

DEPARTMENT OF ENVIRONMENTAL QUALITY ♦ LAND AND WATER MANAGEMENT DIVISION
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www.michigan.gov/deqwetlands

The Control of Phragmites Under the General Permit for Limited Great Lakes Shoreline Management Activities

As of August 1, 2007, the Department of Environmental Quality (DEQ), Land and Water Management Division (LWMD) has a new General Permit (GP) category for limited Great Lakes shoreline management activities. This GP category was developed as a result of the Shoreline Management Policy Workgroup, which consisted of representatives from a number of different state and federal resource agencies and citizen groups such as Save Our Shoreline and Michigan Environmental Council. The new GP category includes limited mowing for control of invasive or non-native species (such as *Phragmites australis*) with an invasive species control plan in accordance with recommendations provided by DEQ.

The GP category allows property owners to request authorization for control of invasive or non-native species through a simplified permit process for a reduced application fee. Control plans exceeding what that can be authorized under the General Permit category will require an application for an Individual Permit. An application for an Individual Permit requires additional fees and will receive a more detailed review by the LWMD, including a public notice.

The GP category for invasive or non-native species control is:

Mowing of invasive or non-native species on Great Lakes Bottomland lying below the OHWM as defined in Section 32502 and above the water's edge. Mowing of areas predominantly vegetated by non-native or invasive species (e.g., phragmites, purple loosestrife) as part of a vegetation control plan in accordance with recommendations provided by the MDEQ. "Non-native" species are plants that did not occur in Michigan prior to 1800. "Invasive" species are plants that have aggressive growth characteristics and that threaten native ecosystems by dominating the normal vegetation of an area. A description of how the proposed mowing is consistent with recommendations provided by the MDEQ must be provided as part of the application.

The LWMD has been cooperating in an interagency effort to develop recommendations for the control of Phragmites. As part of this effort, a guide titled *A Landowners Guide to Phragmites Control* was developed. This guide is available at www.michigan.gov/deginlandlakes. (Click on the Aquatic Nuisance Control Program link.) Landowners should review this guide and the information below before completing an application for treatment of phragmites.

What information do I need to provide in an application for Phragmites control under the GP?

The following information is needed:

- The completed shoreline management General Permit application form, associated information, and fee, available at www.michigan.gov/deqwetlands. (Click on Great Lakes Shoreline Management.)
- A control plan containing the information outlined below.

How do I develop a control plan for phragmites?

Phragmites control plans are not meant to eliminate all vegetation from the shoreline for the creation of a beach. Rather, the desired outcome is re-establishment of a native community of vegetation that will continue to provide important habitat, water quality and shoreline stabilization benefits.

A control plan for phragmites should include an initial herbicide treatment followed by mechanical removal. For large areas with dense stands of phragmites, prescribed burning used after herbicide treatment can provide additional control and ecological benefits. However, phragmites burns very hot and fast, and prescribed burns should be performed only by trained personnel.

Almost 80% of phragmites plant biomass is contained underground in a network of thick roots and rhizomes. Rhizomes use the majority of the energy produced by the plant, and can persist through many types of disturbance. Herbicide is the only known method of effectively killing the plant's roots and rhizomes.

Mechanical removal is a tool used following an herbicide treatment to remove dead stems in order to promote native plant growth and to identify areas of phragmites re-growth for subsequent herbicide spot treatments. Mowing and other mechanical treatments are not intended to create a manicured lawn. Mechanical removal of phragmites may include the use of weed whips, mowers, brush hogs, and flail mowers or hand cutting of stems and seed heads.

The first step to developing a phragmites control plan is evaluation of the existing site conditions. Property owners should consider the following questions about their site, so that they can choose the best control options for their situation:

- How large is the treatment area?
- What percentage of the plants in the treatment area consists of phragmites? How dense is the phragmites stand? Can you easily walk through areas dominated by phragmites?
- How wet is the site? Is there standing water or saturated soils in the treatment area?
- Are there any threatened or endangered species located in the treatment area?
- Can neighbors cooperate with each other to develop a more successful control plan?

The DEQ encourages adjacent shoreline property owners to work together to control phragmites populations. Larger projects can help reduce the likelihood of re-infestation from neighboring populations, may be more cost effective than limiting treatments to a single property, and may also allow the use of additional control options such as aerial spraying and burning.

The second step to developing a control plan is planning an herbicide treatment. Application of herbicides in standing water or below the ordinary high watermark of the Great Lakes requires an additional, separate permit from the DEQ's Aquatic Nuisance Control (ANC) Program. Specific information on the type of ANC permit required, application fees, permit process and application form can be located at www.michigan.gov/deqinlandlakes. (Click on the link to the ANC Program.) The use of a licensed applicator certified in aquatic pest management is recommended for herbicide treatment in wetlands. Applicators can help landowners determine the best herbicide to use for their site (glyphosate, imazapyr or a combination), the timing of the treatment and the application method and rate that will be most effective.

Next, the mechanical treatment should be planned. The type of mechanical equipment that should be used is highly dependent on size and wetness of the site and the density of phragmites. Weed whips or handheld cutting tools are ideal on wet or dry sites with low plant densities. Small mowers can be used effectively on low density sites. Larger mowers and brush cutters can be used on sites with a higher density of plants, but the site must be dry enough to support the weight of the mower to avoid soil disruption. If mowing is chosen as a method of removing herbicide-treated phragmites, the mower deck should be set as high as possible (approximately 12 inches if possible, and no lower than 4 inches) to minimize impacts to small animals and native plants, and to prevent soil disruption and rhizome spread. Mowing/cutting should occur only on those areas where phragmites is present.

It is important to delay mechanical treatments until approximately two weeks after the herbicide treatment is administered, to be sure that herbicides have time to adequately damage phragmites rhizomes. Depending on site wetness, mowing or cutting treated plants once after an herbicide treatment is recommended during the summer to fall (August to first hard frost) or in winter when the ground is frozen. Mowing/cutting during this time frame also eliminates potential disruption to the breeding and nesting seasons for most birds.

After mowing or cutting, the mechanical equipment should be cleaned of all debris before removing it from site to prevent the unintended spread of seeds or rhizomes to other areas. The cut vegetation (thatch) should be removed, if possible, to allow adequate sunlight penetration to the soil and stimulation of the native seed bank. If removed, thatch should be collected, bagged and properly disposed of. Call your local landfill to find out if plant materials are accepted. Mechanical rakes that disturb soils may not be used to collect thatch.

Herbicide should be reapplied in subsequent years to spot-treat individual plants or patches of plants that were not completely eliminated in the first application. After removal from a site, phragmites will continue to re-colonize from remnant and neighboring populations and the existing seed bank. Phragmites typically begins to recover three years after treatment and will become reestablished if follow-up annual maintenance is not implemented. Successful control plans should incorporate spot treatment with herbicide along with annual mechanical treatment. Annual herbicide spot treatments of pioneer colonies of phragmites can provide up to 100% control of phragmites and discourage its spread while enhancing the recovery and growth of native plants.

In most cases, an adequate native seed bank will be present in the soils to eliminate the need for additional seeding. However, if native plants fail to establish during the year following treatment, application of a seed mix may be necessary.

What should be included in the control plan for my application for phragmites control under the GP?

The control plan submitted should include:

- A description of the existing phragmites stand, including the size of the treatment area in square feet or acres and the percentage of plants that are phragmites in relation to the other plants in the treatment area.
- The average and maximum depth of water that is normally present in the treatment area.
- A description of the type of mechanical equipment to be used in the project (i.e. conventional mower, flail mower, brush cutter, hand tools, etc) and the proposed cutting height (may not be lower than 4 inches).
- The type of herbicide to be used and the file number or copy of the application to the Aquatic Nuisance Control program.
- A treatment schedule including dates of proposed herbicide treatment and dates of proposed mechanical treatment.
- A project site plan that includes:
 - Dimensions of the property.
 - Approximate location of the ordinary high watermark.
 - Approximate location of the water's edge.
 - Dimensions of the treatment area.
 - Any areas that are dominated by plant species other than phragmites.

Phragmites control plans submitted under the General Permit Category for Limited Great Lakes Shoreline Management Activities will be reviewed on a case by case basis. However, in most cases, DEQ staff will be using the guidelines in "A Guide to the Control and Management of Invasive Phragmites" developed as part of the recent interagency effort to develop recommendations for the control of Phragmites in Michigan.

A site inspection by DEQ field staff will likely be necessary and additional information may be needed for field staff to complete their review. We encourage all property owners to submit their applications to control phragmites several months before the first herbicide application is scheduled to ensure permitting delays will not interrupt a treatment schedule.

My property is within a designated Environmental Area. Can I still apply for phragmites control under the General Permit?

Yes. Although other types of projects that are described by the General Permit may not be conducted in an Environmental Area, control of phragmites may be authorized. Be sure to indicate on the application form that the property you wish to treat is in an Environmental Area.

Can other vegetation besides phragmites be controlled under this General Permit Category?

In some cases, property owners may have problems with other types of invasive plant species, such as baby's breath or purple loosestrife, between the ordinary high watermark and the water's edge on their property. The General Permit applies to these invasive and non-native plant species, but the control methods will be different from those described in this document for Phragmites. Applicants should provide the control methods proposed and justification for why they were selected (advice from a resource agency staff, literature search, etc.) as part of their application.

Can mowing alone be used to control phragmites under the GP?

No, mowing alone, without a preliminary herbicide treatment, cannot be authorized under the General Permit. Research shows that using mowing alone is not an effective control method, as the plants' rhizomes are left behind and re-growth readily occurs. Regeneration from those rhizomes often causes an increase in phragmites stand density. Improper use of mechanical methods, such as cutting during the wrong time of year, cutting too frequently, or cutting where native plants are present, can also disrupt wildlife and destroy existing native plants.

Can disking or plowing equipment be used for mechanical removal of phragmites?

Disking soil is never recommended as a mechanical control method for phragmites, since it results in the spread of rhizomes and the production of new plants. In addition, native vegetation is destroyed during the process. This type of vegetation removal is not authorized under the General Permit.

Can I use other mechanical treatment methods alone to control phragmites on my property?

For some homeowners, herbicide treatment followed by mechanical treatments may not be possible. While cutting alone has not been proven to control phragmites, it may help reduce phragmites seed spread if it is conducted at the correct time of year and if it is cut to a height that does not disturb native vegetation.

Property owners who have isolated or very low density phragmites infestations may be authorized to hand cut phragmites to a height of 30 inches. The cutting must take place when the plant is using the majority of its energy for seed and flower production, which is normally between August 1 and the first killing frost. Cutting at this height will allow sunlight to penetrate the soil, which may encourage native plant growth. All cut material must be collected and properly disposed of if using this method. This type of treatment should not be used on properties with large areas of phragmites or areas where phragmites is present in high densities. Follow up treatment may be necessary if this method does not result in decreased phragmites plants. Herbicides may be appropriate for eliminating phragmites re-growth in subsequent years. The success of this type of treatment and other mowing regimes is currently being researched.