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March 21, 2022

*Your file*            *Votre référence*  
54755

*Our file*            *Notre référence*  
20-HCAA-01879

Joint Review Panel for the Marathon Palladium Project

Debra Sikora – Chair, Joint Review Panel

c/o Impact Assessment Agency of Canada

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**Subject: Marathon Palladium Project – Response to Undertaking #7**

Dear Debra Sikora:

DFO is writing in response to Undertaking 7 from the hearing session on March 21, 2022.

Enclosed is a written response regarding questions raised by the Panel related to Northern Brook Lamprey, in addition to two documents relevant to the questions raised.

Sincerely,

<Original signed by>

Brandi Mogge  
Team Leader  
Mining, Oil and Gas – South  
Fish and Fish Habitat Protection Program  
Ontario and Prairie Region

### Likelihood of presence in the project area – desktop assessment

DFO has confirmed that northern brook lamprey are identified as potentially present in the project area using the species at risk mapping tool ([National Aquatic Species at Risk \(dfo-mpo.ca\)](http://NationalAquaticSpeciesatRisk.dfo-mpo.ca)) due to a single data point at the mouth of the Pic River, dated to 1978 and originating from the Royal Ontario Museum. Additional data referenced in the COSEWIC assessment indicates additional confirmation of the species in the Pic River, however the specific location is unknown. Staff with DFO's Sea Lamprey Control Centre confirmed that streams 5 and 6 (Hare Creek and Angler Creek) have been sampled in the past for sea lamprey, and no northern brook lamprey were encountered at that time. Streams 1, 2, and 3 have not been sampled by the Sea Lamprey Control Centre, and they do not receive lampricide treatment; of the streams in the zone of impact of the project that drain to the Pic River, these are identified as having the potential to support a resident population of northern brook lamprey based on our understanding of habitat characteristics from the review of the EIS.

DFO can confirm that the Pic River adjacent to and upstream of the project receives treatment to suppress sea lamprey, and that northern brook lamprey are affected at approximately the same rate as those that are invasive. Therefore, it is expected that any northern brook lamprey located in the Pic River originate from un-treated tributaries where spawning occurs, and move through larval drift.

### Threats and listing

Northern brook lamprey (Great Lakes – Upper St. Lawrence populations) was added to Schedule 1 of the *Species at Risk Act* as Special Concern in March 2009. The use of lampricide and habitat modification are the primary threats to northern brook lamprey in the Great Lakes basin. Lesser threats include water quality, invasive species, and climate change.

The reason for designation is that this nonparasitic lamprey is distributed in streams throughout the Great Lakes basin (except Lake Ontario) and in southwestern Quebec. In the Great Lakes basin, which comprises most of its range, about 50% of the streams it is known to inhabit are subjected to ongoing chemical treatment for sea lamprey control which causes mortality to its larval stage. However, in untreated streams, the species is still abundant.

Northern brook lamprey live up to seven years as larval lamprey (ammocoetes). Adults have limited mobility and their fertility is relatively low compared to other lamprey species. Short migrations are made to spawning grounds by adults, while passive larval drift is the only movement made by the larval stage. This likely limits the capacity for the species to disperse and expands its range, in addition to limiting their capacity to recolonize areas they have been extirpated from.

From the management plan (attached): “Vulnerability of northern brook lamprey to lampricide applications is dependent upon its distribution in relation to sea lamprey, particularly, the native lamprey ammocoetes’ location relative to the upstream distribution of sea lamprey ammocoetes in the system (Schuldt and Goold 1980). In some cases, northern brook lamprey may be less vulnerable to lampricide applications as it is more likely to inhabit headwater areas frequently free of sea lamprey, but due to its relative lack of mobility compared to the silver lamprey, may be less likely to recolonize from elsewhere following lampricide application.”

### Residual Effects

There are no habitat impacts expected from the project in the Pic River. Therefore, it is unlikely that there will be residual effects to northern brook lamprey habitat in the Pic River.

During the fish and fish habitat hearing session, the proponent indicated that lamprey ammocoetes are detectable using back-pack electrofishing. DFO can confirm that this is accurate, however there are a series of specific considerations that must be integrated into the sampling design to increase the likelihood that they would be detected. Sampling methodology in the environmental impact statement did not describe specific efforts to confirm presence or absence of this species, therefore DFO advises it is unlikely that efforts to detect ammocoetes was adequate. As such, there remains a possibility that northern brook lamprey are resident in streams 1, 2, and/or 3 which have not been sampled by DFO staff in the past. Given that northern brook lamprey’s population status in this region is dependent on resident populations that spawn upstream of lampricide application, their presence should be ruled out before a residual effects determination for the species is made.

### Attachments:

1. Fisheries and Oceans Canada. 2018. Management Plan for the Northern Brook Lamprey (*Ichthyomyzon fossor*), Great Lakes – Upper St. Lawrence populations, in Canada. Species at Risk Act Management Plan Series. Fisheries and Oceans Canada, Ottawa.
2. COSEWIC Assessment and Status Report on the Northern Brook Lamprey (*Ichthyomyzon fossor*), 2020.