



April 23, 2018

Colleen Darcy
NYSDEC, Region 3
Bureau of Pest Management
21 S Putt Corners Rd
New Paltz, NY 12561

RE: Herbicide treatment of aquatic plants at Mohican Lake & in the Delaware River watershed

Dear Ms. Darcy:

The Delaware Riverkeeper Network is opposed to the proposal to apply the herbicides Endothall and 2,4-D to Mohican Lake in southern Sullivan County for the purposes of treating Eurasian watermilfoil. Application of these chemicals is unnecessary and poses an environmental and a potential health threat to the lake, the residents using the lake, and to downstream human and ecological communities. Moreover, the applicant has misrepresented environmental conditions and required permit information, thus invalidating the SPDES general permit coverage for this proposed herbicide application.

We would like to note that despite the fact that you have been aware of this proposal since last fall, you have chosen to wait to notify the community until now and prescribed an inappropriately minimal period for public comment. This is a significant issue. You should have sought public comment throughout the winter months. A mere 21 days to comment is inappropriately short for an issue of this importance and with significant controversy among those affected by the proposed treatment. We understand the proposal is to begin application as early as May 1, but given NYDEC's awareness of this impending application for over 6 months, it is wrong to allow that May 1 start date to become the driver for an inappropriately short comment period. At a minimum the public should have 90 days. In addition there should be a public hearing that allows the public to speak directly to NYDEC decision makers.

Additional time is also necessary because the lakeside property owners and the public have been unable to access the information necessary to craft a fully informed comment. On April 6 the Delaware Riverkeeper Network submitted a FOIL to get key documents in order to inform our comment, and we have received a response making clear that we cannot expect the documents until May 4, 2018, well after the close of the comment period and after the May 1 date when herbiciding is proposed to begin.

DELAWARE RIVERKEEPER NETWORK
925 Canal Street, Suite 3701
Bristol, PA 19007
Office: (215) 369-1188
fax: (215) 369-1181
dm@delawareriverkeeper.org
www.delawareriverkeeper.org

Based on the information available today and in the past we know there has been a failure by the applicant (Mohican Lake Taxpayers Association) and NYDEC to exercise due diligence in considering all impacts and contacting all potentially affected property owners and community members. There are in-lake and downstream impacts that have not been fully considered nor fully addressed. Residents do not agree to restrict or curtail their uses of the lake. This permit should be denied and more appropriate strategies that are protective of the environment and downstream communities undertaken instead.

Of significant concern to the Delaware Riverkeeper Network and affected landowners along the lake is the high likelihood of human exposure during the proposed application period, and the failure of affected landowners to consent to the curtailment of their uses. With a window of treatment from May 1st to June 30th, the application of these toxic herbicides (see MSDS for specific toxicity information) overlaps with the Memorial Day weekend and the beginning of the peak recreation season for lakes in southern New York. NYSDEC itself has cited the unacceptable risk from human bathing exposure when rejecting the national recommendations for one of the two herbicides (Endothall), and has required more stringent notification of exposure for individuals recreating on waters treated with this product. The March 28, 2018 notice makes clear that “potable uses will be restricted for at least ten days after the application” and will in fact not be lifted for an unknown period of time, i.e. “when lab results indicate the concentration is less than 51 ppb at the water intake.” Special notice to the applicator must be provided by those residents who rely on the lake for drinking water – an absolutely backward mandate that puts the onus on the resident rather than the applicator, and one that further demonstrates just how dangerous the chemicals being used are.

In fact, NYSDEC acknowledges that there is no known “safe” level for Endothall, with NYSDEC basing their 50 ppb ($\mu\text{g/L}$) human exposure concentration on generic organic compound exposure. The lack of any known safe concentration for humans and the persistence of this compound in Mohican Lake for weeks beyond the application date necessitates that all individuals facing exposure agree to this exposure, and to their exposure to 2,4-D, before these chemicals are added to a surface water body. Like Endothall, 2,4-D carries significant human health risks, and has linked to higher cancer risks by the International Agency for Research on Cancer. NYSDEC likewise acknowledges¹ that 2,4-D persists in lake sediments for months after introduction into the lake, extending the period of exposure for humans and the aquatic ecosystem far beyond the initial period of application. For Mohican Lake, individual owners of both lake bottom and lakeside property do not all consent to this exposure to these toxic chemicals, and thus the curtailment of their uses of Mohican Lake. In addition, there is no opportunity for visitors to the lake renting or otherwise staying at the lakeside homes to speak out about their potential exposure.

How will NYSDEC ensure that all users of the lake during the period of application, including waders, bathers, and boaters who may fall into the water and come into direct contact, will be notified of the potential exposure and the health risks associated with that contact?

How will NYSDEC address the liability issues associated with businesses who support, advocate and rely on business associated with recreational use of the lake, including uses that will support and/or induce contact with the treated water? There may be legal risks for businesses or landowners who rent out their properties that support/encourage recreational uses which expose users to the dangerous chemicals.

¹ see “A Primer on Aquatic Plant Management in New York State” by NYSDEC, Division of Water; available at https://www.dec.ny.gov/docs/water_pdf/ch6apr05.pdf

The proposed chemical must not be added to the lake. Doing so would be a violation of New York State law and raise significant health exposure and legal liability issues for users of, residents around, and businesses dependent upon use of the lake.

The downstream impacts within the Mill Brook watershed have also not been addressed through the current permitting process. Given the rural setting and many potential uses of the stream water below Mohican Lake for human, livestock, and plant irrigation uses, the downstream impacts need consideration and redress. The likelihood of negative downstream impacts is increased by the proposed location of the treatment within Mohican Lake, with emphasis of some lake treatments within a narrow cove at and immediately upstream of the lake outlet. Not only will there be little dilution from the large volume of water within the lake as a whole (see permitting comments below) but the outlet stream (with no control by the applicant of this outlet) will immediately begin exposing all downstream property owners to the toxic herbicides.

Our understanding is that multiple uses exist within the Mill Brook watershed and downstream of the Mohican Lake outlet which could be impacted by the proposed chemical treatment, including livestock watering, crop irrigation, and/or human uses. The most disturbing revelation about these potential impacts is that the applicant has failed to investigate the number and extent of downstream water withdrawals, and has apparently failed to fully notify downstream users who may be most significantly impacted.

Clearly, a permit must not be granted under such conditions.

There has also been a failure to evaluate the broader potential impacts from exposure, including to threatened and endangered plant species, within Mohican Lake and/or in the regulated adjoining wetlands. Indeed, no documentation of any kind for the species composition, densities, and distribution for both native and non-native species has been provided to support the use of toxic herbicides in this lake. Thus, NYSDEC cannot evaluate or document that severe negative impacts to state and/or federally listed plants have been prevented by issuance of permits in this setting, contrary to the requirements within the permit for pesticide applications. Nor is it clear that the target application area has high densities of non-native aquatic plants (e.g., Eurasian water milfoil) and low densities of native aquatic plants, including threatened and endangered species. The impacts to native aquatic plants from these herbicide applications have therefore not been evaluated nor even considered in this setting. It is vital that the permitting of toxic compound discharges within waters of New York State not be abused under the pretense of invasive species control when the impacts to native aquatic plants may be much more profound and severe. Aquatic plant surveys, including the composition, abundance, and distribution of native species, needs to be completed before any herbicide is introduced into this lake and irreversible harm has been inflicted. New York State must verify that the application will not adversely affect state or federally listed species or their critical habitats before it continues to consider the application at hand.

The addition in 2018 of the broad-spectrum, systemic herbicide 2,4-D to the toxic mix of chemicals proposed for application to Mohican Lake raises even greater concerns and greater uncertainty about the impacts to native plants and the lake's ecology. Of the herbicides permitted for use in New York State waters, 2,4-D has some of the highest toxicities to native aquatic plants, in addition to its impacts on invasive species. As such, the addition of 2,4-D to the herbicide mix increases the likelihood that the introduction of

these chemicals to Mohican Lake will have large and potentially irreversible impacts to the native aquatic plants that have thrived in this lake for thousands of years. Indeed, the introduction of chemical herbicides into a lake management program can easily destabilize the system, eliminating long-persistent native aquatic plants and favoring fast-growing, pioneer species including the invasives purportedly targeted by the chemical treatments.

The landowner notification for 2,4-D application also does not specify how 2,4-D will be used in Mohican Lake. New York regulations (NYCRR Part 327.6) currently restrict 2,4-D application to “only for the control of emergent plants having a large part of their leafy growth projecting above or lying flat on the water surface.” Yet the notification from Mohican Lake Taxpayers Association and Solitude Lake Management states their intention to only control Eurasian watermilfoil, a submerged aquatic plant not fitting this regulatory definition for appropriate use. The inherent conflict between 2,4-D’s restricted use and the recent notification lead to multiple possible and uncertain applications of this chemical in Mohican Lake, leading to even greater risk and uncertainty on the chemicals impacts to a host of vital native aquatic plants in this ecosystem. The short comment period, the lack of availability of the application materials, and the much longer timeframe for the FOIL process relative to the comment window all contribute to this uncertainty and the inability of affected landowners to understand and evaluate how their uses will be affected, how their property and property rights will be damaged, and whether they consent to these impacts. Both the chemicals themselves, and the permitting process, fail to address and communicate the likely impacts from the toxic chemical introductions into a healthy aquatic ecosystem.

These concerns about ecological impacts apply equally to the NYSDEC-regulated wetlands in-and-adjacent to Mohican Lake (HL-53 at 93 acres) and the NYSDEC-regulated wetlands just 0.5 miles downstream of the lake outlet (PE-5 at 132 acres) which will be directly exposed by the Mohican Lake treatment. The applicant has neither mapped these wetlands in their application materials (an important requirement for aquatic herbicide permits) nor considered the impacts from the combined exposure from Endothall and 2,4-D. Indeed, NYSDEC clearly states that permit review cannot commence until an accurate and complete application has been submitted, with important emphasis in multiple sections of the locations of NYSDEC-regulated wetlands. Because these regulated wetlands are contiguous with both Mohican Lake and with the downstream receiving waters, an aquatic herbicide permit is not the sufficient or appropriate regulatory mechanism to evaluate the environmental risks from these herbicide compounds being introduced into the State’s surface waters, and this aquatic herbicide permit must not be issued.

The Delaware Riverkeeper Network is equally concerned about the broader and cumulative impacts of these aquatic herbicides in the Delaware River watershed. With many lakes and ponds within the Mill Brook watershed alone, and the potential for multiple overlapping treatments of these herbicides in other lakes that will cumulatively raise levels in the receiving Mill Brook and downstream Delaware River, the cumulative impacts need to be considered and evaluated. These broader impacts include human exposure via water intakes as well as ecological impacts to non-target species, including New York State threatened and endangered aquatic plant species such as *Podostemum ceratophyllum*, whose populations in the Delaware River and its tributaries represent the last known stronghold for this plant within the state.

The Delaware Riverkeeper Network respectfully requests additional information about other lakes, ponds, and streams where Endothall and 2-4 D, and/or any similar broad-spectrum aquatic herbicides, have been permitted by New York State within the Delaware River basin.

Finally, the permit application submitted previously for Mohican Lake contained multiple errors, misrepresentations, and inconsistencies. We are seeking the current documentation to undertake a similar assessment. Among the problems noted previously included, but were not limited to:

- failure to notify downstream users of pesticide application and their environmental exposure;
- failure to identify and map NYSDEC regulated wetlands (particularly HL-53 and PE-5) and evaluate the impacts to these wetlands;
- inaccurate representation of lake size and volume, thus distorting dilution calculations;
- potential misrepresentation of herbicide target species, with application area targeting high concentration of native aquatic plants such as water lilies (e.g., *Nymphaea*, *Nuphar*);
- incomplete information on the mapping of aquatic resources and water uses within and downstream of Mohican Lake, including livestock and irrigation uses within and below Mohican Lake;
- inaccurate downstream modeling based both on inaccurate lake size but also based on proposed herbicide location, lack of dilution before introduction into downstream waters, and the high risks for much for elevated exposures to downstream users.

Moreover, the purported impacts to boating from Eurasian water milfoil are exaggerated and do not warrant the introduction of toxic compounds. We have spoken with numerous boating enthusiasts who attest to Eurasian water milfoil being low among impediments to motorized and non-motorized boat travel.

As NYSDEC already has acknowledged through multiple publications of its own, herbicide treatments to control invasive aquatic plants entail significant risks, substantial controversy, and many disadvantages that relegates them to the option of last resort when other less-invasive techniques have been thoroughly evaluated and the concerns from herbicide impacts have been addressed. Particularly because Mohican Lake is a slightly acidic, soft-water system that is outside the ideal growing conditions for Eurasian watermilfoil, the risk of rapid milfoil expansion and dominance are low, providing ample time and opportunity to thorough evaluate and test alternative strategies.

For Mohican Lake, at least three alternative strategies need to be considered, evaluated, and tested before herbicide application can be deemed the most appropriate control strategy for Eurasian watermilfoil. First, the native aquatic beetle known as a weevil has been shown to effectively control Eurasian Watermilfoil while leaving native species of aquatic plants unharmed. This weevil (family Curculionidae, species *Euhrychiopsis lecontei*) feeds effectively on the growing tips of the milfoil plant, can complete multiple generations in a single growing season, and has been shown to be an effective natural control agent when weevil populations are augmented through stocking. Although some variability in response has been noted, Mohican Lake would be a strong candidate for weevil control in part because of the largely natural shoreline that would allow the beetles to successfully survive the winters in leaf-litter along the shoreline, and then successfully launch their attacks on milfoil the following spring.

The second natural control strategy which should be evaluated is the aquatic caterpillar *Acentria ephemerella* (family Crambidae). The aquatic caterpillar can reach high densities on Eurasian Watermilfoil, and effectively attacks the growing tips of milfoil plants. Unlike the milfoil weevil, this caterpillar (and its adult form, a moth) are not native to New York, but this species has become naturalized over the last 100

years and is now considered a non-native resident species. It also has the advantage over the weevil in not needing shoreline over-wintering sites and instead is an entirely aquatic species. This caterpillar has been effective at controlling Eurasian Milfoil in New York's Cayuga Lake.

The third alternative control strategy which may prove highly effective in a setting such as Mohican Lake is the use of manual control of individual plants in targeted areas. Although manual removal on a lake-wide basis would be expensive and time-consuming, more localized efforts by individuals and professionals could be a key part of the long-term control and management of the Eurasian Watermilfoil in Mohican Lake. Clearly, multiple NYSDEC-recognized alternatives to herbicides are available for the control on Eurasian watermilfoil at Mohican Lake, and there is great potential that one or more of these techniques could provide more effective control without curtailing riparian owners uses of the lake and without endangering the long-established native aquatic plant and wetland communities in Mohican Lake and in the adjacent waters. Particularly in this context where riparian owners do not consent to their uses being curtailed, viable alternative strategies must be considered and evaluated here in Mohican Lake.

To manage the impacts from watermilfoil in Mohican Lake, a long-term strategy is needed that identifies management options, evaluates trade-offs among those options, gathers information and data to fill gaps, and builds consensus for all lake users. Such a Lake Management Plan or Aquatic Plant Management Plan (depending on how comprehensive) needs to be the guide prior to any management action that could backfire and exacerbate the problems or damage the lake ecosystem.

We urge NYSDEC to deny issuance of the Mohican Lake permit for application of Endothall and 2,4-D . We further request additional consultation and discussion about the broader application of endothall-containing and 2,4-D compounds, and similar broad-spectrum herbicides, into aquatic environments within the Delaware River basin in order to evaluate the individual and cumulative impacts to all best uses of these waters.

Sincerely,



Maya K. van Rossum
the Delaware Riverkeeper



Erik L. Silldorff, Ph.D.
Restoration Director