off the surface of the water as soon as possible.

*Options:*

- Dispersants.
- Mechanical dispersal with FRCs or other vessels.
- Natural dispersal by environmental conditions.

For small spills, mechanical dispersal would be the preferred method.

## **3. Bird Collection<sup>2</sup>**

*Purpose:* Implement a humane response to oiled birds as required by Environment and Climate Change Canada's National Policy on Oiled Birds and Oiled Species at Risk.

*Options:*

- The only option would be a ship-based effort to detect and collect dead and live oiled birds, both within the slick and adjacent to it.

All vessels in or near the slick should understand the need to collect birds. All vessels should have dip-nets, large plastic collecting bags to hold dead birds, and cloth bags or cardboard boxes in which to hold live oiled birds. Efforts should be made to retrieve live oiled birds to ensure they are dealt with humanely.

## **4. Wildlife monitoring**

*Purpose:* Determine potential impact of spill.

*Options:*

- Ship-based surveys for oiled and unoiled wildlife.
- Aerial surveys for oiled and unoiled wildlife. Will require structured surveys (e.g. strip or transect surveys of spill area).
- Placement of ECCC-CWS staff on vessels and aircraft.

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<sup>2</sup> Only those individuals authorized to do so (nominee on an existing federal permit issued under the Migratory Bird Regulations) can be involved with the collection of migratory birds.

Dedicated ship-based bird surveys should be initiated immediately. Ideally arrangements should be made to have a ECCC-CWS observer on vessels or flights. In addition trained seabird observers need to be placed on all vessels monitoring a slick. This should continue until the slick is dispersed.

## 5. Beached Bird Surveys

*Purpose:* Determine impact of spill on wildlife and retrieve any live oiled wildlife on beaches.

*Options:*

- Conduct daily beached bird surveys during the incident and until one week after slick has been removed or dissipated.

ECCC-CWS or other government officials (CCG, Enforcement Officers) will oversee the collection of dead and live oiled birds<sup>3</sup> as instructed in ECCC-CWS' protocol for collecting birds during an oil spill response. This would only be required in circumstances where a large number of birds are potentially oiled or if the spill occurs in a sensitive area.

## 6. Drift Blocks

*Purpose:* Drift blocks may be deployed in slick to provide an estimate of bird mortality.

*Options:*

- Release from vessel.
- Release from aircraft.

The deployment of drift blocks would only be expected if there was a large spill and blocks should be released as soon as possible after a spill (ECCC-CWS should be consulted to determine protocol for drift block deployment and tracking). The polluter or their agent would be expected to ensure drift blocks are tracked and collected as appropriate.

## 7. Live oiled bird response<sup>3</sup>

*Purpose:* Implement a humane response to oiled birds as required by Environment and Climate Change Canada's National Policy On Oiled Birds And Oiled Species at Risk.

*Options:*

- Rehabilitation.
- Euthanization.

ECCC-CWS will be consulted to determine the appropriate response and treatment strategies which may include cleaning and rehabilitation or euthanization. ECCC-CWS policy specifically requires that species at risk or other species of concern be rehabilitated.

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<sup>3</sup> Only those individuals authorized to do so (nominee on an existing federal permit issued under the Migratory Bird Regulations) can be involved with the collection of migratory birds.

## **Environment**

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Date: April 02, 2020

To: Bridget Tutty, Nova Scotia Environment

From: Wetland & Water Resources Specialist, Water Resources Management Unit

Subject: Gabarus Quarry Expansion Project: Environmental Assessment Registration -  
Wetlands

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### **Scope of Review:**

The following review of the Gabarus Quarry Expansion Project Environmental Assessment Registration (Dexter Construction Company Limited, February 2020) is specific to the mandate of the NSE Wetlands Program within the Sustainability and Applied Sciences (SAS) Division. The review considers whether the environmental concerns associated with wetlands and the proposed mitigation measures to be applied have been adequately addressed within the Environmental Assessment. The recommendations provided below are meant to supplement the actions outlined in the EA submission documents.

### **Reviewed Documents:**

- H2O GEO Environmental Services Inc. 2020. *Registration Document for a Class 1 Undertaking Under Section 9 (1) of the Nova Scotia Environmental Assessment Regulations. Gabarus Quarry Expansion, Gabarus Lake, Cape Breton Regional Municipality, Nova Scotia.* Dexter Construction Company Limited.

### **General Comments:**

#### *Summary of Findings:*

- 3 wetlands, comprising 2.74 ha of total area have been identified within the study area.
  - WL 1 (2.61 ha): Fen / Riparian Swamp / Slope Swamp/ Flat Swamp Complex
  - WL 2 (0.09 ha): Remnant Sphagnum Swamp
  - WL 3 (0.04 ha): Disturbed Marsh / Open Marsh to Fen
- It is indicated that up to 0.9 ha (0.7 ha in NW and 0.2 in NE) of wetland habitat could be removed by the Project works.



#### *Wetland Identification:*

- While the vegetation of the wetlands was well-described in text form, there was no indication provided as to the methodology used for in-field wetland delineation, and whether these methodologies are acceptable to NSE.
- There was no summary provided of delineation findings documented in the field. For example, delineation data forms, or a summary table of key vegetation/soils/hydrology indicators.
- It is unclear from the information provided in the EA whether boundaries were actually delineated on the ground or not.
- No functional assessment results (WESP-AC or NovaWET) were indicated in the EA.

#### *Mitigation and Monitoring:*

- Details on proposed on-site mitigation measures specific to the protection of remaining portions of wetlands are not provided in the EA.
- While it is indicated in the EA that monitoring will be conducted for surface and groundwater in accordance with the *Pit and Quarry Guidelines* under the *Environment Act*, there is no reference made to wetland monitoring.

#### **Conclusions & Recommendations:**

Beyond the estimates of wetland area removal, there is insufficient information provided in the EA Registration to predict whether adverse environmental effects on wetland function will occur. A series of recommendations are provided below.

#### *Planning/Design Issues:*

- The proponent should prepare and submit a *Wetland Management and Monitoring Plan* for NSE's review and acceptance. This plan should be developed in consultation with the NSE Wetland Specialist. This document should include:
  - Details and designs on proposed on-site mitigation measures specific to the protection of remaining portions of wetlands, including measures for sediment and erosion control, vegetation management, stormwater management, and water quality management.
  - A detailed monitoring plan for remaining portions of wetlands. Wetland monitoring efforts should include integration of surface water and groundwater monitoring data wherever appropriate.
  - An Adaptive Management framework related to wetlands.

#### *Operational Issues/Other Permitting Processes:*

- The Project will be subject to the NSE Wetland Alteration Approvals process prior to any Project activities involving wetland removal.
- The points of deficiency related to 'Wetland Identification' above should be addressed during Wetland Alteration Approvals process.
- The proponent should conduct a functional assessment of all on-site wetlands to be altered using the Wetland Ecosystems Services Protocol for Atlantic Canada (WESP-AC).
- The NSE-approved *Wetland Management and Monitoring Plan* should be a key piece of supporting information for this application package.

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Date: April 2, 2020

To: Bridget Tutty, Nova Scotia Environment

From: Acting Coordinator Special Places, Culture and Heritage Development

Subject: Gabarus Quarry Expansion

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Staff of the Department of Communities, Culture and Heritage has reviewed the Gabarus Quarry Expansion EA documents and have provided the following comments:

***Archaeology***

Staff reviewed the sections of the EA document pertaining to archaeology and have no archaeological concerns. The archaeology sections within the document align with the results and recommendations highlighted in the Archaeological Resource Impact Assessment report for the project area completed by CRM Group.

***Botany***

Staff reviewed the sections of the EA document pertaining to botany and provided the following comments:

There are no concerns regarding plant and lichen Species at Risk and Species of Concern, and the general terrestrial plant communities for the project area. Regarding greenhouse gas emissions and mitigation, there is little to no consideration in the EA document beyond stating that quarry activities “have the potential” to generate them at a similar rate to the present operation, and that the proponent will employ “Best Management Practices” (no reference provided) to manage them. More information should be provided on what emissions can be typically expected, how the company plans to reduce them, and what additional mitigation or sequestration activities will be employed (e.g., tree planting and progressive revegetation of unused sections, investment in carbon offsets, etc.).

***Palaeontology***

Staff have reviewed the sections of the EA document pertaining to palaeontology and geology, no issues with fossil heritage resources in the surficial or bedrock geology of the area are

anticipated.

***Zoology***

No CCH staff were available to review the sections relating to zoology.

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**Date:** April 2, 2020  
**To:** Department of Environment  
**From:** Department of Municipal Affairs & Housing  
**Subject:** **GABARUS QUARRY EXPANSION (DEXTER CONSTRUCTION)**

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As requested, the Department of Municipal Affairs and Housing has reviewed the Registration Document for the Environmental Assessment of the Gabarus Quarry Expansion.

Since consultation with municipalities is one of the Department's areas of mandate, we would like to ensure that the proponent continues to undertake adequate consultation with the Cape Breton Regional Municipality in order to confirm conditions for compliance with municipal planning policies and by-law provisions.

Thank you for the opportunity to review the Registration Documents for the above-noted project. Should you require additional information, please contact the Department.



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Date: April 2, 2020

To: Bridget Tutty, Environmental Assessment Officer

From: Lynsey Crowell, Regulatory Review Biologist, Fish and Fish Habitat Protection Program, Ecosystem Management

Subject: Gabarus Lake Quarry Expansion Project

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Dear Bridget Tutty:

Fisheries and Oceans Canada (DFO), Fish and Fish Habitat Protection Program (FFHPP) received the Nova Scotia Environmental Assessment registration document submitted for the Gabarus Lake Quarry Expansion Project in Cape Breton County. The project is to expand on an existing quarry that is currently under 4ha to a total 13 ha area over a 20-40 year period. Quarry operations are anticipated to remain the same, with periodic seasonal operations within the months of April to December.

The study area is bordered by an unnamed stream to the north, and a 2<sup>nd</sup> unnamed stream to the immediate south beyond the Grand Mira Gabarus Road. Both streams feed into Gabarus Lake with no additional watercourses identified within the study area. Multiple wetlands were identified within the study area, located primarily towards the north and east of the site. The quarry floor drains east, discharging into a natural wetland complex, with no additional sedimentation controls onsite.

DFO-FFHPP is responsible for administering the fisheries protection provisions of the *Fisheries Act* (FA) and the *Species at Risk Act* (SARA) for aquatic species at risk. The fisheries protection provisions of the FA includes section 35 which prohibits the harmful alteration, disruption, or destruction (HADD) of fish habitat and section 34.4 which prohibits the death of fish by means other than fishing. SARA prohibits the killing, harming, harassment, possession, capturing or taking of a species listed as extirpated, endangered or threatened; the damage or destruction of a residence or the destruction of any part of the critical habitat of such a listed species, unless authorized by the minister.

Below you will find the comments from DFO - FFHPP regarding the above mentioned project:

- When field work was completed, Brook trout were found within the unnamed streams during. It is suspected that Rainbow trout, Brown trout, Atlantic salmon,

Rainbow smelt, Sticklebacks, American eel, Alewife, Striped bass, and Atlantic sturgeon may use the unnamed streams, tributaries to Gabarus Lake, as spawning, nursery, and rearing habitat.

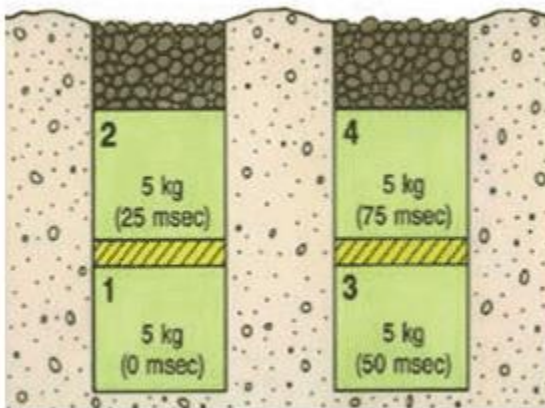
- The project involves the removal of up to 0.9 ha of wetlands within the expansion area. Wetland 1 and 3 appear to be contiguous with fish bearing waters; as such, the wetlands are assumed to support fish life cycle processes. Any direct or indirect impacts on Wetland 1 and 3 will have to be adequately assessed to ensure that HADD does not occur.
- Due to the potential habitat functions supported by the unnamed streams and wetlands, this habitat may be considered important to support the life cycle processes of multiple fish species. As such, the proponent must ensure that the undertaking does not cause a harmful alteration, disruption or destruction of fish habitat. The information in the report does not adequately assess the potential for HADD to occur nor does it provides sufficient mitigation to ensure that a HADD will not occur.
- A water balance was not completed to determine the potential impacts of the quarry activity may have on nearby fish habitat. As per section 7.4.3 of the report, the quarry expansion will result in slightly altered flow conditions in the tributary stream passing north of the site. This alteration has not been adequately assessed to determine the potential impacts on fish and fish habitat within the unnamed streams and wetlands.
- Any indirect impacts associated with the quarry expansion that may result in either the reduction or increase in surface water flow could result in the requirement for a FA authorization from DFO.
- The current project design has no sedimentation control plans. Existing wetlands have been altered to provide some filtration but the report lacks a plan to address future considerations of sediment on the wetlands, potentially impacting the fish and fish habitat. Note, that under section 36(3) of the FA, no person shall deposit or permit the deposit of deleterious substance in any water frequented by fish or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.
- The report references a drainage management system, details including its location, design, maintenance and operation was not provided in the report.
- Overall, the assessment provided does not adequately demonstrate how the proponent will protect fish, fish habitat, and its functions.

## BLASTING

- Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.

- If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:
  - Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries [timing windows](#).
  - Isolate the work site to exclude fish from within the blast area by using, for example, bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
  - Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
  - Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
  - Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
  - Place blasting mats over top of holes to minimize scattering of blast debris around the area.
  - Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
  - Remove all blasting debris and other associated equipment/products from the blast area.

*Figure 1: sample blasting arrangement*



Per Fig. 1: 20 kg total weight of charge; 25 msec delay between charges and blast holes; and decking of charges within holes.





## Tutty, Bridget R

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**To:** Rideout, Bill E  
**Subject:** RE: Gabarus Quarry Expansion EA Reminder

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**From:** Rideout, Bill E <Bill.Rideout@novascotia.ca>  
**Sent:** April 2, 2020 9:57 AM  
**To:** Tutty, Bridget R <Bridget.Tutty@novascotia.ca>  
**Cc:** Kempkens, Daniela <Daniela.Kempkens@nshealth.ca>  
**Subject:** RE: Gabarus Quarry Expansion EA Reminder

Hi Bridget,

I reviewed the above-noted EA in consultation with the Regional MOH.

Provided best management practices are implemented, and compliance with NSE's Industrial Approval is achieved and maintained throughout the life of the quarry, impacts to public health are deemed to be negligible.

Thank you,

Bill Rideout  
Environmental Health Consultant  
NS Environment

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Date: April 4, 2020  
To: Bridget Tutty, Nova Scotia Environment  
From: Nova Scotia Office of Aboriginal Affairs  
Subject: Gabarus Quarry Expansion Project

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The Nova Scotia Office of Aboriginal Affairs (OAA) has reviewed the Environmental Assessment Registration Document for the proposed Gabarus Lake Quarry Expansion Project, submitted by Dexter Construction Company Ltd. on March 3, 2020. The following review considers whether the information provided will assist the Province in assessing the potential of the proposed project to adversely impact established and/or asserted Mi'kmaq Aboriginal and Treaty rights.

### **Section 6.2.5 Fish and Fish Habitat**

Section 6.2.5 states that streams or other surface waters which could support fish, occur along the northern boundary and southeast of the EA study area. Both surface and groundwater discharge originating from the quarry may contribute to flows in the unnamed stream north of the site and in a tributary that passes the quarry to the south, but there are no direct surface water connections from the quarry to these areas. This section further states that the unnamed stream passing along the northeastern margin of the study area potentially provides habitat for fish. The stream potentially provides acceptable nursery habitat for salmonids and could contain juveniles of various species which occur in the Gabarus Lake area, including Brook Trout, Rainbow Trout and Brown Trout; including Atlantic salmon (*Salmo salar*); Rainbow Smelt; Sticklebacks (Three-spine, Four-spine and Nine-spine); and American Eel.

The Mi'kmaq of Nova Scotia continue to rely on fish for Food, Social, and Ceremonial (FSC) purposes and to provide a moderate livelihood. As such, potential impacts to fish and fish habitat may potentially have an adverse impact to Aboriginal and Treaty rights. Additional information should be provided on the potential for surface water runoff to impact fish and fish habitat. Additionally, surface and groundwater monitoring programs should be incorporated into the terms and conditions of the EA Approval, or subsequent Part V Approvals, if approved, to monitor water quality.

### **6.2.7 Mammals**

### **6.3.5 Hunting and Trapping**

Section 6.2.7 states that moose and Canada Lynx (the latter provincially listed as Endangered) are known to occur in the general area of the Study Site. Section 6.3.5 further states that moose are an important contributor to the hunting economy for the Mi'kmaq, however the eastern region of Cape Breton, including Cape Breton County, is

not zoned for moose hunting.

Although Moose hunting activities do not occur in the eastern region of Cape Breton, Moose are a culturally important species to the Mi'kmaq of Nova Scotia. As such, additional information should be provided to determine the potential of Moose presence in the Study Area and the potential for the project to impact Moose and Moose habitat.

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Date: April 2, 2020

To: Bridget Tutty  
Environmental Assessment Officer

Cc: Manager, Water Resources Management Unit

From: Senior Hydrogeologist, Sustainability and Applied Science Division

Subject: Gabarus Quarry Expansion Project

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Environmental Assessment (EA) reviews from the NSE Sustainability and Applied Science Division Senior Hydrogeologist focus primarily on groundwater resources. This includes the potential for the proposed undertaking/project to adversely affect groundwater resources, including general groundwater quality, quantity, municipal water supplies, local water supply wells and groundwater contributions to stream baseflow, groundwater recharge and wetlands. The review is conducted of materials provided by the proponent during the EA registration process. Any recommendations made are based on this review.

Dexter Construction Company Limited (Dexter) of Bedford, Nova Scotia proposes to expand an existing <4 Ha aggregate quarry located at 605 Grand Mira Gabarus Road, Gabarus Lake, Cape Breton Regional Municipality (CBRM), Nova Scotia. The quarry property is located on private land leased to Dexter at 605 Grand Mira Gabarus Road (PID #'s 15852478 and 15351539) in Gabarus Lake, CBRM, Nova Scotia. The proposed 13-hectare quarry permit area covers approximately 5 hectares of PID 15852478 and approximately 8 hectares of PID 15351539.

Dexter intends to expand the existing Gabarus quarry for the continuing purpose of extracting and supplying aggregate for the local construction industry. The existing quarry has been in operation for approximately 25 years and is currently operating under a NSE Industrial Approval (2014088454-01) for a less than four hectare quarry. The scope of this application is for expansion of the existing quarry to a 13.0 hectare permit area.

Currently, the existing active area at the Gabarus quarry includes on-site related facilities including a scale house as well as a staging area for a portable asphalt plant, portable crushing spread, and stockpiling areas. Dexter has a current development agreement with CBRM which allows for the placement and use of the asphalt plant on the property.

The Project includes overburden removal where necessary, bedrock drilling, blasting, hauling, crushing, trucking/transport, on-site fueling activity, on-site surface water

management and eventual decommissioning and rehabilitation of the site. In addition, a portable NSE approved asphalt plant is occasionally situated on the property. The operation is intended for the production of aggregate, primarily to be used in the road and local construction industry

## **Comments**

The Gabarus Quarry Expansion Project documentation states that the proposed expansion area is estimated to be from <4 Ha to 13 ha. It is anticipated that future development will involve the production of approximately 25,000 to 50,000 tonnes of aggregate per year, for a period of approximately 20 to 40 years.

- The location of the undertaking is not within a municipal drinking water Source Water Protection zone, drinking water Watershed or Wellfield Protection Area (WHPA) or a regulated Protected Water Area. The nearest Protected Water Area is the North Sydney Protected Water Area (Pottle Lake) which is about 40 km north of the site. In addition, the Kelly Lake Municipal Drinking Water Watershed is located about 15 km to the northeast of the site and is the source water area for the Town of Louisbourg, NS.
- The nearest Public Registered Drinking Water Supply is about 12 km north of the project site at the Two Rivers Wildlife Park, 4581 Grand Mira North Road.
- The Nova Scotia Environment Well Logs Database (WLB) (as accessed through the Natural Resources Nova Scotia Groundwater Atlas interactive map) locates 4 drilled water wells within about a 2 km radius of the middle of the project area.

However, it has been noted previously that the Well Logs Database Records and any mapping based on these records need to be considered in terms of locational errors/accuracy of the original data. In addition, the Well Logs Database does not contain a complete listing of every water supply well in the province and some areas may contain water supply wells not reported. Field truthing and field surveys for actual water supply well locations would be needed for verification.

- In the Registration Document it is noted that both drilled and dug wells are used as drinking water sources in the Gabarus Lake area. There it is stated that two homes, which would use groundwater wells, are located within 1 km of the study area. This includes one of which is a drilled well belonging to the residents of 769 Grand Mira Gabarus Road (800 metres from site). The other property likely serviced by a well is located 600 metres from the site (727/733 Grand Mira Gabarus Road)
- Based on visual mapping and location of structures, it appears that there are approximately another 10-12 residences within about 2 km of the current quarry site. However, most of these are located along the shores of Gabarus Lake, and do not have associated water well records in the database for their location.

- The registration document notes the following: “It is important to note that aggregate excavation will not take place below the current quarry floor elevation and therefore will not intercept the deep bedrock water table. In addition, there will be no pumping of groundwater and therefore no dewatering of associated bedrock aquifer.” (p. 16). However, actual current and projected excavation elevations to confirm these plans could not be located in the document.
- Similarly on page 25: “The actual depth of the bedrock water table at the quarry site is not known, but it has not been encountered during previous quarry operations, and it is not anticipated that the quarry expansion will reach the bedrock water table.” Any change to this intent would require additional Departmental review and approval.
- The proponent states “the quarry floor will continue to add recharge in approximately the same amount as at present, although the response time in influencing groundwater flow would be shorter and the flows would be more sudden; overall, the effect on overall groundwater flow patterns will be negligible.” (p. 67)
- In general, if not intersecting the water table, the groundwater in the quarry area should likely remain similar to the present and groundwater dewatering effects on downgradient wells would likely not occur due to the quarry excavation alone. Changes in groundwater recharge due to changed quarry floor infiltration could still have some effects on reduced flows in nearby watercourses and wetlands. This aspect is not fully discussed in the document. The only way to determine these potential effects is to put in place appropriate monitoring. In addition, planning should be conducted for appropriate mitigation measures.
- The potential for Acid Rock Drainage (ARD) from the quarry was evaluated in the registration document (p.15 and Appendix C). Based on one rock sample and geological mapping the proponent determined the quarry rock is not acid producing. The proponent states “Quarry rock is within acceptable limits for sulphur and acid-generating potential” (p. 68)
- The registration document notes that a groundwater monitoring program to assess groundwater levels, quality and flow conditions would be implemented, according to NSE standards (p.67 and pp.70-71). This is necessary information to obtain to predict and avoid excavation below the water table, as well as to avoid adverse effects to groundwater potentially caused by quarry operations. Such a monitoring program would need to be designed and installed by a professional hydrogeologist (P.Geo or P.Eng) licensed to practice in Nova Scotia.
- Although not specifically noted, a baseline water survey for residential water supply wells within 1 km of the proposed Quarry Development area (ie. operational water wells at 769/727/733 Grand Mira Gabarus Road) is recommended to provide useful pre-construction water well and water quality data for contingency purposes, prior to quarry expansion.
- Pre-blast surveys of all water well supplies within 800 metres of the blast site/quarry should be a requirement. Well locations, well construction conditions, water levels,

yield and water quality tests (including bacteria, general chemistry and metals) should be included in the survey.

- It is noted in Section 7 Valued Environmental Components (VECs) that Groundwater is considered a VEC (p.62). The document states that “The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in the following and are summarized in Tables 9 and 10.” However, Tables 9 and 10 are not included in the documentation and thus these tables could not be evaluated.
- The quarry operations are likely to result in direct removal of several wetlands (Figure 37, p. 28). However, in addition, quarrying activities may also alter shallow groundwater conditions immediately adjacent to remaining wetlands and these changes could have a potential adverse effect to flows in these wetlands and watercourses.

## **Recommendations**

The following recommendations are suggested based on the proposed Gillis Lake Quarry Expansion groundwater effects environmental assessment review:

### **Planning/Design Issues of Significant Importance**

None identified.

### **Operational Issues/Other Permitting Processes**

1. It is recommended that an industry-standard permanent monitoring well network be established on the site prior to further quarry development, if approved, to assess the water table location, groundwater flow directions, baseline (and background) water quality and to monitor for downgradient water quality and quantity effects, including the effects of groundwater recharge and groundwater-surface water interactions on nearby watercourses and wetlands.
2. It is recommended that all groundwater monitoring program design, installation and assessment work be prepared by a professional hydrogeologist (P.Geo or P.Eng) and submitted to the Department for review prior to acceptance.
3. A baseline water survey of residential water supply wells within 1 km of the Quarry Expansion area is recommended prior to the quarry development.
4. Pre-blast surveys of all water well supplies within 800 metres of the blast site/quarry should be a requirement. Well locations, well construction conditions, water levels, yield and water quality tests (including bacteria, general chemistry and metals) should be included in the survey.
5. Should excavation within 1 metre of the measured maximum annual water table level, or

below, be desired the proponent will need to provide additional information on potential effects and mitigation assessment and obtain an approval amendment.

6. It is recommended that standard precautionary statements be provided in any approval terms and conditions that state, to the effect, that “the Proponent should replace or repair any water supply well found to be adversely affected by their quarry operation to the satisfaction of the well owner”.

### **Other Observations**

There are undetermined, potential affects of altering the shallow groundwater regime in the vicinity of wetlands/watercourses, both on-site and off-site. The potential importance of this has not been fully evaluated in the registration document, but instead is minimized. Planning for potential adverse effects of reduced groundwater flows to wetlands and watercourses, including prevention and mitigation measures, is recommended.



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Date: April 1, 2020  
To: Nova Scotia Environment  
From: The Department of Business  
Subject: Gabarus Quarry Expansion Project

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The mandate of the Department of Business (DOB) is to lead and align provincial government efforts behind a common agenda for inclusive economic growth. This mandate focuses on strategic priorities and opportunities that encourage Nova Scotia's innovation, competitiveness, entrepreneurship, and export orientation.

Fulfilling this mandate involves working collaboratively with our Crown corporations (Develop Nova Scotia, Halifax Convention Centre Corporation (Events East Group), Innovacorp, Invest Nova Scotia, Nova Scotia Business Inc. and Tourism Nova Scotia), key partners in other levels of government, entrepreneurs, large businesses, post-secondary institutions, venture capital investors and Nova Scotians.

After reviewing the Gabarus Quarry Expansion Project Environmental Assessment Registration Document, the proposed project was deemed to be consistent with the mandate of the Department of Business.



## Lands and Forestry

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### MEMORANDUM

**TO:** Bridget Tutty, NS Department of Environment  
**FROM:** Department of Lands and Forestry  
**DATE:** April 2, 2020  
**RE:** Gabarus Quarry Project EA Comments

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The Department of Lands and Forestry (herein the Department) provides the following comments on the above project:

#### **Crown Lands:**

This project would not require approvals/permits/authorities from the Land Administration Division.

#### **Wildlife, Wildlife Habitat and Species-at-Risk:**

The Department has the following concerns:

1. The proposed mitigation measures in relation to flora and fauna and Species-at-Risk (SAR) lack clarity. A Wildlife Management Plan must be developed as outlined below to clearly frame mitigation measures for biodiversity, wildlife and species-at-risk.
2. The EA Registration Document and Biophysical Assessment Report does not convey that the proponent has an adequate understanding of the applicable acts, legislation and regulations (*i.e. Nova Scotia Wildlife Act and Migratory Birds Convention Act*) that along with the *Nova Scotia Endangered Species Act*, and federal *Species at Risk Act* justify the need for and importance of wildlife surveys and appropriate mitigation proposed to ensure avoidance of contraventions under these acts within the EA process.
3. The methodologies for bird and owl surveys lack specific information to justify that surveys were conducted under the right time of day, appropriate location, environmental conditions and following a known protocol.

#### 4. Section 6.2.9 Species at Risk (EA Registration Document):

Figure 32 depicts that lichen surveys were not required as there was no modelled Boreal Felt Lichen (BFL) habitat within 500 m of the centroid of the project. The At-Risk Lichen Special Management Practice requires surveys be completed for At-Risk Lichen if modelled habitat occurs within 100 m of **the disturbance footprint** < [https://novascotia.ca/natr/wildlife/habitats/terrestrial/pdf/SMP\\_BFL\\_At-Risk-Lichens.pdf](https://novascotia.ca/natr/wildlife/habitats/terrestrial/pdf/SMP_BFL_At-Risk-Lichens.pdf) > Thus, the figure presented here gives an inaccurate representation of the distance of the modelled lichen BFL habitat from the project area. The EA reports that no suitable modelled BFL habitat is found within 1 km of the study site. However, modelled habitat is present <500 m from the NW corner to the proposed Expansion Area. This should be noted for future EAs or expansions as detailed lichen surveys may be required.

The Department offers the following recommendations for consideration as conditions for project approval:

1. The proponent will provide the Department's Wildlife Division, with GIS shapefiles showing the location of:
  - all flora and fauna surveys
  - all S1, S2, S3 species recorded in surveys
  - all species listed under NS Endangered Species Act and SARA recorded in the project area.

All digital data should be sent to Nova Scotia Environment where it will be forwarded to the Department's Wildlife Division to ensure entry in provincial databases.

2. The methodologies for bird and owl surveys lack specific information to demonstrate that surveys were conducted under the appropriate conditions, at the right time of day, and at locations that reflect suitable habitat types. **The protocol for surveys should be provided to the Department for review so that it can determine if additional surveys will be required prior to work commencing at the site.**
3. The northwest corner of the Expansion area doesn't appear to be adequately covered by bird surveys. **The Department recommends that the proponent provide the Department with the rationale to explain why surveys were not completed in this area so that it can determine if additional surveys will be required prior to work commencing at the site.**
4. Preparation of a Wildlife Management Plan (WMP) is required to clearly outline the mitigation measures to protect flora and fauna listed as sensitive or at risk. **The WMP must be developed in consultation with Wildlife Division, Department of Lands and Forestry and be approved by the Department and NSE before any work commences at the site.** The WMP should include:

- a) Effective management responses and procedures for what to do when a species at risk or a species of conservation concern (SOCC) is found within the approved operational area.
- b) Establish a clear communications procedure for reporting observations of SAR and SOCC species and unexpected observations on site to project managers and to Wildlife Division, Department of Lands and Forestry.
- c) Clearly outline the mitigation measures and the timing window for clearing to protect all species of migratory, SOCC (S1, S2 and S3), and SAR birds, their nests and eggs for species recorded on site or with potential habitat on site. Generally clearing should be avoided from 15 April – 31 August for passerines. However, mitigation to avoid the raptor and owl breeding and nesting seasons, which occur earlier, should also be addressed. It is the responsibility of the proponent to ensure compliance with federal and provincial legislation and regulations regarding resident, migratory, and at-risk bird species and their habitats (e.g. *Species at Risk Act*, *Canadian Migratory Bird Convention Act*, *Fisheries Act*, *NS Endangered Species Act*, *NS Wildlife Act*, and their regulations).
- d) The WMP should include mitigation measures and management actions should an individual snapping or wood turtle or their nests be found on site. Although these species have a limited potential to occur on site, both are attracted to quarries for nesting and thus quarry operations pose key threats for these species during the nesting season.
- e) Provide a clear procedure to avoid creating nesting habitat for Bank Swallows and Common Nighthawks and an approach for inspecting, and protecting nests, should they be encountered during operations.
- f) *Section 6.2.7 Mammal* states that the ACCDC 2018 report indicates that both Little and Northern Myotis had the potential to occur in the vicinity of the project, while *Section (6.2.9)* indicates the same report had no records within 5 km. **The Department recommends the proponent provide additional information to clarify if SAR bats were given the proper consideration in the EA. If there is a potential for bats to be impacted by the proposed works, the appropriate mitigation measures must be included in the Wildlife Management Plan.**
- g) A clear approach for providing training and identification information in the form of photos and descriptions of SAR species and sensitive habitat features (e.g. raptor nests) to personnel working on site and the procedures to follow should SOCC or SAR species be encountered on site. (For example, Common Nighthawk nests are difficult to find due to their ability to blend into the substrate. The WMP must provide detail on how the proponent will ensure that site personnel are adequately trained on identification and behaviours to look for in order to ensure incidental take of nests are avoided. Procedures to follow should a nest be found would include actions such as halting work, establishing a buffer setback, and notification and consultation of Department of Lands and Forestry staff.)

- h) A plan for providing human-wildlife conflict training to avoid bear and coyote interactions and measures to be taken should an encounter occur. The plan should include measures to mitigate attracting other nuisance wildlife to the site.
- i) Approaches to monitor and control the incursion of invasive species of plants within the operational areas approved for this project. The proponent should undertake periodic inventory of the approved area every three years to identify any new non-native plants within the Project Footprint (i.e. not reported in the baseline vegetation survey). If any new non-native species are found, the proponent must report these to the Department and consult on any corrective actions required.
- j) Vegetation in sensitive habitats (i.e. wetlands) should be monitored on an annual basis. If there is a change in the plant community structure that is attributable to the extraction, including any increases in invasive plant species, the proponent will undertake corrective actions in consultation with the Department and NSE.
- k) Plans for mitigating light pollution that could impact migratory birds, including long-distance migratory shorebirds, songbirds, Common Nighthawks, bats or waterfowl on the adjacent coastline. This may include a reduction in lighting during key spring and fall migration periods.
- l) The EA Registration document does not indicate the proposed duration of the quarry expansion. The WMP should provide detail on the proposed duration of quarry operation and how the proponent will address changes to species-at-risk listings over time. Additional biodiversity and species-at-risk surveys may be required periodically to ensure no impacts to SAR or biodiversity under revised and updated legislation.
- m) Plans for restoring former operational areas through recontouring and revegetating with native species.

## Environment

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Date: April 2, 2020

To: Manager, Water Management Unit

From: Senior Surface Water Quality Specialist, Water Management Unit

Subject: Gabarus Quarry Expansion Environmental Assessment – Review  
Comments & Recommendations

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### Scope of Review

As Senior Surface Water Quality Specialist with the Nova Scotia Environment (NSE) Sustainability and Applied Science Division, the following Gabarus Quarry Expansion Project Environmental Assessment (EA) review focuses on the following subjects:

- Surface water quality & its management
- General surface and groundwater resources, and fish and fish habitat & their management

The following review considers whether the environmental concerns associated with the above subjects and the proposed mitigation measures have been adequately addressed in the Environmental Assessment. The recommendations provided below are meant to supplement the actions outlined in the EA submission documents.

While general comments on fish and fish habitat, wetlands, surface water quantity, and groundwater quality and quantity may be included below, applicable technical specialists should be consulted for specific review and comment.

### Reviewed Documents

The following document was the basis for this EA review:

Dexter Construction Company Limited. 2020. *Gabarus Quarry Expansion, Gabarus Lake, Cape Breton Regional Municipality, Nova Scotia*. Registration Document for a Class 1 Undertaking Under Section 9(1) of the Nova Scotia Environmental Assessment Regulations. Dexter Construction Company Limited.

### Comments

#### *General*

- No information is provided about whether aggregate washing is proposed to take place at the site. This type of activity would typically require a water withdrawal approval application and consideration in the design of the surface water runoff management infrastructure to receive and treat the process wastewater.

- Dust management is proposed to reduce dust emissions from the Project activities, including use of water spray. The EA Registration Document does not identify where this water will be potentially sourced, where it is sourced for the existing quarry activities and what would be the expected application volumes/rates. No discussion is provided of potential runoff routing, impacts and mitigation measures with respect to dust management measures and interaction with surface water resources. Depending on the expected application volume, frequency and source of the water to be used for dust control the activity may trigger the requirement for a water withdrawal approval application and consideration in surface water runoff management infrastructure design.

### *Surface Water Resources*

- The EA Registration Document and NS hydrology geographic information system (GIS) layer identify that the proposed Project is located in the headwaters of an unnamed tributary to Gabarus Lake (Appendix D, Map A-2).
- Appendix D, Map A-5 presents flow directions based on existing pre-development topography (including the existing quarry) for the site, which is assumed to use a digital elevation model (DEM) based on the 1:20,000 NS topographic map. The majority of the site flows to the northeast into the northwest branch of the unnamed tributary, while the southern part of the site, based on pre-development topography, flows into the south branch of the unnamed tributary. The southern part of the site surface water runoff is conveyed to the tributary via the Grand Mira Gabarus Road roadside ditch. The two branches of the unnamed tributary join together downstream of the Project area prior to discharging into Gabarus Lake.
- Wetland areas were identified/confirmed via EnviroSphere site visits within the Project area, including wetlands connected to the unnamed tributary, particularly along the northwest branch and near the confluence of the northwest and south branches of the unnamed tributary.
- No field delineation to identify potential additional watercourses was conducted in support of the EA Registration Document.
- No municipal or private registered water supplies are located adjacent to or downstream of the Project area.

### *Surface Water Quality*

- Water quality monitoring occurred at three sites on the northwest branch (WS1, WS2 and WS3), one site (WS4) on the south branch of the unnamed tributary and one pond formed within grubblings in the proposed areas (WS5) on June 11, 2019 by EnviroSphere. WS3 is indicated as being located downstream of the existing quarry drainage works. Water quality measurements consisted of field measurements using a multi-parameter probe and collecting a water sample for total suspended solids (TSS) laboratory analysis. The laboratory analysis was conducted by EnviroSphere. Water quality results in comparison to the Canadian Council of Ministers of the Environment for Protection of Aquatic Life were with acceptable ranges to support aquatic life (pH, dissolved oxygen). WS4 had an elevated TSS result (84.5 mg/L) in comparison to the other watercourse sites, which was attributed to adjacent provincial road runoff and upstream forestry management land uses. WS4 is indicated as representing a baseline/reference

site. Given that its upstream land uses include a provincial roadway and actively managed forest lands it is not potentially applicable as the only reference site for a Project monitoring program.

- The EA Registration Document states that samples were collected on June 11 following a rainfall event. Climate data for the nearby Environment and Climate Change Canada operated Louisburg meteorological station indicates 0.3 mm of precipitation was measured on June 11 with no preceding precipitation on June 10. The amount 0.3 mm would not be considered a significant amount and may not be sufficient for surface water runoff to occur.
- General chemistry and metals laboratory analysis were not conducted on the collected water quality samples. Metals can be potentially absorbed to sediment particles from quarry activities and transported via surface water runoff. This information would have been useful to characterize baseline conditions with respect to these potential Project contaminants of concern.
- One quarry rock sample was collected and submitted for acid generating rock analysis. The result indicates low sulphur concentrations and is predicted to have negative potential for generating acid (Section 5.1; Appendix C). No rationale is provided for why only one quarry rock sample was collected and analysed for this rock characterization and assessment.
- Section 6.1.4 identifies the existing quarry site surface water runoff infrastructure as the quarry floor draining to the northeast corner into a subsurface French drain that discharges into an adjacent wetland complex that empties into the northwest branch of the unnamed tributary.
- Section 7.4.3 indicates the Applicant will maintain the existing drainage management system at the Project site. The only proposed design change provided is that earthen berms will be used around active quarry activities to divert surface water runoff away from the quarry site. No information is provided on whether the existing drainage management system is adequately sized to manage predicted surface water runoff from the quarry expansion area. Information on this activity, including proposed mitigation measures and conceptual designs would indicate how surface water runoff management within the expanded quarry site will maintain the predicted non-significant effect to surface water resources.
- Project area flows are stated as being continued to be managed in a natural way and to minimize damage to the local landscape. No explanation is provided on what is referred to by the term 'natural' or what mitigation measures will be implemented to achieve this type of flow regime.
- Surface water monitoring is proposed to be implemented to ensure surface water leaving the site meets applicable water quality guidelines. No details are provided on potential monitoring site locations, sampling frequency or parameters.

#### *Fish and Fish Habitat*

- The wetlands adjacent to the unnamed tributary within the Project area were not assessed with respect to their potential to provide fish habitat. There is potential that these wetlands could provide habitat to fish during different life stages.

#### *Surface Water Quantity*

- The existing quarry site is indicated as having the majority of precipitation being transported off-site as surface water runoff via the quarry drainage system with an unquantified small amount being transported into the groundwater system via



infiltration. No analysis or rationale is provided to support this statement in the EA Registration Document.

- Section 6.2.3 indicates that in adjacent grubbed areas to the existing quarry, small ponds have formed in temporary depressions. The formation of the depressions is attributed to fine till particles filling voids and cracks within the exposed bedrocks. Using aerial photographs of the existing site via [Pictometry](#) from April 2013, it is observed that the existing quarry floor is completely flooded. These observations align with the above statement that precipitation is predominantly managed within the quarry site as surface water runoff.
- The proposed quarry expansion for the northwest branch of the unnamed tributary is estimated to reduce the drainage area by approximately 15% (Section 7.4.3). The Project activities are estimated to reduce surface water runoff to the unnamed tributary northwest and south branches, which has not been quantified. The surface water runoff reduction is estimated to be off set by groundwater lateral flow to the adjacent watercourses supplied by precipitation infiltrating the quarry floor (cracks and spaces) and overall cause a non-significant change to watercourse flow. No quantitative analysis is provided in the Registration Document to indicate the unnamed tributary receives groundwater inputs as part of its flow regimes. This statement contradicts the Section 6.1.5 statement about the majority of precipitation being transported off-site as surface water runoff and site observations of ponded water within the active quarry area and in adjacent grubbed areas. These conflicting observations provide different types of scenarios occurring to the unnamed tributary flows: 1. Potential reductions in watercourse flows in sections upstream of quarry site surface water runoff discharge points due to the observed limited infiltration in the quarry floor or shallow lateral flows not contributing to watercourse flows; 2. No or reduced change in watercourse flows in sections upstream of quarry site surface water runoff discharge points due to lateral flow contributions from increased infiltration at the quarry site. No rationale or quantitative assessment is provided to support either of these scenarios within the EA Registration Document. The first scenario will have a potential effect to the unnamed tributary flows, which could affect aquatic life and habitat and there is insufficient information provided in the EA Registration Document to determine the likelihood of this scenario.

#### *Groundwater Quantity & Quality*

- The EA Registration Document references a shallow groundwater aquifer and deep bedrock groundwater regime. No information is provided to support that there are two groundwater complexes separated with depth and due to confining geology. The groundwater system would be typically be interpreted as one groundwater system with seasonal variation in water table height and due to this height residential water supply wells are drilled to lower depths.
- No groundwater table elevations are provided in the EA Registration Document indicating the separation distance between the existing and proposed quarry floor and table elevations and to date the groundwater table has not been intercepted by the existing quarry operations (Section 7.4.2).
- It is estimated that localized infiltration and subsequent groundwater recharge will be similar between the existing land cover and active quarry floor (Section 7.4.2). No information is provided to support this statement. As discussed in the Surface Water Quantity comments section above contradicting information is provided in

the EA Registration Document where the existing quarry site has surface water runoff as the primary precipitation conveyance mechanism and the expansion is predicted to have infiltration as the primary mechanism. The Project is not expected to influence the groundwater aquifer levels substantially in the Regional area, where existing residential water supply wells are a minimum distance 800 m from the site.

## **Recommendations**

### *Operational Issues/Other Permitting Processes*

#### *Surface Water Quality*

- No aggregate washing activities should occur at the Site without permission from NSE.
- Submission of proposed dust control activities to NSE staff for review as part of the Industrial Approval application, including the proposed source of water, expected withdrawal volumes, and associated mitigation measures to reduce impacts. If water withdrawal volumes trigger requirements for a water withdrawal application, this should be prepared and submitted prior to the start of quarry construction and operation activities.
- An erosion and sediment control plan developed by a qualified professional should be submitted for NSE review and approval prior to the start of construction and operation activities, including clearing, grubbing and stripping.
- New surface water management infrastructure (e.g., settling ponds, ditches) and existing infrastructure enhancements should be designed by a qualified professional to reduce sediment loading from the quarry site. This infrastructure should include proposed clean water diversion berms and other drainage systems to convey non-site impacted water away from the Project area. Pre- and post-development surface water runoff rates should be considered in the design with the objective of a zero increase in peak discharge from the project development area. Pond design should consider potential scour impacts to the receiving water environment. Appropriate mitigation measures should be implemented to support surface water management through all phases of project phases, including incorporating seasonality (e.g., winter site management). Final infrastructure design criteria, storm event sizing, and effluent discharge concentration and monitoring requirements should be developed and submitted to NSE staff for review and approval prior to the start of quarry construction.
- A surface water quality monitoring program is proposed and should be developed to monitor discharge from the proposed surface water runoff management infrastructure, and potential effects on watercourses impacted by the project development (e.g., northwest and south branches of unnamed tributary to Gabarus Lake). Baseline monitoring sites should be established on both branches of the unnamed tributary, including periodic monitoring for an expanded list of parameters such as metals which would be potentially transported with sediment from the quarry activities. This plan should be submitted to NSE staff for review and approval prior to the start of quarry construction.
- A site-specific contingency plan should be developed that includes prevention and response methods for spills and inadvertent releases. This plan should be submitted to NSE staff for review and approval prior to the start of quarry

construction.

#### *Surface Water Quantity*

- As proposed in the EA submission (Section 10.0), a water quantity monitoring program should be developed to monitor discharge from the surface water runoff management system and potential effects on appropriate watercourses and wetlands (e.g., northwest branch and south branch of unnamed tributary to Gabarus Lake) to confirm that effects will not be significant. This will be particularly important for the northwest branch as conflicting information is provided on the expected changes to the flow regime. The sampling frequency and monitoring equipment used should be sufficient to estimate potential surface water quantity changes associated with the Project, particularly the northwest branch with flows expected to be maintained via lateral groundwater flow. A baseline monitoring site or sites should be established. Monitoring activities should include assessment of potential changes to aquatic life and fish habitat. A mitigative response plan should be included as part of the program, including potential measures to maintain flows in watercourses observed to have decreased flows potentially effecting aquatic life. This monitoring program plan should be submitted to NSE staff for review and approval prior to the start of quarry construction.

#### *Fish and Fish Habitat*

- Additional consultation by the Proponent with Fisheries and Oceans Canada should be conducted with respect to characterizing existing and baseline fish habitat within the unnamed tributary to Gabarus Lake and adjacent riparian wetlands prior to the start of quarry construction.

#### *Groundwater Quality and Quantity*

- The groundwater quality and quantity monitoring program proposed within the EA submission should be developed and implemented, including a monitoring interval to represent baseline monitoring conditions. This program should be developed in consultation with and reviewed and approved by NSE staff prior to the start of quarry construction.

## Environment

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Date: April 2, 2020  
To: Bridget Tutty, Environmental Assessment Officer  
From: Sr. Water Resources Engineer, Water Resources Management Unit  
Subject: Gabarus Quarry Expansion Project

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### **Scope of review:**

This review is intended for use by the Environmental Assessment (EA) Officer. The role of the Sr. Water Resources Engineer with NSE Sustainability and Applied Science Division is to consider the proposed undertaking's potential for negative environmental impacts and any proposed mitigations with respect to surface water quantity and management. The review is based on materials provided by the proponent during EA registration process.

Any recommendations provided below are meant to supplement the actions outlined in the submission documents.

### **Documents reviewed:**

- Registration Document for a Class 1 Undertaking for the Gabarus Quarry Expansion, submitted by Dexter Construction Company Limited (February 2020).

### **Comments**

- The project as submitted would expand the existing Gabarus quarry from less than 4 ha permit area, to a total of 13 ha permit area ('study area').
- It is noted that this expansion would occur over time, and the use of expanded quarry is to be assessed considering 'the foreseeable future' with no plans for decommissioning or reclamation included in the submission beyond commitment to consult with NSE under the Industrial Approval process at the time of closure.
- No information is provided on whether aggregate washing is proposed or currently does take place on site. No information is provided on the source of wash water if it is in use. The Nova Scotia Pits and Quarries Guidelines requires that all wash water systems be arranged in a closed circuit. A surface water withdrawal would require permitting
- No information is provided on the proposed or existing source of water used for the described dust management protocols which is noted to include the use of 'water spray'. The Nova Scotia Pits and Quarries Guidelines requires that any

liquid that discharged by the operation is collected and treated prior to existing the property.

- Water storage and/or water withdrawal to provide water for on site applications may require additional permitting from NSE. No remarks by the proponent are made to confirm they have considered this.
- The quarry is located within secondary watershed 1FJ-SD12, which links Gabarus Lake to Belfry Lake and ultimately outlets to Forchu Bay. The proposed project at full development (13ha) represents approximately 1% of the secondary watershed. Immediately north and south of the study area are headwaters of the tributaries to Unnamed Stream as shown in Map A-5 of Appendix D. Surface water and groundwater contribution to these tributaries are uncharacterized. The proponent assumes that both surface water and groundwater contribute to both tributaries.
- Most of the proposed undertaking would occur in the catchment area to the northern tributary. The catchment area (Zone 1, Appendix D, Map A-5) contributing flow to the northern tributary is approximately 0.6 km<sup>2</sup> using available base data. The footprint of the undertaking is estimated to alter 15% of the catchment area of the northern tributary. The future management of surface and storm flows on the expanded quarry are not described, and the impact of flows to the tributary are not quantified. The data source used in the elevation modelling is not noted and is assumed to be provincial base data, which is based on a 1:20,000 topographic mapping.
- A portion of the undertaking would occur in the catchment area to the south tributary. The catchment area (Zone 2, Appendix D, Map A-5) contributing flow to the southern tributary is 0.5 km<sup>2</sup>. The proponent does not estimate the impact area to the southern tributary. The future management of surface and storm flows on the expanded quarry are not described, and the impact of flows to the tributary are not quantified. The data source used in the elevation modelling is not noted and is assumed to be provincial base data, which is based on a 1:20,000 topographic mapping.
- Existing management of surface water (water which arrives onsite via precipitation and/or seepage) is not described in detail. The existing surface grade of the existing facility is noted by the proponent to be to east, and surface water is described to be exiting the site via “via a constructed subsurface French drain into several small wetlands and then into a wetland complex through which both northern and southern tributaries flow”.
- Existing precipitation is noted as leaving the existing quarry through a drainage system. The future conditions of the expanded quarry described in the report state that surface flows in the future will be conducted through “artificial but managed regime” with “slightly altered flow conditions” in the north tributary to Unnamed Stream. Maintenance of surface water in the future expansion is not further quantified nor is a management plan presented.
- The proponent states that the northern tributary has the presence of fish and fish habitat. The proponent provided no description of future or proposed surface water maintenance facilities that differ from the existing management system, nor how fish and fish habitat in the full reach of the northern tributary would be monitored, or potential mitigations for alterations. A water balance or any more detailed assessment of catchment area and the management of surface water would have provided the ability to assess impact. The proponent’s commitment

to 'manage flow in a natural way' is not substantiated, and therefore cannot be accepted.

- Proposed management, specifically confirmation of outlet location, of the expanded quarry's surface water management is not provided. If all surface water flows from the expanded site are managed through the existing system which outlets in proximity to the junction of the north and south tributaries, impact to the environment in the northern tributary should be assessed and a monitoring plan established. Potential to harm fish and fish habitat may require additional permitting from DFO.
- The proponent commits to undertaking hydrologic monitoring in accordance with the Pits and Quarries Standards, the (current) Industrial Approval, and the *Environment Act*. None of these stipulate hydrologic monitoring. Therefore, in order to assess and mitigate the impacts of the project on the environment, a monitoring program must be established.
- Emergency management plans, or other contingency plans for operations which would detail prevention and response methods in the event of inadvertent releases of effluent are not described.

### **Recommendations:**

Insufficient information is provided to assess the impact of the proposed undertaking on surface water quantity and management. Therefore the following recommendations are made:

- A water quantity monitoring program be developed and submitted for review and approval by NSE prior to construction such that the baseline conditions are collected and ongoing monitoring activities sufficient to characterize surface water quantity changes associated with the project particularly with focus to the north tributary in order to assess potential changes to the environment, including aquatic life and fish habitat. Mitigations and response plans will be included in this program.
- A Surface Water Management Plan be prepared for the undertaking by a qualified professional and submitted to NSE for review and acceptance prior to construction taking place. This plan will be prepared in coordination with the water quantity monitoring plan and may consider subdelimiting the expansion area such that maintenance of flows in the northern tributary are maintained in a more natural way. This surface water management plan should include demonstration of how climate change has been addressed.
- It is noted that the proponent in further permitting and approvals may complete more extensive fish and fish habitat assessment and/or apply for Authorization with DFO for offsetting of the loss of habitat which may result from the alteration of flows to the northern tributary.
- A detailed sediment and erosion control plan be developed by a qualified professional and is required to be submitted for NSE review and approval prior to construction activities, including clearing, grubbing, and stripping, taking place.
- Any necessary approvals (e.g., watercourse alteration) for the redirection of surface water must be received prior to the proposed activity taking place

- Details surrounding the plan for water use for the purpose of dust suppression must be provided to NSE prior to expansion activities taking place, with an assessment of potential impacts and identification of mitigations, where appropriate.

**From:** [Environment Assessment Web Account](#)  
**To:** [Tutty, Bridget R](#)  
**Subject:** FW: Proposed Project Comments  
**Date:** March 12, 2020 8:39:54 AM

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**From:** @cbrm.ns.ca>  
**Sent:** March 11, 2020 2:17 PM  
**To:** Environment Assessment Web Account <EA@novascotia.ca>  
**Subject:** Proposed Project Comments

**\*\* EXTERNAL EMAIL / COURRIEL EXTERNE \*\***

**Exercise caution when opening attachments or clicking on links / Faites preuve de prudence si vous ouvrez une pièce jointe ou cliquez sur un lien**

Project: Gabarus Quarry Expansion Project Comments: With the expansion of this quarry I am concerned that the owner may want to increase the volume of asphalt currently produced on site. As mentioned in their presentation a portable asphalt plant is used on occasion. The smell from the current production carries quite far with the prevailing winds and we are concerned that any prolonged exposure to the odors could be detrimental to our health. I would also be concerned that with an increase in production of asphalt the storage of hazardous materials on site would increase. The potential for accidental spills or uncontrolled discharge of waste materials into the nearby watercourse would be detrimental to the environment and carry toxins into the waterways of the nearby Gabarus Wilderness Protected Area. On another note we are concerned with the increase in truck traffic on the 327 Highway. Our experience to date with the truck traffic from the quarry has been unpleasant and at times dangerous. When trucks are hauling material they travel too fast for the road conditions, drive left of center and use their engine brakes near residences. If the proposed expansion proceeds then the quarry operator should have policies in place for off site transport of their materials. Rules should cover both their company trucks as well as contractors. Name:

Email: [@cbrm.ns.ca](mailto:@cbrm.ns.ca) Address:

Municipality: Gabarus email\_message: Privacy-Statement: agree x: 55 y: 19