Invasive *Phragmites australis* management within the Long Point Region

2020-2021 Implementation Plan [Version 4.0]

Big Creek NWA and Thoroughfare Unit, Long Point NWA

Canadian Wildlife Service – Ontario Region
Environment and Climate Change Canada
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1.0 Background Information

The Long Point region is internationally recognized for its ecological importance and unique geophysical attributes. Extending 40 km into Lake Erie in southern Ontario, Long Point is the largest freshwater sand spit in the world. The region is recognized as a UNESCO World Biosphere Reserve and an internationally important wetland under the Ramsar Convention. Long Point is a globally significant Important Bird Area for threatened and congregatory species, waterfowl, and migratory land birds. These ecological values are protected by a diversity of conservation landowners, including two National Wildlife Areas (NWA), a provincial park and provincial crown land, and thousands of additional hectares protected in conservation agreements. Finally, the Long Point area provides many recreational and tourism opportunities, including fishing, birding and hiking.

European Common Reed, *Phragmites australis* subsp. *australis* (Phragmites) is an invasive perennial grass, transported from Eurasia in the early 1900s. 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. In 2005, Agriculture and Agri-Food Canada identified it as the nation's "worst" invasive plant species (Catling, 2005). Growing up to 6m in height, and up to 1m below ground, Phragmites outcompetes native vegetation and changes the very nature of wetland systems. Once established, Phragmites forms extensive monocultures that displace native plant and animal species, decreasing biodiversity, and threatening the habitats of numerous provincially and federally listed Species at Risk (SAR). Phragmites is listed as threat in the Recovery Strategies for 15 federally listed SAR found at the two NWAs and management of Phragmites is specifically noted as an action for 9 SAR.

In the ecologically significant Long Point region, the spread of Phragmites has been exponential since the 1960s. Expansion is predicted to continue at a rate of 14-37% annually (Jung et al., 2017). Since 2016, provincial agencies and non-profit partners have implemented a management program that has resulted in the chemical and mechanical treatment of approximately 1,200 ha of Phragmites in the Long Point region. However, little management has occurred on federal land. In 2018, it was estimated that more than 800 ha of the 4,000 ha of NWA lands were dominated by Phragmites. Wetland ecosystems, hydrology and numerous SAR have been impacted by Phragmites and will be increasingly threatened as this plant continues to spread. As a result, Phragmites has been identified as a primary threat within Ontario's Long Point Walsingham Forest (LPWF) Priority Place and in the management plans of the Big Creek and Long Point NWAs. The LPWF Integrated Conservation Action Plan and the management plans for the Big Creek and Long Point NWAs have established a goal of reducing the extent of Phragmites to less than 10% of its 2018 extent by 2025. This project will achieve this goal by treating approximately 568-738 ha of Phragmites over the next 5 years.

2.0 Purpose and Rationale

The purpose of this project is to manage non-native Phragmites in the Long Point Region to reduce or remove its threat to SAR, and to the biodiversity and ecological integrity of these areas. Landowners surrounding the BCNWA and LPNWA are currently undertaking activities to manage Phragmites; since 2016, more than 1,200 ha, or virtually all of the Phragmites (with the exception of monitoring control sites) on non-federal land, has been managed. Phragmites is now not only a threat to SAR on federal lands but are also a source for reinvasion of adjacent properties. Inaction increases the threat to several SAR within the Long Point area, through the degradation

and alteration of available habitat, and the reduction in species' recruitment. The survival and/or recovery of 15 SAR is threatened by Phragmites within the BCNWA and LPNWA. Without management, Phragmites will continue to spread, failing to achieve management plan objectives and jeopardizing SAR and other wildlife populations.

A comprehensive program to manage Phragmites and restore natural wetland communities is necessary for the following reasons:

1. to implement recovery actions for SAR
2. to avoid further risks to SAR, and
3. to achieve the goals of conservation plans and the mandate of the Canadian Wildlife Service (CWS).

We propose a multi-year, adaptive, integrated pest management approach, based on best practices, sound science and four years of expertise gained in a pilot project led by the Ontario Ministry of Natural Resources and Forestry (OMNRF). This approach will include a variety of management tools, including the combination of chemical and mechanical techniques to kill the Phragmites and facilitate the restoration of native plant communities. A rigorous ecological monitoring plan will also be implemented to evaluate the impacts of the project on Phragmites, SAR and other ecological and physical conditions.

Management of Phragmites has been ongoing on non-federal lands within the Long Point region since 2016. While it is too soon to quantify the impacts of Phragmites management on SAR at the population level, monitoring indicates a positive response to wetland biodiversity post-treatment. Blanding's turtles and other turtle species have been found basking in treated, newly open areas, effectively increasing the available habitat. In addition, Blanding's turtles were found traversing areas where dead Phragmites had been rolled over winter, which previously would have been too dense to migrate through (Markle & Chow-Fraser, 2018). This would enable the turtles to travel more direct routes, decreasing migration distance and possibly increasing survival rates. Research has also demonstrated a significant positive impact of Phragmites management on the abundance of breeding marsh birds (*Botaurus* sp. and *Rallus* sp.) within the Long Point area (Tozer & Mackenzie, 2019). Further, aerial insectivores have been observed preferentially foraging over areas where Phragmites management has occurred, as compared to untreated sites (Rooney & Robichaud, 2019). Fowler's Toads (*Anaxyrus fowleri*) have been heard calling for the first time in seventeen years in areas where Phragmites has been managed (Eric Cleland, pers. comm., 2020). The OMNRF reported considerable increases in both open water and water/aquatic vegetation classes, primarily attributed to removal of Phragmites. This likely translates to increased diversity of wetland habitats and available fish habitat, and additional research was scheduled to occur in the fall of 2019 (Hogg *et al*., 2019). Populations of Bent Spike-rush (Eleocharis geniculate) have also shown signs of recovery in areas that have undergone Phragmites management (Rooney, pers. comm., 2019).

3.0 Project Description

Through the guidance of the Best Management Practices, developed by the OMNRF (2011) and the Michigan Department of Environmental Quality (2014), CWS-ON has considered the use of all approved methods and tools for Phragmites control to maximize treatment efficacy while minimizing non-target impacts. Because no single mechanism is effective on its own for this species, an Integrated Pest Management approach is required. Management actions may include a combination of chemical control (e.g., herbicide application) followed by cultural control (e.g., burning), and mechanical control (e.g., rolling or cutting). This approach follows best management

practices for Phragmites developed based on two decades of research in the U.S. (Hazelton, 2014; MDEQ, 2014,) and will benefit from the experience of four years of Phragmites management and research within the LPWF region conducted by the OMRNF, NCC, University of Waterloo, and one small-scale management project conducted by CWS-ON at Big Creek and Long Point in 2019

The proposed management would be initiated in mid-August 2020 and would be comprised of three key activities:

1) Herbicide application to Phragmites between August and October, to kill the plant and its roots
2) Cutting or rolling of dead stems, commencing in the winter after herbicide treatment to remove dead standing stalks and improve light penetration to the ground, and
3) Prescribed burns when the ground is frozen, to remove recalcitrant litter in dense stands, as appropriate and operationally possible (note: this is only possible where topography and appropriate weather conditions are suitable).

3.1 Herbicide Application

The glyphosate-based herbicide Roundup® Custom for Aquatic & Terrestrial Use (active ingredient glyphosate) will be used in this project, following all requirements of the *Ontario Pesticides Act*, the federal *Pest Control Products Act*, and all other relevant legislation. Roundup® Custom was selected due to its well-documented and monitored use in the U.S., as well as management and monitoring of projects conducted at Long Point since 2016. Glyphosate has been shown to be extremely effective in killing Phragmites (>90%), while minimizing impacts to non-target wildlife (Rooney 2017; Breckles and Kilgour, 2018). In addition, this formulation (Roundup® Custom) does not have a surfactant pre-mixed into the container, further reducing the potential non-target impacts; many commonly used surfactants are known to negatively affect aquatic organisms. Instead, the aquatic-safe surfactant Aquasurf® from Norac Concepts Inc. will be added to the herbicide. This product has been selected and approved by Pest Management Regulatory Agency (PMRA) as suitable for use in aquatic environments. By carefully selecting a well-monitored, safe and effective herbicide, and using it in in accordance with the label rates and combination with an approved, aquatic surfactant, potential harm to SAR will be minimized.

In all scenarios where herbicide will be used, it will be applied by a technician licensed by the province of Ontario. The applicator conducting all herbicide work will be qualified and specialized in both Phragmites management and in the restoration of native wetland habitats. The applicator who has conducted the Phragmites management to date is a professional biologist, trained in SAR identification in the Long Point region.

Where there are large, dense stands of Phragmites, herbicide application by helicopter is the preferred method because we can manage the largest area, with the greatest efficacy, while minimizing landscape impacts to SAR and other non-target attributes. Buffer zones are used to prevent harm to non-target species; boom sprayers are not used near locations where individual SAR, hibernacula or other sensitive areas have previously been documented. Non-target (non-SAR) vegetation existing within dense Phragmites stands would be negatively impacted by application, of herbicide; however, it is uncommon to find native vegetation in these areas. Glyphosate is absorbed by the leaves of the plant, and therefore underground native seeds and rhizomes are not impacted, preserving the native seedbank.

In areas where aerial application is not appropriate (buffer zones such as property lines), herbicide will be applied by hydraulic sprayer affixed to a Marsh Master. A Marsh Master is a lightweight, amphibious vehicle, specialized for use in wetland environments. It is slow moving and has minimal landscape impacts, reducing the likelihood of non-target impacts. Jon boats can be used to treat Phragmites located in areas adjacent to waterbodies, particularly if there are SAR occurrences preventing aerial application. They are also beneficial in accessing sites that are considered too sensitive for land-based vehicle use. Herbicide can be sprayed from the boat if the Phragmites is within reach, or staff can treat on foot using the hose and spray wand. Finally, backpack sprayers are useful tools when Phragmites patches are sparse, or near SAR and/or sensitive habitats. This enables highly targeted application, avoiding potential impacts to non-target species.

3.2 Mechanical Management

Mechanical management of Phragmites, as it relates to this project, includes cutting and/or rolling of recalcitrant stalks after being treated with herbicide. Cutting and rolling of Phragmites is not an effective management strategy on its own, as it leaves roots and rhizomes intact, and regrowth will occur the following spring. However, when used in combination with herbicide, cutting and rolling can be very effective. These methods could be conducted as soon as shoots emerge in spring; however, this coincides with sensitive SAR life stages. Therefore, cutting and rolling will only occur between November and March. Marsh Masters with appropriate attachments are the most efficient tool for cutting and rolling. A cutting blade severs stalks just above ground level, with minimal landscape impacts. Rolling of dead standing stalks increases the visibility of new Phragmites growth, making retreatment easier and more effective. Furthermore, rolling can decrease seed dispersal by reducing the likelihood of dispersal via wind, and enable easier access to sites by track vehicles. It also creates migration routes with fewer physical barriers for herpetofauna. In the years immediately following management, it is possible that the rolling of stalks could reduce the overall vegetative canopy, thereby reducing the habitat of some species. However, one native vegetation is restored, the quantity and quality of habitat available to these species will increase.

Following cutting and rolling, prescribed burns are an effective method to remove excess biomass and help enable recolonization of native vegetation the following spring. To reduce impacts to SAR, burns would only be conducted during the winter, as appropriate and operationally feasible, by trained and licensed professionals after obtaining appropriate permits. In 2019/2020, water levels in the Long Point region were too high to conduct burns, but it is possible that this could change in 2020 and 2021.

4.0 Site-Specific Management Approaches

4.1 Big Creek National Wildlife Area

Where dense patches of Phragmites are of significant size, herbicide will be applied aerially via helicopter with a boom-sprayer. A helicopter launch pad will be established within the adjacent Flight Marsh (owned by the Nature Conservancy of Canada). Herbicide will be delivered by a truck, and all helicopter activities (take off, landing, fueling) will occur at the launch. A helicopter would effectively treat the majority of Phragmites at BCNWA; however, different strategies will be required adjacent to trees or within the buffer of the aerial application. These include use of a Marsh Master, Jon Boat or Backpack Sprayer.

Where there are dense patches of Phragmites, a Marsh Master will be required to travel through the patch to treat stems on either side of the vehicle by way of hydraulic sprayer.

4.2 Thoroughfare Unit, Long Point National Wildlife Area

Compared to areas nearer the tip of Long Point, the Thoroughfare Unit (TU) is considered fairly accessible. Roads to the west of the unit and beaches along the southern border mean that supplies can be delivered by vehicle and enable easier access for monitoring. The southern and northern borders and the edges of the channels in this unit are also accessible by boat, which could be used to both deliver supplies and treat buffer areas. With permission, a helicopter launch pad will be established within Long Point Provincial Park lands, along the south shore road. Herbicide will be delivered by a truck, which will travel to the launch pad using the same south shore road. All helicopter activity (take off, landing, refueling, etc.) will take place at this location. Given the density of Phragmites within the unit, it is expected that the majority (>90%) will be treated by aerial herbicide application. A Marsh Master will be required for treatment of buffer zones around trees and SAR, and will access the site by travelling along the south shore road. Once it reaches the western border of the TU (approximately the end of the established road) the Marsh Master will travel along the pre-existing ATV trails, which run parallel to the beach. Access to inner marshland can be reached from this ATV trail. These same access points will be used for mechanical management over the winter.

5.0 Environmental Mitigation

5.1 Chemical Control

An herbicide (Roundup® Custom for Aquatic & Terrestrial Use) will be used in this project. This use will follow all requirements of the *Ontario Pesticides Act*, the federal *Pest Control Products Act*, and all other relevant legislation. Use of this pesticide will be done following Integrated Pest Management principles including:

1. Focusing control actions to vulnerable stages of the target plant;
2. Using appropriate application technology to reduce non-target impacts;
3. Monitoring weather and only applying when off-target deposition can be minimized;
4. Integrating herbicide control with other physical methods (rolling, burning) to maximize effectiveness;
5. Associated monitoring of effects on soil, water and wildlife;
6. Monitoring, evaluation and reporting of the results of this spray program.

5.2 Reducing Non-target Impacts to Wildlife and Plants

5.2.1 Herbicide Application Area

Herbicide application will be targeting Phragmites plants directly and will not be sprayed in open water areas. All efforts will be undertaken to minimize non-target impacts to other plant species. The timing of herbicide application will also assist to avoid impacts to most native plants as they will be entering dormancy for the winter, although it is rare to find

native plants intermixed with dense stands of Phragmites, and therefore it is unlikely that native plants will come in contact with any herbicide.

5.2.2 Herbicide Application Timing

Herbicide application may occur any time in 2020 between August 15 and October 31; however, most aerial and ground treatment will most likely occur from September 8 to 26. This timing window is ideal for reducing indirect impacts, as most bird breeding/nesting seasons are completed, amphibians and reptiles will be staging (preparation stages for hibernation), most native plants have senesced, insects have completed the majority of their life stages, and Phragmites is at its most vulnerable.

5.2.3 Mechanical Management Timing

Once treated, follow up mechanical management is an important component of an integrated management plan for Phragmites. Rolling and/or cutting of dead stalks of Phragmites generally occurs in the winter months when the ground is frozen, enabling access by equipment with reduced landscape impacts, and local species have migrated or are hibernating. Therefore, there are no significant non-target impacts predicted to result from mechanical management; although minor disturbances may occur, they are not expected to have significant impacts on species, and will be outweighed by the overall benefits of the project.

Prescribed burns for Phragmites may be undertaken between November 1 and March 31, 2020, but is dependent on several environmental factors, including weather, water levels and topography.

5.2.4 Weather Contingencies

Herbicide application will be guided based on the herbicide and surfactant product labels, as prescribed by the PMRA; herbicide will only be applied when winds are below 16 km/hr, there is no forecasted precipitation in the 24 hours following application, and temperatures are moderate.

Winter ground management will only occur within restricted weather windows, to reduce the likelihood of harm to non-target species. In particular, rolling will only occur once the ground has frozen, and when the air temperature has been below 5°C for more than 24 hours; if the temperature rises above 5°C, all work will cease. Further, if conditions allow for controlled burns to occur, wind direction and precipitation will greatly impact the timing of these activities. CWS-ON will work with prescribed burning experts to determine the optimal timing.

5.2.5 Motorized Access

In order to reduce impacts to wildlife, any motorized access to areas without established roads for the purpose of Phragmites control will be limited to:

- Lightweight, slow-moving vehicles (i.e. Marsh Master), or
- Boats

6.0 Monitoring

To assess the efficacy of treatment and the associated ecological impacts, a monitoring plan was developed by CWS-ON and Dr. Rebecca Rooney of the University of Waterloo. Dr. Rooney has worked with CWS-ON in the past, drafting much of the 2019 monitoring plan, and has conducted monitoring associated with the OMNRF's Phragmites management program in the Long Point

Region since 2015. Monitoring efforts will be implemented prior to and following management, such that a baseline is established, and the impacts of management can be analyzed over subsequent years. The use of reference sites will enable an assessment of habitat restoration following management; reference sites will represent a “goal state” to which outcomes in treatment areas can be compared. Habitat restoration is the primary objective of this project and will be the focus of monitoring efforts.

The following monitoring objectives have been established for management at the 2020 sites (Big Creek NWA and Thoroughfare Unit LPNWA), such that CWS-ON can assess the immediate (efficacy of treatment, non-target impacts) and long term (habitat restoration, impacts to native biota) outcomes.

1. Mapping of key SAR habitat features and SAR plants
2. Assessment of effects of herbicide application
3. Vegetation recovery capacity
4. Maximum exposure risk of alcohol ethoxylate homologue (AEH), glyphosate and its primary breakdown product AMPA in water and sediment
5. Effects of treatment on wetland biota habitat use
6. Assessing fish habitat

In addition to newly established monitoring protocol to be implemented within the 2020 sites, CWS-ON will continue to implement the 2019 monitoring plan at the established treatment, control and reference plots.

To address the objectives outlines in 2020 monitoring plan, several protocols will be implemented, as outlined in Section 6.1. Note that this is a brief summary of the monitoring plan, and a more detailed description of the objectives and protocols can be found in the “*2020 Monitoring plan to address potential immediate and acute effects of glyphosate-based invasive Phragmites australis control actions*.

Limitations and restrictions imposed by COVID-19 have impacted some of the planned monitoring. The NWAs were closed to any access, including public, contractor and CWS-ON personnel, from March 25 to June 1, 2020. This prevented the planned spring surveys from occurring, which impacted much of the bird and amphibian monitoring. At this time, NWAs are open to contractors, allowing for certain components of the monitoring plan to occur. Fieldwork to be conducted by CWS staff remains restricted, but some activities have been approved and are moving forward as planned.

6.1 Vegetation Surveys

Control, treatment and reference plots from the 2019 sites will be surveyed by CWS-ON staff in July or August to assess control efficacy and native vegetation recovery. At the 2020 sites, Dr. Rooney’s team will do semi-systematic surveys within SAR candidate habitats; any SAR plant encountered will be censused and mapped. These surveys will occur in June and July, when vegetative conditions are optimal; much of the native vegetation will have emerged and be identifiable, while Phragmites will only be sprouting, making it easier to navigate the area.

Vegetation surveys at a regional scale will occur using high resolution satellite imagery. CWS-ON will acquire pre- and post-management WorldView-2 imagery and, through a probable contract with NCC and McMaster University, analyse changes in vegetation cover and open water, and look for areas of overspray.

6.2 Water and Sediment Sampling

To test for the presence of alcohol ethoxylates (surfactant), and glyphosate (herbicide) and its derivatives (AMPA) in the water and sediment, CWS-ON will sample the locations of highest exposure to herbicide application. At the new 2020 sites, these locations are still to be determined, but will likely fall within the largest patches of dense Phragmites that were treated through aerial application. Sampling events will occur prior to treatment, 24 hrs following treatment, 30 days following treatment, and 1 year following treatment. At the 2019 sites, CWS-ON will resample once at each area of highest exposure. Samples will then be sent to the University of Guelph for analysis.

6.3 Phragmites Mapping

Through a contract with NCC and McMaster University, CWS-ON has acquired high resolution WorldView-2 satellite imagery from July 2018. Phragmites within the Big Creek NWA and Thoroughfare Unit of the Long Point NWA will be delineated and mapped by Dr. Pat Chow-Fraser of McMaster University. This updated mapping will then be used to inform management actions; NCC will incorporate herbicide buffer zones into the mapping, differentiating areas to be treated by ground versus aerial herbicide application. For Phragmites patches to be treated aerially, CWS-ON will create bounding boxes around the polygons to enable the use of a GPS auto-boom; irregular shaped polygons cannot be treated effectively using aerial application, and so must be converted into rectangular polygons, which allow the helicopter pilot to fly in consistent, straight swaths.

Post-treatment WorldView-2 imagery collection in summer of 2021 will be analysed and compared to pre-treatment imagery to assess the efficacy of management. Post-treatment imagery will also highlight areas which may require re-treatment in subsequent years.

6.4 Wildlife Monitoring

6.4.1 Breeding Bird Point Count Surveys

Due to unforeseen NWA closures, marsh bird point counts were cancelled for 2020. Instead, historic Marsh Monitoring Program (MMP) data will act as a substitute for the pre-treatment baseline. Monitoring protocols, as outlined in the 2020 Monitoring Plan, will be implemented within the Big Creek NWA and Thoroughfare Unit of the Long Point NWA in the spring of 2021. Results will be compared to the historic baseline, to provide insight into changes in marsh bird diversity and abundance following Phragmites management.

6.4.2 Automated Recording Units

Due to unforeseen NWA closures, Automated Recording Units (ARUs) were not deployed in the spring of 2020. Instead, Dr. Rebecca Rooney's team will work with CWS-ON to analyse historic ARU recordings, with the goal of creating a reliable pre-treatment baseline. Post-treatment recordings collected in 2021 and beyond will be compared to this baseline to assess changes in species diversity and abundance following Phragmites management. In addition, Dr. Rebecca Rooney's team will begin to develop an automated recognizer for King Rail (*Rallus elegans*).

6.4.3 Turtle Visual Encounter Surveys

Due to unforeseen NWA closures, turtle visual encounter surveys were not completed in 2020. Instead, historic turtle monitoring data will be compiled and used to develop a pre-treatment baseline for diversity, abundance and habitat use. This baseline will rely heavily on the telemetry and visual encounter surveys conducted by Scott Gillingwater and Dr.

Chantel Markle within the Big Creek Unit of the Big Creek NWA. CWS-ON will then run a competitive bid contract in 2021 to collect post-treatment data within the Big Creek NWA, and pre-treatment data within the Long Point Unit of the Long Point NWA.

6.4.4 Fowler's Toad Monitoring

Dr. David Green from McGill University will continue to conduct his Fowler's Toad monitoring program within the Thoroughfare Unit of the Long Point NWA. CWS-ON has entered into a 2-year contract with Dr. Green for this work. His historic dataset, in combination with the data collected in 2020, will be compared to post-treatment monitoring that is planned for the spring and summer of 2021. Unforeseen NWA closures have delayed the start date of the research, but a modified monitoring approach was implemented.

6.4.5 Waterfowl Surveys

Beginning in the summer of 2020, CWS-ON will conduct waterfowl surveys within the Big Creek NWA. A proposed monitoring protocol is currently under development, and efforts are being led by Brigitte Collins of CWS.

6.4.6 Fish sampling

CWS-ON is implementing a fish monitoring protocol that meets the terms and conditions of the SARA permit and Fisheries Act Authorization. CWS-ON will estimate the effect of the management on fish habitat using satellite imagery collected before and after treatment to compare the amount of open water habitat created. CWS will also conduct fish kill surveys before and after herbicide application in September 2020. A more rigorous protocol may be developed for subsequent years to monitor the impacts of management on fish abundance, diversity and habitat use.

This monitoring plan is detailed in the "*2020 Monitoring Plan to Address Potential Immediate and Acute Effects of Glyphosate-based Invasive Phragmites australis Control Actions*". The Big Creek NWA is also the location of two long-term SAR turtle monitoring projects (Gillingwater, Markle). Telemetry data collected by these researchers has been valuable in determining both the location of SAR individuals within the Big Creek NWA and in evaluating the risk of management activities on SAR. CWS-ON hopes to continue this telemetry work within the Big Creek or Long Point Unit from 2021-2025; by conducting telemetry both before and after management, CWS-ON will aim to build a comprehensive understanding of changes in habitat use following Phragmites management.

7.0 Adaptive Management Framework

Through transparency of outcomes and the implementation of adaptive management, this project will lay the foundation for future management and monitoring efforts. Besides directly addressing the objectives of the monitoring plan, these monitoring activities will also increase our understanding of SAR and other wildlife within the NWAs, including abundance, distribution and habitat use. This information will help to inform future species assessments, recovery strategies and Critical Habitat.

The adaptive management framework also allows for the annual integration of lessons learned into the management and monitoring program. In the event that monitoring reveals unintended or unanticipated impacts, such as negative effects on non-target species, the approach would

be reconsidered and altered accordingly. Internal and external partners and experts would be consulted, such that the best alternative approach would be adopted.

8.0 Communications and Notification

Pesticide use notification plans for the Long Point Region are prepared in accordance with the requirements of the Ontario Pesticides Act, 1990. All notification actions are designed to meet the public's general right to know about herbicide applications made to outdoor public places that are owned or controlled by public authorities, and allow members of the public to take action to avoid potential contact with herbicides, if they wish. A notification plan developed by the OMNRF, NCC and CWS-ON was developed with input from the Haldimand-Norfolk County Health Unit. CWS-ON will ensure that herbicides are applied to public places in a safe, responsible manner, minimizing harm to the community and the environment. CWS-ON will notify members of the public and the following stakeholder groups about herbicide applications made for the purpose of controlling Phragmites in aquatic areas within the Long Point Region prior to the commencement of any work:

1. Residents within 800 m of an herbicide application area that may have a surface water intake – if deemed necessary by CWS-ON and/or MECP, notices will be delivered to nearby residents to alert them of the timing and extent of herbicide application.
2. Boaters, hunters, daily park users – signage will be erected prior to herbicide application to alert the public. Hunters will not be permitted to hunt within the herbicide application window.
3. Municipality, Health Unit, Ontario Provincial Police, Fire Department, local hospitals
4. Bird Studies Canada
5. Long Point Provincial Park staff, day users and campers
6. Phragmites Action Alliance
7. The Nature Conservancy of Canada
8. The Ministry of Natural Resources and Forestry

Notification will occur using a variety of methods, which aim to inform all impacted parties listed above. These methods include:

- Signage at NWA access points, general information areas, and high traffic areas
- Roadside signage on the causeway and within the cottage communities in Crown's Marsh
- Public notice, distributed to major newspaper outlets
- Verbal information relay at the provincial park and NWA offices
- Email and phone contact information, to be listed in public signage and available for questions and concerns
- Website postings, including the implementation and sampling plans, on relevant websites, including Long Point Phragmites Action Alliance (longpointphragmites.ca) and the Long Point Ratepayers' Association (longpointrpa.com).

2020 is the second year that CWS-ON has been engaged in Phragmites management in the Long Point Region, however, a larger, regional program has been ongoing since 2016. During this period, the project team (OMNRF, NCC, Ontario Parks and now CWS-ON) have consulted with and continued to engage with multiple parties, including:

- Norfolk County
- Haldimand-Norfolk Health Unit

- Long Point Phragmites Action Alliance
- Long Point Ratepayers' Association
- Long Point Waterfowlers' Association
- Private organizations, including Bird Studies Canada, Ducks Unlimited Canada and the Long Point Company
- Indigenous groups in the region (10 communities)
- Residents of the Long Point Region

Each year (typically in June or July), OMNRF, NCC, Ontario Parks and CWS-ON host three meetings with various partners including:

1. A meeting with the Haldimand-Norfolk Health Unit, Norfolk County and the Ministry of the Environment, Conservation and Parks to discuss surface water monitoring and public notification;
2. A public engagement session with local residents to provide an overview of the proposed work and the use of an herbicide; and,
3. An Indigenous engagement session with first nation communities in the region.

The objectives of these meetings are to inform, engage and seek input. In 2020, due to social distancing requirements associated with the virus COVID-19, CWS-ON and its partners have conducted virtual engagement sessions, including a webinar with the health unit on June 10, and a public and Indigenous engagement webinar on July 30. Typically, the public and Indigenous engagement sessions would be held separately and in-person but were adapted due to COVID-19 restrictions. The 2020 engagement sessions, as well as those run in the past, have been positively received.

9.0 Mapping

9.1 Long Point Walsingham Forest

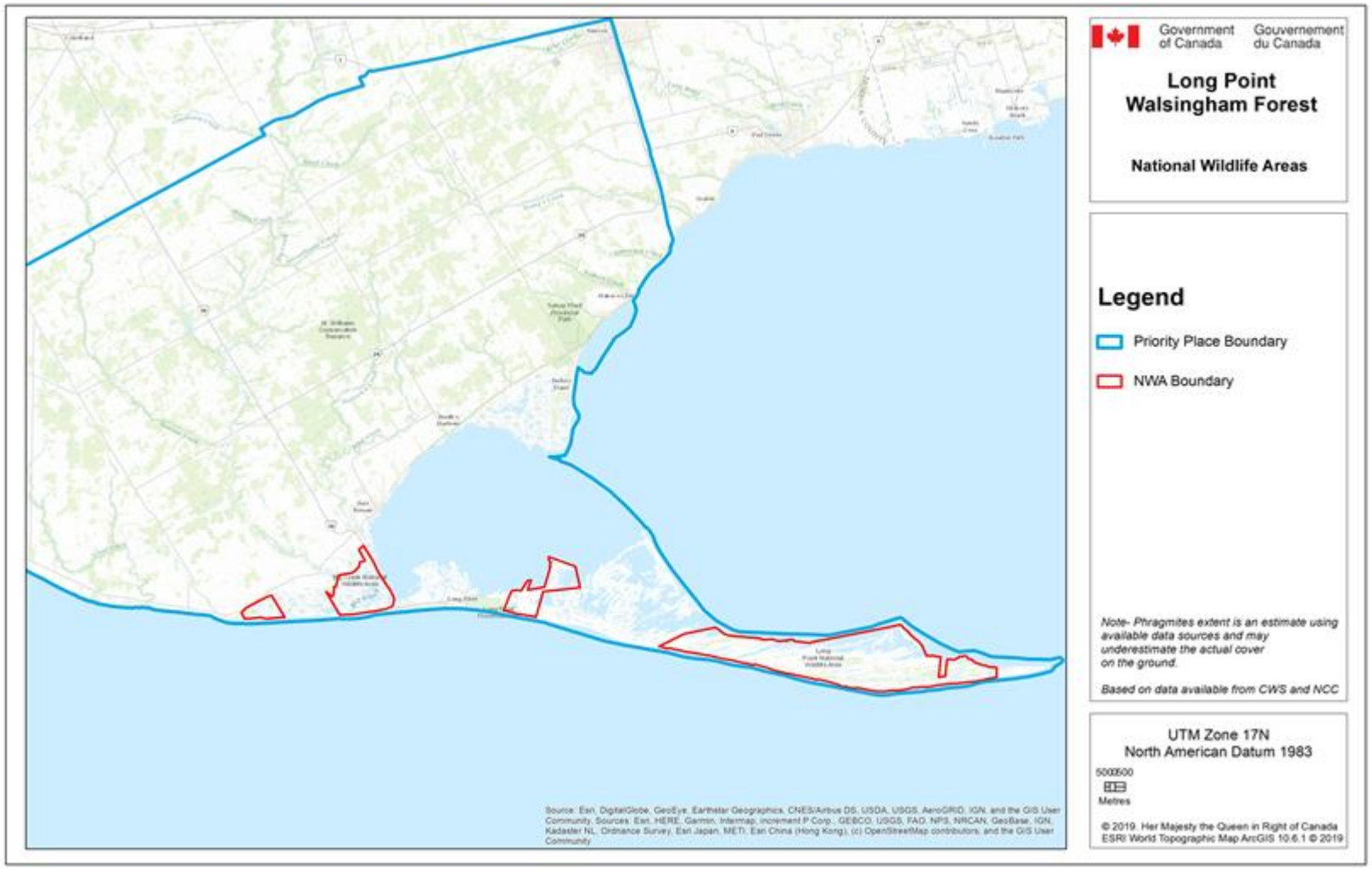

Figure 1. The National Wildlife Areas where Phragmites management is being proposed between 2020 and 2025 in relation to the CWS-ON Priority Place, Long Point Walsingham Forest.

9.2 Big Creek National Wildlife Area

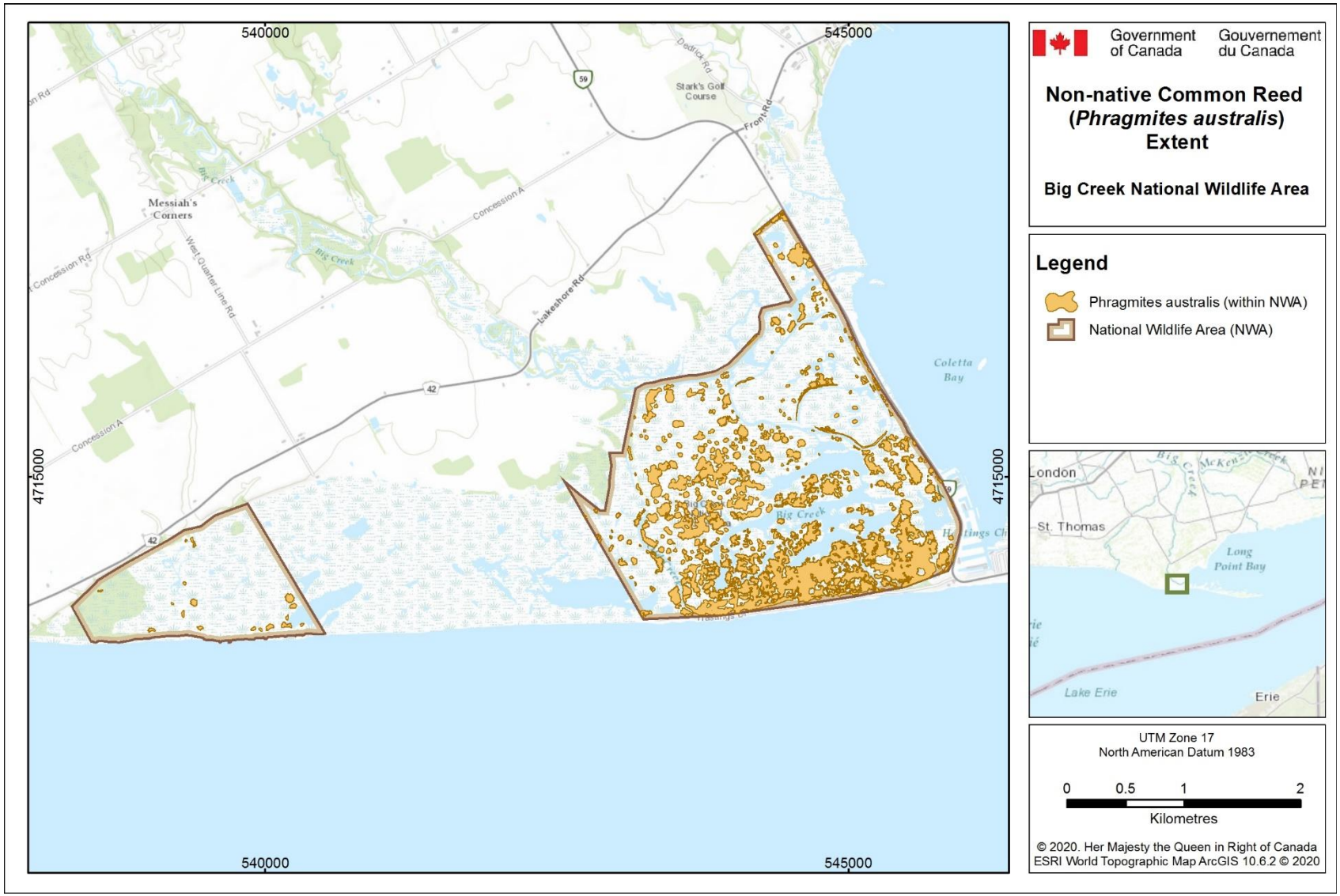

Figure 2. Phragmites extent within the Big Creek National Wildlife Area. CWS-ON intends to treat 90% of the Phragmites within the NWA boundary between August 2020 and March 2021.

9.3 Thoroughfare Unit, Long Point National Wildlife Area

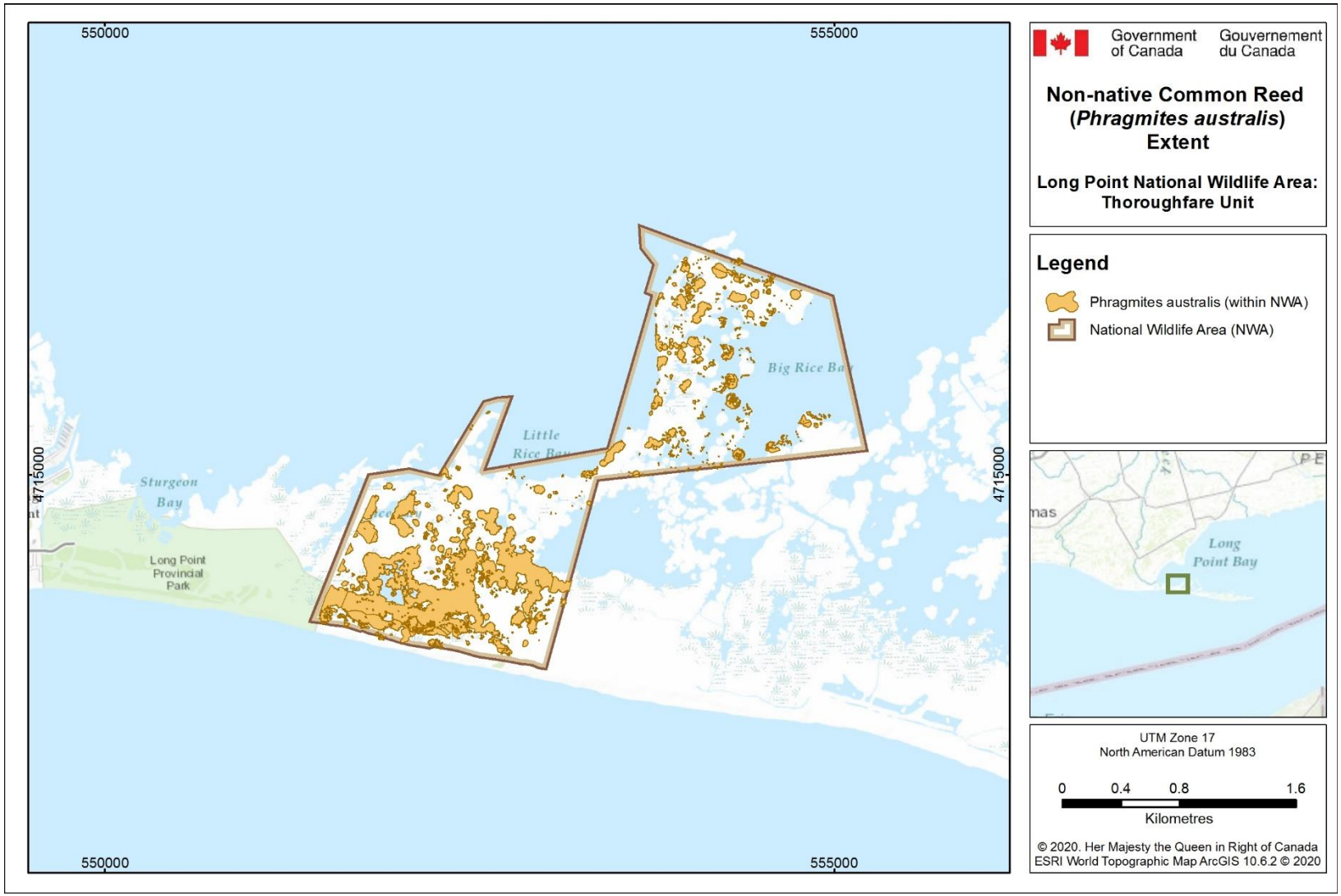

Figure 3. Phragmites extent within the Thoroughfare Unit of the Long Point National Wildlife Area. CWS-ON intends to treat 90% of the Phragmites within the NWA boundary between August 2020 and March 2021.

10.0 Contact Information

Further information on the project and herbicide use can be obtained by visiting the Long Point Phragmites Action Alliance at longpointphragmites.ca. Questions regarding the project and activities on federal lands can by directed to the following contacts:

Project Manager: Heather Braun, Habitat Biologist
Canadian Wildlife Service Environment and Climate Change Canada
Phone: 416-739-5827
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