

# Conservancy Lands Keep 'P' Out of Green Lake

By Thomas L. Eddy

View to the east from Norwegian Bay on Green Lake during late summer. Note the remarkable water clarity.

Photo by T. L. Eddy

**Protecting  
the land  
that protects  
the lake**  
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**For more information  
about our local land trust  
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**Bur Zeratsky, President  
920-294-3592**

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'P' is the elemental symbol for phosphorus, a vital nutrient for all life. In plants, P helps build strong roots and flowers. In freshwater ecosystems, P is the main rate-limiting nutrient—it is the nutrient which limits growth over time. So, what do plant nutrients, notably P have to do with Green Lake?

Lake ecosystems require nutrients for plant growth. Through photosynthesis green plants release oxygen and form the base of the food chain that all other organisms depend on for survival. However, too much P promotes excessive aquatic plant growth and algae blooms, which can lead to a decline in water quality over time and premature aging of a lake (cultural eutrophication). Fortunately, Green Lake's current nutrient state is classified as mesotrophic with moderate amounts of plant nutrients present.

Aquatic plant growth in Green Lake, like many lakes in the southern half of Wisconsin, is partially mitigated by mechanical aquatic plant harvesting, a labor-intensive and costly operation.

Prevention of eutrophication requires diligent and long-term watershed management. According to lake science, a lake ecosystem is better balanced, more biodiverse, and exerts greater resiliency to environmental changes when protected from nutrient-loading.

Through precipitation events exacerbated by climate change, water transports P into Green Lake from agricultural fields, city lawns, and stormwater runoff, and wastewater treatment effluent from the City of Ripon. Prolific plant growth, followed by dieback and bacterial decay consumes dissolved oxygen (DO), thus potentially adversely impacting fish and invertebrate populations.

In 2014, lowered DO in Green Lake's "metalimnion" or thermocline prompted the Wisconsin Department of Natural Resources (WDNR) to classify Green Lake as "impaired for DO" because it does not meet present water quality standards. At approximately 30 feet depth the thermocline is a narrow stratum where temperature change occurs more rapidly with depth than it

does in the layers above or below. How substantial a contribution by P toward Green Lake's impaired metalimnetic DO status is currently unknown, but it is the subject of ongoing research.


How do we keep P out of Green Lake? Historically, numerous best management practices have been implemented by the Green Lake County Land Conservation Department and Green Lake Sanitary District (GLSD) throughout the watershed to keep soil and P on the land. Since 2011, a core team of lake partners has developed and carried out a WDNR-approved lake management plan that facilitates lake and watershed health. Strategies that reduce P include establishment of agricultural and tributary buffers, retention basins, minimal and no-till farm practices, aquatic plant harvesting, and promotion of a comprehensive city stormwater management plan.

A proven approach that minimizes P is establishment of "conservancy lands" by the Green Lake Conservancy (GLC) land trust and its main partners—the

GLSD and WDNR. Preserved and mostly undeveloped conservancy lands that minimize nutrient runoff and non-point pollution into Green Lake include Mitchell Glen, Norwegian Bay Wetlands, Guskey and Miller Prairies, Wick Nature Preserve, Blackbird Point Wetlands, Tuleta Hill Prairie, and Sunnyside Nature Preserve.

Since 1995 the GLC has offered science-based lake and watershed protection through land acquisition, gift, and conservation easement. Following two decades of land trust accomplishments, the Green Lake Conservancy continues steadfast to this task, contributing to the ecological, social, and economic well-being of our communities.

*Thomas L. Eddy is a founding member of the Green Lake Conservancy and serves as VP for Conservation. To pledge a donation to the Conservancy or to learn more about the work of the Conservancy, visit them at [greenlakeconservancy.org](http://greenlakeconservancy.org). To contact the Conservancy call (920) 294-3592 or email [info@greenlakeconservancy.org](mailto:info@greenlakeconservancy.org).*



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