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## USGS PRESENTS STATE OF THE LAKE

On January 26, 2017, Dr. Dale Robertson of the U.S. Geological Survey (USGS), presented the USGS's annual "State of Big Green Lake" to the GLSD Board of Commissioners and the Lake Management Planning (LMP) Team at the LMP quarterly meeting. A summary of the USGS's presentation is provided below.

**PHOSPHORUS LOADING:** Over the past 20 years, the lake has seen a decrease in annual phosphorus loading by approximately 25% (from approx. 18,000+ lbs. in 1997-98 to 16,000+ lbs. in 2013-16). This is significant because phosphorus is the primary problem nutrient which causes degradation in lakes including Big Green Lake. Furthermore, phosphorus concentrations coming from our main tributary, Silver Creek, have decreased by approximately 50%. Since almost one-half of Big Green Lake's tributary water flow comes from Silver Creek, this decrease is significant.

**WATER QUALITY:** The water quality of Big Green Lake, based on accepted water quality standards (phosphorus and algal populations), has remained fairly stable over the past 20 years.

**WATER CLARITY:** The water clarity of Big Green Lake has become clearer since the mid-1980s. Mostly likely, this water clarity improvement from 14 feet to 21 feet can be tied to Zebra Mussels which were introduced to our lake 10+ years ago. Reminder, "clearer" doesn't mean "cleaner". AIS (Aquatic Invasive Species) and climate change remain major concerns to Big Green Lake moving forward.

The USGS, in cooperation with the Green Lake Sanitary District (GLSD), has monitored Big Green Lake dating back to 2004 and its tributaries dating back to the 1980s. The USGS evaluates Big Green Lake's tributaries to the lake to quantify nutrient loading to the lake.

The USGS uses very consistent and rigorous sampling protocols that enable the water quality of the lake and its tributaries to be regularly evaluated and examined for short and long-term trends. GLSD's annual contract with the USGS comes to just under \$100,000 per year, of which twenty five percent is paid for by the federal government. Tributary monitoring identifies total phosphorus and suspended sediment concentrations entering the lake; while lake monitoring includes measurements for total phosphorus, dissolved nitrate plus nitrate-nitrogen, dissolved ammonia nitrogen, total Kjeldahl nitrogen, chlorophyll a, secchi (water clarity) and depth profiles for water temperature/dissolved oxygen/pH/specific conductance.

In addition to the GLSD's annual contract with the USGS which is paid for by your GLSD Tax Levy (refer to the article on back cover titled "Green Lake Sanitary District Taxes"), our LMP team is also conducting other important water quality research, more will be coming on this in the near future.



*A USGS monitoring station, above, collects water samples for analyzing phosphorus and sediment in Big Green.*

## 2017 SPRING CLEANUP

The GLSD's Annual Spring Cleanup will be held from Sat., May 27, 2017 through Sat., June 3, 2017. Most trash will be accepted as well as scrap metal and yard waste. Garbage containers will be available at the GLSD Wastewater Treatment Plant (located at N5295 County Highway TT in the Town of Princeton) during the dates and times specified below. The garbage containers will be located within the facility fences and identification of being a GLSD property owner will be required.

**Sat., May 27: 8:30am – Noon**

**Tues, May 30 through Fri., June 2: 8am - 3pm**

**Sat., June 3: 8:30am – Noon**

**ELECTRONIC WASTE WILL NOT BE ACCEPTED.** This includes: TVs (any size), desktop or laptop computers, mice, keyboards, computer cables, computer speakers, desktop printers, CD players, DVD players, VCRs, DVRs and other video players, CPUs, monitors, fax machines, scanners, video recorders/players, video game consoles, zip drives, hard drives, external modems, copy machines and fluorescent light bulbs.

To properly dispose of electronic waste, the City of Princeton will be collecting E-Waste on May 15th. Specific times and other drop-off information can be obtained from the Princeton Clerk's Office

at 920-295-6612. You do not have to be a city resident to take advantage of this event.

**HAZARDOUS WASTE MATERIALS WILL NOT BE ACCEPTED.** If you have any type of hazardous waste materials for disposal (i.e. used oils, paints, batteries tires, microwaves, recyclables and appliances containing fluids etc.), Green Lake County Land Conservation will be holding a "Clean Sweep" on August 11, 2017 from 11am - 6pm. Please contact Green Lake County LCD at 920-294-4051 for more information. Preregistration is required or drop off of hazardous materials.

For the 13th year in a row, GLSD will provide an area set up for Reusable Items during our Spring Cleanup. If you have gently used items that are not ready for the landfill, we will accept them and donate them to people and organizations that can reuse them.

We reserve the right to turn away property owners who abuse the privilege of this special service (i.e. bringing in multiple loads of garbage/brush/waste inconsistent with a normal single residence spring cleaning). If you are unsure about an item, contact the GLSD office at 920-295-4488 between 8am - 4pm for clarification.



## FOR YOUR INFORMATION

### SEWER REMINDERS

Please DO NOT Flush Disposable Wipes into the sewer system. These items fail to break-down and clog the lift stations. The wipes can also get caught in the homeowner's private lateral—a cost that must be paid for by the homeowner. Please also refrain from sending grease down your sink drain or any drain that ties into the sewer. The sewer system is owned by everyone using it around the lake. Proper use saves everyone from expensive repairs.

### GREEN LAKE FISHING NEWS

On April 3, 2017 the DNR, GLSD and fish volunteers took over 25,000+ Lake Trout (Big Green Lake's quota) from our Fish Rearing Facility (FRF) and stocked them into Big Green Lake. The majority of these released fish ranged in size between 9 and 11 inches. None of the Lake Trout stocking would be possible without the continued support of the Big Green Lake Fishing Partnership. Besides the GLSD, our partners include: City of Green Lake, Green Lake Association, Green Lake County, Fishing Guide Mike Norton, Citizen Volunteer Steve Siders, Walleyes for Tomorrow and the Wisconsin DNR.

### GARBAGE REMINDER

Garbage is picked up on Monday mornings, except for the following holiday weekends:

Memorial Day: pick-up on Tues., May 30

Labor Day: pick-up on Tues., Sept. 5

Christmas: pick-up on Tues., Dec. 26

New Year's 2018: pick-up on Tues., Jan. 2

If possible put your trash out on the morning of pickup by 6 am. If you have to leave before that, spray the outside of your garbage bags with an ammonia/water mixture to discourage animals from creating a "garbage mess". Recycling for property owners signed up is the first Monday of the month, except if a holiday weekend, then see Tuesday dates above.

### CONTACT INFORMATION CHANGES

Please notify our office of changes in your property status (i.e. owner, address, marital status etc.) so we can keep our records accurate. Call our office at 920-295-4488 or send an email to [paulettej@glakesd.com](mailto:paulettej@glakesd.com)

### SEWER RELATED WORK

If you are involved in or planning a building project in a sewer area, please contact the GLSD Office 920-295-4488 for permit and inspection related information.

## LAKE MANAGEMENT PLANNING(LMP) TARGETS CARP REMOVAL

The LMP Team which includes representatives from 10 local, state and federal organizations has identified the restoration of the Highway K Estuary as a top priority project in 2017. The K Estuary is located on the south side of County Highway K bridge just east of Highway 73. The 200+ acre K Estuary is an extremely valuable shallow water filtering system feeding Big Green Lake. Three of Big Green Lake's seven tributaries—Wurchs, Spring and Roy Creeks—flow into the K Estuary before their tributary water ultimately makes its way into our lake.



A sign at the Hwy K Bridge informs lake users about the K Estuary Restoration Project.

We want our property owners to understand the connection between this project and the "Carp Die-Off" from last summer. In order to restore the K Estuary to its native state (revegetation of this waterbody with emergent and submergent aquatic plants along with native game fish and wildlife), the major hurdle in this restoration project requires us to begin by removing the carp from this waterbody. Carp removal will allow us to revegetate the K Estuary and recapture the valuable water quality filtering benefits of a restored shallow water system. Once this Estuary is revegetated, the restoration won't last unless we continue to maintain a low population of carp moving forward.

The carp barrier structure—built by the LMP Team on the South side of the K Bridge—is needed to keep carp from moving into the K Estuary from the lake in order to spawn. The carp overwinter in the lake because the main lake becomes more suitable to these nuisance fish as water temperatures turn much colder dur-

ing the winter months. As water temperatures warm in the spring, carp migrate back to the shallow water systems to spawn because these shallow water systems warm up much faster than the main lake. Furthermore, the water depths (2 feet) and features (muddy and turbid) of the shallow water systems like K Estuary are much more conducive to successful carp spawning, and therefore, create ideal conditions for growing our overall carp populations in the main lake and Estuaries (Silver Creek and County K).

There is strong evidence to support our K bridge carp barrier caused the "Carp Die-Off" from last summer. We tested multiple carp and confirmed that the dying carp showed signs of great stress and physical deterioration, both of these conditions are consistent with fish confronted by a structure such as the carp barrier. The dying carp displayed the characteristics of fish trapped under a bridge for several weeks trying to get back into a desirable spawning area. The carp tested showed no signs of any type of virus, disease or bacterial problems.

### AVOIDING A CARP DIE-OFF IN 2017

In order to avoid the carp problems of last summer, we are taking several proactive steps to eliminate most, if not all, of the dead floating carp problems from last summer. The proactive steps outlined below will make carp removal invisible to our property owners and the general public:

- A new and improved carp commercial fishing contractor has been hired to aggressively harvest the carp from under the K bridge beginning in April and continuing throughout the summer for as long as carp continue to show up at the K bridge

- The GLSD will be much more proactive and aggressive in monitoring the carp die-off as well as making daily trips around the lake during the die-off period (early to mid-June)

- Depending on die-off conditions, we are putting backup plans in place to enlist more groups and volunteers to assist in the dead carp collection if needed

- It's important for property owners to understand that there may be short-term



A carp barrier at the Cty. Hwy. K Bridge keeps carp from moving into the K Estuary from the lake in order to spawn.

negative consequences from a carp die-off; however, the long-term consequences to our lake greatly outweigh the short-term problems. Carp are an invasive species and are not good for our lake. Less carp equate to an improved lake in the short-term and long-term. Good science strongly supports removing carp from our main lake and connected Estuaries.

## CONSERVANCY PROPERTIES UNDERGOING BIG CHANGES

### SPRING BURNING

Thanks in part to a great turn out by volunteers, the GLSD has been able to complete prescribed burns on several Conservancy properties. Spring burning of these natural areas is critical to promoting native vegetation while helping to limit and sometimes kill new buckthorn growth. It is a low cost but very effective strategy in controlling buckthorn seedlings. Burns have been completed at Winnebago Trail Conservancy, Sunnyside Conservancy, Norwegian Bay Wetlands, and the Tuleta Hill Prairie since mid-March.



### HAMMER'S BUCKTHORN REMOVAL

Managing the invasive species on the Conservancy properties is very challenging. Our most prevalent invader is common buckthorn. It can be found on every one of our conservancy lands. Sunnyside, Norwegian Bay, Winnebago Trail, and Hammer's Trail have all been heavily infested with the prickly shrub. Since the winter of 2015, we have removed nearly 50 acres of buckthorn off the conservancy properties. GLSD staff and Lisa Reas, our Conservancy Lands Manager, have acquired \$40,000 from various governmental agencies to fund the removal and follow-up herbicide treatments. Our ultimate plans (next 3-5 years) involve restoring these valuable wetland filtering areas to their native state.



### FISH STICKS

In the winter of 2016, large trees were placed along the shore of four of our Conservancy properties—Sunnyside, Pool's Hill, Norwegian Bay, and Hammer's Trail—in order to help protect shoreline areas with heavy erosion. The projects were funded by a Healthy Lakes DNR grant that looks to create near shore fish habitat through the use of the tree structures generally known as 'fish sticks'. The project has been very successful on the four properties with Hammer's Trail being the property with the most need. Fifteen fish stick structures were placed there along 300' of shoreline and 2,300 deep rooting native wetland sedges, rushes, grasses, and flowers were planted by GLSD staff and Green Team Volunteers.



## GLSD COMMISSIONERS

Jerry Specht | *President*  
Ken Bates | *Treasurer*  
Boni Jensen | *Secretary*

## GLSD STAFF

Charlie Marks | *Administrator*  
Paulette Janssen | *Admin. Asst.*  
Paul Resop | *Plant Operator*  
Stuart Marks | *Plant Operator*  
& *Aqweed Harvester Supervisor*  
Dallas Lewallen | *Asst. Plant Operator*

## CONTACT US

www.glakesd.com  
(920) 295-4488

N5295 Cty Rd TT  
Princeton, WI 54968

## OFFICE HOURS

7:30 am–3:00 pm, Mon–Fri

For sewer emergencies after hours, please contact Charlie Marks at 920-291-6688.

## UPCOMING GREEN TEAM EVENTS

MAY 6th  
Mitchell Glen Spring Tour

MAY 20rd  
Bison Tour

JUNE 3rd  
Stream Bugs & Restoration Tour

JUNE 10th  
Kayak or Canoe Spring Lake

JULY 8th  
Moonlight Paddle on Silver Creek

JULY 8th  
Beekeeping and Prairie Tour

SEPTEMBER 9th  
Shoreline Forest Restoration Tour

OCTOBER 7th  
Mitchell Glen Fall Tour

DATE TBD  
Buckthorn Cleanup Crew

For more information, please contact any of the following Green Team Partners: Green Lake Sanitary District (295-4488), Green Lake Conservancy (294-3592), Green Lake Association (294-6480) or Green Lake Schools (294-6411)



N5295 CTY RD TT  
PRINCETON, WI 54968

## GREEN LAKE SANITARY DISTRICT TAXES

How are your GLSD dollars being spent to protect and improve your lake?

GLSD Taxes and sewer revenues are collected and disbursed throughout the year to accomplish many different public health and welfare related activities designed specifically to protect and improve Big Green Lake and its watershed. More specifically, the GLSD is broken down into two major categories—Sewer Service Collection System/Wastewater Treatment Plant (WWTP) and Lake and Watershed Protection and Improvement Programs.

### SEWER COLLECTION SYSTEM AND WWTP

The GLSD's Sewer Service Collection System provides municipal sewer service to approximately 1,250 residential equivalent homes located around Big Green Lake. Below are some quick facts:

- \$500,000–Annual Operating Revenues/Expenses
  - 3 full-time employees dedicated to running the Sewer Collection System and WWTP
  - \$87–residential home quarterly OM&R fee (operations, maintenance & repair). This fee is lower than many other compatible municipal sewer systems around Wisconsin.
  - 300,000 gallons of wastewater per day–capacity of the WWTP (summer peak capacity)
  - 25 Pumping Stations/100 Miles of Sewer Pipe/1,250 Residential Homes
- Sewering a lake can be one of the biggest and most important first-steps to ensuring safe and

healthy water quality from unreliable private on-site wastewater treatment systems (i.e. failed septics and holding tanks).

### LAKE PROTECTION/ IMPROVEMENT PROGRAMS

The GLSD's second major category of work involves specific lake and watershed protection and improvement programs. Below are some quick facts:

- \$500,000–Annual Operating Revenues/Expenses (from taxes and from grants)
- 2 full-time employee equivalents dedicated to running the lake activities/programs:
- Weekly Garbage Pickup/Spring Cleanup (\$140,000)
- Aquatic Plant Harvesting and Collection (\$55,000)
- USGS Contract (*pays for extensive lake and watershed monitoring greater than \$100,000*)
- Year-Round Fish Rearing Facility (30,000 Lake Trout, 20,000 Rainbow Trout) (\$5,000)
- Conservancy Properties (14 properties/200+ acres) (\$15,000)
- Lake Management Planning Team
- Lake and Watershed Protection Work (BMPs with farmers, etc) (\$200,000)
- RSVP – shoreland restoration grants and projects (\$10,000)
- Extensive Grant Writing (average \$100,000+ annually in grant revenues)
- Green Team Member and Sponsor