



TECHNICAL MEMORANDUM

DATE: September 24, 2022
TO: Kevin Riles, KWR Approvals Inc.
FROM: Meghan Milloy, McCallum Environmental Ltd.
SUBJECT: Bellevue Peggy's Cove Lake Wetland Modelling and Environmental Constraints

McCallum Environmental Limited (MEL) was retained by KWR Approvals Inc. (KWR) to complete predictive wetland modelling and a review of environmental constraints on an 11-parcel land assembly (the Study Area) defined by PIDs 00574905, 00601146, 00635995, 00654053, 00654251, 00654269, 40488421, 404629636, 40629891, 41267139, and 41270208, in support of the proposed ecotourism Bellevue Peggy's Cove Lake development. The deliverable for this project was two figures showing predicted (modelled) wetland habitat and known environmental constraints by means of desktop review. The methodology and results are described herein to support these figures.

Methods

The purpose of the Predicted Wetland Layer (PWL) as a tool created by MEL is to help predict and plan for future work on the landscape and help clients identify potential wetland areas prior to further site design and field surveys. The PWL is based on desktop review and does not represent field conditions. The PWL can be used to support planning but should always be field verified. The PWL is derived from publicly available DEMs and is processed using GIS.

The desktop environmental constraints analysis was completed for the Study Area as well using MEL's environmental database layers. These provided layers are by no means a complete set of constraints existing, but more of a "preliminary run" of constraints prior to field evaluation or regulatory consultation. Many of the databases used update regularly, or NSECC/NSDNRR has made updates, but they have not updated the shared layer yet. As such, this is current to MEL databases as of September 2022, but does not make any guarantees at the completeness of the data provided.

Results

The PWL is shown on Figure 1, attached to this memo. This figure shows the predicted wetlands and the Halifax Regional Municipality (HRM) municipal buffer setback for watercourses. This municipal setback has been conservatively attached to all predicted wetland habitat, although, this buffer is only required on wetland contiguous with watercourses and/or open water wetlands. This figure also shows mapped/confirmed watercourses from the available provincial databases. The predicted wetland layer likely over represents wetland habitat on the landscape, and some of the narrow wetland habitat predicted could be confirmed on the landscape in the form of linear watercourses. No specific watercourse modelling was completed.

Figure 2 attached to this memo shows the results of a desktop review of environmental constraints (current as of September 2022). Within the Phase 2 and Phase 3 Study Areas, there are several constraints identified:

- Wetlands of Special Significance
- Mapped Wetlands (NSTDB)
- Mapped Watercourses and Mapped Lakes/Waterbodies (NSTDB)



- Boreal Felt Lichen Predicted Habitat

Wetlands of Special Significance are NSECC defined/confirmed during wetland permitting. The layer on Figure 2 is the predicted WSS layer provided by the province (predictive tool). Field work and regulatory consultation would be required to confirm each of these WSS if/as required. WSS are not allowed to be altered and thus are high risk if inside your project area). Your client will need to avoid these wetlands once confirmed. There could be additional WSS based on field surveys, once completed, if species at risk are observed within them, or if their functional evaluation deemed them to be of high conservation value.

All field surveyed wetlands and watercourses require permitting if any form of alteration is expected. Watercourses can be crossed (through permitting) with a bridge, culvert installation or open bottom box culvert, but watercourse diversion (physically moving a stream/realignment of a stream, infill of a pond or lake) is not permitted, unless under exceptional circumstances, or if the project has proceeded through a provincial environmental assessment process. Generally, watercourses must be avoided. Wetlands can be altered, but not those which are classified as WSS, unless the alteration of the WSS supports necessary public function. Wetland alteration must show a mitigation sequence (avoidance, minimization and mitigation of impacts) to support permitting. Wetlands that support fish habitat may require a Fisheries Act Authorization (federal authorization).

Nova Scotia Department of Natural Resources and Renewables (NSDNRR) Significant Species and Habitat database layer is a database of documented species at risk and habitats that NRR makes publicly available. The key layer identified inside the Study Area is the predictive boreal felt lichen (BFL) habitat layer (pink). This is a predictive tool/database that NSDNRR developed to predict where the boreal felt lichen might be (this is an endangered lichen). If there was boreal felt lichen present within the Study Area, it would require protection and a 500m plus buffer so has serious development implications. However, the predictive layer has been shown over the past many years to not be particularly accurate when predicting where BFL might be. This database is a predictive tool only, and all lichen presence, including BFL, must be confirmed through field surveys.

Limitations

This exercise was based on desktop available layers and should not be considered an exhaustive search for environmental constraints. The wetland modelling exercise predicts where wetlands might be and generally has been shown to over-predict wetland habitat. All environmental constraints must be field verified through field surveys. Field surveys to support potential permitting must be completed in the growing season which is defined as June 1 to September 30 of each year.



If you require any clarification or additional information, do not hesitate to contact the undersigned.

Sincerely,



Meghan Milloy
Vice President
McCallum Environmental Ltd.
(902) 880-6375
meghan@mccallumenvironmental.com

Prepared For:







KWR Approvals Inc.

Figure 1

**Bellevue Peggy's Cove
Lake Wetland Modeling**

**Depth to Water Wetland
Modeling Results**

Project # 22-687

-  Study Area Phase 2
-  Study Area Phase 3
-  Mapped Lake (NSTDB)
-  Mapped Watercourse (NSTDB)
-  Predicted Wetlands
-  HRM 20m Buffer



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter



0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: J. Mulino-Devoe Date: 2022-09-13



McCallum Environmental Ltd.

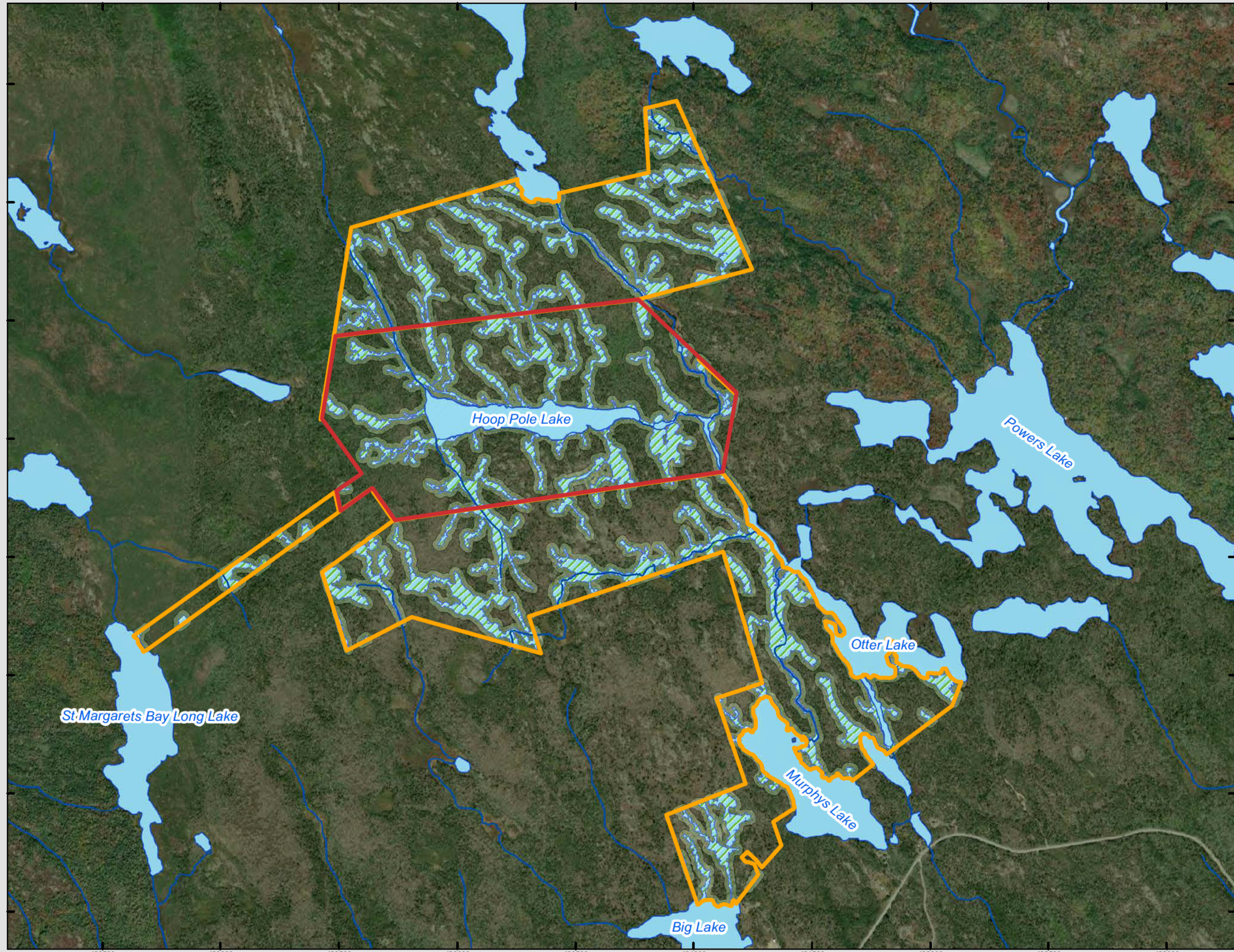
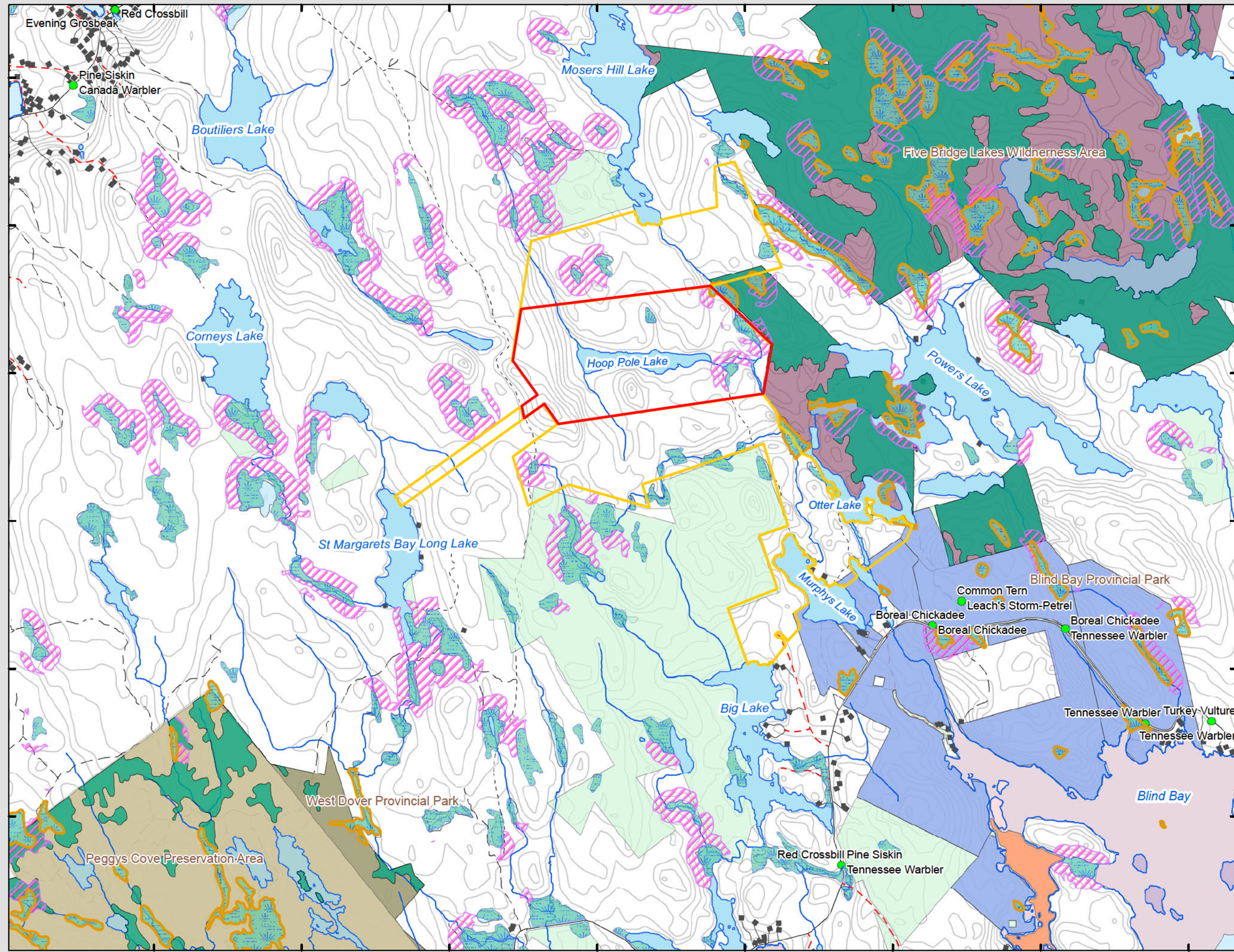


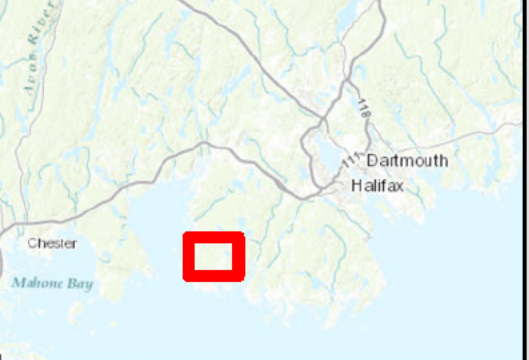
FIGURE 2

**Bellevue Peggy's Cove
 Lake Environmental
 Constraints Mapping**

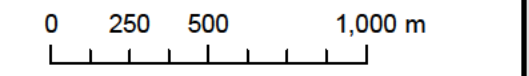
Project # 22-687



- Buildings
- ACCDC Observation
- Mapped Watercourse (NSTDB)
- 5m Contour Line (NSTDB)
- Crown Lands
- Old Forest Policy 2022
- Wetlands of Special Significance
- NSDNR Significant Species and Habitat Database
- Peggy's Cove Preservation Area
- Sea Farming Industries B.V.
- Water Body (NSTDB)
- Mapped Wetland (NSTDB)
- Mapped Lake (NSTDB)
- Boreal Felt Lichen Predictive Habitat
- Study Area Phase 3
- Study Area Phase 2
- Five Bridge Lakes Wilderness Area
- West Dover Provincial Park
- Blind Bay Provincial Park
- 3640



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1:24,000 Scale when printed @ 11" x 17"

Drawn By: MD
 Reviewed By: _____
 Date: 2022-09-13



McCallum Environmental Ltd.

Kevin W. Riles

Subject: Nova Scotia Environment (NSE) Wetland Permitting and Compensation Process

From: Meghan Milloy <meghan@mccallumenvironmental.com>

Sent: Tuesday, September 20, 2022 4:15 PM

To: jane@kwrapprovals.com

Cc: 'Kevin W. Riles' <kevin@kwrapprovals.com>

Subject: Nova Scotia Environment (NSE) Wetland Permitting and Compensation Process

Hi Jane,

Wetland permitting process:

1. We need to actually delineate the wetlands on the ground. To date, the results are only modelled/predicted wetlands. This work can be completed until there is snow on the ground and then again once snow is gone in the spring.
2. Field work is then required within each wetland that is considered for alteration – it is at this point that we complete the functional assessment to “rank” the significance of the wetland. We also complete a survey for species at risk presence within the wetland. Collectively, this work determines the likelihood of success in alteration. This work could require the wetland to be classified as a Wetland of Special Significance (WSS). WSS are not allowed to be altered, unless to support public good. This field work must be completed between June 1 and Sept 30. If we are delineating wetlands in season, we can collect the data to support an alteration all at once (most efficient way to do it).
3. MEL can then prepare a wetland alteration application for submission to Nova Scotia Environment and Climate Change (NSEC). This application requires a section related to efforts to avoid wetlands, minimize impacts to wetlands which needs to come from your client’s development plan – this is the argument section – we’ve done the best we can to plan/develop, but we need to impact these wetlands and here’s why. That kind of stuff.
4. For every wetland lost, the client needs to restore wetland habitat to offset the losses. This is completed generally at a 2:1 ratio (can be higher depending on the significance of the wetland (3:1- or 4:1 even for WSS)). This work can be completed by a Wetland Restoration Professional (MEL is one, there are others). Generally, the cost associated with this is ~\$3.50/m².

In the compensation part of the application, MEL can highlight trail networks that have been planned to integrate remaining wetlands into the development (perhaps the client would consider some signage/educational material even) and these trails can be considered as part of the compensation plan (to be negotiated with NSECC but we have had success with this in the past) which lessens the need for offsite restoration. It can only form a portion of the overall compensation plan (minimum 1:1 restoration on the ground is required).

Hope this helps!

Meg

Meghan Milloy, MES

VICE PRESIDENT

(902) 880-6375

