

A Not-for-Profit Facilitating Effective, Efficient and Environmentally Responsible Control Programs

# Municipality of Lambton Shores Invasive *Phragmites* Management Plan Version ||

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Prepared for: Municipality of Lambton Shores 7883 Amtelecom Parkway Forest, ON NON 1J0

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Cover photo: Nancy Vidler, Chair, Lambton Shores Phragmites Community Group (LSPCG) on the Port Franks Homeowners Association beach in 2009 prior to Phragmites control (Photo source: Bill MacDonald, LSPCG).

Unless otherwise stated, all photos included in this document were taken by J.M. Gilbert.

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### **1.0 INTRODUCTION**

The first Invasive Phragmites Management Plan for the Municipality of Lambton Shores (hereafter referred to as the LS Management Plan) was created in 2013. This guiding document came about due to the efforts of the Lambton Shores Phragmites Community Group (LSPCG), a local volunteer organization that has been spearheading control efforts in the Port Franks and surrounding areas since 2009. Members of the LSPCG recognized the need for a comprehensive and, pro-active approach, that would encompass the entire Municipality, as this would reduce further spread, negative impacts, control costs and, ensure long-term protection from re-invasion (Figure 1).



*Figure 1. Location of the Municipality of Lambton Shores and scope for the Phragmites Management Plan (Source: Municipality of Lambton Shores Official Plan 2015/2019).* 

Back in 2013, the LS Management Plan was the only known comprehensive Phragmites control plan in existence in Ontario and throughout the Laurentian Great Lakes. It addressed the following eleven components which were considered essential for a successful control program at the Municipal level: 1) determining the locations of Phragmites throughout the Municipality, 2) creating a Phragmites Control Program Coordinator position, 3) acquiring required funding, 4) increasing public awareness, 5) increasing local community engagement, 6) undertaking control project management, 7) implementing a long-term control strategy, 8) tracking control efforts, efficacy and barriers, 9) listing Phragmites as a noxious weed, 10) expanding the control program to include adjacent municipalities, and 11) advocating for the availability of water-safe herbicides. Since this LP Management Plan was written, there has been a considerable increase in Phragmites awareness, control projects, and funding support as well as available tools throughout the province.

In 2021, Health Canada's Pest Management Regulatory Agency (PMRA) and the Ontario Ministry of Environment, Conservation and Parks (MECP) approved the use of the water safe herbicide Habitat Aqua. This was a key tool that had been lacking in the available control options and was deemed imperative for achieving effective Phragmites control in Ontario. The Municipality of Lambton Shores took a leading role lobbying the Provincial Government on numerous occasions to help make this herbicide available in Ontario. The LSPCG also wrote numerous letters to the Premier, Minister of Natural Resources, MPP Monte McNaughton and, in so doing, they helped raise awareness about invasive Phragmites at Queens Park.

In 2020, Ducks Unlimited Canada (DUC), the Federation of Ontario Cottagers Associations (FOCA), the Invasive Species Centre (ISC), Nature Conservancy of Canada (NCC), the Ontario Federation of Anglers and Hunters (OFAH), and the Ontario Turtle Conservation Centre (OTCC) formed the Green Shovels Collaborative. In 2022, the Ontario Invasive Plant Council (OIPC) also became a partner. This Coalition provided the Provincial Government with 'shovel ready' opportunities to increase green jobs, economic recovery and environmental progress on invasive species. Provincial funding was provided to support a number of initiatives including the development of A Strategic Framework for Coordinated Phragmites Management in Ontario, a Cost-Benefit Analysis report, a Guiding Document for Municipalities, a Northern Ontario Control Strategy as well as grants to support Phragmites control projects. Work is ongoing to increase control capacity through the development of required tools, securement of long-term, sufficient funding, and implementation of a widespread public education campaign. More information about these Green Shovels initiatives can be found at https://www.greenshovels.ca. Municipalities that have Management Plans and programs already in place, such as Lambton Shores, are well positioned to receive funding support.

As well, significant progress has been made in reducing Phragmites within a number of areas throughout Lambton Shores over the past decade. The main focus for control efforts has been sections of the Lake Huron shoreline in West Bosanquet, Ipperwash and Port Franks as well as throughout the Port Franks community including L-Lake and the Ausable River. The LS Management Plan proved invaluable for guiding these control efforts and for obtaining project grants. A summary of these efforts is provided in Section 2.0 of this document. There remain however, a number of sites where Phragmites control has yet to take place, including Municipal land, or where improvements to control efficacy and efficiencies can be made. This updated Lambton Shores Phragmites Management Plan (Version II) provides a strategy for addressing

these identified gaps and guiding the implementation of a successful, comprehensive and viable Phragmites Control Program.

## 2.0 SUMMARY OF INITIATIVES UNDERTAKEN

The majority of control work that has occurred in the Municipality of Lambton Shores during the past decade has taken place in the communities of Port Franks, Ipperwash, and sections of shoreline within Ward 4 (Phragmites Management Area 5: West Bosanquet as identified in the initial LS Management Plan). These areas were all experiencing significant Phragmites infestations. Additional control work also occurred in Grand Bend and on private lands throughout the region where Phragmites was just beginning to establish. Control of Phragmites along Municipal, County and Provincial roads has also been taking place. Almost all of the projects were initiated and/or supported by the LSPCG in partnership with many groups and organizations. A brief synopsis of these groups and the work undertaken is provided below.

#### 2.1 Lambton Shores Phragmites Community Group and Partners

The Lambton Shores Phragmites Community Group (LSPCG) is comprised of the following members: Bill MacDonald, Derek Scott, Ray Horban, Janice and Petar Cuckovic, Nette Pachlarz, Michelle Hay, Paul Peterson, Sandra Marshall, and Nancy Vidler (Chair). They are all retired professionals who have collectively dedicated well over 10,000 hours of their time toward reducing Phragmites throughout Lambton Shores.



Figure 2. Members of the Lambton Shores Phragmites Community Group: backrow (L-R) Paul Peterson, Bill MacDonald, Petar Cuckovic, Derek Scott; front row (L-R) Ray Horban, Nancy Vidler, Nette Pachlarz, Janice Cuckovic, and Sandra Marshal (Source: LSPCG).

The main areas of focus for this group have been in the Port Franks area including the local beach, interior wetlands, Mud Creek, Ausable River, residential properties, and roadsides. They also have managed a large Phragmites control project along 2.6 km of Lake Huron shoreline south of the Shawshawanda Creek which includes the 59 ha Wood Drive Coastal Wetland. This is the only wetland on Lake Huron that is located within the Carolinian Zone and provides significant habitat for a number of species-at-risk. Without the LSPCG's tireless efforts, this wetland would most likely still be infested with high density Phragmites. To date, control projects have encompassed over 120 ha (300 ac). More information about these projects is found in Section 2.2.

Some of the outreach and educational activities the LSPCG have undertaken include:

- development of an information door knocker and control program whereby
- homeowners can contact either ABCA or SCRCA to control Phragmites on their property
  development of an Agricultural Community Fact Sheet
- facilitating a meeting to connect Municipal and County staff to discuss undertaking a more efficient road control program
- connecting with MTO to ensure the section of Highway 21 through Lambton Shores was controlled
- educated NextEra about the threat of wind turbine construction and the spread of Phragmites which led to funding support for control projects and an agreement to control Phragmites at these sites post construction
- undertaking private land owner outreach
- initiating and guiding control efforts in Grand Bend
- presenting at numerous educational events and conferences throughout the province
- undertaking a number of deputations to Municipal Council
- facilitating strong connections and engagement with the local MPP and MP about the Phragmites issue
- managing and successfully acquiring a number of grants and other funding support for the Wood Drive Coastal Wetland Restoration Project
- creating a Phragmites fact sheet to be included with the Municipal tax notice
- contributing to public education through articles about their work in local papers including the London Free Press, as well as radio interviews
- designing and assisting with installation of information signage in a number of locations (Figure 3)
- organizing and undertaking numerous community outreach and educational workshops and events
- undertaking fundraising events



*Figure 3. One of several Phragmites informational signs posted throughout Lambton Shores by the LSPCG, IPP and Municipality.* 

The LSPCG are well known and respected throughout Ontario and have received a number of awards including: 1) the St. Clair Region CA Conservationist Award, 2) The Minister's Award for Environmental Excellence, 3) the Ausable Bayfield Conservation Authority Conservationist Award, 4) Municipality of Lambton Shores Environment Award, 5) Good Neighbour Award and 6) The Invasive Species Centre Leadership Award. More information about the LSPCG and their work can be found on their website (LSPCG.com) and Facebook page.

The Ipperwash Phrag Phighters (IPP) is another very active volunteer organization who are under the LSPCG umbrella and focus their efforts in the Ipperwash area. This group was formed in 2016 by Sandra Marshall, a local seasonal resident, and she along with many dedicated volunteers, have managed to eradicate Phragmites from ~3 km of shoreline. They also expanded their control efforts to include White Sweet Clover, another problematic invasive plant that was also threatening the dune ecosystem. To ensure that Phragmites is never able to re-establish, IPP developed a beachcombing program which includes training on how to identify viable Phragmites plant parts that wash onto the beach as well as proper disposal. And, while doing this work, they also remove garbage. This group has also been instrumental in significantly reducing the high density Phragmites that was choking the Tanner Swale and the other sloughs that are just inland from the lake. These linear, wet depressions are bordered by vegetated sand ridges and are very rare ecosystems that provide habitat for a number of species-at-risk and other wildlife. Members of IPP have volunteered 1000s of hours toward manual control, outreach and education and fundraising efforts and are also recipients of the Good Neighbour Award and the St. Clair Region CA Conservationist Award. They host numerous educational and hands on control events each year including 'Phrag Hunts' whereby volunteers learn how to identity Phragmites and manually control the plant. Before this event, IPP members used flagging tape to allow easy identification of the Phragmites which drew the attention of beach users and created a great educational opportunity. IPP also created an informational doorknob hanger with information on who to contact if they had Phragmites on their property which they distributed to every property and business in the community. IPP members have also set up informational displays at local events like the Trash 2 Treasure/Dumpster Days, and Municipality open houses and displays and talks have taken place when invited by service clubs and libraries. They also use social media such as Facebook, to keep the public informed and updated. IPP volunteers have received assistance in the control of Phragmites and White Sweet Clover on a number of occasions by student volunteers and Youth Rangers provided through the St. Clair Region Conservation Authority (SCRCA) and the Ministry of Natural Resources and Forestry (MNRF). Funding has been received through donations from individuals, the Centre Ipperwash Community Association, the Federation of Cottage Associations (FOCA), Lambton Nature Trails, Green Shovels Collaborative, the MNRF, and the Invasive Phragmites Control Centre. The SCRCA has made numerous site visits, and has provided herbicide spraying at recovery cost. More information about this group is provided in Appendix A and can be found on their Facebook page.

J.M. Gilbert has been working with the LSPCG since it's inception. Through her various roles as consultant (Gilbert and Dunn Ecosystem Restoration), founder/co-chair Ontario Phragmites Working Group, contract staff with Nature Conservancy of Canada (NCC) and most recently as the Executive Director of the Invasive Phragmites Control Centre (IPCC), a not-for-profit she founded in 2017, she has assisted with numerous initiatives and control projects. Since 2017, the IPCC has been assisting with control projects in the Wood Drive Coastal Wetland (PMA 5) and L Lake in Port Franks and contributing in-kind support.

The Municipality of Lambton Shores is another important partner of the LSPCG contributing both financially and in-kind each year through various means. This support has included annual funding for control of Phragmites along municipal roads, financial support for the development of both Phragmites Management Plans (initial version and Version II), pick up and disposal of cut stalks from local community events, installing Phragmites signs within a number of communities, assisting with administrative support for project grants, supporting community outreach and local meetings through provision of venues and other logistics, and including a Phragmites Fact Sheet in municipal tax notices. Former Mayor Bill Weber and a number of Councillors, have been very supportive of the LSPCG over the years and participated in numerous events. They have also been strong voices at Rural Ontario Municipal Association (ROMA) and other meetings with the Provincial Government where they have advocated for Phragmites control support including availability of water-safe herbicides.

The Nature Conservancy of Canada (NCC) has partnered with the LSPCG on a number of initiatives over the years including the development of information brochures and other outreach and educational events as well as Phragmites control projects. The control efforts have mainly focussed on NCC lands around Ipperwash and on L-Lake in Port Franks. In 2021 and 2022 control work was expanded to include Mud Creek, Sunfish Creek, and the Ausable River. This project was led by the NCC and LSPCG and also included support from ABCA, the Municipality of Lambton Shores and the IPCC. It is anticipated to require ongoing efforts for the next few years. More information is provided in Section 2.2 below. NCC also supported control efforts in the Wood Drive Coastal Wetland in 2022.

The ABCA and SCRCA are two key partners that have worked with the LSPCG on several control projects as well as outreach and educational initiatives. The ABCA have been assisting the LSPCG with control efforts since 2011 focussing on the Ausable River and providing significant in-kind support with the assistance of the creation of signs, fact sheets, local meetings and numerous other educational and outreach initiatives. Since 2015, they have been working on Phragmites management on ABCA owned properties within Lambton Shores, the Municipality of Lambton Shores owned property from Lake Huron to Bog Line, and privately owned properties. And, in 2017 ABCA began working with the Grand Bend Horticultural Society (GBHS) to control Phragmites throughout Grand Bend and surrounding area. ABCA also has a program to undertake Phragmites control on private lands within their watershed for a nominal fee. This work has been guided by a Board of Directors approved Invasive Species Strategy (2017). More information about the work undertaken by ABCA can be found in Appendix A. As previously mentioned, ABCA has been a key partner in the large-scale control program underway in the Port Franks area since 2021. Information about this project is provided in Section 2.2 below.

The SCRCA have supported the LSPCG and IPP on numerous occasions over the years including hosting or participating in outreach events, creating educational materials, undertaking Phragmites control on private lands for a nominal fee, assisting with control efforts in the Wood Drive Coastal Wetland, the Ipperwash Dunes and Swales, the Ipperwash shoreline and other locations. They have also provided assistance through the Ontario Ranger Program to help local volunteers undertake manual Phragmites control. The SCRCA also receives funding from Lambton County to help coordinate Phragmites related initiatives within the County. This program began in 2018 and, in October of that year, the SCRCA hosted a Lambton County Phragmites Partnership Workshop attended by various entities working on Phragmites control throughout the County. The meeting began with a number of presentations covering general Phragmites information, control options, roadside management, a Municipal Drain Phragmites program in Leamington, and the City of London's Management Strategy. This was followed by a discussion on how best to establish an information sharing network and harmonized approach for treatment and management. A synopsis of this workshop is provided in Appendix B. As Coordinator, the SCRCA's main role is to bring together all partners working on Phragmites control to understand, educate and inform each other of current and proposed management activities. And, to connect partners with government agencies, industry and funders to better prioritize management activities and locations. While this role is very important, there are other critical components that need to be implemented and managed for a comprehensive control program to be successful in this Municipality. These are outlined in detail in Section 4 below. These initiatives require significantly more time and effort than is reasonable to expect from SCRCA staff who have other important obligations.

Numerous other entities have also been assisting with the Phragmites control efforts including Lambton Shores Nature Trails, Grand Bend Horticultural Society, and Ducks Unlimited Canada (DUC). Grand Bend Horticultural Society have partnered with ABCA helping to identify sites within Grand Bend for Phragmites control. Volunteers from the Lambton Shores Nature Trails organization have assisted the LSPCG with cutting dead Phragmites and other projects. And, in 2019, Ducks Unlimited Canada undertook a fundraising campaign raising ~\$25,000 to support the LSPCG's work in Port Franks and the Wood Drive Coastal Wetland.

#### 2.2 Summary of Phragmites Control in the Phragmites Management Areas (PMAs)

In the initial LS Management Plan, the Municipality of Lambton Shores was divided into seven Phragmites Management Areas (PMAs): PMA 1- Port Franks (Ward 3; Figure 4), PMA 2- Grand Bend (Ward 1), PMA 3- Pinery Provincial Park and surrounding communities (Ward 2), PMA 4-Ipperwash Beach (Ward 3), PMA 5- West Bosanquet (Ward 4), PMA 6- Municipal Roads, and PMA 7- Agricultural Drainage Ditches, Lagoons, Golf Courses, Parks. For each PMA, information on known locations of Phragmites, site specific control recommendations, and associated costs were provided. Within some of these PMAs, significant Phragmites reductions have been achieved. However, many gaps still remain either due to lack of a consistent, or effective control program, or no control program being in place at all. Below is a summary of the work undertaken within each PMA and identified areas requiring attention.



Figure 4. Ward locations in the Municipality of Lambton Shores.

#### 2.2a Phragmites Management Area 1: Port Franks (Ward 3)

Phragmites has been managed in Port Franks through a collaborative endeavor spearheaded by the Lambton Shores Phragmites Community Group (LSPCG) in partnership with the Municipality of Lambton Shores, the Ausable Bayfield Conservation Authority (ABCA), Nature Conservancy of Canada (NCC), the IPCC, and private landowners.

The first known Phragmites control project to be undertaken in Lambton Shores occurred in 2011 by members of the Port Franks Beach Homeowners Association and the Windsor Park Association. Their beach was rapidly being overtaken by Phragmites and in those days there was very little awareness about Phragmites (Figure 5). The two groups with support from Geoff Peach, co-founder of the Lake Huron Centre for Coastal Conservation, got the appropriate approvals in place and raised enough funds to hire a contractor (Dover Agri-serve) to control the Phragmites on their beach. Since that time this area has remained 'Phrag free' due to the efforts of the LSPCG, and other volunteers from the Port Franks community (Figure 6).



*Figure 5. Invasive Phragmites on the Port Franks beach prior to control efforts in 2009 (Source: LSPCG).* 



Figure 6. Lambton Shores Phragmites Community Group and other volunteers from the Port Franks community collecting Phragmites that had washed onto their beach, May, 2022 (Source: LSPCG Facebook page).

These volunteers subsequently formed the Lambton Shores Phragmites Community Group after realizing the prevalence of Phragmites throughout their community and the need for far more control actions as well as outreach and education. Because very few Phragmites control projects were taking place at this time in Ontario, the LSPCG decided that a small island with high public exposure would be used as a demonstration site to show the control methods being used were environmentally safe and effective. Mosquito Island, located near the mouth of the Ausable River was chosen for this site and control work occurred in 2011 in partnership with the ABCA (Figures 7, 8).



Figure 7. High density Phragmites on Mosquito Island near the mouth of the Ausable River which was chosen as a Phragmites control demonstration site in Port Franks, August 2010 (Source: LSPCG).



Figure 8. Mosquito Island after Phragmites was controlled, July 2012 (Source: LSPCG).

Due to the success of this project, and the very positive response from the local community, control work was expanded to include more sections along the Ausable River as well as roads, Mud Creek, L-Lake, and private, Municipal, and NCC owned lands (Figures 9-12). The NCC and Municipality of Lambton Shores became involved and helped to secure funding to undertake work on their properties. All of the herbicide control efforts up until 2022 only took place on dry sites resulting in a significant decline in high density Phragmites on these sites.



*Figure 9. Ortho map showing the known locations of invasive Phragmites throughout the Port Franks area in 2011 (Source: ABCA).* 



Figure 10. High density Phragmites along the banks of the Ausable River around a marina in Port Franks, September, 2012 (Source: N. Vidler).



Figure 11. Phragmites being controlled in dry sections along the bank of the Ausable River across from the marina in Port Franks, 2017 (Source: LSPCG).



*Figure 12. Photos taken from an oxbow section of the Ausable River in Port Franks a) in 2007 before Phragmites control occurred and b) 2014 after Phragmites control (Source: R. Horban).* 

In 2019, the LSPCG partnered with the ABCA, IPCC, and local volunteers to control the Phragmites in the water around the small wetland on the west side of Outer Drive. IPCC crews worked with the volunteers to manually cut and remove the low density Phragmites while Truxors (amphibious cutting machines) were used to cut and remove the high-density sections (Figures 13, 14, 15). Municipal staff hauled away all of the cut material as in-kind support. ABCA staff returned that fall and walked around the perimeter of the wetland wearing backpack spray units treating Phragmites on the dry sections with herbicide.



*Figure 13. Bill MacDonald (LSPCG Director) and another volunteer hauling cut Phragmites from the wetland on Outer Drive in Port Franks, July 10, 2019.* 



Figure 14. Volunteers taking a break from cutting and hauling Phragmites from sites along Outer Drive in Port Franks, July 10, 2019.



*Figure 15. One of two IPCC Truxors used to remove Phragmites from a wetland on the west side of Outer Drive, Port Franks, August 2, 2019.* 

In 2021, NCC secured funding for a multi-year project that would enable Phragmites control to take place on NCC property and other areas that had not been previously treated either because they were difficult to access, were wet, or both. This included sections of the Ausable River, Mud Creek and L-Lake. In 2022, NCC was successful in acquiring an Aquatic Extermination permit to allow use of the water safe herbicide Habitat Aqua on these sites, and control work was undertaken in partnership with the LSPCG, ABCA and the IPCC. NCC plans to continue this work in 2023.

#### 2.2b Phragmites Management Area 2: Grand Bend (Ward 1)

Invasive Phragmites establishment has been minimal in Grand Bend compared to other areas along the Lake Huron shoreline. Local residents first became aware of Phragmites in 2012 due to the efforts of the LSPCG and the ABCA who had undertaken a number of public education and outreach initiatives. In 2012, a partnership was formed between the Grand Bend & Area Horticultural Society (GB&AHS) and the ABCA. At that time volunteers identified 12 locations where Phragmites was establishing and these sites were subsequently controlled. One site included a stormwater pond located in a residential area (Figure 16). The Phragmites was treated with herbicide prior to the pond undergoing construction however, Phragmites returned (Figure 17). A few local residents are trying to keep Phragmites under control using manual methods (Figure 18). The GB&AHS volunteers monitor the area for Phragmites provide this information to the ABCA who undertake any required herbicide control.



*Figure 16. Phragmites around a stormwater pond in a residential area in Grand Bend, 2012 (Source: LSPCG).* 



*Figure 17. Phragmites growing along the banks of a stormwater pond in Grand Bend after construction, June 2020 (Source: G. Scholl).* 



Figure 18. Local residents volunteer their time to manually control Phragmites growing in the water in a local stormwater pond, June 2020 (Source: G. Scholl).

The herbicide control is only occurring on dry sites and, because the work is being undertaken by a Conservation Authority, they have a Natural Resource Exemption under Ontario Regulation 63/09 (Cosmetic Pesticide Ban) for the requirement to obtain written permission (Letter of Opinion) from the Ministry of Natural Resources and Forestry (MNRF). In many cases obtaining a LOO can take several months and delay control work until the following year therefore, ABCA is able to control new sites in a timely fashion. Control of Phragmites in water using the water safe herbicide Habitat Aqua requires a Water Extermination Permit from the Ministry of Environment Conservation and Parks (MECP). The steps involved to obtain this permit, including public consultation, can be time consuming and requires much more outreach, and information gathering including detailed maps that show the actual size of the areas to be treated. To date, ABCA have not undertaken herbicide control of Phragmites in wet areas in the Grand Bend area.

#### 2.2c PMA 3: Pinery Provincial Park and surrounding community (Ward 2)

In past years, Park staff have undertaken a few small-scale Phragmites control efforts using unconventional methods such as steam which have been relatively unsuccessful. There still remains a large, high-density infestation on the park property particularly along the Olde Ausable Channel that flows into the Ausable River. Interest to undertake a comprehensive control project has been expressed by staff in the MECP Ontario Parks SW Zone office. Success of such a project would be enhanced through partnerships with adjoining land managers such as the ABCA and private land owners. Controlling Phragmites in this Provincial Park will be very important for not only protecting those areas that have been controlled outside of the park but, also restoring those critical habitats that are currently being impacted. The Attawandaron Scout Camp is adjacent to

the Provincial Park property with the Olde Ausable Channel dividing the two properties along the west side with ABCA land on the Ausable River along the southern side (Figure 19). The Phragmites on the scout property was controlled in 2013 in conjunction with control on the ABCA owned property. Unfortunately, no Phragmites control took place on the adjacent Pinery Provincial Park land and since that time Phragmites has re-colonized the scout property along the Olde Ausable River.



*Figure 19. Location of Attawandaron Scout Camp on boundary of Pinery Provincial Park (Map Source: Lambton County GIS Map).* 

#### 2.2d PMA 4: Ipperwash Beach (Ward 3)

Due to the efforts of the Ipperwash Phrag Phighters (IPP) invasive Phragmites is no longer present along the entire shoreline in this community. This represents a huge change from the conditions that existed in 2013. Volunteers regularly walk the beach and are trained to recognize viable Phragmites plant parts or seedlings which they immediately remove and properly dispose of (Figures 20, 21). Through this program they have also been able to control other problematic invasive plants such as White Sweet Clover. These volunteer efforts by the local residents are ensuring that Phragmites does not have the opportunity to become re-established along this shoreline.



Figure 20. Invasive Phragmites along the sandy shoreline in Ipperwash in 2013 prior to control efforts a) scattered throughout native vegetation in the dunes and b) a high-density cell along the shoreline.



*Figure 21. IPP volunteers picking up pieces of Phragmites that have washed onto the Ipperwash Beach, May 21, 2022 (Source: IPP Facebook).* 

Control efforts undertaken by this group and partners in the sloughs and, adjoining properties just off of the shoreline, is proving to be more of a challenge due to the rough terrain and difficulty accessing. Through significant volunteer efforts, along with assistance from the SCRCA and the IPCC, the high-density Phragmites that once choked the slough just off Parkway Drive is significantly reduced through use of cutting-to drown control methods (Figures 22, 23, 24). Highdensity Phragmites within a few nearby dry sloughs were also treated with herbicide by the IPCC in 2021 (Figure 25). The IPP volunteers are now able to manage the remnant sparse populations in these sites.



*Figure 22. IPP volunteers assisting the IPCC crews with removal of cut Phragmites from the Tanner Swale, July 13, 2020 (Source: IPP Facebook).* 



*Figure 23. IPP volunteers assisting IPCC crew with cutting and collecting Phragmites in the Tanner Swale, July 13, 2020.* 



Figure 24. Restored section of the Tanner Swale that was choked with high density Phragmites prior to the efforts of the IPP volunteers, July 13, 2020.



Figure 25. Dry slough in the Ipperwash area with high density Phragmites that was treated with herbicide by the IPCC in partnership with IPP and SCRCA, September 20, 2021.

The recommended next steps by the IPP are to ensure there is a monitoring program in place for the sections of the dunes and swales where Phragmites has been controlled as well as a need to expand control efforts in these systems. There still remain isolated cells in some more interior sloughs owned by NCC and also on private lands including a trailer park that need to be managed. This would be made easier with a dependable source of funding, and the involvement of younger volunteers. It also requires a more formal and extensive reporting system to be developed for property owners who have Phragmites.

#### 2.2e Phragmites Management Area 5: West Bosanquet (Ward 4)

This PMA extends from the Shawshawanda Creek, which borders Kettle Point, south to Townsend Line. This area covers ~6 km of shoreline and includes seven small communities: Wood Drive, Lake Valley Grove, Sunnidale, Pinetree, Cedarview, Glendale and Lakeview. There are also two seasonal trailer parks, two recreational camps (Lambton Centre Campground and Forest Cliff Camp) and large sections of privately owned shoreline. When this shoreline was first assessed in 2012/13, it was divided into 15 Blocks (sections) using landownership, structures or natural features to delineate each area to facilitate management (Figure 26).



*Figure 26. The shoreline within Phragmites Management Area 5 divided into 15 Blocks to facilitate Phragmites management and tracking efforts (LS Management Plan 2013).* 

The Wood Drive Coastal wetland is located in the northern most section of this PMA and encompasses the shoreline from the Shawshawanda Creek southward to the northern boundary of the Lambton Centre Campground. This wetland is part of a larger complex that extends northward onto Kettle and Stony Point First Nation land. It is the only wetland on Lake Huron within the Carolinian Zone and provides critical habitat for a number of wetland dependent plants and animals including species-at-risk. In 2013, the LSPCG recognized the significant impact invasive Phragmites was having on this wetland. And, when they discovered that no entity was taking initiative to restore and protect it, they decided to include this project as part of their ongoing work throughout Lambton Shores. Control work began in 2014 and the scope of this project was expanded to include Lambton Centre (Block 4) in 2016 and privately owned undeveloped property (Block 5) in 2020 (Figure 27). Since that time, a significant reduction of Phragmites has been achieved along this ~2.5 km section of shoreline (Figures 28 - 35). Only sparse Phragmites populations remain in Blocks 1, 3, 4, and 5. Wood Drive residents are now able to control any of the sparse re-growth in Block 1. Lambton Centre has been maintaining their property, and the owners of the property in Block 5 plan to manage any Phragmites that returns after control efforts in 2021 and 2022 targeted the large, high-density cells. Control work is planned to continue for Blocks 2 and Block 3 in 2023.



*Figure 27. The Wood Drive coastal wetland and adjacent blocks where the LSPCG and partners have been controlling Phragmites since 2014.* 



Figure 28. Controlling Phragmites in Block 1 of the Wood Drive Coastal Wetland, August 2015.



Figure 29. IPCC crew removing the last of the high density Phragmites from Block 1 in the Wood Drive Coastal Wetland, July 2019.



Figure 30. Invasive Phragmites in Block 2 of the Wood Drive Coastal Wetland, August 2017.



Figure 31. Native wetland plants in Block 2 of the Wood Drive Coastal Wetland where Phragmites had been controlled in previous years, July 2021.



Figure 32. Shoreline at the Lambton Centre campground (Block 4), August 2017.



Figure 33. Shoreline at the Lambton Centre campground (Block 4) in July 2018, the summer after Phragmites was controlled.



Figure 34. Shoreline at the Lambton Centre campground (Block 4) looking north, before Phragmites was controlled, August 2017.



*Figure 35. Shoreline at the Lambton Centre campground (Block 4) looking north into Block 3, after Phragmites was controlled, July 2019.* 

Back in 2012 and 2013, when the shoreline from Lake Valley Grove, Sunnidale, Pine tree (Block 6) to the southern municipal boundary (Block 15) was first assessed, there were sections of high density Phragmites cells interspersed with non-invaded sections and numerous small Phragmites cells observed. There were also a number of locations where Phragmites was growing in roadside ditches. A few property owners were undertaking their own control either using herbicide or by cutting but, many sections of the shoreline where not being controlled. In 2012, Nancy Vidler (Chair, LSPCG) met with many property owners all along this shoreline and also those living south of the Municipal boundary in Plympton Wyoming. As a result, a number of control projects were undertaken. This included 1.7 km of shoreline within the communities of Lake Valley Grove, Sunnidale and Pine Tree Estates (Block 6). This is an active recreational area with numerous shoreline alterations including groins, seawalls, rip rap rocks, and landscaping. The LSPCG were able, with in-kind support from the Municipality, to successfully obtain a provincial Land Stewardship and Habitat Restoration grant for \$13,000. These funds along with \$3,000 in donations from local residents went toward hiring a contractor (Dover Agri-serve) who undertook herbicide control on dry sections in 2013. The following year, only narrow strips of Phragmites in the lake remained. This same contractor controlled *Phragmites* around the Cedar Cove Marina (Block 8) at the same time. This was paid for by the local residents in partnership with the St. Clair Region Conservation Authority. It is not known what additional control work has occurred in the other sections of this shoreline over the years. It is presumed that Orchard View Trailer Camp, Cedar View Campground, and Forest Cliff Camp continued to actively control Phragmites on their properties as well as a number of residents. When this area was re-assessed in 2021, no Phragmites was observed in the lake (Figures 36 - 38). The linear cells that were present along the exposed shoreline when lake levels were low, likely got ripped out during the numerous high wave

energy events that occurred as lake levels steadily increased beginning in 2013 and peaked at record highs in 2020. A few small, high-density cells are still present adjacent to the shore above the water line and along the banks of creeks (Figures 39 - 43). As well, there remain a number of small Phragmites cells along the shore and in adjacent upland areas (Figures 44 - 49). All of these cells would be relatively easy to control at this stage. If not controlled, they are likely to rapidly expand and re-establish along the shoreline since Lake Huron water levels are entering the low-level cycle and are predicted to continue to drop for the next ~ eight years.



Figure 36. Shoreline in the Block 6 area, July 2021 (Photo: K. Alexander).


Figure 37. Shoreline in the Block 7 area, July 2021 (Photo: K. Alexander).



Figure 38. Shoreline in the Block 10 area, July 2021 (Photo: K. Alexander).



Figure 39. High and low density Phragmites along the shoreline in Block 7, July 2021 (Photo: K. Alexander).



*Figure 40. Small, high density Phragmites cell along the shoreline edge at a marina in Block 8, July 2021 (Photo: K. Alexander).* 



*Figure 41. High density Phragmites along the edge of boat channel in Block 9, July 2021 (Photo: K. Alexander).* 



Figure 42. Phragmites along a creek in Block 11, July 2021 (Photo: K. Alexander).



Figure 43. Phragmites along a creek in Block 12, July 2021 (Photo: K. Alexander).



Figure 44. Phragmites scattered along the shoreline in Block 6, July 2021 (Photo: K. Alexander).



Figure 45. Sparse Phragmites along the shoreline in Block 7, July 2021 (Photo: K. Alexander).



*Figure 46. Phragmites amongst native plants along the shoreline in Block 8, July 2021 (Photo: K. Alexander).* 



*Figure 47. Phragmites along an upland slope at the edge of the lake in Block 10, July 2021 (Photo: K. Alexander).* 



Figure 48. Phragmites scattered along the shoreline in Block 11, July 2021 (Photo: K. Alexander).



*Figure 49. Phragmites intermingled with native plants along a metal erosion structure on the shoreline in Block 15, July 2021 (Photo: K. Alexander).* 

## 2.2f Phragmites Management Area 6: Roads

Phragmites occurrence throughout the Municipality of Lambton Shores was last mapped in 2012/2013 (Figure 50). This work was undertaken by members of the LSPCG, J.M. Gilbert and Lindsay Hayes, a Summer GIS Technician hired by the Municipality. The mapping also included occurrences along the roads and at that time, there were 428 identified cells totaling ~ 254.5 ha (629 ac). In 2016, Lambton County undertook Phragmites occurrence mapping for both roads and municipal drains (Figure 51). Plans are in place to update this map pending available resources (as per Jason Cole General Manager, Infrastructure and Development Services, County of Lambton). Roadside locations controlled by the contractor (Green Stream Lawn and Vegetation Management, Inc.) in 2021 illustrate that there remain a number of locations where Phragmites is still present, albeit at much-reduced densities (Figure 52).



*Figure 50. Invasive Phragmites occurrence mapping within the Municipality of Lambton Shores in 2012.* 



*Figure 51. Locations of Phragmites along roadsides and municipal drains throughout Lambton County in 2016 (Source: Lambton County).* 



*Figure 52. Locations of roadside Phragmites cells treated in 2021 throughout the Municipality of Lambton Shores (Source: R. Egan, Green Stream Lawn and Vegetation Management).* 

Roadside control of Phragmites along Municipal roads began in 2012 and along Lambton County roads within the municipal boundary in 2013. In 2015, Nancy Vidler (Chair, LSPCG) happened to be driving behind a spray boom truck treating Phragmites along a County Road and noticed the boom being raised and treatment being stopped when the truck got to an intersection, even though Phragmites continued beyond this point. Upon enquiry she learned that the contract was only for County, not Municipal roads. Nancy convened a meeting shortly after with the respective managers and since 2016 the County and the Municipality have been working together and hiring the same contractor to undertake the work.

Highway #21 is the only Provincial Road that crosses through the Municipality and the Ministry of Transportation (MTO) have been actively controlling Phragmites along this stretch since 2013. In an update provided to the LSPCG in the summer of 2022, James Corcoran (General Services Coordinator, Vegetation, MTO West Region) stated that MTO planned to treat all Phragmites along their roads in Lambton County that year. He also mentioned that MTO is seeding treated

areas with native grasses and forbs in the belief that bare areas need to be replanted to reduce colonization by invasive plants. The native plants have been found to be better able to outcompete the invasive species compared to the traditional roadside seed mixes. MTO seeded all of Highway #21 from Highway #402 to Forest and beyond to the Ipperwash area in conjunction with the reconstruction projects that were occurring. An occurrence map was not provided and it is not known how much Phragmites is still present.

There remain a number of locations where Phragmites is still growing in roadside ditches in small communities. In Ipperwash, large, high density Phragmites cells exist along Army Camp Road (pers. comm. S. Marshal). Phragmites is also found along roads in Lake Valley Grove, Pinetree and Forest (Figures 53-55). There are likely a number of other small communities where Phragmites is still present along roadsides. It is not known what, if any, control has taken place in these communities. In Port Franks there are a few smaller low- density pockets that remain along Superior Street, Huron Street, and Outer Drive. These sites are being looked after by the ABCA and NCC (pers. comm. N. Vidler).



*Figure 53. Phragmites still growing a roadside ditch off Freeman Street in the Pinetree community (Block 6) which was reported during the first assessment in 2012, July 2021 (Photo: K. Alexander).* 



Figure 54. Phragmites along the Amtelecom Parkway, Forest, July 2021 (Photo: K. Alexander).



Figure 55. Phragmites along Rawlings Road, Forest, July 2021 (Photo: K. Alexander).

# 2.2g Phragmites Management Area 7: Agricultural Drainage Ditches, Lagoons, Golf Courses, Parks.

The presence of Phragmites in agricultural drainage ditches, lagoons, golf courses and a park were assessed by L. Hayes during her Phragmites survey conducted in 2013 for the MLS. Information on the specific location of these cells is available at the MLS office. At that time, she found a number of agricultural drainage ditches with Phragmites present. SCRCA staff had reached out to Drainage Superintendents to initiate control work but, to date, no Phragmites control has taken place (pers. comm. S. Shaw). The plants were at low-densities back then but, would be expected to have increased significantly by now. Phragmites was also observed at sewage lagoons in Grand Bend, Forest and Thedford back in 2013 and is still present at these sites (Figure 56). As well, Phragmites was, and still remains, at the golf courses in Thedford and Forest. A control program is to begin at the Forest Golf and Country Club in 2023 in partnership with the LSPCG and the IPCC (Figure 57).



Figure 56. Phragmites in a lagoon near Thedford, July 2021 (Photo: K. Alexander).



Figure 57. Phragmites around a pond at the Forest Golf and Country Club, July 2021 (Photo: K. Alexander).

# 3.0 IDENTIFIED GAPS

Despite all of the efforts undertaken by the LSPCG, IPP, and many other dedicated volunteers, private land owners, campgrounds, staff from ABCA and SCRCA and other organizations including NCC, and Municipal and County Road Supervisors, there still remain numerous sites throughout the Municipality where Phragmites control has yet to occur. This includes Municipal land in Forest and on Northville Road, roadsides in small communities, agricultural drains, residential and other privately owned properties such as golf courses. As well, Phragmites is still present in sites that have undergone control efforts although at significantly reduced populations. At many of these sites, Phragmites could easily be eradicated if there was a Municipal Control Program in place. This includes the stormwater pond in Grand Bend and the Lake Huron shoreline in Phragmites Management Area 5 (West Bosanquet) where, with the exception of a few relatively small cells, high density Phragmites is now gone (see Section 2.2e). With Lake Huron now entering the low lake level cycle, remnant Phragmites along the lake will no longer be stressed by high water and wave energy allowing these plants to rapidly expand if left unmanaged.

The first management plan focused on the Lake Huron Shoreline and adjacent communities where Phragmites invasion was quite extensive. The interior towns of Forest, Arkona and Thedford as well as smaller communities including Jericho, Jura, Kinnaird, Springvale, Ravenswood, Walden Place, Walker Woods and, all places in between, were not included. All of these communities will need to be assessed for the presence of Phragmites. A cursory assessment of Forest was undertaken in 2021 and at that time Phragmites was observed in a number of locations throughout this community (Figure 58, Table 1). A more thorough assessment will likely reveal even more locations.



Figure 58. Phragmites locations (numbered waypoints) observed throughout Forest, July 2021.

Waypoint	Description	
040	high density stands in edge of tree line and in front of the EMC Ready	
	Mix property along edge of farm field and behind the Public Works	
	building.	
041	behind Gilpin Funeral Home, along the drain, medium to high density.	
043	in a park behind a school/long-term care facility around a fenced in	
	pond.	
	High to medium density. Mostly wet, some dry; ~10m by 10 m	
044 (beside	along the paved pedestrian pathway between the grass and the bank of	
045 on map above	the drain; high density, mostly dry; ~30m by 1.5m	
045	under road bridge on banks of river; low density, dry; ~10m by 4 m	
046	golf course maintenance yard; low density; small cell	
047	Japanese Knotweed @ pumphouse building off of Clyde Street.	
048 & 050	sewage Lagoons; scattered in patches around the edges	
049	in the road-side drain across from the municipal compost site	
051	small stand beside parking lot at a private unnamed building; dry;	
	medium density; ~ 10 m by 1 m; note: heavy equipment active just	
	behind the stand	
052	in drain along Rawlings Road and behind warehouse.	

Table 1. Description of Phragmites cells observed throughout Forest, July 2021.

During this assessment Japanese Knotweed (Reynoutria japonica) was observed at the pumphouse on Clyde Street (Figure 59). This is another very problematic invasive plant that should be controlled in a timely fashion before it spreads into other areas. These types of situations will continue to occur and, by having a comprehensive Phragmites Control Program in place, it lends itself to the early detection of new problematic invasive species as well as the incorporation of a rapid control response. This is not only a far more cost-effective approach, but it also significantly increases the odds of eradication.



Figure 59. Japanese Knotweed, observed at a pumphouse site in Forest, July 2021.

# 4.0 RECOMMENDED STRATEGY

Although there have been tremendous gains made in the reduction and control of Phragmites within the Municipality of Lambton Shores over the past decade, there still remains a number of areas where a control program has yet to be implemented or where control efficiencies could be greatly improved. Achieving successful Phragmites management at a municipal scale requires a comprehensive program that includes all lands, regardless of ownership. And, in areas where Phragmites is well established, such as in Lambton Shores, it also requires a full-time dedicated Phragmites Coordinator to implement and manage this program. To date, the role of a Phragmites Coordinator has been partially fulfilled by the LSPCG and St. Clair Region CA (SCRCA). All members of the LSPCG are retired professionals that have already dedicated a significant amount of time and should not be expected to take on more responsibilities. The SCRCA are not financially compensated to devote staff time to undertake all of the required initiatives.

A Phragmites Coordinator would provide the communication and coordination link between all stakeholders including relevant Municipal and County departments, the two Conservation Authorities located within this Municipality, ABCA and SCRCA, as well as Kettle and Stony Point First Nation, local Phragmites groups (LSPCG, IPP), private landowners, Pinery Provincial Park staff, and numerous other stakeholders. The Phragmites Coordinator would be responsible for implementing a number of initiatives that will be key for achieving success which include: 1. establishing working groups, 2. delineating Management Areas, 3. mapping and prioritizing control efforts, 4. undertaking community outreach and facilitating collaboration opportunities, 5. developing site specific control plans and acquiring required permits, 6. establishing and maintaining monitoring and reporting programs, 7. implementing training workshops and creating and disseminating educational materials and program information, 8. implementing strategies and providing guidance on existing policies to prevent further spread and, 9. determining funding needs and seeking funding opportunities (Figure 60). This position would best be held under the Municipal umbrella to coordinate efforts already taking place by the Municipality, County, the LSPCG and their numerous partners including ABCA and SCRCA. Funding to support a Phragmites Coordinator position may be available through the Green Shovel's Collaborative initiative. Once this position is created, and the structures put in place, the role could be expanded to include other problematic invasive plants. The cost savings of this proactive approach would far offset the investment in the creation of this new position. Based on a cost benefit analysis undertaken by the Green Shovels Collaborative in 2021, it was estimated that the cost of Phragmites to the province was ~\$470.4 million per year with property values, tourism and recreation, and road safety incurring the highest costs.



Figure 60. Key components of the Lambton Shores Phragmites Management Strategy.

#### 4.1 Working Groups

It is recommended that at least two Working Groups be formed, one specifically for Municipal, County and CA staff (Municipal Working Group) and one for entities that represent lands that are not Municipal, County or Conservation Authority owned or managed (Coalition Working Group). The Phragmites Coordinator would play a key role in establishing and managing the mandates of both Working Groups.

#### 4.1a Municipal Working Group

The Municipal Working Group should include representation from relevant Municipal Departments such as Public Works, Parks and Facilities, Grand Bend and Port Franks Marinas, Fire, Emergency and Protective Services, Planning, Transportation, Drainage and By-Law Enforcement. It should also include representation from ABCA, SCRCA, and Lambton County. Formation of this group is intended to foster communication to reduce costs and redundancy, identify barriers to implementation, and create collaborative solutions. Members of the Working Group bring resources and perspectives from various Departments and agencies so that the implementation of specific Control Plans not only reflect the needs of the Municipality but, are also feasible. The Phragmites Coordinator would be responsible for: 1) scheduling meetings, 2) facilitating communication between various departments, CAs, and the County, 3) reporting to Council, 4) helping to develop Control Plans, 5) coordinating control efforts that link departments, CA's, and the county, 6) assisting with the determination of annual budget allocations, 7) finding alternative funding sources to supplement and support control needs, 8) identifying priority sites and ensuring control occurs in a timely fashion, 9) assisting with hiring control contractors, managing control projects, tracking control efficacy via standardized monitoring protocols, and 10) producing an Annual Report. The Annual Report would summarize efforts undertaken in that fiscal year, including budget allocations, work undertaken, results, successes, challenges and recommendations for control efforts in the next fiscal year.

## 4.1b. Coalition Working Group

Formation of a Coalition Working Group is required to facilitate the control of Phragmites on properties that are not owned, or managed, by the Municipality, County, or Conservation Authorities. This group would ideally include representatives from the Lambton Shores Phragmites Community Group, Ipperwash Phrag Phighters, cottage associations, Kettle and Stony Point First Nation, the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMNRF), the Ministry of Transportation (MTO), the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the Agricultural community including the Drainage Superintendent, Pinery Provincial Park, Nature Conservancy of Canada (NCC), the Chamber of Commerce, golf courses, camp grounds, school boards and various community groups including Lambton Shores Nature Trails, Grand Bend Horticultural Society, among others. The Phragmites Coordinator should be the Municipality's representative on the Coalition Group with participation from staff from relevant Departments, CA's and the County as required. This participation will be critical for facilitating good communication and collaboration between the two Working Groups. The Phragmites Coordinator's role would not only be to establish this group, but with their input, develop and manage a control program for non-municipal property that complements the Municipality's efforts. This program would include generating awareness and public support, increasing participation in control efforts, facilitating control work, and acquiring funding to offset control costs. The Phragmites Coordinator would also be responsible for tracking and monitoring the control work undertaken, facilitating the acquisition of required permits, and creating an annual report.

#### 4.2 Management Areas

Parceling the Municipality into smaller Phragmites Management Areas (PMAs) facilitates control implementation at a more manageable level for annual planning and budgeting, control activity tracking, monitoring, and reporting purposes. In the original LS Management Plan, the Municipality was divided in 9 PMAs (see Section 2.2). Within each PMA, the locations of known Phragmites patches were noted along with size, density and control options. In 2012/13, when this mapping occurred, the majority of the Phragmites was found along roads and the Lake Huron shoreline (Figure 50). These PMA designations remain relevant and useful but, were intended to be modified as required. As previously mentioned, far less control work has occurred within the interior areas away from the lake. Other large areas requiring significant control include the Pinery Provincial Park, Kettle and Stony Point First Nation including Kettle Point and the old army base in Ipperwash (Stony Point).

Determining where Phragmites currently exists throughout Lambton Shores is required for understanding the type and scope of control required, control timelines and associated costs. This assessment is also required to guide annual control prioritization since it would not be feasible to target all sites in the same year. Phragmites within the high visibility locations (roadsides, trails, fields and other open spaces, ditches, and stormwater ponds) can easily be mapped and placed on a priority scale. Land ownership and control options then need to be determined and this information becomes the basis for each PMA Control Plan. More information on mapping and prioritizing criteria are found in the Mapping and Prioritizing section.

## 4.3 Mapping, Prioritization, Data Collection

#### 4.3a Mapping

Determining where the Phragmites is located throughout Lambton Shores will be important for planning and prioritizing control efforts. The type of information collected during the mapping stage depends upon the intended use. Occurrence information is the simplest to collect and provides a basic understanding of where Phragmites is known to be present and where it is problematic for safety or other concerns. More detailed assessments can then be targeted, especially for the priority areas, to ensure that the information collected is useful for guiding the appropriate control actions to be taken and for tracking purposes. This is discussed further in Section 3.5.

An initial assessment using roads will be a very efficient way of determining where there are liability and safety concerns and where the highest degree of infestation occurs. Options for undertaking this work include:

- hiring summer students or utilizing Public Work staff to record occurrence information into tablets or smart phones to be submitted to a central data base (this will need to be created)
- establishment of a reporting system for EMS services (fire, ambulance, police) who could help with identifying problematic areas in need of immediate attention
- engaging the IPCC to collect and manage the occurrence data and map production

Consideration should be made toward the development of a publicly accessible occurrence mapping tool to allow anyone to report Phragmites observations. This will be invaluable for identifying cells that are not in high use areas or that might not be captured during the road surveillance. The reported locations will need to be ground-truthed by experienced personnel and this could possibly be undertaken by volunteers from local Phragmites groups. This public reporting system would ideally be part of a public education and engagement program which is discussed further Section 3.7. This site could also be used to collect information on control projects undertaken by private landowners. Including information on how to identify Phragmites, particularly young plants, will reduce the incidence of erroneous reports. Existing reporting programs such as iNaturalist and EDDMapS could be utilized but, there would have to be a mechanism to acquire the reported information pertinent to Lambton Shores. The Phragmites Coordinator could be responsible for establishing and managing this reporting program and there may be assistance coming from the Green Shovels initiative to assist with the development of reporting software and mapping tools.

The maps created, using the occurrence information, will be very useful for gaining an initial, visual understanding of the pattern of infestation throughout Lambton Shores and for highlighting the problematic sites. Over time, these maps can be used to show control progress using a colour coding system such as red-uncontrolled, orange-under control, green-eradicated.

#### 4.3b Prioritization

A Prioritization Tool should be created to help focus efforts where they are most needed on an annual basis. This tool would ideally allow high priority work to be undertaken regardless of the Municipal Department that is responsible or landownership. Highest priorities would be given to those sites that pose significant risk in terms of safety and liability concerns. Examples include blocked site lines at intersections, rail crossings, driveways, and private laneways, fire hazards for residences, buildings, and infrastructure during the dormant season, concealed fire hydrants, and impediments to Police and other EMS services to respond to vehicle accidents because of high density Phragmites along roads. High priority considerations would be given where Phragmites: 1) threatens natural areas that provide Species-at-risk habitat, 2) impacts infrastructure such as damage to asphalt, 3) impedes water flow or storage capacity in drainage ditches and stormwater management ponds and, 4) negatively impacts recreational and aesthetic enjoyment of parks, trails and waterfronts.

High priority should also be given to controlling isolated, pioneer populations before they expand and spread further since these can be the easiest and cheapest to eradicate. And, toward the reduction of spread vectors that contribute to rapid expansion of Phragmites. Examples include:

- transportation corridors (e.g., roadside ditches, railway lines, walking pathways)
- waterways and wet sites (e.g., rivers, shorelines, wetlands, ditches, drainage areas, boat launches, etc.)
- utility corridors (e.g., Hydro, pipelines)
- construction sites where Phragmites may be transported on equipment
- recreational areas where people may be walking, boating

## 4.3c Data Collection

Once the occurrence information is collected, the sites should be revisited in order to obtain more detailed information. This is used to inform how best to control the site and other considerations. For instance, if the cell is located in a roadside ditch that is normally dry but, will flood after a rain event, this will impact control timing. The information collected should include cell size and density and photos to allow control efficacy to be assessed and reported. Ideally, the site assessments are undertaken by the same crews that are going to be doing the control work. This provides the opportunity to gain familiarity with the sites and an awareness of potential impediments to control operations such as obstructions, pedestrian use, proximity to recreational fields and backyards, ravines or rough terrain and many other situations that may be encountered.

Recommended information to collect for Phragmites cells located along roads and drainage ditches includes:

- cell locations (latitude/longitude start and end along each road)
- cell densities (sparse, intermediate, high)
- cell size (estimate length x width; or use GPS unit and walk perimeter)
- site conditions: permanently or intermittently wet, inclines, obstructions
- photo documentation
- identified liability and safety concerns (i.e. blocked site lines for traffic, hidden fire hydrants)
- proximity to natural areas, parks, trails, rivers, creeks, ponds and other wetlands residential areas, businesses, industry, trails, recreational fields
- cell extension beyond the road allowance onto adjacent property owners
- connections with other linear features including rail lines, hydro corridors

This information is valuable for determining the correct control methods and equipment required for contractors. Phragmites along roadways is most effectively controlled using herbicides and how these products are applied depends upon cell density and proximity to residences, agricultural fields, lawns and other areas with vegetation that could be negatively impacted by use of non-select herbicides. More information on herbicides is provided in Appendix A.

Phragmites occurrence in fields, along trails, stormwater ponds, wetlands, creeks, streams and rivers will most likely need to be determined by walking and use of a GPS unit or a tablet with mapping capabilities. Information to collect for these types of areas includes:

- cell locations (latitude/longitude)
- cell densities (sparse, intermediate, high)
- cell size (estimate length x width; or use GPS unit and walk perimeter)
- site conditions: dry, intermittently wet, permanently flooded
- identified safety concerns (i.e., proximity to schools, gardens, backyards, recreational activities)
- photo documentation
- recommended control methods and timing

Assessments of natural areas such as riparian corridors, ravines, parks and lakeshore requires more effort. For these areas the location of Phragmites will need to be determined either by walking, use of a boat, ATV or other suitable means. This work can also occur in the winter using snowshoes, cross county skis, or snowmobiles. The location of the Phragmites can be captured

using a Global Positioning System (GPS) unit or tablet with mapping capabilities. For some areas, use of a UAV (unmanned aerial vehicle) may be required and/or much more efficient.

The original Management Plan contains examples of Phragmites occurrence maps showing Phragmites locations along the shoreline in PMA V. Information was collected on size, density, site conditions, considerations, and recommended control information. This information can be used to estimate control costs, anticipated control efficacy, and anticipated work in subsequent years. The personnel undertaking these assessments will need to have Phragmites control experience in order to provide the detailed information required.

## 4.4 Fostering Collaboration

A program that solely focuses on controlling Phragmites on land that is under one particular jurisdiction is doomed to fail. Targeting the Phragmites on only one side of a fence or only within a road allowance will result in an unending battle. Undertaking a comprehensive control program can however, be complicated and, at times, difficult as it will need the engagement and support of numerous stakeholders. The formation of a Municipal Working Group and Coalition Working Group would help provide a structure for a collaborative approach and the formation of required partnerships. Members of these groups will need to work together to determine the annual control targets based upon the available funds. Updates and adjustments to timelines and approaches will likely be required to account for the actual work that can be undertaken, resultant control efficacy, additional actions required, unanticipated challenges and any barriers to success that need to be addressed. Where feasible, management of a Phragmites cell that crosses jurisdictional boundaries should be done collaboratively either by utilizing the same control crews, timing control efforts in a manner that increases control effectiveness and efficiencies or altering inhouse practices.

Examples include:

- hiring the same contractor to control a stretch of road that crosses different jurisdictions (Municipal, County, MTO, private lanes)
- utilizing a manual control crew to treat plants surviving an initial herbicide application undertaken by a boom truck, or Phragmites that did not get sprayed because it was beyond the boom width, outside of the road allowance or along residential fence lines or agricultural fields
- informing Municipal staff or private landowners not to cut Phragmites in areas that are slated to be treated with herbicide
- removing standing dead Phragmites during the dormant season in areas with site line or other issues to allow herbicide application to occur as soon as possible the following year
- coordinating water level manipulations in stormwater management ponds to facilitate either herbicide application or cutting to drown control
- targeting control on private lands adjacent to work being undertaken on Municipal property including roads
- undertaking work on private lands where the owners are most receptive first since successful outcomes will help to bring those more recalcitrant or skeptical on board

Control of Phragmites along hydro and other utility corridors will require the engagement and 'buy in' of these large conglomerates. This is not just pertinent to Lambton Shores but, across Ontario and is another issue currently being addressed by the Green Shovels Collaborative. Engagement on a local level however, will be very important and the Municipality could use the

leverage of their Phragmites Control Program to ensure there is representation on the Coalition Working Group and help entice the development of their own 'in house' control programs.

General public engagement will be invaluable for long term control, particularly in natural areas. Many municipalities support local volunteer efforts either through covering the cost of training workshops, manual control equipment and supplies, liability insurance, biomass removal, and community events. The Municipality of Lambton Shores has provided invaluable support to the LSPCG, IPP and other community groups throughout the years by undertaking biomass removal, posting signs, providing meeting locations, and funding. As well, the Mayor, Councilors, and staff have supported and attend numerous functions and this level of support and engagement is to be commended.

Engagement of students looking to acquire volunteer hours, local naturalist groups, and other like-minded organizations should be considered in the development of sustainable, long-term programs to ensure Phragmites does not reinfest or colonize new areas. This could be implemented by creating a similar program to Adopt a Road whereby companies or community groups could sign up to look after particular areas throughout the city once the main infestation has been significantly reduced.

# 4.5 Control Implementation and Permits

#### 4.5 a Control Implementation

Having a basic level of understanding of control methods is important for making informed decisions about what actions should occur and who is best suited to undertake the work. It is also helpful for managing expectations so that projected outcomes are realistically conveyed. For effective Phragmites control to occur, the below-ground structures must be killed. Small, lowdensity populations are generally easier to eradicate from a site simply because there are less roots and rhizomes. However, there are caveats since plants growing in shallow water, scattered throughout rough terrain, or hidden among other vegetation make it difficult to reach or observe every plant. The high-density cells are challenging to eradicate because of the extraordinary amount of root and rhizome biomass which is 2 to 3 times greater than the above ground biomass. The two most effective options currently available for controlling Phragmites include herbicide application and cutting-to-drown methods. With either option, it is possible to achieve a significant degree of control during the first attempts but, it is imperative that control efforts continue since surviving plants are capable of re-establishing dense colonies thereby negating the initial gains. The general rule is that Phragmites is not considered to be eradicated from a site until no live plants are observed for three consecutive growing seasons. More detailed information on Phragmites control methods can be found in Appendix D.

The control work can be undertaken by trained Municipal staff, CA staff, experienced contractors or a combination of these options. Having local capacity will be invaluable for implementation of an effective Early Detection and Rapid Response Program and will greatly increase the ability to eradicate Phragmites from roads and other easy to access sites. Engagement of Conservation Authority staff with expertise in controlling Phragmites is also a potential avenue to explore. The City of London for example, has a contract with the Upper Thames Valley CA to undertake invasive plant management, including Phragmites, within Ecologically Sensitive Areas. Huron-Kinloss has a contract with the Ausable Bayfield CA (ABCA) to manage Phragmites along their roads and this program has been highly successful (see Appendix A for more information). As well, both ABCA

and St. Clair Region CA (SCRCA) participate in a control program targeting private lands in the Lambton Shores area. Property owners contact the appropriate CA and pay a nominal fee for this service. This program was developed and rolled out by volunteers from the Lambton Shores Phragmites Community Group who distributed educational door knockers throughout their region (See Appendix C). Within Norfolk County a similar program is being led by Nature Conservancy Canada (NCC) who were able to secure Trillium Funds allowing them to undertake control work on private lands without charging a fee. The IPCC manages Phragmites control in natural areas and roadsides for the City of London. This allows the crews to control Phragmites in a systematic fashion and efficiently since patches along roads and adjacent properties can get controlled at the same time. This program includes monitoring and provision of annual progress reports that go to both the Parks and Road Operations Departments. Because there is a set annual budget dedicated to this program, feasible control targets are able to be set and attained.

When contracting out control work it is important that considerations other than just the lowest bid be taken into account. These include:

- do they have properly licensed and experienced staff?
- are they knowledgeable about which herbicides are to be used for Phragmites control in different situations such as industrial versus natural areas?
- are they familiar with the recommended label application rates and appropriate timing windows for the herbicide product to be used?
- do they have the required equipment to undertake the work?
- are they able to undertake follow-up treatments in the same growing season or required biomass removal?
- do they have any infractions or incident reports that indicate a poor track record for safety and unsound operational practices?
- do they hold the appropriate Operators License, and sufficient liability, and errors and omissions insurance coverage?
- do they undertake clean equipment protocols?
- do they have expertise working in urban areas and are their crews are able to answer public enquiries in an informed and respectful manner to alleviate herbicide use concerns?
- if the work is to occur in natural areas and/or species at risk habitat, do the crews have an ecology, or similar educational background, and relevant experience?
- can they provide references from previous clients?

Building an Early Detection and Rapid Response (EDRR) Program into the Phragmites Control system will be required to maintain 'Phrag Free' zones throughout the region short-and long-term. This program will hinge on Municipal staff and the general public being able to identify early-growth stages of Phragmites, having an efficient reporting system in place, and a network of trained volunteers or crews that are able to control the plants in a timely fashion. The EDRR Program will ensure the initial investment to control Phragmites is protected over the long-term using local capacity and resources. Ideally the early detection component of this program is linked to a citizen reporting structure to help capture pioneer or previously unknown populations.

#### 4.5 b Permits

Use of herbicides may require a permit depending upon a number of factors. Pesticides are registered by Health Canada's Pesticide Management Regulatory Agency (PMRA). The PMRA are responsible for conducting thorough reviews of the health and environmental impacts of these products and, once registered, each Provincial or Territorial Government then has the authority to regulate use. In Ontario, The Ministry of Environment, Conservation, and Parks (MECP), regulates the use of pesticides through The Cosmetic Pesticide Ban Act, 2008. Under this Act, the use of glyphosate and imazapyr herbicides are permitted, for appropriately licensed individuals, to control Phragmites for public health and safety concerns including for public works, buildings and other structures that are not a public work, golf courses, specialty turf, specified sports fields, arboriculture and the protection of natural resources, if certain conditions are met. There are also exceptions for agriculture and forestry. Under this Act, use of pesticides in natural environments is prohibited unless these projects are undertaken by the Ministry of Northern Development, Natural Resources and Forestry (MNDNRF; formally the Ministry of Natural Resources and Forestry), Conservation Authorities (CA), a contractor hired by the MNDNRF or CA, a proponent working under an agreement with the MNDNRF, or a proponent who has a Letter of Opinion from the MNDNRF. Use of Habitat Aqua is regulated through The Permit to Perform Water Extermination which is administered by the MECP. For this permit to be approved, there are several conditions that must be met including the need to have First Nation consultation and for the application area to be at least 1 km from drinking water intake points. More information on this permitting process can be found at https://youtube/A1K-iLFg3Jk.

Private landowners who wish to hire their own contractors to undertake control work on dry sites should be aware that if herbicide is to be used, and the property is not zoned agriculture or industrial, a Letter of Opinion will be required. Reputable contractors will not undertake work without this permit but, the Municipality may wish to make this information widely available to discourage illegal activities. Habitat Aqua cannot be purchased without a permit making unauthorized use more difficult. One of the Phragmites Coordinator's roles would be to look after the permit requirements.

#### 4.6 Monitoring and Reporting

Keeping track of the work being undertaken and the results of these efforts is often an overlooked and undervalued process in Phragmites Control Programs but, it is vitally important. This should be another key role undertaken by the Phragmites Coordinator along with assistance as required.

The Phragmites Coordinator would collect all of the information on control work undertaken each year to be summarized in a summary report. These sites should be assessed early in the growing season (late spring to early summer) the following year to determine if additional control work is required and can then be planned. The information to be collected is similar to that acquired during the initial assessment with the emphasis on describing size and density reductions and recommended follow-up control actions. Examples include the recommendation to switch from a hose and handgun herbicide application to backpack application, switch to a herbicide with a different active ingredient, or switch from herbicide to mechanical control. Photo documentation is very helpful for visually comparing pre- and post-control conditions. This information should be included in the annual report to illustrate progress and highlight challenges and opportunities for improvements.

#### 4.7 Training, Education and Information Dissemination

Investment in training, education and information dissemination will save money in the long run because it will reduce inefficiencies and continued spread while engaging more citizens, and counteract the 'whack-a-mole' approach. Developing training modules specific to Municipal staff, volunteers, industry, private landowners and other community partners leads to a sense of ownership of the Lambton Shores Phragmites Control Program and instills best management practices. The training modules should be tailored to the specific audience because there will be differences in the type of information and hands on training required. For instance, volunteers and private landowners will not be involved in herbicide control, (with the exception of farmers and others with the legal means to use these products) but, may be assisting with identification, detection, and low-density manual control. The Phragmites Coordinator, with support from the Municipal Working Group, could be tasked with developing information packages to be used by all departments to ensure clear, consistent messages are provided to the public. They could also create public notices to be distributed to the local media regarding herbicide use in certain areas of the city or roadsides. Outreach materials with key messages can also be used to answer media inquiries and create media packages.

Creation of a Phragmites Information portal on the Municipality's website would be a very effective way to educate, increase citizen engagement, communicate information on control programs and disseminate important notices. The website would ideally include up to date information on what work is occurring, annual reports, occurrence maps, fact sheets, and postings of training opportunities, community control events, and posting of photos from volunteer lead initiatives. Another low cost and effective way to get information out to the public is through a fact sheet or other similar document that is distributed with the Tax notice.

Identifying the location of successful control demonstration sites in Port Franks and Ipperwash on the Municipality's website would provide a low cost, educational opportunity and help maintain Lambton Shores as leader in the province in these initiatives. Currently there are a number of sites with signs that include information on the control work undertaken and pre-control photos. Additional information signs could be posted at other sites and on major roads leading into the Municipality to promote the work being undertaken and provide an avenue for local engagement, ownership and pride.

#### 4.8 Prevention and Policy

The Ontario Invasive Species Act (2015) regulates the prevention and management of invasive species in Ontario. Sixteen species are prohibited under this Act, meaning it is illegal to import, possess, transport, or release these species anywhere in Ontario. Four additional species, including Phragmites, are listed as restricted. This means it is illegal to import, deposit, release, breed/grow, buy, sell, lease or trade Phragmites anywhere in Ontario. Although this Act has been in place since 2015, there has yet to be a funded program in place that actually enforces it. This puts the onus on each Municipality to undertake enforcement which makes for a very patchwork approach and needs to be addressed. In the interim, Lambton Shores could greatly reduce the spread of Phragmites, and other problematic invasive plants, with policies and incorporation of procedures into the daily operation of the relevant Municipal Departments.

A policy that would significantly reduce the spread of Phragmites and, other invasive plants, is the incorporation of the Clean Equipment Protocol into relevant operational procedures. The protocol was created by the Ontario Invasive Plant Council in 2013 and a copy can be found on

the Ontario Invasive Plant Council website. The protocol requires that construction equipment and vehicles be cleaned before entering a new job site and prior to leaving a site that is contaminated with invasive species. Ontario Parks, MTO and many Municipalities include the Clean Equipment Protocol requirement in construction tenders and contracts.

Another policy consideration would be to add Phragmites to the noxious weed list. Although the list was created by Ontario Ministry Agriculture, Food, and Rural Affairs (OMAFRA), many Municipalities have their own list and enforce accordingly. Having Phragmites on this list would help prevent the use of seed heads, and other plant parts, in ornamental displays or intentional planting. It would also support reduction of Phragmites in drainage ditches and agricultural lands and the ability to undertake control on private lands where the owners may not be supportive of control efforts.

Additional policy considerations should be made with regard to proper disposal of the Phragmites biomass. Lambton Shores is a leading the province in providing proper disposal for Phragmites and other invasive plant materials at the landfill within a designated isolated location. The Municipality could also consider, with the Phragmites Coordinators guidance assigning designated brown fields or other suitable locations to receive cut Phragmites or excavated materials containing Phragmites to ensure they are contained. Dried Phragmites can be burned or the contaminated material could be buried. This would require an overburden of ~1 m.

A program that could be instituted to reduce Phragmites from colonizing sites where the sediment has been disturbed would be to promote the quick establishment of ground cover. This would be particularly useful for road work, culvert replacements, construction work at storm water management ponds and similar projects that leave moist, bare ground exposed and suitable for Phragmites seedling colonization. An MTO funded research project undertaken by McMaster University resulted in a list of plant species suitable for use along roadsides. These plants are salt tolerant and able to grow in poor soil and other harsh conditions. MTO has recently begun to require the use of this seed mix at provincial highway construction projects. Lambton Shores could implement a similar policy.

#### 4.9 Funding

Although the cost burden to implement this comprehensive control strategy could initially be high, this will reduce once significant control has been achieved. The first 5 to 7 years of the program could achieve a high level of control if sufficient funds are in place. Lambton Shores Municipal Council will need to commit to long-term financial support in order to ensure this program is successful. There are many examples of control programs that have failed because of funding support that only lasted a few years. The end result was wasted funds because the initial gains made in Phragmites reduction were lost, because surviving plants were left to re-establish.

A number of municipalities have an annual budget allocation specific to Phragmites control. This allows for much better planning, improved control results and increased efficiencies. A comparison of those investments relative to population would place Lambton Shore's annual allocation at ~\$30 k. These funds, along with in-kind support, can be leveraged to acquire matching dollars from existing Federal and Provincial grant programs. And, part of the Phragmites Coordinator's role would be to seek out additional funding opportunities. As previously mentioned, the Green Shovels Coalition is currently seeking significant funding commitments

from Federal, Provincial, as well as private sources, to support the province-wide Control Program. If this initiative is successful, Lambton Shores will be well positioned to receive aid with a Phragmites Control Program in place and an annual budget allocation commitment.

An important task for the two Working Groups will be to determine how best to allocate the funds available in each budget cycle. This will ensure that control efforts are being undertaken where the needs are most pressing as per the Prioritization Criteria. Another really important role of these Working Groups will be to determine fair policies to deal with covering control costs off of city property. This could include a combination of private/public partnerships, tax incentives, cost sharing or 100% of the costs are covered. The City of St. Thomas adopted the strategy of paying for Phragmites control regardless of land ownership. They were able to declare that they were 'Phrag Free' after 5 years of implementation. Although Lambton Shores has a larger Phragmites infestation, there is consensus among Phragmites experts that this approach has the greatest likelihood of attaining control success.

# 5.0 Goals and Recommendations

A reduction of 98% of the current infestation level is an achievable goal within the next 10 years if the program is properly structured, well managed, and sufficiently funded. The initial control effort will need to be rolled out and cover as many areas as possible within the next 5-7 years to reduce continued spread and ensure significant control can occur in as many areas as possible. In most sites eradication should be an attainable goal. Where Phragmites is well established, and widespread, total eradication may not be feasible and a control program will likely be required in perpetuity to maintain low-level populations. The engagement of adjacent Municipalities to encourage similar efforts as well as the roll out of a Province-wide control program will significantly reduce spread and the probability of re-infestation. The Green Shovels Phragmites Initiative has the goal of attaining 'Phrag Free' status throughout much of Ontario by 2033. The incorporation of a Lambton Shores Phragmites Management Program in 2023, will position this Municipality to achieve similar outcomes within the same timeframe. When achieved, the few populations that remain can be managed at significantly reduced costs. As an additional benefit, the infrastructure, partnerships and model will be in place to deal with other problematic invaders just as effectively further increasing efficiencies and saving substantial investments in time and money.

## Summary of recommendations:

- 1. Hire a Phragmites coordinator
- 2. Establish a Municipal Working Group and a Coalition Working Group
- 3. Delineate Phragmites Management Areas
- 4. Undertake Phragmites assessment to create location maps, develop a control Prioritization Tool, obtain site specific information to inform required control actions
- 5. Facilitate collaboration opportunities and undertake community outreach develop control plans and acquire required permits
- 6. Establish and maintain monitoring and reporting programs
- Implement training workshops geared to specific audience needs, create and disseminate educational materials, use demonstration sites to increase public awareness, engagement and support
- 8. Determine funding needs and seek funding opportunities
- 9. Implement strategies and policies to prevent further spread

# **APPENDIX A**

# Ausable Bayfield Conservation Area Invasive Phragmites Control Information

Summary of ABCA Phragmites related work:

Nathan Schoelier Stewardship & Conservation Lands Manager Ausable Bayfield Conservation Authority 71108 Morrison Line, R.R.#3, Exeter, On NOM 1S5 (t) 519-235-2610 (f) 519-235-1963 www.abca.ca

Sent via email Jan 24, 2023

- Ausable Bayfield Conservation Authority (ABCA) began phragmites management in 2011
- Guided by a Board of Directors approved Invasive Species Strategy (2017)

# Port Franks and area phragmites management

2011:

2012:

2013: ABCA completed phragmites management for one private landowner within Lambton Shores.

2014: ABCA completed phragmites management for two private landowners within Lambton Shores.

2015: Completed phragmites management on ABCA owned properties within Lambton Shores; Municipality of Lambton Shores owned property from Lake Huron to Bog line; and privately owned properties, in partnership with LSPWG; wherever conditions permitted using Round Up Weathermax.

2016:

2017: Completed phragmites management on ABCA owned properties within Lambton Shores; Municipality of Lambton Shores owned property from Lake Huron to Bog line; and privately owned properties, in partnership with LSPWG; wherever conditions permitted using Round Up Weathermax.

ABCA worked with the Grand Bend Horticultural Society (GBHS) to completed phragmites throughout Grand Bend and surrounding area.

# 2018:

2019: ABCA worked with the GBHS to completed phragmites throughout Grand Bend and surrounding area.

2020: Completed phragmites management on ABCA owned properties within Lambton Shores; Municipality of Lambton Shores owned property from Lake Huron to Bog line; and privately owned properties, in partnership with LSPWG; wherever conditions permitted using Round Up Weathermax.

2021: Phase 1 of a large-scale project in partnership with the Municipality of Lambton Shores, LSPWG, NCC and ABCA to treat phragmites in the Port Franks area, wherever conditions permitted the use of Round Up. NCC and ABCA completed the management work.

2022: Phase 2 of a large-scale project in partnership with the Municipality of Lambton Shores, LSPWG, NCC and ABCA to treat phragmites in the Port Franks area. Work was completed by the Invasive Phragmites Control Centre, and NCC, under a permit to utilize Habitat Aqua and manage areas that were not able to be managed previously, without an aquatic registered herbicide.

ABCA worked with the GBHS to completed phragmites throughout Grand Bend and surrounding area.

# ABCA Roadside Phragmites Management Program

Ausable Bayfield Conservation Authority (ABCA) offers a phragmites management program to interested landowners, organizations, and road managers. ABCA offers the program on a fee-for-service, cost-recovery basis and does not receive municipal levy support for its phragmites management program.

ABCA's roadside management program works closely with municipal Public Works Departments to management in an effective and efficient manner. The program includes:

- Mapping the locations of phragmites
  - ABCA works with municipal staff to develop a process that works best for the project. This may include ABCA staff completing the work, or ABCA staff working with municipal staff to train them on phragmites identification so that it may be identified and mapped during routine road patrols
- Providing proper public notification

- ABCA may complete this process utilizing signs required by the Pesticide Act, or work with municipal staff to provide the required information for a public notification (i.e. newsprint notification)
- Completing the phragmites control work
  - ABCA has staff who hold the proper Exterminator's Licences through the Pesticides Act, and are trained to complete the work
  - Phragmites management experience has proven that the timing, and weather conditions are crucial for the success of the management work. This does not always work with the regular timing of annual vegetation management work completed by municipalities. ABCA can work to most effectively time the herbicide application to increase the effectiveness of the application.
- Provide follow-up mapping
  - Mapping that depicts the locations sprayed aids in efficiently determining areas that may require follow-up spraying in 2022. Collecting this information as the work is being completed allows for it be utilized in subsequent pesticide notifications, reducing the time, labour and expense required for determining the locations.

ABCA's roadside management program generally works off two premises for funding, and coverage area:

- 1) ABCA is provided with a budget to work within. ABCA completes phragmites management work until meeting this budget, and remaining areas are left for subsequent years.
- 2) ABCA is provided with the project scope, including geographical area, and works to complete the phragmites management within the area. Determining the final cost upon completion; interim reports may be provided to update the landowner on the projects state of completion and associated cost.

The County of Huron is a good example of utilizing ABCA's roadside phragmites management services. Since 2014, Huron County has retained ABCA's services to complete roadside phragmites management. During the period between the work commencing in 2014, and the most recent management work, in 2022, the work has evolved from controlling large patches of phragmites, to managing smaller areas of regrowth and treating new stands, utilizing the Early Detection and Rapid Response approach. Several lower-tier Huron County municipalities, including South Huron, Central Huron and Morris-Turnberry have utilized ABCA's services for phragmites management, focusing on roadside control and management. The County of Huron is an example of a landscape approach to phragmites management, where MTO managed roads, County managed roads, municipally managed roads, conservation authority-owned properties, and private-landowners complete phragmites management to control it at a landscape level.

Certain projects may be eligible for cost-share funding support, depending on the nature of the project. Huron Clean Water Project (HCWP) is an example of a funding program that projects may be eligible for. HCWP provides financial and technical assistance for projects to improve and protect water quality in Huron County. It is funded by the County of Huron and service delivery is provided by Ausable Bayfield and Maitland Valley Conservation Authorities. Through HCWP's Rural Stormwater Management and Wetland Creation category, projects within Huron County may be eligible for 50% cost-share funding, up to a maximum of \$3000. In recent years, HCWP has supported private landowners, conservation authorities, and municipalities with phragmites control on properties that they own or manage.

# Additional information:

ABCA also offers a wetland restoration program, commonly utilized by landowners who have areas of their property that are not productive, due to prolonged flooding or inundated conditions. Often, the phragmites management program and the wetland restoration program are utilized consecutively, as phragmites control is completed, followed by wetland restoration to improve the environmental conditions of the area. ABCA's Wetland Specialist is available to meet with landowners who may be interested in restoring an area of their property. The project may be eligible for funding to support the cost of the project.

# **APPENDIX B**

## St. Clair Region Conservation Authority Invasive Phragmites Projects

Update provided by: Steve Shaw Manager of Conservation Services St. Clair Region Conservation Authority 205 Mill Pond Crescent Strathroy, ON N7G 3P9 519-245-3710 sshaw@scrca.on.ca

email sent January 2022 (original notes have been edited)

- funds from Lambton County were first provided to SCRCA in 2018 to help with Phragmites related initiatives

SCRCA held a Lambton County Phragmites Partnership workshop on October 31, 2018
banners and table top display materials were created to use at events, fairs, etc. to educate people on what Phragmites look like, why they are an invasive species, how they spread, etc.
attended numerous farm events and fall fairs in 2019 with table top displays and information brochures and 2 SCRCA staff so we could get the invasive phrag word out to as many rural landowners as we could.

- In 2020 and 2021 SCRCA could not do any public events due to COVID restrictions

- drastically reduced the amount of funding contribution from the County to the SCRCA both of those years due to the difficulty meeting the obligations listed in the County's project scope that was agreed to

- however, SCRCA worked on what they could without too much public contact

- We, mostly me, contacted drainage and road superintendents to gather information about who was doing what to control phrag in each municipality and to promote awareness as well as offer spraying assistance to those not doing anything

- I also went to a few private landowner sites and met with them to provide advice and offer assistance getting their sites sprayed if they could not do it. So there was actually some good one on one contact, advice and encouragement provide there.

- We found a little bit of grant support dollars to go towards some spraying efforts in 2021 for municipalities who have never done any control work at all and were interested in starting something. We had one municipality take the offer last year which triggered 2 landowners in that municipality to hire SCRCA to spray many acres of phrag on their properties.

- We were also able to provide a little extra help to LSPCG last year for the Wood Drive (Block 5) project with staff undertaking some herbicide application

# Lambton County Phragmites Partnership Workshop

Royal Canadian Legion 493 Erie Street Wyoming, Ontario

> October 3 1, 2018 9:00 am - 2:30 pm

Agenda		
Гime	Agenda Item	Magazin
9:30 am	Welcome and Introductions Brian McDougall St. Clair Region Conservation Authority	11/2000
9:40 am	Phragmites 101: An Introduction Janice Gilbert Invasive Phragmites Control Centre	
10:20 am	Roadside Initiatives - The Lambton Shores Experience Nancy Vidler Lambton Shores Phragmites Community Group	
10:40 am	Break	UNR COMPERSION
10:55 am	Managing Phragmites along Roadways - A Provincial Perspective James Corcoran On tario Ministry of Transportation	
11:15 am	Phragmites Management in London, Ontario Linda McDougall Gity of London	
11:35 am	Phragmites Management in Municipal Drains - Municipality of Learnington Lu Ann Marentette Municipality of Learnington	
11:55 am	Phragmites Treatment - Successes, Challenges, Options and Costs Steve Ford Green Stream Lawn and Vegetation Management	
12:15 pm	Lunch	
1:00 pm	Partner Discussions Facilitator - Sarah Hodgkiss St. Clair Region Conservation Authority	
2.15 pm	Farewell and Wrap-Up Brian McDougall	PER

# APPENDIX C Phragmites Control Program Information for Private Landowners



# APPENDIX D Phragmites Control information

#### **Background Information**

Considered to be Canada's worst invasive plant, *Phragmites australis*, hereafter referred to as Phragmites, has numerous modes of spread, expands at an exponential rate, and outcompetes other plants including cattail and woody species. One seedling can produce upward of 80 ramets in one growing season and, once established, this clonal grass is capable of expanding into a large, dense colony within 5-7 years (Figure 1). More than 2/3rds of the total biomass occurs belowground consisting of a tight network of roots and rhizomes which can extend downward several metres (Figure 2). There are few natural constraints on this plant and, therefore, human intervention is required.



Figure 1. Phragmites throughout a large embayment in Oliphant, Lake Huron, in 2018 before control efforts were undertaken.


*Figure 2. High density Phragmites cell along a creek with the belowground network of roots and rhizomes exposed.* 

The degree of Phragmites control that can be achieved on a site level is highly dependent upon a number of factors including site conditions (dry, wet, substrate type), weather, cell numbers, densities and sizes, access, wildlife presence, and proximity to rare and other high value plants, structures, residential dwellings, recreational activities, roads, and trails. These factors all impact how much area can be treated in one day and the type of equipment that is required.

It is the below-ground structures that must be shut down for control measures to be effective. Small, low-density populations are generally easier to eradicate from a site simply because there are less roots and rhizomes. However, there are caveats since plants growing in shallow water, scattered throughout rough terrain, or hidden among other vegetation can be difficult to deal with. The high-density cells are challenging to eradicate because of the extraordinary amount of roots and rhizomes. The two most effective options currently available for controlling Phragmites include herbicide application and cutting-to-drown methods. With either option, it is possible to achieve a significant degree of control during the first attempts but, it is imperative that control efforts continue since surviving plants are capable of re-establishing dense colonies thereby negating the initial gains. The general rule is that Phragmites is not considered to be eradicated from a site until no live plants are observed for three consecutive growing seasons. Once a substantial amount of the initial infestation has been reduced, the site could be protected longterm by local residents or volunteer groups. Supporting these efforts along with imparting local knowledge on how to identify and remove young plants or other viable parts (roots and rhizomes that tend to wash up on shorelines) has proven to be invaluable for protecting many areas from re-invasion.

### Herbicide Information

The IPCC utilizes herbicides to effectively treat Phragmites in both dry and wet conditions. Our crews include biologists, ecologists and university graduates who are experienced working in a variety of situations including species at risk habitat, natural areas within cities, coastal and interior wetlands, lakeshores, federal and provincial parks, stormwater management ponds, and roadsides. Every effort is made to ensure collateral damage to surrounding native vegetation is minimized and that wildlife and people are not negatively impacted. We do this by selecting the appropriate equipment and timing for each specific site.

Currently there are six products legally available in Canada to control *Phragmites australis*. Five are for terrestrial use and one is for use in wet sites. Four of the terrestrial herbicides contain glyphosate as the active ingredient: Roundup WeatherMax<sup>®</sup> (registration No. 27487), Roundup WeatherPRO<sup>®</sup> (registration No. 33653), Roundup VisionMAX<sup>®</sup> (registration No. 27736) and Timberline<sup>®</sup> (registration No. 33456). WeatherPRO is a new product released by Bayer in 2020 and has identical chemistry to WeatherMax but, is intended for non-industrial uses under the management of Bayer's environmental division. The fifth terrestrial herbicide is Arsenal<sup>®</sup> Powerline (registration No. 23713) which has imazapyr as the active ingredient. All five products contain surfactants that have been shown to be harmful to aquatic life and have strict guidelines for use near water bodies. On March 15<sup>th</sup>, 2021, the water safe herbicide Habitat Aqua<sup>®</sup> (registration No.26271) became the first product available in Canada to control Phragmites growing in water. This herbicide has been used for several decades in the United States and has been shown to be safe and effective. Because Habitat Aqua only contains imazapyr, the water-safe adjuvant AquaSurf (registration number 32152) must be added during the mixing stage to promote uptake by plants.

Both the glyphosate and imazapyr based herbicides work by shutting down key enzymes produced in the plant's roots. These enzymes are only found in plants but, because they are non-selective, they will harm both herbaceous and woody species. In fact, a small amount of imazapyr can kill a mature tree and buffer zones of at least two driplines should be established when using this product. The glyphosate-based herbicides are IPCC's first choice for use in sensitive areas because they have less potential to kill large trees and native plant recovery, post application, tends to occur at a faster rate compared to sites treated with imazapyr. Arsenal Powerline is utilized when a Phragmites cell that has been treated 2 or 3 times with a glyphosate herbicide, still retains surviving plants.

In large, high-density cells, removing standing dead stalks post herbicide application greatly increases native plant recovery and makes it easier to find and treat surviving plants the following growing season. Small high-density cells do not tend to require cutting for habitat restoration purposes but they should be removed when there are issues with access, blocked site lines at intersections, fire concerns, or other safety or liability issues. This work can usually be undertaken manually using gas powered cutters or, where selective harvesting is more appropriate, by using cane cutters or spades. Specialized equipment is used to cut larger areas.

# Accreditations and Permits

Use of the above-mentioned herbicides can only be undertaken by licensed professionals with the appropriate accreditations acquired through the Pesticide Training and Certification Department, University of Guelph, Ridgetown Campus. In Ontario, 6 of the 15 classes of Exterminators Licenses are relevant to the control of Phragmites and each depends upon the area to be treated (Table 1). Four of these licenses are for terrestrial, ground application in either agricultural land

(Agriculture), tree lots (Forestry), public works sites including roads and stormwater management ponds (industrial Vegetation), and natural areas, parks, residential properties etc. (Landscape). Aerial application, has to date, occurred in a limited number of coastal wetlands where expansive acreage of monoculture Phragmites exist. This work has been undertaken under special permits and by very experienced helicopter companies. An Aquatic License is required to use Habitat Aqua to treat Phragmites in wet sites along with an MECP Water Extermination Permit.

Environment	License	Site Conditions
Land	Aerial	Terrestrial
	Agriculture	Terrestrial, impacting crops or farm operations
	Forestry	Terrestrial, stands found in forests >1 ha in size
	Industrial Vegetation	Terrestrial, impacting public works ie. roads, drainage
		ditches, stormwater management ponds
	Landscape	Terrestrial, stands found land with treed cover <1 ha
Water	Aquatic Vegetation	Flooded

Table 1. Pesticide licenses available for Phragmites control in Ontario

Pesticides are registered by Health Canada's Pesticide Management Regulatory Agency (PMRA). The PMRA are responsible for conducting thorough reviews of the health and environmental impacts of these products and, once registered, each Provincial or Territorial Government then has the authority to regulate use. In Ontario, The Ministry of Environment, Conservation, and Parks (MECP), regulates the use of pesticides through The Cosmetic Pesticide Ban Act, 2008. Under this Act, the use of glyphosate and imazapyr herbicides are permitted, for appropriately licensed individuals, to control Phragmites for public health and safety concerns including for public works, buildings and other structures that are not a public work, golf courses, specialty turf, specified sports fields, arboriculture and the protection of natural resources, if certain conditions are met. There are also exceptions for agriculture and forestry. Under this Act, use of pesticides in natural environments is prohibited unless these projects are undertaken by the Ministry of Northern Development, Natural Resources and Forestry (MNDNRF; formally the Ministry of Natural Resources and Forestry), Conservation Authorities (CA), a contractor hired by the MNDNRF or CA, a proponent working under an agreement with the MNDNRF, or a proponent who has a Letter of Opinion from the MNDNRF. Use of Habitat Aqua is regulated through The Permit to Perform Water Extermination which is administered by the MECP. For this permit to be approved, there are several conditions that must be met including the need to have First Nation consultation and for the application area to be at least 1 km from drinking water intake points. More information on this permitting process can be found at https://youtu.be/A1K-iLFg3Jk.

# Herbicide Application Methods

How the herbicide is applied and when to apply it are not only determined by the plant's life cycle but a number of other important factors. These include: the presence of wildlife such as nesting birds, turtles or other Species at Risk (SAR), the presence of SAR and other desirable plants, recreational use, weather, Phragmites densities and size of the area to be treated. Glyphosate herbicides have the best efficacy if applied later in the growing season when there is plenty of leaf surface to intercept a sufficient amount of spray. This is particularly important for high density cells where the goal is to have as much active ingredient as possible translocate down to the belowground structures. Herbicides are effective up until the time that the plants naturally senesce (shut down) which generally happens mid to late fall in Southern Ontario and earlier in northern locations. Once applied, the treated plants can begin to show signs of necrosis after a few days. When feasible, follow-up treatments of surviving plants can occur as early as 2 weeks after the initial application. The recommended herbicide concentration is 5% herbicide plus 1% Methlylated Seed Oil (MSO) when mixing in small volumes such as backpack sprayers. For large scale applications, rates of 8L/ha of product plus 1% v/v of MSO are recommended as per product labels. It is imperative that clean water be used when mixing herbicides because the active ingredients will readily bind to suspended sediments and organic compounds rendering them ineffective.

Imazapyr has a different effect on plants thereby allowing Arsenal Powerline to be applied earlier in the growing season and still be effective. Treated plants will remain green throughout the growing season showing no sign of necrosis which means that control efficacy cannot be assessed until the following year. The rate of application is about half that of the glyphosate products at 4.68 L/ha and a non-ionic surfactant should be added at 0.25% v/v. The rate of application for the Habitat Aqua product is based upon the area to be treated. Concentrations for backpack applications are recommended at ~0.5-1% with the surfactant, Aqua Surf added at 1.5% concentration.

Equipment required to apply herbicide to Phragmites depends upon the density of the population and the area to be treated. Backpack sprayers are best for treating areas with a scattered population or smaller cells. These can be used by a crew walking or from a lightweight ATV (Figures 3, 4). Specialized vehicles such as the IPCC's Fat Truck are used to access remote, difficult terrain and are equipped with commercial grade spray equipment (tank, pump, hose, handgun) allowing large, high-density cells to be treated (Figure 5). This same spray system is also used in boats to treat Phragmites growing in water and along shorelines.



Figure 3. IPCC crew walking with a backpack spray unit to control invasive Phragmites growing in a meadow marsh on the Lake Huron shoreline.



Figure 4. IPCC crew using a lightweight ATV to access and spray Phragmites growing in a field in southern Ontario.



*Figure 5. The IPCC's Fat Truck retrofitted with commercial grade herbicide equipment to control Phragmites located in remote and difficult to access terrain.* 

# Cutting-to-drown Methods

The Cutting-to-drown method is commonly used where Phragmites is growing in water and conditions are considered favourable for achieving high control efficacy or, when herbicide control is not an option. This method involves cutting the stalks as close to the sediment as possible to deprive the roots and rhizomes of oxygen. In water depths of ~0.5 m, 60% to 95% mortality can be achieved with one cut and in deeper water, 100% mortality is possible. This method works particularly well in murky water where sunlight is not able to penetrate too far into the water column and promote the development of a new shoot. Removal of the cut stalks from the water is required because they can re-sprout at the nodes causing issues with further spread (Figure 6). As well, thick, floating mats impede water flow and negatively impact aquatic plants and wildlife (Figure 7). Although cutting to drown is more labour intensive and targets a lower area per day compared to herbicide application, a large benefit is the biomass is removed at the same time.



*Figure 6. Roots and shoots sprouting from nodes along a Phragmites stalk that fell into the water.* 



*Figure 7. A thick, floating mat of cut Phragmites in the Wood Drive Coastal Wetland, Lambton Shores, Lake Huron.* 

The IPCC uses specialized amphibious machines (Truxors) to cut and collect high density Phragmites (Figures 8 - 13). The Truxors have paddle tracks on pontoons, are relatively light weight and move slowly which allows the operator to avoid wildlife. They also operate with water safe hydraulic fluid and engine coolant to reduce potential contaminant issues to the environment. With a few exceptions, the Truxors have only been required to cut a cell once. Any re-growth that may occur can then be controlled using manual cutting methods.



*Figure 8. IPCC's amphibious track machine (Truxor) used to cut and remove high-density Phragmites from the water.* 



Figure 9. Truxor cutting Phragmites at the Lambton Centre Campground, August, 2017.



*Figure 10. Truxor removing cut Phragmites from the shoreline at the Lambton Centre Campground, September 2017.* 



Figure 11. Lambton Centre Campground shoreline after initial Truxor work, September 2017.



Figure 12. Truxors continuing work along the Lambton Centre Campground shoreline, July 2018.



*Figure 13. Lambton Centre Campground shoreline looking north, July 2022 (Photo source: K. Alexander).* 

Intermediate density and small high-density cells can be cut manually using Stihl gas powered cutters and, in really sparse patches, spades or cane cutters can be used (Figures 14 - 17). In many communities, manual cutting is undertaken by trained volunteers and the IPCC crews are only required to remove the high-density cells. These volunteers provide an invaluable service by protecting the shorelines and natural areas from becoming re-infested (Figure 18).



Figure 14. IPCC crew member with a Stihl gas powered saw used to cut Phragmites stalks underwater.



*Figure 15. Oliphant Fishing Islands Phragmites Community Group volunteer cutting Phragmites using a gas-powered Stihl saw.* 



Figure 16. Students using spades to control Phragmites along a sandy shoreline on Lake Huron (Source: Lynn Short, Humber College).



*Figure 17. Educational postcard illustrating the cane cutting method to control Phragmites.* 



Figure 18. Volunteers from the Lambton Shores Phragmites Community Group, summer students with SCRCA and crew from the IPCC using cane cutters to remove sparse Phragmites at the Wood Drive Coastal Wetland, July 23, 2018.

There are several options for disposing of the biomass. The preferred option is to pile the material in strategic locations on site. In wetlands, these piles provide structure for birds, turtles, snakes, muskrats and other wildlife (Figures 19, 20). The stalks will dry out, even if sitting in water, and the piles quickly shrink and are eventually colonized by native plants. New shoots that may emerge can be easily controlled by pulling them out of the pile and laying back on top to dry or, if the roots are too deep, they can be treated with herbicide. If creating piles on site is not an option, the biomass could be transported to a fallow field or other suitable location to be spread out to dry and then burned (Figure 21). Alternatively, the biomass can be taken to a local landfill, or other suitable location, where it can be left to desiccate over time. A number of municipalities provide biomass removal as in-kind support (Figures 22, 23,24).



Figure 19. Phragmites piled on the shoreline of an island in Oliphant, Lake Huron.



Figure 20. Image of the same Phragmites pile shown in Figure 19, which was used by 40 Common Terns for nesting the following spring.



*Figure 21. Phragmites cut from the Wood Drive Coastal Wetland, Lambton Shores, was hauled to a nearby fallow field to dry out and then be burned.* 



*Figure 22. Cut Phragmites being unloaded from a collection barge and placed into a dump truck to be transported to the local landfill, Oliphant, South Bruce Township, Lake Huron.* 



*Figure 23. Bin supplied by the South Bruce Peninsula Municipality to assist volunteers with disposal of cut Phragmites.* 



*Figure 24. Phragmites piled in an isolated section of the local landfill in the South Bruce Peninsula Municipality.* 

### Important Considerations

Regardless of the Phragmites control method being used, care must be taken to reduce unintended harm to wildlife that may be in or around the area where Phragmites is being controlled. Birds will nest in the edges of thick Phragmites regardless of whether it is in a roadside ditch, stormwater pond or a wetland (Figure 25). Fish spawning beds can also be present in areas adjacent to high density Phragmites and for most water bodies throughout Ontario, work cannot occur until mid-July. Adhering to fish spawning regulations will not only reduce the potential to negatively impact fish but also young birds, since most will have fledged the nest by that time. There are exceptions however, the Least Bittern tends to be a late nester, and young birds have been observed in high density Phragmites in August (Figure 26). Other species often observed while undertaking Phragmites control work include turtles, frogs, snakes, muskrats and dragonfly and damselfly nymphs and Monarchs (Figures 27 - 31). An experienced crew will be able to recognize when work should be halted and postponed for another time. Although it is important to control Phragmites, this work should be undertaken with the mindset that it does not need to be controlled at all cost. Phragmites did not get here overnight, and it will take a thoughtful, methodical approach to deal with it in an appropriate way to ensure there is more 'good' than harm taking place while achieving a desirable outcome.



Figure 25. It is not uncommon to see bird nests in the edges of high density Phragmites.



Figure 26. Least Bittern observed near its nest in thick Phragmites along a Lake Erie shoreline.



Figure 27. A Midland Painted Turtle that was basking on a floating mat of cut Phragmites, River Canard, LaSalle.



Figure 28. An American Bullfrog sitting on a Phragmites pile, along a Lake Erie shoreline.



*Figure 29. A Northern Water Snake beside a Truxor that was removing Phragmites from a Lake Erie shoreline.* 



*Figure 30. A muskrat feeding on cut Phragmites on the River Canard, LaSalle.* 



*Figure 31. A Monarch caterpillar preparing to create its cocoon on vegetation intermixed with Phragmites in a meadow marsh on the Lake Huron shoreline.* 

Additional information on Phragmites control methods can be found in the document: Invasive Phragmites (Phragmites australis) Best Management Practices in Ontario: Improving species at risk habitat through the management of Invasive Phragmites (Nichols 2020, Ontario Invasive Plant Council, May 2020 edition). Or, by contacting Janice Gilbert @ janicegilbert@rogers.com.