



*Green Lake looking east across Norwegian Bay, early November 2023.*

## LANDOWNER DRIVEN EFFORTS IN THE WATERSHED

As part of our fall newsletter this year, we'd like to highlight some of the wonderful and truly impactful efforts by property owners around the lake that often occur with little notice or acknowledgement. We'll be outlining a new sediment basin in the Terrace, summarizing the scope of best management practices (BMP) around the watershed, as well as explaining the history of Tuleta Hill Prairie Conservancy Property. Committed citizens, landowners, and farmers around our watershed are making a big difference for the future of Green Lake. The long-term health of the lake depends on these efforts.

While the summer of 2023 continued to be dry around our watershed, there were a handful of spring runoff and rain events that still provided nutrient loading into the lake. The USGS will be providing the final summer water quality numbers in the next month or so, but initial results showed encouraging phosphorus numbers for the lake. Similar to last year, the ongoing drought plays a tremendous role in this positive trend. It is important to acknowledge the water quality benefits associated with limited precipitation are likely short-term; similar to the low water levels themselves. It's important

to point out that the years of 2018 through 2020 were 3 of the wettest years on record and brought significantly higher than average nutrient loading into the lake. A few drought years will not create long-term improvement to the lake's water quality. The GLSD and our lake management partners must continue



*High water clarity, Green Lake, August, 2023.*

to develop and help fund projects throughout the watershed to limit nonpoint source runoff.

As mentioned above, we want to illustrate some of the efforts being made around the watershed by individual landowners or neighbors working together to benefit the lake. This past September, a new water and sediment retention basin was installed in the Green Lake Terrace area. An undeveloped property in that area came up for sale in early 2022. Several neighbors got together and decided to purchase the property to help limit further development and corresponding hard surface runoff, which is a significant problem in the Terrace. The landowners reached out to the GLSD and the Green Lake County Land Conservation Department (LCD) for ideas on how they could manage the property for the betterment of the lake. The LCD staff determined that this parcel is a main flow path for water coming off neighboring farm fields and draining directly into Green Lake. The county evaluated the drainage area of the fields and determined a retention basin could help limit both water volume and sediment load moving across the property which is only 450' away from the lakeshore. The landowners agreed to have the basin installed and, as it encompasses the entire property, the parcel would then be viable for no other use; effectively donating the land to the protection of the lake. Jordan Dornfeld of the LCD and Hannah Niewoehner of the GLSD worked to create the basin design, cost share agreements, and bid documents facilitating the basin construction which occurred in September.

The basin, which stops an estimated 33 lbs of phosphorus from reaching the lake each year, was funded through a



Targeted Runoff Management grant acquired by the GLSD (in partnership with GL County LCD and the GLA) in early 2023. It is believed that 1 lb of phosphorus can generate 500 lbs of algae in a WI lake; meaning that this new basin may reduce algae in the lake by over 16,000 lbs. Since 2012, the GLSD, County LCD, GLA, and NRCS have worked with landowners around our watershed to establish and cost share around 35 sediment basins, roughly 20 streambank stabilization projects, 30 grassed waterways, a dozen rocked waterways, another dozen field terracing projects, as well as a host of other BMPs that have saved the lake over 5,000 lbs of phosphorus loading annually. These projects could not be done without the partnership of farmers and willing landowners around our watershed.

The adjacent photos show the basin structure as the vegetation continues to establish. Like other sediment basins around the watershed, the GLSD has agreed to maintain the basin in perpetuity. Over many years, when the basin fills with sediment eroded from upland areas, the District will fund the removal of the sediment from the basin so it can continue to filter water draining from fields in that area to the lake.

For the third summer in a row, **Big Green Lake's water levels were very low.** The GLSD fielded calls from residents curious about who controls the level of the lake and why there was still water being allowed over the dam in the City of Green Lake. Under Sec. 31.02 of the Wisconsin Statutes, the DNR regulates and controls the level and flow of water in all navigable waters, including Big Green Lake. Subsequently, the city operates the dam and manages the lake level within the range the DNR has established. However, Sec. 31.34 of the Wisconsin Statutes requires that the City of Green Lake maintain at least 25% of the natural flow to the Puchyan River at all times to support aquatic habitat downstream. Therefore, in times of drought, the city is not able to stop the flow of water over the dam in order to increase the level of Green Lake.

Since 1989, the GLSD operated our **weekly beach sampling** program between Memorial Day and Labor Day. GLSD staff sampled the lake water at each public beach as well as several boat launches each week to determine E. coli levels at the various locations. Elevated levels of E. coli were found once at Dodge Park, and twice each at the Sunset Park boat launch and the Green Lake Conference Center beach. As was the case in previous years, similar test results at these locations

### DID YOU KNOW.....

In 2023 alone, utilizing various DNR grants and District tax levy, the GLSD has cost shared cover crops on over 1,100 acres of land in our watershed. A big thank you to those farmers helping to protect Green Lake!

are believed to be caused by accumulated goose or seagull droppings adjacent to the sampling locations. When swimming in the lake near shore, always evaluate the nearshore area for evidence of waterfowl droppings. If you see it along the lake-shore, it's best to swim elsewhere. The GLSD will continue its beach sampling program in 2024. Watch our Facebook page for postings on water quality issues during the summer months.



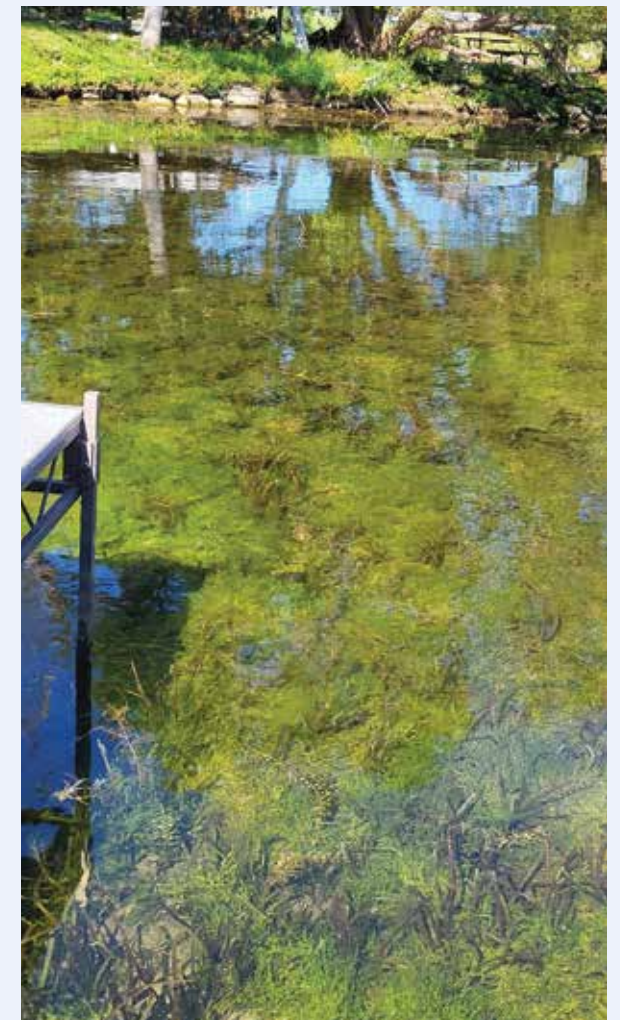
Terrace sediment basin, Green Lake, September 2023.

## AQUATIC PLANT SPOTLIGHT – MUSKGRASS

### COMMON NAMES: MUSKGRASS, STONEWORT, CHARA

Found commonly around Green Lake in shallow water areas, muskgrass is a familiar looking plant to many. Surprisingly, it is actually an unusual type of algae that resembles a more complex plant. It is very simple in structure and has rizoids instead of actual roots. The plants can be found ankle to knee high and often with a calcium coating which gives the plant a crusty or gritty feel. As its common name indicates, it has a strong musk smell which is very noticeable once it's out of the water. Due to its limited height, and the fact that the aquatic plant harvesters are not able to operate in the shallow water depths where it is usually found, it is difficult for the GLSD to cut muskgrass effectively. Hand-pulling or raking can work to remove these plants; though they are believed to be a great sink for available lake nutrients. Muskgrass also provides shade and shelter for a variety of fish and is a choice food of waterfowl, particularly diving ducks.

~From *Through the Looking Glass: A Field Guide to Aquatic Plants*



Above: Muskgrass and water celery, Norwegian Bay, Sept. 2023. Left: Close up of Muskgrass

## GLSD WASTEWATER PERMIT COMPLIANCE

### WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES) PERMIT COMPLIANCE

As mentioned in previous newsletters, the GLSD is required to meet new, stringent wastewater discharge requirements set forth by the State of WI. Since 2018, the District has been working toward a phosphorus compliance alternative to reduce the phosphorus discharged from our current lagoon wastewater treatment system. Currently, the GLSD pumps treated wastewater to the Fox River through a force main approximately five miles west of our existing treatment plant. There are several compliance alternatives the GLSD has evaluated over the past 6 years. Initially, we'd hoped to use the agricultural best management practices (BMP's) that we help implement and fund to achieve compliance via phosphorus credit trading. Unfortunately, since those projects are in the Big Green Lake watershed, and the GLSD discharges to the Fox River watershed, the DNR would not allow the credits to be applied to meet our trading needs. The District had discussions at various levels of the WDNR for the last couple of years on this issue, with the DNR not allowing trading credits in other watersheds to be utilized for phosphorus compliance.

The other compliance options for the GLSD included adding on to and retrofitting our current wastewater facility to add phosphorus treatment by adding chemical coagulants to the treated wastewater and further filtering the water to remove solids-bound phosphorus particles. The estimated price tag for this option based on recently updated costs is estimated to be over \$5.5 million dollars with an annual operation and maintenance cost of \$42,500. While this option would be acceptable to the DNR, it would have a general lifespan of around 20 years with potential new facility upgrades needed around the year 2045.

The compliance option the GLSD Board chose was the recycling of our treated wastewater onto the landscape, also known as land application of our treated effluent wastewater. Identified by the DNR as our most "environmentally friendly" alternative, land application is not uncommon in Wisconsin. Many rural municipalities, such as the City of Hayward and Village of Plainfield, utilize this method of reusing treated wastewater to irrigate crops (for animal consumption), natural groundcovers, or trees, and have done so successfully for many years. Since 2020, the District has been evaluating suitable lands near our existing treatment facility and along the force main route on County Highway T and other roads leading to our Fox River discharge location. To the benefit of the GLSD and our customers, we're excited to announce that we've secured the parcels needed to undertake land application and meet our future compliance requirements. District staff have spent much of 2023 consulting with our Engineers, Cedar



Corporation, and WDNR staff to ensure all code requirements are met for our use of these parcels and we have received the necessary support from the state to move forward. We hope to complete the infrastructure design phase in 2024 with construction occurring in 2025.

With this purchase and corresponding use of the property, the District will meet our WDNR compliance goals. In addition to the environmental benefits of reusing the treated water to irrigate vegetation (specifically native prairie vegetation on District owned properties), the grasses & forbs are required to be cut and removed from the land each fall. By doing so, the District removes added nutrients from the landscape. The total price of this compliance option is estimated to be around \$4.5 (including land purchase) with an annual operation and maintenance cost estimated to be \$27,000. While this compliance option has a lower cost than a completed facility upgrade with chemical addition and filtration, it is still an expense the GLSD ratepayers will have to absorb in their user fees. However, since the GLSD will no longer be discharging treated wastewater to the Fox River, the District is evaluating the possibility of selling our phosphorus credits each year to other municipalities to help offset the land purchase cost. Initial estimates provided by RES, the state phosphorus trading clearinghouse, the revenue generated could be in the range of \$30,000 to \$50,000 annually. This revenue will be used to help reduce future rate increases needed to pay for the land and infrastructure investments. Further updates regarding the GLSD's pathway to full WPDES compliance will be provided in future newsletters.

## WASTE MANAGEMENT UPDATE

The GLSD board approved a 5-year contract extension with Waste Management for weekly trash collection for residents of the District. We are excited to announce that **bi-weekly recycling will now be available** to residents in addition to the weekly household trash collection. This is an improvement over our previous contract, which only offered monthly recycling collection. If you would like to have recycling service, Waste Management will provide you with a 64-gallon, yellow-topped cart. The cost for the service is only \$8.00 per month per cart. If you are not currently a recycling customer with Waste Management and would like to sign up for this service, call our office (920) 295-4488, and GLSD staff will work with WM to get an account set up for you. WM invoices on a quarterly basis.

Here are some reminders about trash collection within the District:

- WM collects household waste only – no yard waste, construction materials, or electronics. Do not place extra bags or waste items on the ground next to the WM-issued trash cart. It will not be collected.
- Keep carts in easy to see locations. Having it near your fire number or mailbox is recommended.
- Have carts out Sunday evenings or by 6 am Monday mornings.
- Remember to place carts with top handles facing away from the road.
- Remember that on Mondays following busy weekends, trash collection may extend into Tuesday.
- If roads are unsafe due to ice or snow, WM may not venture down that road. Safety is always a priority.
- Check our Facebook page for updates on trash collection around holidays.



### RECYCLING CENTERS

In addition to the curbside trash collection/recycling service for our residents, be aware that recycling can be dropped off to your local township as well. The list below outlines the services provided to residents of each township within the Green Lake Sanitary District boundaries.

**TOWN OF BROOKLYN**  
N6285 Berlin Rd, Green Lake

Accepts garbage, recycling, and yard waste.

**HOURS (NOV – APR)**  
Sat.: 7:30–11:30 am  
Mon.: 7:30–10:30 am

**HOURS (MAY – OCT)**  
Sat.: 7:30 am – 1:30 pm  
Mon.: 7:30 – 11:30 am

**TOWN OF GREEN LAKE**  
N2298 Cty Road A  
(920) 398-2405  
www.townofgreenlake.com

Accepts recycling and yard waste.

**HOURS**  
Sat.: 8:00 am – 2:00 pm

**TOWN OF PRINCETON**  
County Trunk D  
(920) 295-4057  
www.cityofprincetonwi.com

Accepts recycling only.

**HOURS**  
1st and 3rd Saturday of each month  
from 8:00 am – 12:00 pm

**TOWN OF MARQUETTE**  
306 Lyons St., Markesan  
(920) 229-6360

Accepts recycling only.

Recycling receptacle available for township residents that can be accessed 24 hours per day.

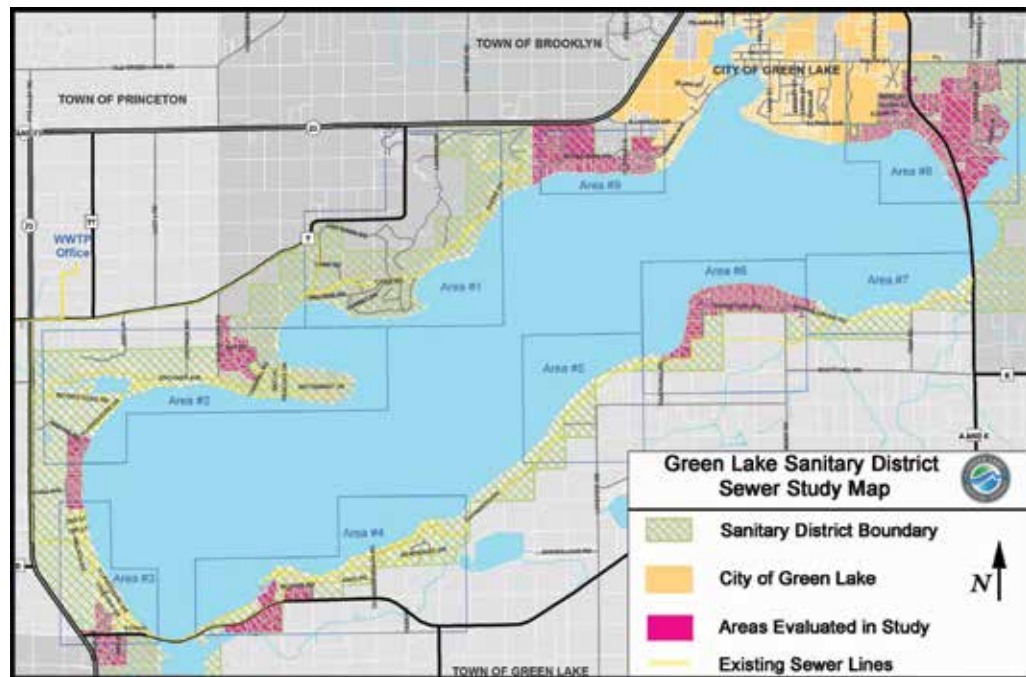
## GLSD FUTURE SEWERING STUDY

**GLSD POTENTIAL FUTURE SEWERING UPDATE** - In 2021, after piecemealing two sewer projects and starting evaluation of a third, the Green Lake Sanitary District (GLSD) received several additional requests to evaluate sewerage additional locations around the lake. The GLSD board authorized a high-level study to determine the following: 1) If sewerage these areas possible, 2) What the associated costs would be for impacted landowners, and 3) If the GLSD wastewater treatment facility has the capacity to accept additional wastewater. The study draft was completed late last year with spring and summer of this year spent evaluating the information while GLSD staff reviewed records on septic system ages, groundwater levels, etc. in the potential project areas. This past August, the GLSD and our engineering firm, Cedar Corp, brought the information to the public at 2 informational meetings – one for Sewer Service Area 8 (Sunnyside/Cty A/Illinois Ave) and the other meeting was for the remaining Sewer Service Areas (2, 3, 4, 6, 9) which is the west end of the lake, a small area in the Terrace, a small area along Cty K/McAfee Rd, Sandstone, and the Hickories.

The main information relayed in the study was that it is possible to sewer these areas and the GLSD has the capacity to receive the additional wastewater, but the associated assessments are costly. They range from roughly \$28,000 to \$52,000 for the various study areas. Several other areas of the GLSD have recently been seweraged; the areas were primarily along the

lake, with costs ranging between \$22,000 and \$29,000 per property. Please note that each area of study varies; for example, some areas are primarily waterfront, some areas are set back from the lake, some areas have larger lot sizes with ample room for septic replacement, and some areas have shallow soils to bedrock. Further development of options such as alternative placement of sewer lines or removing specific streets/areas from study provide additional cost estimates within specific areas. The board is moving through these discussions at the monthly board meetings.

In October and November, the GLSD board began providing additional direction regarding potential project areas. Decisions made to date include: 1) declining to provide service to Area 8 at this time with reevaluation in 10 years including having a potential wastewater partnership in place with the City of Green Lake; 2) declining to sewer Area 6, the County Rd K portion of Area 4, and the Sugar Loaf/Bay Road portions of Area 2 at this time due to the large parcel sizes and/or limited existing development in these areas. These portions of the GLSD will also be reevaluated for potential sewerage in 10 years. The board further requested an estimate to have the sewer line on McAfee Rd completed. The GLSD Board of Commissioners will continue to discuss the areas proposed for sewerage and provide further direction as they move to finalize the study in the spring of 2024.



Tuleta Hill Prairie Conservancy, August 2022.

## TULETA HILL PRAIRIE LOCAL LANDOWNER EFFORTS PROTECT THE LAKE THROUGH LAND ACQUISITION

The Tuleta Hill Prairie Conservancy property is another wonderful example of what residents can accomplish to protect Green Lake. Before the prairie was established in 2008, this property, which is roughly 250' from the south shore of Green Lake, was used intensively for agricultural production. In March 2005, a record-breaking rainstorm caused sediments from the parcel to flow through adjacent residential properties and onto the ice covering the lake. Soon after, the landowner decided to sell to a potential developer looking to create a high-density residential subdivision.

Rather than have the rural landscape changed so significantly, about 20 neighbors on Tuleta Hill Road began a movement to preserve at least a portion of the property. The Green Lake Neighbors, a group led by volunteer attorney Robert Burke, a Tuleta Hill resident & contributor to this history of the parcel, strongly opposed the project. Eventually, the developer

abandoned the project. The Neighbors Group, along with a grant from the MacArthur Foundation, donated \$172,500 to the Green Lake Conservancy (GLC) toward the purchase of the property. In late 2007, the property was deeded to the Green Lake Sanitary District with the understanding that it would remain as prairie and be managed for public use through annual funding provided by both the GLSD and the GLC.

The property was seeded into a deep-rooted native prairie to hold soil in place and act as a perpetual buffer for the lands still in agricultural production upslope. There are over 7 acres upon which to enjoy mowed walking trails winding through prairie flowers and grasses that host an array of pollinators, birds, and other critters. Parking is available just off Tuleta Hill Road. For more information on the Conservancy Properties around our watershed, please visit the Green Lake Conservancy website: [greenlakeconservancy.org](http://greenlakeconservancy.org).





N5295 CTY RD TT  
PRINCETON, WI 54968

PRSR STD  
US POSTAGE  
PAID  
OSHKOSH WI  
PERMIT NO 90

## GLSD COMMISSIONERS

Jerry Specht | *President*  
Ken Bates | *Treasurer*  
Justin Ellis | *Secretary*

## GLSD STAFF

Lisa Reas <i>Administrator</i>	Hannah Vorrie <i>Watershed Coordinator</i>
Paulette Janssen <i>Admin. Asst.</i>	Scott Neuman <i>Conservancy Property Technician</i>
Stuart Marks <i>Plant Operator</i>	
Dallas Lewallen <i>Plant Operator</i>	

## OFFICE HOURS

7am–3pm, Mon–Fri

For sewer emergencies after hours, please contact Dallas Lewallen at (608) 345-7484 or Stuart Marks at (920) 369-8199.

## GLSD IS NOW ON FACEBOOK

In order to reach residents of the District more efficiently regarding time-sensitive issues such as garbage collection, beach advisories, etc., the GLSD can now be found on Facebook. Additionally, from time to time we will be posting information about our Conservancy Properties, various programs we manage, and general lake information. Please check us out.

