APPENDIX C

2020 Monitoring Plan for Glyphosate Concentrations in Surface Water Samples adjacent to residences near Long Point and the outlet of Big Creek.

Background

Environment and Climate Change Canada – Canadian Wildlife Service (ECCC-CWS), the Ontario Ministry of Natural Resources and Forestry (OMNRF) and the Nature Conservancy of Canada (NCC) (hereon referred to as the Project Team) will be implementing a Phragmites management and monitoring project within the Long Point Region including the Big Creek and Long Point National Wildlife Areas (NWAs). Phragmites has caused severe degradation to coastal wetlands and beaches in North America by outcompeting diverse native vegetation and replacing it with dense, monotypic stands with limited ecological value. Best Management Practices for Phragmites includes the application of herbicide in the fall to effectively kill the stem and root systems (OMNRF, 2011), followed by over-winter mechanical rolling. The herbicide selected for this project is RoundUp® Custom for Aquatic and Terrestrial Use (active ingredient glyphosate), which has a long history of successful use in the United States, as well as within the Long Point region over the past 4 years. Approximately 280 ha of new Phragmites patches will be treated using herbicide, with large, dense patches treated aerially via helicopter, and smaller, more sparse patches treated on the ground via hydraulic sprayer. Aerial application reduces the volume of herbicide required, since it can treat large areas much more efficiently than ground application. Therefore, aerial application will be used wherever possible.

This monitoring plan will enable the Project Team to assess the concentrations of glyphosate in surface water samples adjacent to the herbicide application areas within the Long Point Region. The purpose of this sampling is:

1. To provide confidence in the safety of the project for residents in the Long Point region
2. To ensure that, following treatment, glyphosate concentrations in the surface waters adjacent to the municipal water intake and private water intakes are less than the Ontario Drinking Water Quality Standard (ODWQS) for glyphosate

Areas planned for herbicide application between August and October 2020 are outlined in Appendix I. Similar monitoring occurred in the region in 2016, 2017, 2018 and 2019 by the OMNRF following herbicide application for Phragmites control. All samples collected over the 4 years found glyphosate levels to be well below the ODWQS of 0.28 mg/L.

Sampling Plan

A total of 6 sampling sites are proposed to be monitored, assuming that treatment proceeds in the area: 3 sampling sites at Big Creek and 3 sampling sites at Long Point. See Figure 1 for site locations.

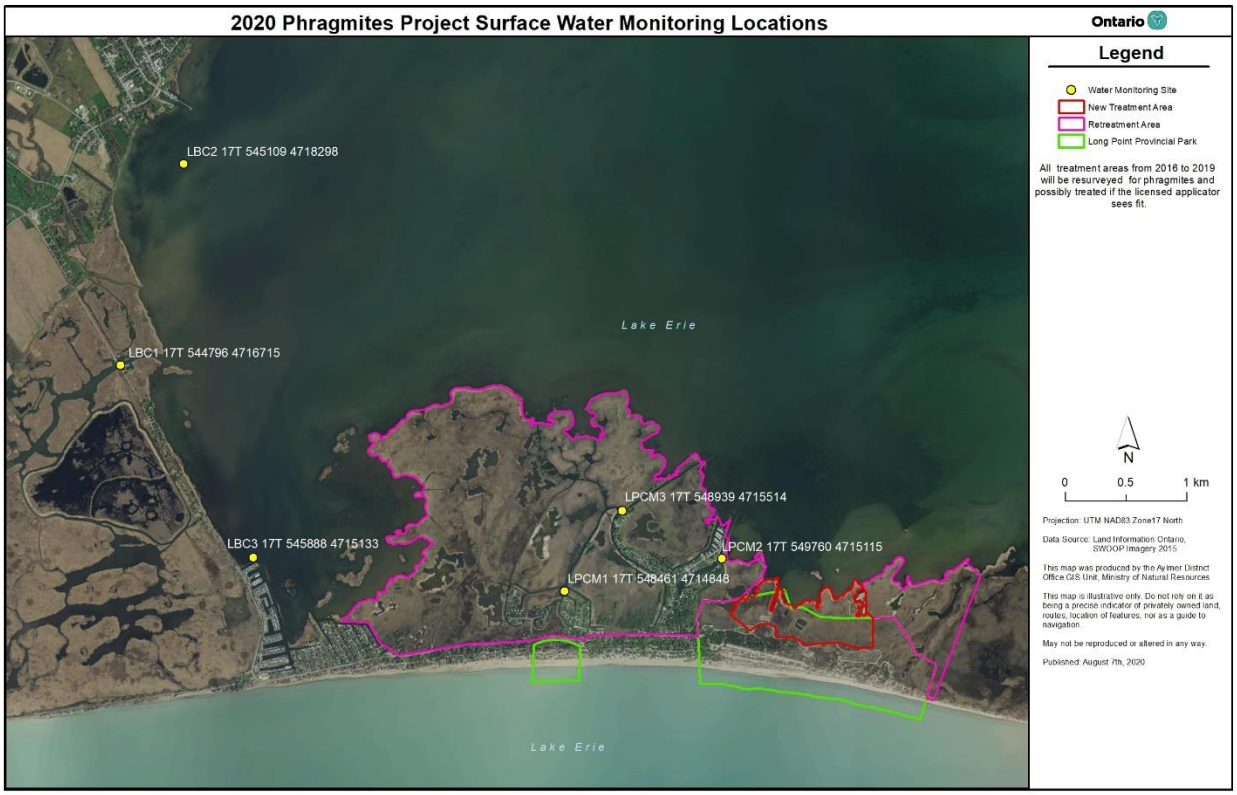

Figure 1. Proposed surface water sampling locations within Lower Big Creek and Crown Marsh.

Big Creek

Two of the sampling sites are located at the mouth of Big Creek, adjacent to the Phragmites treatment area (LBC1 and LBC2; Figure 1). In 2019, LBC1 was sampled and concentrations did not exceed the ODWQS of 0.28 mg/L. Therefore, LBC2 was never sampled. In addition, there will be a sampling site adjacent to the Sandboy Marina (LBC3; Figure 1), which, similar to LCB2, will only be sampled in the event that LBC1 exceeds the ODWQS.

A municipal water intake supplying Port Rowan and area is found in the Long Point Inner Bay approximately 800m from a private marsh treatment location. During 2019 discussions with MECP and HNHU it was decided that due to low connectivity to Lake Erie that this site was a low risk to the municipal water intake and could managed through sampling at LBC1 and LBC2. The system is operated by the County of Norfolk and has a regulated intake protection zone of 1000m in diameter. Further, following discussions in 2020, it was decided that LBC3 would be established adjacent to Sandboy Marina, given that the majority of herbicide treatment will be occurring in the

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Big Creek Unit. Discussions with the County of Norfolk and the HNHU will be held to ensure awareness and knowledge of the project and to discuss protection of water quality. At the upstream end of the project area, landowners adjacent the Big Creek treatment areas will be notified of herbicide application.

Sampling Method

Water samples will initially be collected slightly upstream from where the mouth of Big Creek meets Long Point Inner Bay (LBC1; Figure 1). This sample location is proposed to ensure monitoring and protection for the Port Rowan municipal water intake, as well as residents along the Big Creek causeway. A GPS point of the sample location will be taken at the time of sampling to ensure consistency.

Baseline samples will be collected prior to the initial spray date at LBC1. Post-treatment samples will occur within 12 hours and again at 24 hours post-treatment until a downward trend in the glyphosate levels is confirmed or baseline levels are reached. The samples will be analysed within a 36 hour turn-around time, for the presence of glyphosate. The laboratory will have a method of minimum detection limit of 0.005 mg/L for glyphosate, which is more sensitive than the ODWQS of 0.28 mg/L. If necessary, the Project Team will continue sampling at 24 hour intervals post-treatment, to demonstrate a downward trend and that the levels are below the ODWQS. If glyphosate levels exceed the ODWQS, the Project Team will take a sample as soon as possible at the Port Rowan municipal water intake (LBC2; Figure 1) and at the Sandboy Marina (LBC3; Figure 1). Arrangements will be made with the County to collect a filtered water sample at the same time, and have it submitted to the licensed accredited laboratory. Should the raw water sample at LBC2 or LBC3 exceed or be equal to the ODWQS, then the filtered water sample will be analyzed with expedited turnaround time. If samples taken from the raw water intake, and/or filtered samples exceed the ODWQS, the Medical Officer of Health at the HNHU and the County of Norfolk will be consulted regarding next steps. Sampling at LBC1, LBC2 (intake), LBC3, and filtered water intake will still continue simultaneously at 24 hour intervals until a declining trend is evident and glyphosate levels fall and remain below the ODWQS. The Port Rowan municipal water system does filter out glyphosate as standard procedure, but CWS-ON has the option of trucking either raw water or potable water to the Port Rowan municipal water system if glyphosate levels at the water intake are found to be above the ODWQS. In the event that the reservoir and/or distribution system is contaminated, the Project Team will work with Norfolk County, the HNHU and MECP to ensure potable water is supplied to the residents by alternative means (e.g. bottled water, fill stations). A list of approved water suppliers has been provided by County of Norfolk staff and one or more of those suppliers will be contracted if needed.

Table 2: Location coordinates and schedule for surface water sample collection at Lower Big Creek. Samples marked with an "X" will be conducted; samples without an "X" will occur contingent on the results from the first 3 samples at LBC1 (see note).

Sample ID	UTM	Baseline	12hr.	24hr.	48hr.	72hr.	96hr.
LBC1	17T 544796 4716715	X	X	X			

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LBC2 intake*	17T 545109 4718298						
LBC3*	17T 545888 4715133						

Note: LBC2 and LBC3 will only be sampled if LBC1 12hr. and 24hr. samples exceed the ODWQS for glyphosate. If this LBC2 and LBC3 sampling is required, LBC1 will also continue to be sampled every 24 hours until a downward trend in the glyphosate levels is confirmed below the ODWQS or a return to baseline levels is reached.

Long Point

Water samples will be collected in 3 locations adjacent to the cottage shoreline developments that fall within 800 metres of the herbicide application areas. A GPS point of the sample location will be taken at the time of sampling to ensure consistency with the locations below in Figure 1 and Table 2. Samples will be collected prior to the initial spray date within the Long Point Crown Marsh, and 12 hours and 24 hours post-treatment.

Sampling Method

The samples will be analysed within a 36 hour turn-around time, for the presence of glyphosate, by the licenced, accredited laboratory. The laboratory will have a method of minimum detection limit of 0.005 milligrams/L for glyphosate. The purpose of this sampling is to confirm that glyphosate concentrations, post spraying, in the surface waters adjacent to the shoreline developments of the Long Point community, are less than the ODWQS for glyphosate (0.28 mg/L). The results will be immediately reported to the MECP and HNHU. Three sample sites will be monitored for this portion of treatment. Residents and businesses on Long Point and the Causeway will be notified in advance via public notice in local newspaper, road sign(s), and postings on the Long Point Rate Payers' Association website (http://longpointrpa.com/) and the Long Point Phragmites Action Alliance website (http://longpointphragmites.ca) of the herbicide application and offered free bottled water if they rely on the use of surface water intakes (see attached Notification Plan).

If necessary, the Project Team will continue sampling at 24 hour intervals post-treatment, to demonstrate that the glyphosate levels follow a downward trend and are below the ODWQS. Should this level exceed the ODWQS from either sample, the HNHU and the MECP will be notified and consulted to determine next steps. The Project Team will only notify residents to resume use of potable water systems once the level has been confirmed below the ODWQS, and the MECP and the HNHU have authorized the return to operations of these systems.

Table 2. Location coordinates and schedule for surface water sample collection at Long Point Crown Marsh.

Sample ID	UTM	Baseline	12hr.	24hr.	48hr.	72hr.
LPCM1	17T 548461 4714848	X	X	X		

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LPCM2	17T 549760 4715115	X	X	X		
LPCM3	17T 548939 4715514	X	X	X		

Free bottled water will be available at the Long Point Provincial Park for Long Point residents who rely on surface water intakes for potable water. There will be a designated date and time advertised to residents, through the road signs and website posting, where they may obtain water and where Ontario Parks staff will be in attendance to answer questions and direct residents to where they may find more information. Past that day, residents may contact the project supervisor to arrange bottled water pickup at the Park. Water is being offered to residents throughout the course of the herbicide application and until residents are notified that they may resume use of potable water systems.

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APPENDIX I - Maps

Figure A1. Potential retreatment and new treatment areas on non-federal land within Lower Big Creek.

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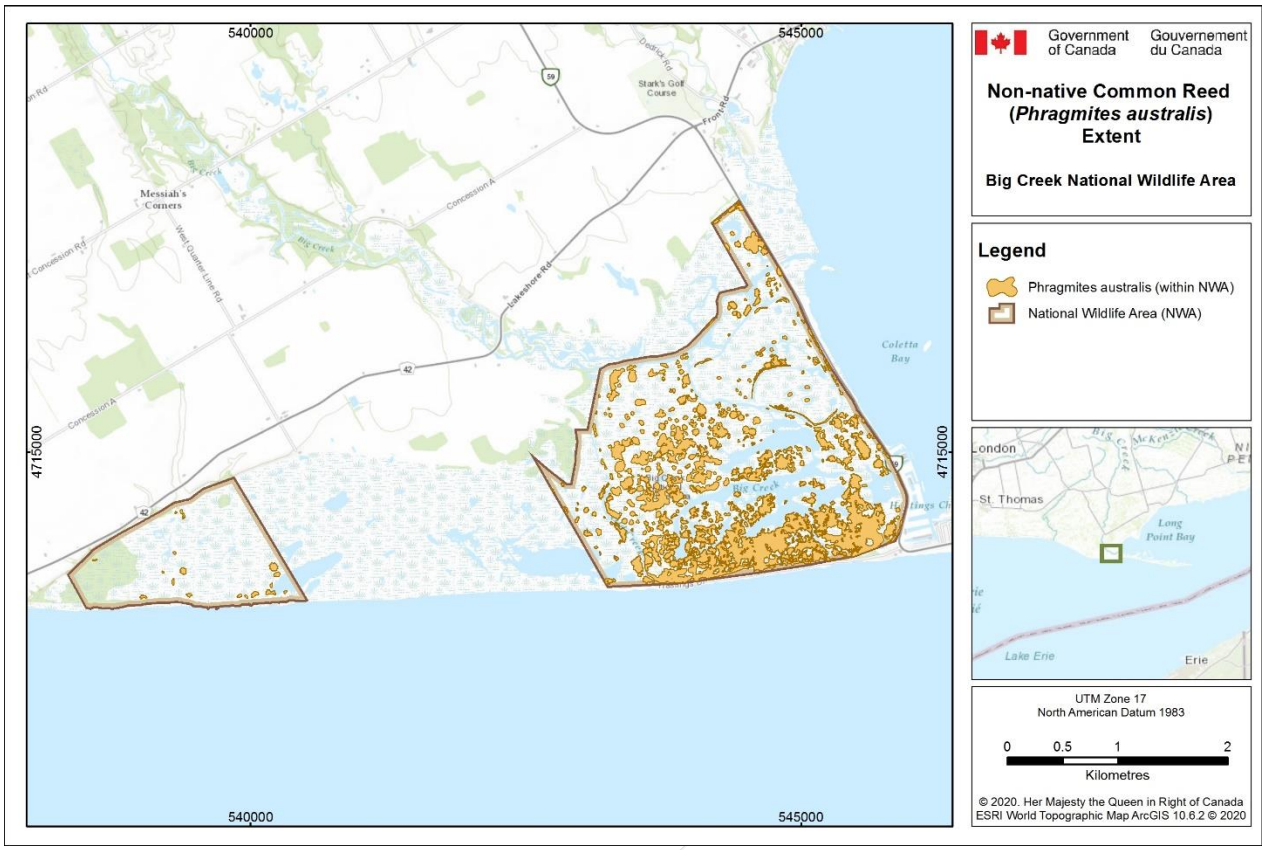

Figure A2. New treatment areas on federal land within the Big Creek National Wildlife Area.

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Figure A3. New treatment and potential retreatment areas on non-federal land within Crown Marsh

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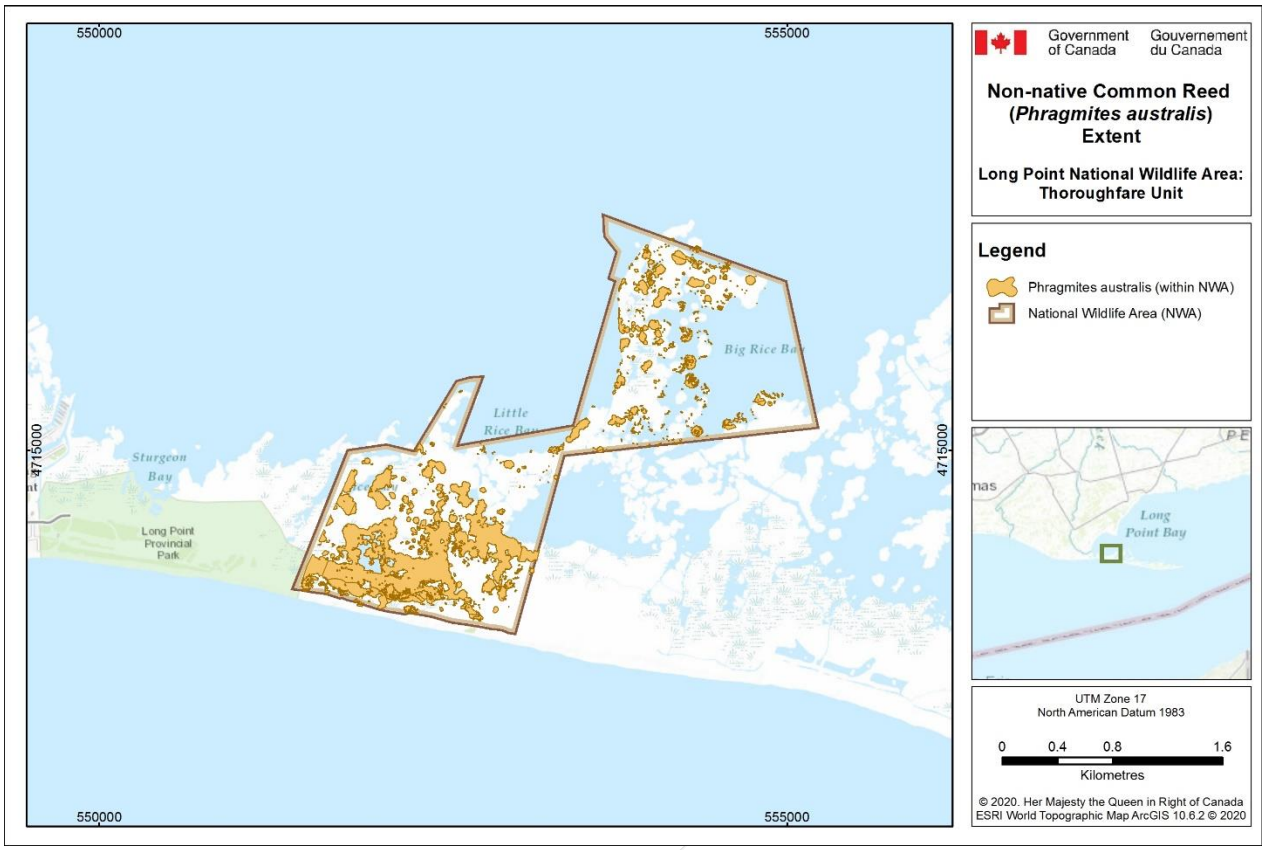

Figure A4. New treatment area on federal land within the Thoroughfare Unit, Long Point National Wildlife Area.

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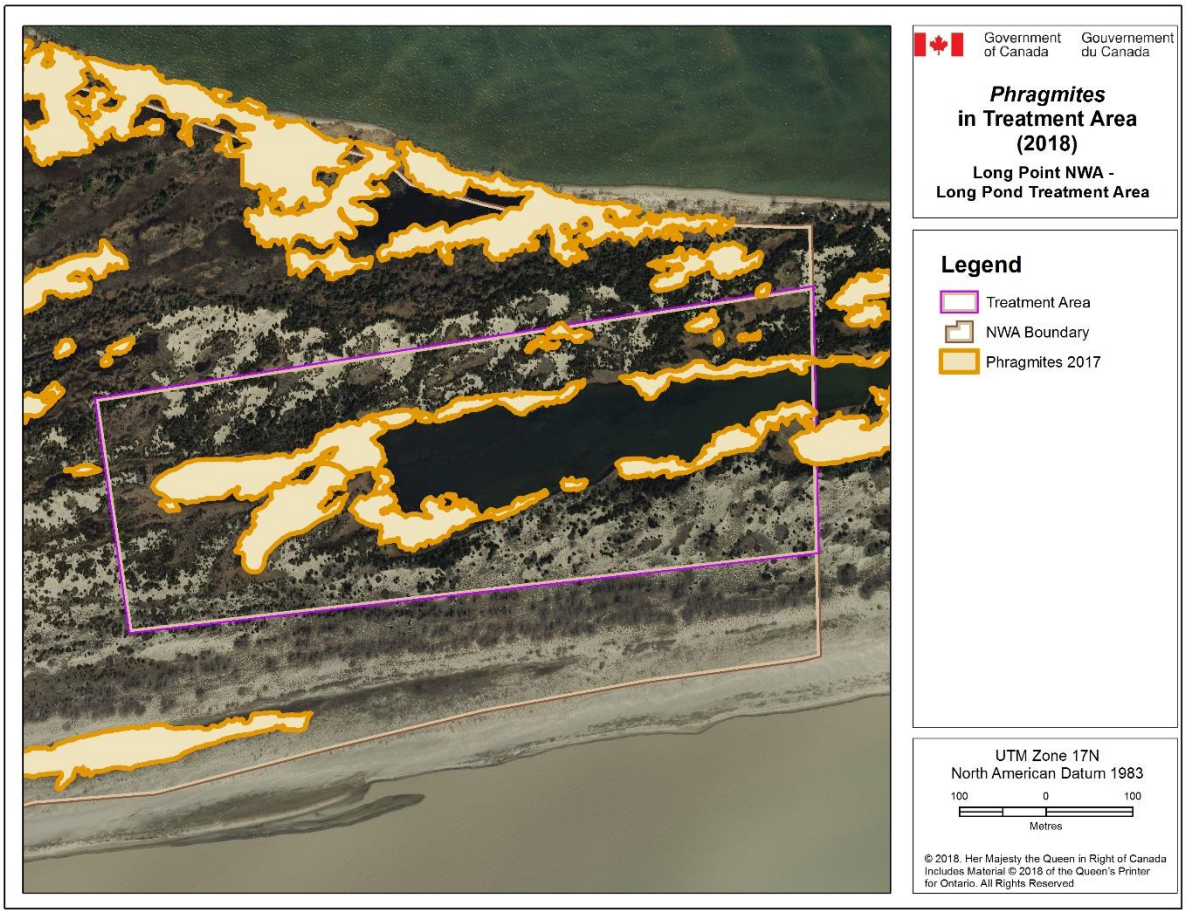

Figure A5. Potential retreatment area on federal land within the Long Point Unit, Long Point National Wildlife Area “Long Pond”.

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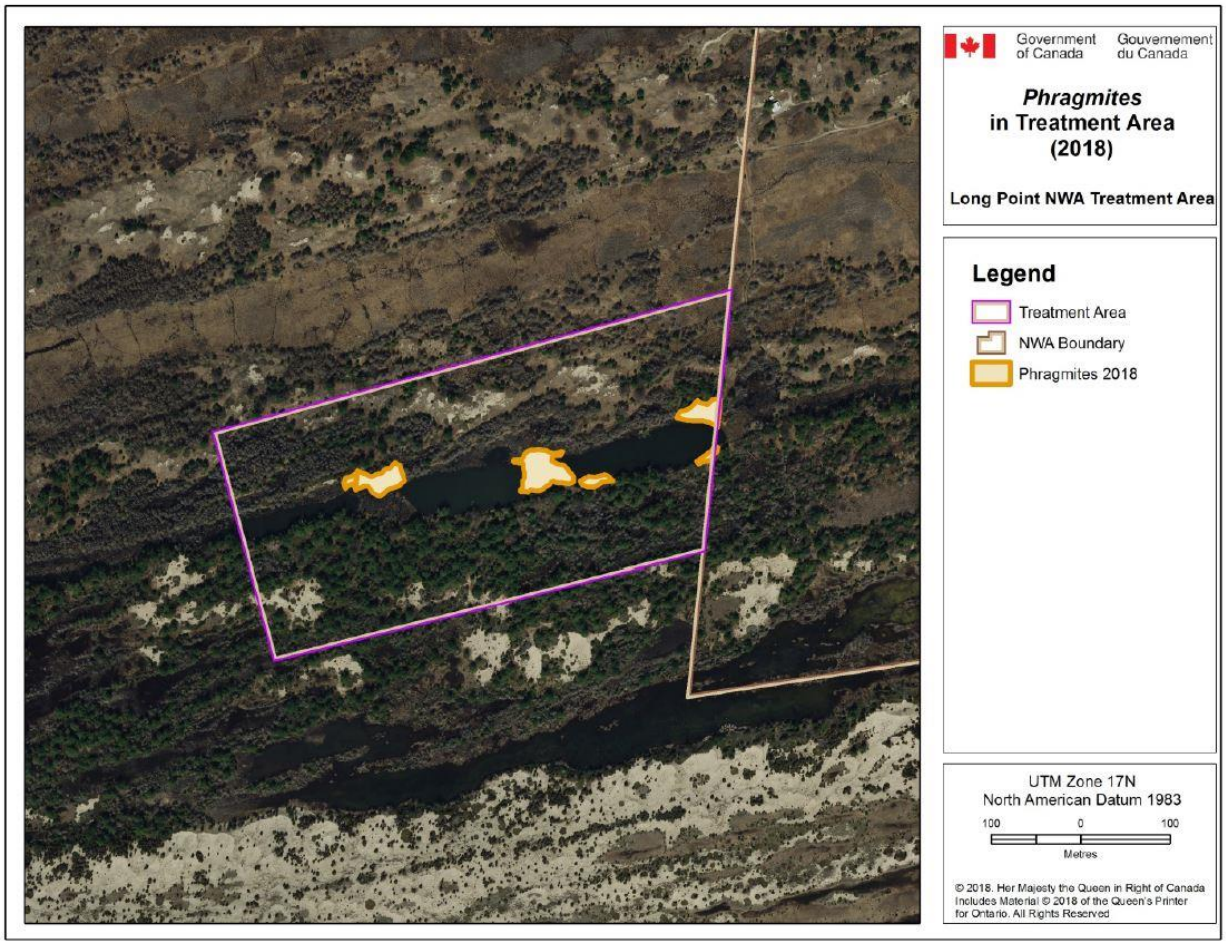

Figure A6. Potential retreatment area on federal land within the Long Point Unit, Long Point National Wildlife Area “Otter Pond”.

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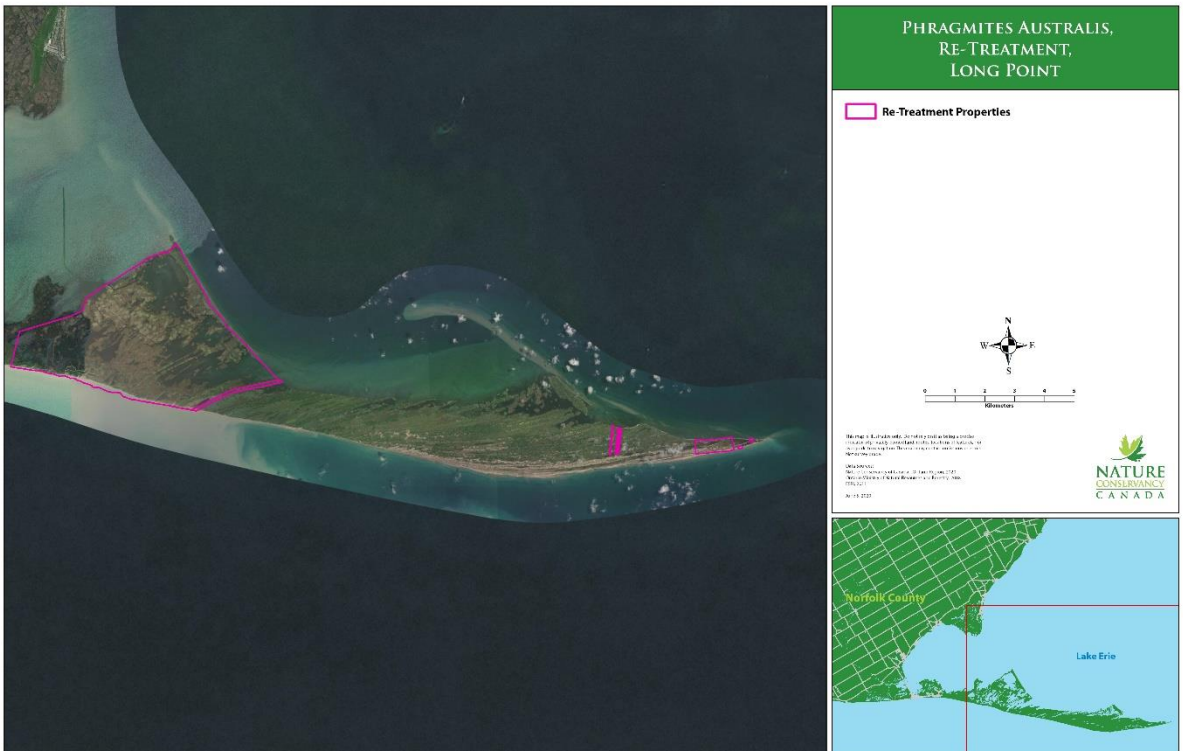

Figure A7. Potential retreatment area on non-federal land within the Long Point peninsula.

Figure A8. Potential retreatment area on non-federal land along the north shore of Long Point Inner Bay.

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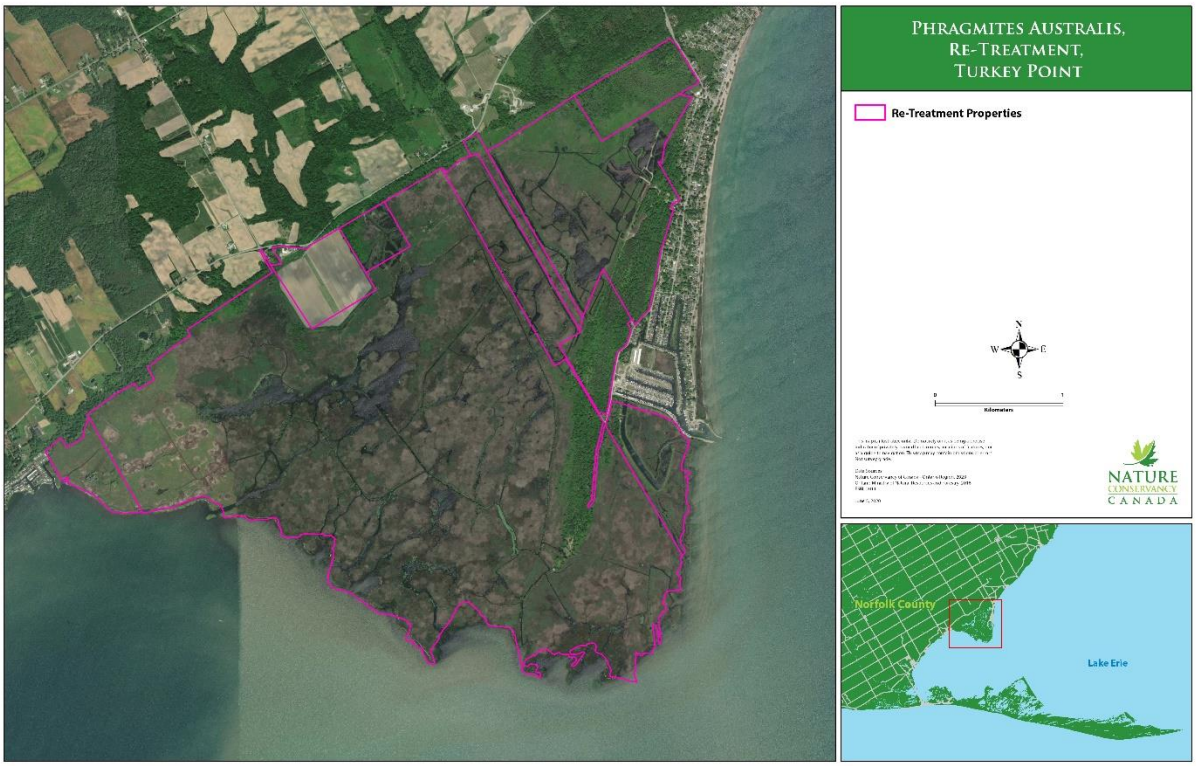

Figure A9. Potential retreatment area on non-federal land at Turkey Point.

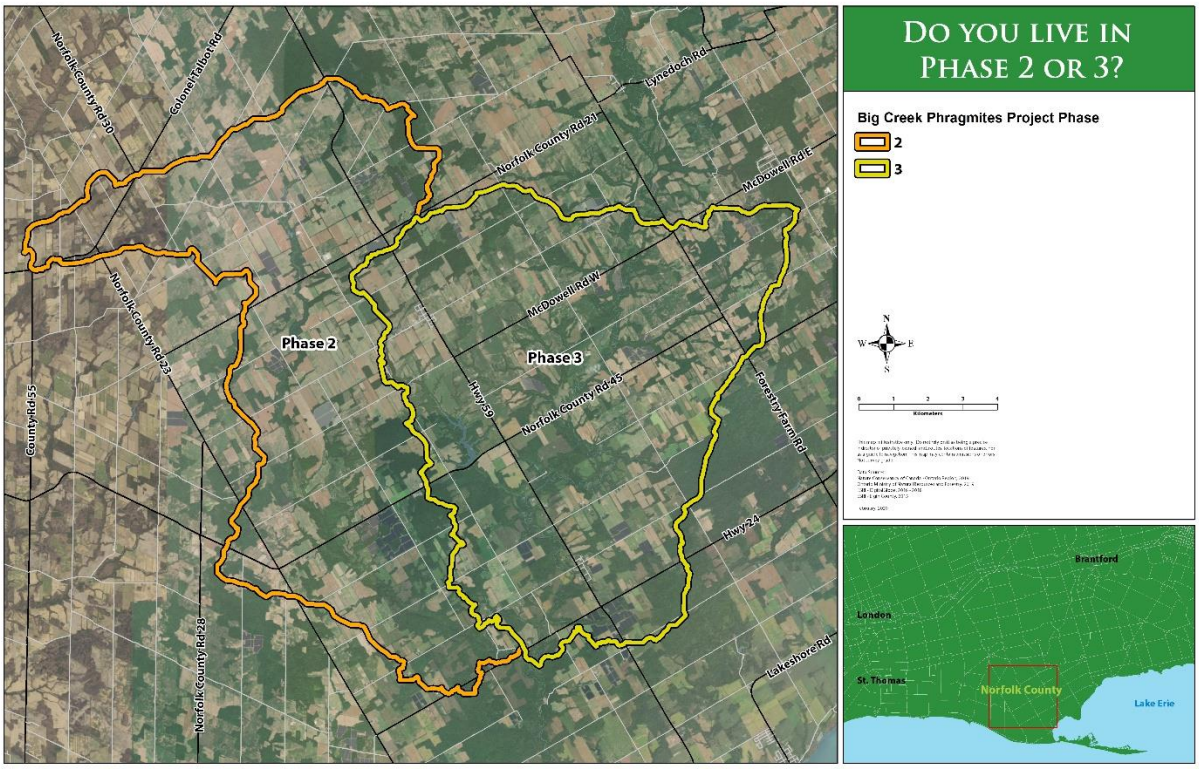

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Figure A10. Phases where properties will be surveyed for Phragmites and treated as necessary. Most sites are dry and not connected to waterways but rather low-lying areas at farm field edges etc.

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