

APPENDIX H

DELG Correspondence and Questions/Answers

July 26th, 2019

Mr. Jim Ward
Northshore Micmac District Council Inc.
38 MicMac Road
Eel Ground, NB E1V 4B1

RE: Eradication of Invasive Smallmouth Bass from Miramichi Lake, NB.

Mr. Ward,

Thank you for the project description submitted on June 27th, 2019 regarding the above-mentioned project. It is the Department of Environment and Local Government's (DELG) understanding that the proposed project consists of depositing a deleterious substance, Noxfish Fish Toxicant II, into Miramichi Lake in order to eradicate Smallmouth Bass, which is an invasive species. Based on the information provided, it has been determined that the proposed project **will** require an Environmental Impact Assessment (EIA) registration as per item (u) of *Schedule A* of the *EIA Regulation (87-83)* as the proposed project will affect the Gaspé-Southern Gulf of St. Lawrence population of Atlantic Salmon (listed as Special Concern provincially, and Special Concern by the Committee on the Status of Endangered Wildlife in Canada) and American Eel (listed as Threatened provincially, and Threatened by the Committee on the Status of Endangered Wildlife in Canada).

Information on the EIA review process can be found in the Guide to EIA in New Brunswick, which is available online here: <http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/GuideEnvironmentalImpactAssessment.pdf>.

Please don't hesitate to contact Cassandra Colwell by email, Cassandra.colwell@gnb.ca or by phone at (506) 457-6747 if you have any questions or if you would like to further discuss.

Sincerely,



Paul Vanderlaan, P.Eng.
Director, Environmental Impact Assessment Branch

C. Cassandra Colwell, DELG
Courtney Johnson, DELG
Christie Ward, DELG
Mark Langford, DELG
Guy Robichaud, DFO
Daniel Bourque, DFO
Colette Lemieux, ERD



Responses to NBDELG Inquiries Regarding the Application to Deposit a Deleterious Substance to Eradicate Invasive Smallmouth Bass from Miramichi Lake

Submitted by: North Shore Micmac District Council Inc.

Submitted to: Department of Environment and Local Government

Date: August 7, 2019

Attachments: Eradication of Invasive Smallmouth Bass From Miramichi Lake, NB - Request to authorize the deposit of a deleterious substance pursuant to the Aquatic Invasive Species Regulations

Included herein are responses to questions posed by DELG in relation to an EIA screening. The North Shore Micmac District Council along with our project partners (the Working Group) propose to have a meeting with DELG should there be any outstanding questions or concerns regarding the information below and attached. Please note that further detail on the inquiries can be obtained in the Aquatic Invasive Species (AIS) deleterious substance authorization request that we submitted to DFO (attached).

NOTE: The ultimate goal of the ***Canadian Action Plan to Address the Threat of Aquatic Invasive Species – September 2004*** is to minimize (and ideally eliminate) the introduction of harmful AIS and remediate the impact of those already in Canada. The plan's underlying principles include incorporating environmental, economic, and social factors in decision making; working cooperatively with all stakeholders; and using science-based techniques to assess the risk of aquatic invasive species. Numerous jurisdictions and organizations are involved, from local to international levels.

Within the federal government, primary responsibility and authority rests with Fisheries and Oceans Canada and Environment Canada but, depending on the species and its pathway into Canadian waters, management actions can also involve Transport Canada, Industry Canada, the Canadian Food Inspection Agency (CFIA), the Canadian Border Services Agency (CBSA), Health Canada and others. Provincial and territorial governments share the responsibility, as do bilateral organizations such as the International Joint Commission and the Great Lakes Fishery Commission. Industry, a variety of NGOs, Aboriginal peoples and the general public are also involved.

The partners with the North Shore Micmac District Council (proponent) consider ourselves in that group of NGOs and Indigenous peoples as described above. We are taking on an important role to assist the federal and provincial governments who have Constitutional Responsibility to address aquatic invasive species and eliminate the risk posed by smallmouth bass to the Miramichi watershed. The governmental responsibility extends far beyond simply playing the role of regulator.

I.A. June 26, 2019 Inquiries:

In order to determine if an EIA registration is required for this proposed project, can you please submit a project description including:

- Project location
- Areas of product application
- Methods of application
- Any proposed work in or within 30 metres of regulated wetland areas (ex. new structures, soil disturbance, etc.)
- Any proposed work in or within 30 metres of a watercourse
- Any potential impacts to species at risk
- Project timelines

I.B. Responses:

1. Project Location – The project location is Miramichi Lake (Latitude: 46°27'33.90"N, Longitude: 66°58'17.68"W), including all inlets 30m upstream, and Lake Brook. Please see maps in section 2.2 of AIS application (attached).

2. Areas of Product Application –

- a. Noxfish Fish Toxicant II – Miramichi Lake and all inlets 30 m upstream
- b. Potassium Permanganate – Miramichi Lake outlet Lake Brook 30 minutes travel time upstream of confluence with Southwest Miramichi River

Noxfish II is registered for use in Canada under PMRA # 33247 by Health Canada and in the USA as Prenfish (reformulation 2232) under EPA Reg. No. 89459-45 by the U.S. Environmental Protection Agency. The registrations follow government scientist reviews of rigorous standardized testing results to ensure there are no unreasonable risks to public health or environmental when used according to label directions.

3. Methods of Application –

- a. Noxfish Fish Toxicant II – Lake treated by pump injection in open water, spray in shoreline areas, and dripcan injection in the inlets
- b. Granular Potassium Permanganate – Miramichi Lake outlet Lake Brook treated by electronically controlled auger.

4. Work Within 30 m of Regulated Wetland – The staging area including drums of rotenone will not be located in or within 30 m of a regulated wetland. Tanks to hold fish are planned to be located adjacent to a small, cold-water tributary that enters the east end of the Lake, which is identified as a wetland on the GeoNB map viewer; however, it is in fact a watercourse, not a wetland. We will work with DELG on a detailed plan for tank location to minimize disturbance within the 30 m watercourse buffer or to find an alternative location outside the 30 m buffer.

5. Work Within 30 m of a watercourse – The staging area for rotenone drum storage is approximately 30 m from Miramichi Lake and not within 30 m of a watercourse (see AIS application for full description of area setup including containment procedures). Tanks to hold fish are planned to be located adjacent to a small, cold-water tributary that enters the east end of the Lake, i.e., within 30 m of a watercourse. The fish holding tanks will have a low impact and are a mitigation strategy for re-introduction and rapid recovery of fish species in the lake. Again, we will work with DELG on a detailed plan for tank location to minimize disturbance within the 30 m watercourse buffer or to find an alternative location outside the 30 m buffer.

6. Potential Impacts to Species at Risk –

The project will affect the Gaspé-Southern Gulf of St. Lawrence population of Atlantic Salmon (listed as Special Concern provincially, and Special Concern under by the Committee on the Status of Endangered Wildlife in Canada) and American Eel (listed as Threatened provincially, and Threatened by the Committee on the Status of Endangered Wildlife in Canada). We must note that the purpose of the eradication of smallmouth bass is ultimately a conservation measure to protect native species like Atlantic salmon and American eel. The long-term benefits to the native ecosystem far outweigh the short-term, small-scale impacts of the project.

Atlantic salmon juveniles are not anticipated to be present in the lake but are present in Lake Brook in low densities (pers. comm., Chris Connell, Fish Biologist, Department of Energy and Resource Development). American eel are expected to be present in both the lake and Lake Brook.

In addition to deactivating the rotenone after treatment, our mitigation strategy is to capture Atlantic salmon and American eel via electrofishing in Lake Brook and release into the SW Miramichi River prior to treatment. A barrier will be placed at the mouth of Lake Brook to prevent fish from ascending the brook during treatment. American eel captured in the lake will be held in tanks with the other species and reintroduced into the lake post treatment. Given that American eel are panmictic, and that both Atlantic salmon and American eel are migratory/anadromous, populations in Lake Brook and Miramichi Lake are anticipated to repopulate rapidly. Furthermore, given that the 43.1 km² Miramichi Lake sub-watershed represents only 0.3% of the greater Miramichi watershed (13,500 km²), the anticipated effects of the treatment on Atlantic salmon and American eel are negligible at the watershed-scale and even less so at the population scale (Gaspé-Southern Gulf of St. Lawrence).

Mussel beds were investigated in the lake for the presence of yellow lampmussel and brook floater but neither were found in the samples. A more comprehensive sampling regime will take place in summer 2019 by experts in the field at Anqotum, a partner in the project. The Brook Floater mussel has been assessed by COSEWIC (2009)³ as Special Concern and DFO has developed a Management Plan (DFO 2018)⁴ to identify Broad Strategies for addressing threats. Aquatic invasive species such as smallmouth bass are in fact listed as a threat to the brook floater mussel in DFO's management plan; therefore, eradication of smallmouth bass from the lake would be beneficial to the brook floater, should it be present. Furthermore, brook floater assemblages have been identified downriver in the Southwest Miramichi River and the potential escape of smallmouth bass from the lake poses a threat. This strengthens the need for eradication to eliminate the threat.

Toxic effects are not expected to impact any mussels since the proposed rotenone levels are below known toxicity values for freshwater mussels (see Section 5.1 of the AIS application).

The wood turtle (*Glyptemys insculpta*) is a SARA-listed species; however, its presence is not confirmed within the vicinity of Miramichi Lake. Furthermore, the risk to this species if present is negligible for the following reasons:

- Limited potential for exposure to rotenone: the species nests on land and is omnivorous, largely feeding on terrestrial organisms which are not exposed to rotenone
 - The United States Environmental Protection Agency (EPA 2006; 2007)^{5,6} uses the sensitivity of birds as a surrogate for reptiles, and rotenone is practically non-toxic to birds because of rapid natural break down and piscivorous birds or mammals are not likely able to consume sufficient quantities of rotenone to result in acute toxicity.
 - In British Columbia, painted turtles have been present in several treated lakes. Some have been held captive within active rotenone treatment areas and observed for a period of time post treatment with no mortality or negative effects observed (Steve Maricle *personal communication, Province of BC*).
7. Project Timelines – The project will take place in mid-September, with the project area affected for a 2 to 3-week window following the rotenone application. As per product application requirements, public safety will be ensured by prohibiting use of the lake for a 3-day period post application. Several factors must be considered with regards to application timing to ensure the highest probability of success, as well as to limit impacts on non-target species, facilitate rapid and successful fish reintroduction, and ensure rapid breakdown of rotenone. Mid-September is the optimal timing for various technical and biological reasons:

- The lake is 15-18°C based on temperature monitoring, ensuring effective toxicity to SMB
- SMB eggs will not be present as spawning is finished in July and egg incubation time is 2-9 days
- Rotenone half-life and duration of acute levels is lower at higher temperatures (i.e., >12°C)
- Deactivation with potassium permanganate is most effective at warmer temperatures (>10°C)
- Fall treatment timing will avoid impacting alewife. Post-spawned adults leave the lake in July and YOY emigrate from the lake primarily in July and August.

II.A. July 8, 2019 Inquiries:

- The following statement was noted in the authorization request submitted to DFO: “Additional study during summer 2019 is needed to determine the precise quantity of KMnO₄ needed to deactivate rotenone in the highly organic water of Miramichi Lake.” Can you please expand upon what this additional study will involve? Further, it is noted that the Safety Data Sheets for potassium permanganate lists the chemical as having ‘acute and chronic hazards to the aquatic environment’ while the PMRA label for Noxfish Fish Toxicant II lists potassium permanganate as an appropriate detoxification agent. Can you please provide further documentation confirming potassium permanganate is appropriate and safe to use as a detoxifying agent in the manner described?
- It was noted that Appendix B of the authorization request submission contains a Safety Data Sheet for Prenfish Fish Toxicant. Why was this provided as the Noxfish Fish Toxicant II is the product proposed for usage throughout the request?
- Can you please submit more details regarding waste management for dealing with the dead fish after treatments? Can you please include potential locations that you are intending as suitable disposal options? Also, can you please confirm that prior arrangements are made with the selected disposal company?

II.B Responses:

1. Preliminary tests were conducted in 2017 to determine the optimum concentration of potassium permanganate to use in deactivating rotenone in Lake Brook, but test results were inconclusive. The water in Miramichi Lake is high in organics likely increasing its background permanganate demand which must be satisfied chemically prior to the permanganate oxidizing and deactivating rotenone. The studies will involve using samples of rotenone-treated water from Miramichi Lake at the proposed treatment rate and adding various amounts of permanganate. The

samples will be assayed for rotenone and permanganate content. These studies will be completed prior to beginning the project and refine the amount of permanganate needed. Potassium permanganate is the standard for chemically deactivating rotenone, operational procedures are described in detail in SOP 7.1 of Finlayson et al. (2018)¹, and the kinetics of this long-standing procedure were first described by Engstrom-Heg (1972)².

2. When putting together the AIS application, the Canadian rotenone formulation Noxfish Fish Toxicant II had just been approved for registration in Canada by PRMA, but a new SDS had not yet been provided by the registrant. However, the Prenfish Fish Toxicant formulation in USA is the same formulation as the Noxfish Fish Toxicant II formulation in Canada, so the substitution was made. Since then, a SDS for the Noxfish Fish Toxicant II has become available and is attached.

3. Fish Disposal

It has become common practice to leave fish in lakes after a rotenone treatment because rotenone breaks down quickly, does not pose a risk for terrestrial and avian predators who may consume the fish, and provides a significant nutrient influx to the lake to help with recovery of planktonic species, invertebrates, and fish populations. For example, Health Canada endorsed this approach at a recent rotenone eradication in BC in the fall of 2018.

We will take a hybrid approach at Miramichi Lake given that there are social considerations due to presence of camps on the lake. The majority of fish will be left to decompose naturally and supply nutrients to the lake to help with rapid recovery, while fish at the east end of the lake where all camps are located will be collected and disposed of appropriately to mitigate potential social impacts. The east end of the lake will be monitored for dead fish for several days post treatment, and fish removed for disposal. Fish will be transported and buried in a gravel pit located approximately 200 m from the staging area adjacent to the lake (pit location: Latitude 46°26'58.57"N, Longitude 66°57'28.36"W). An alternative nearby location has also been identified at the following coordinates: 46°27'3.70"N 66°58'35.65"W. Both locations are on crown land and a Crown Lands Occupancy Permit will be sought from the Department of Energy and Resource Development. Disposal will follow conditions of the occupancy permit and requirements of DELG.

¹ Finlayson, R., D. Skaar, J. Anderson, J. Carter, D. Duffield, M. Flammang, C. Jackson, J. Overlock, J. Steinkjer, and R. Wilson. 2018. Planning and standard operating procedures for the use of rotenone in fish management – rotenone SOP manual, 2nd edition. American Fisheries Society, Bethesda, Maryland, USA.

² Engstrom-Heg, R. 1972. Kinetics of rotenone-potassium permanganate reactions as applied to the protection of trout streams. New York Fish and Game Journal 19(1):47-58.

³ COSEWIC. 2009. COSEWIC assessment and status report on the Brook Floater *Alasmidontavaricose* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 79 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

⁴Department of Fisheries and Oceans Canada (DFO). 2018. Management Plan for the Brook Floater (*Alasmidonta varicosa*) in Canada. Species at Risk Act Management Plan Series. Department of Fisheries and Oceans Canada, Ottawa. iv + 42 pp.

⁵Environmental Protection Agency (EPA). 2006. Environmental fate and ecological risk assessment chapter in support of Phase IV of the reregistration eligibility decision on rotenone. Environmental Risk Branch, Environmental Fate and Effects Division, Office of Pesticide Programs, Washington, DC 20460 (May 24, 2006).

⁶EPA. 2007. Registration Eligibility Decision for Rotenone EPA 738-R-07-005. U.S. EPA, Prevention, Pesticides and Toxic Substances, Special Review and Reregistration Division, March 2007.

From: Nathan Wilbur
Sent: September 6, 2019 3:04 PM
To: cassandra.colwell@gnb.ca
Cc: Devin Ward <devin@migmawel.org>; Jim Ward <jamespward314@gmail.com>
Subject: RE: Pesticide use for AIS eradication - Miramichi Lake proposal - monitoring inquiry

Hi Cassandra,

On behalf of the Working Group, I'm happy to answer your questions below. The use of rotenone is well-developed, including its natural breakdown time, safe concentrations for fish re-introduction, and deactivation. As such, we have included detailed protocols in the AIS application for monitoring during and after the application to ensure safe conditions for fish re-introduction and to ensure the rotenone is deactivated prior to entering the SW Miramichi River via Lake Brook.

Please see the following section in the attached AIS application for detailed answers to your questions:

Section 4.5 – Proposed Environmental Effects Mitigation (re-introduction plan, deactivation)

Section 7 – Re-establishment Strategy

Section 8 – Monitoring (application monitoring)

Please reach out if you have any more questions on the details.

Thanks,

Nathan

Nathan Wilbur, PEng, MScE
Director, New Brunswick Programs
Atlantic Salmon Federation (ASF)
nwilbur@asf.ca / [506 442-2185](tel:5064422185)

Begin forwarded message:

From: "Colwell, Cassandra (ELG/EGL)" <Cassandra.Colwell@gnb.ca>
Subject: Pesticide use for AIS eradication - Miramichi Lake proposal - monitoring inquiry
Date: September 6, 2019 at 1:56:54 PM ADT
To: "jamespward314@gmail.com" <jamespward314@gmail.com>

Hello Jim,

I was wondering if you could answer the question below regarding your proposed project?

What type of monitoring system will be put in place to 1) understand when it is safe to return native species to the treated system, and 2) measure the downstream concentration of rotenone in trout brook and the Southwest Miramichi?

Thank you,

Cassandra Colwell, MSc.

Project Manager/Gestionnaire de projets

Environmental Impact Assessment Branch/Direction des Études d'impact sur l'environnement

New Brunswick Department of Environment and Local Government/

Ministère de l'Environnement et des Gouvernements locaux du Nouveau-Brunswick

Phone: (506) 457-6747

November 15th, 2019

Mr. Jim Ward
Northshore Micmac District Council Inc.
38 MicMac Road
Eel Ground, NB
E1V 4B1

RE: Eradication of Invasive Smallmouth Bass from Miramichi Lake, NB.

Mr. Ward,

Thank you for the project description submitted on June 27th, 2019 regarding the above-mentioned project. It is the Department of Environment and Local Government's (DELG) understanding that the proposed project consists of depositing a deleterious substance, Noxfish Fish Toxicant II, into Miramichi Lake in order to eradicate smallmouth bass, which is an invasive species.

On July 26th, 2019, you were sent a letter indicating that as per item (u) of *Schedule A* of the *Environmental Impact Assessment (EIA) Regulation* an EIA registration was required as the proposed project was deemed to affect the Gaspé-Southern Gulf of St. Lawrence population of Atlantic salmon (listed as Special Concern provincially, and Special Concern by the Committee on the Status of Endangered Wildlife in Canada) and American eel (listed as Threatened provincially, and Threatened by the Committee on the Status of Endangered Wildlife in Canada).

Since that time, new information has been received that smallmouth bass are now in the Miramichi River system. Based on this new information, technical reviewers have indicated that the current effects to the Gaspé-Southern Gulf of St. Lawrence population of Atlantic salmon and American eel caused by smallmouth bass in the lake and river are greater than the effects of the proposed eradication project, provided that mitigation efforts are made to capture (pre-treatment) and re-introduce (post-treatment) the two species at risk.

Based on the additional information, the proposed project **does not** require an Environmental Impact Assessment (EIA) registration and review as per the *EIA Regulation*. Please note the following:

- 1) A valid *Watercourse and Wetland Alteration Permit* must be obtained prior to conducting any alteration in or within 30 metres of a regulated wetland or watercourse.
- 2) A Request to authorize the deposit of a deleterious substance pursuant to the *Aquatic Invasive Species Regulations* must be obtained from the Department of Fisheries and Oceans Canada.



- 3) Prior to utilizing non-domestic pesticides in waterways in New Brunswick a *Pesticide Use Permit* must be applied for and authorized by DELG. Non-domestic pesticides may only be handled and applied by individuals who possess Pesticide Applicator Certification.
- 4) Should the project be modified, the proponent must submit an updated project description to the EIA Branch to determine any EIA requirements.
- 5) The project must comply with all other applicable acts and regulations.

Please note that this decision related to EIA requirements is based on the current regulatory context. Should the project not proceed within one year from the date of this decision, the proponent must contact the EIA Branch of DELG to confirm any assessment requirements.

Please don't hesitate to contact Cassandra Colwell by email, Cassandra.colwell@gnb.ca or by phone at (506) 457-6747 if you have any questions or if you would like to further discuss.

Sincerely,



Paul Vanderlaan, P.Eng.
Director, Environmental Impact Assessment Branch

- C. Cassandra Colwell, DELG
Courtney Johnson, DELG
Christie Ward, DELG
Mark Langford, DELG
Guy Robichaud, DFO
Daniel Bourque, DFO
Colette Lemieux, NRED

July 13, 2020

Mr. Jim Ward
Northshore Micmac District Council Inc.
38 MicMac Road
Eel Ground, NB E1V 4B1

Subject: Amended Application - Eradication of Smallmouth Bass from the Miramichi Watershed.

Mr. Ward,

Thank you for the amended project description received by the Department of Environment and Local Government (DELG) on May 25th, 2020 regarding the above-mentioned project. It is the Department of Environment and Local Government's (DELG) understanding that the proposed project consists of depositing a deleterious substance, Noxfish Fish Toxicant II, into Miramichi Lake and portions of the Miramichi Watershed in order to eradicate smallmouth bass, which is an invasive species.

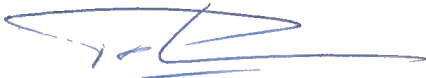
Based on the information provided in the amended project description, the proposed project **does** require an Environmental Impact Assessment (EIA) registration and review as per the NB *EIA Regulation*.

Information on the EIA review process can be found in the *Guide to EIA in New Brunswick*, which is available online here: <http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/GuideEnvironmentalImpactAssessment.pdf> and is attached.

Information which must be included in an EIA Registration document is listed on pages 13-25 of the guide.

Please don't hesitate to contact me by phone at (506) 453-2865 if you have any questions or if you would like to further discuss.

Sincerely,



Paul Vanderlaan, P.Eng.
Director, Environmental Impact Assessment Branch

Enclosure (1)

C. Catherine Lambert, DELG
Mark Langford, DELG
Paulette Hall, DFO
Kristian Moore, NRED

