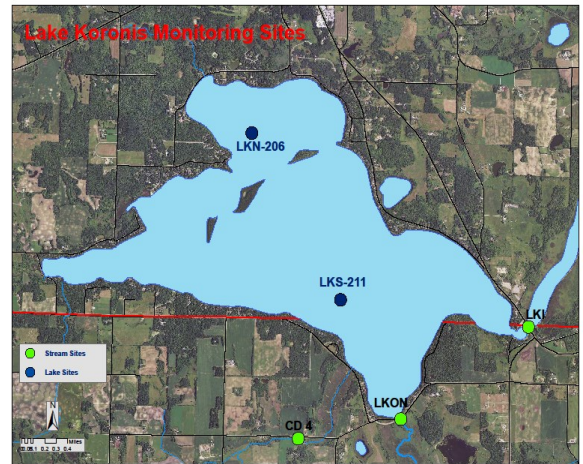


Lake Koronis 2013 Monitoring Summary

In the summer of 2013 we saw some of the latest recorded Ice outs, better water clarity and a late summer dry spell, creating an unique year. These factors created ideal conditions for aquatic plant growth, which is better for our lakes than algae growth (the alternative) and better habitat for the fish.

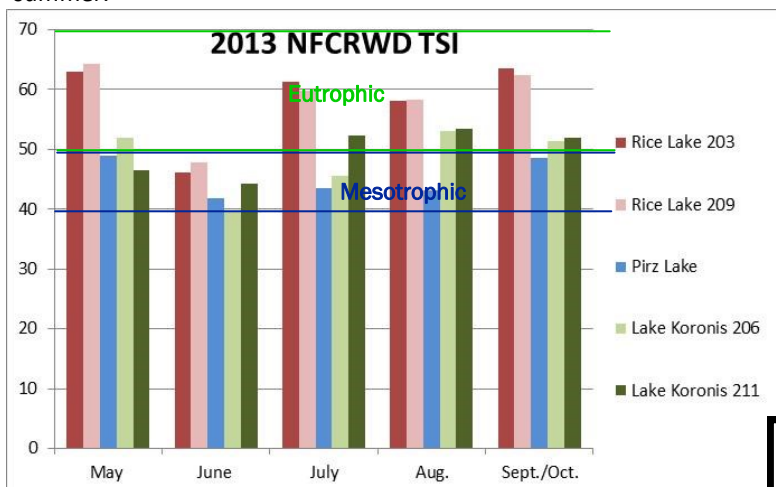
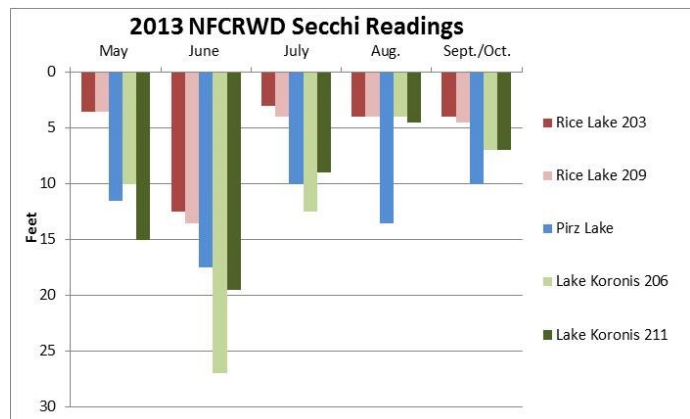
During the 2013 open water season the NFCRWD along with volunteers collected lake samples at two locations (LKS-211 and LKN-206), and locations at the Lake Koronis inlet (LKI) and outlet (LKON). (see map)

In this report you will find a summary of the monitoring results for 2013, along with some long term trends. If you have any questions about these results please contact NFCRWD Chris Lundeen, 320-346-2869, technfcrwsd@tds.net.



Lake sites are monitored every month during the open water season for water clarity (Secchi disk); temperature, pH, dissolved oxygen, conductivity (YSI multipurpose probe); chlorophyll A, phosphorus and total suspended solid material (Lab samples) contained in the water. Phosphorus content is the primary benchmark used to determine whether lakes are overly inundated with nutrients while chlorophyll-A is useful in determining the amount of algae in a lake. Lake monitoring is accomplished using a cooperative effort between lake association volunteers and NFCRWD staff.

A measure used to quantify these results is Carlson's Trophic Status (TSI), which is a benchmark for lake water quality. Eutrophic (TSI 51-70): Decreased transparency, lack of oxygen in the lower levels during the summer, weed problems evident, warm-water fisheries only. Mesotrophic (TSI 41-50): Water moderately clear; some probability of no oxygen in the lowest levels during summer.



Aquatic Invasive Species (AIS) - The NFCRWD hired DNR trained AIS boat inspectors, for the summer of 2013 to inspected boats coming into and out of public boat access throughout the NFCRWD. The inspectors went through a survey this each boater and inspected boats to make sure it was CLEAN of plant material and water. Doing these inspections not only protected the waters within the NFCRWD from getting AIS but also educated the boaters about affects of AIS and MN AIS laws. Make sure to inspect your own boat (**CLEAN, DRAIN and DRY**) before you enter or exit any body of water.

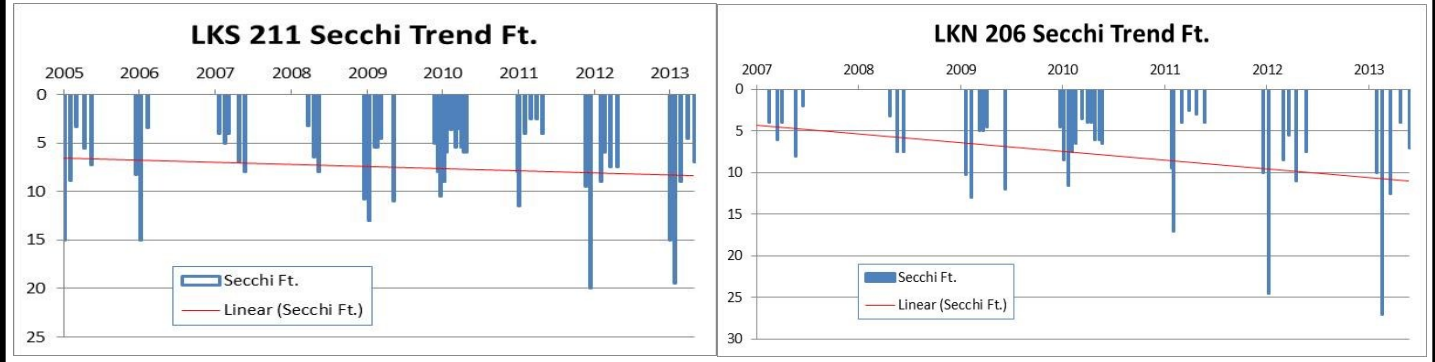


Thank you to the lake associations and their members who assisted with water quality monitoring this year, especially John Hanson, Al Schmidtbauer, Karen Langmo and Tom Weber.

Lake Koronis Water Quality

The Secchi depth is a measurement of water clarity. Water transparency directly affects the amount of light penetration into a lake. Algae and suspended particles from erosion make the water cloudy and decrease the Secchi transparency in a lake; therefore, the lower the Secchi depth, the higher the algal concentration and lake productivity. (from RMB labs)

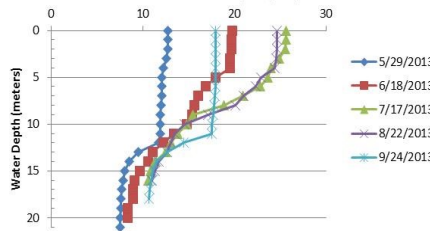
Below are the trends (red line) from the Secchi readings for both the LKN-206 and the LKS-211. Although there is not enough years to show a statistical significant trend. You can see a slight increase in water clarity at the LKN-206 site over these years, the LKS-211 site shows no change over these years. It is promising to see the increase in highest readings during the year, this usually happens in the



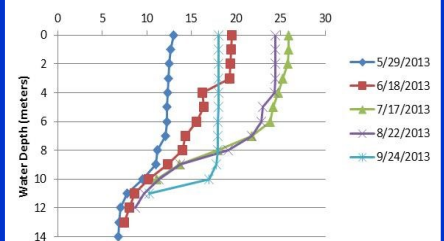
YSI Multi parameter probe, is an instrument used to collect water chemistry data. The instrument is lowered into the water column. At each meter the temperature, dissolved oxygen (DO), pH and conductivity, is recorded. The graphs to the right show the temp. and DO readings from 2013.

A healthy lake in this region will have an oxycline during the summer months, this process starts in the spring. Which is shown in the graphs when the DO levels read around zero. This oxycline layer also helps keep the nutrient (phosphorus) rich soil from mixing with the top layer of water, where the phosphorus can increase algae growth during the growing season. During fall the lake turns over and the lake mixes from top to bottom, seen in the graphs, where the temp and DO are more uniform from the top of the water column to the bottom.

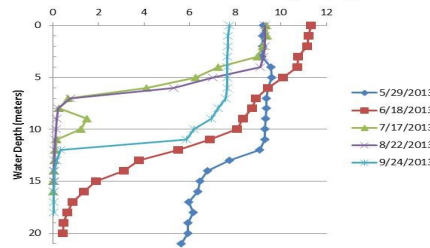
LKS 211 2013 YSI Temps (°C)



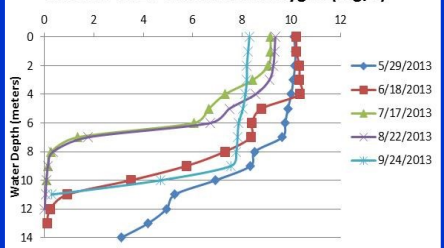
LKN 206 2013 YSI Temps (°C)



LKS 211 2013 YSI Dissolved Oxygen (mg/L)



LKN 206 2013 YSI Dissolved Oxygen (mg/L)



2013 NFCRWD work to improve water quality (Reducing erosion and nutrients transpiration):

Agricultural Practices

- 40 Rock Inlets to be installed (replacing open tile inlets)
- 2 Controlled Outlets

Partnered with County SWCD, CROW and local Lake Associations

- 2 Water retention/ bank stabilization areas (Rice Lake & Lake Koronis)

Ditch Buffer Strip Establishments

- Acquired 3.7 miles



**NORTH FORK
CROW RIVER
WATERSHED DISTRICT**

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www.NFCRWD.org
Office hours:
8:00-4:30 M-F

**Board Meetings
are the second Monday
of each month.
7 p.m.
April- November
1 p.m.**

What you can do to improve Water quality

Native Shorelines – Native plants can be a good way to decrease erosion and reduce runoff. Native plants have deeper roots than turf grass, which will help in reducing erosion on your shoreline. When most people think of native grasses they think of weeds, but many native grass and flowers can provide a visually appealing shoreline. Native plants also attract wildlife. Taller grasses and flowers will also deter geese from coming on your shoreline.

No-Mow Zone (buffer zone) – A cheaper version to planting a native shoreline, but will take a longer time for the native plants to grow. There is a seed bank in most shorelines, so even though your shoreline could be turf grass right now, if you stop mowing or weed wiping a stretch of shoreline (5-10 feet or more from the waterline), the native plants and flowers will have a chance to grow.

Other Practices: Rain Gardens, Rain Barrels, low or no fertilizer

There many be cost share dollars to install these practices on your property. Contact the NFCRWD for more information.

All water monitoring data is provided to the Minnesota Pollution Control Agency each fall and combined into a database for use in water quality assessment (http://pca-gis02.pca.state.mn.us/eda_surfacewater/index.html). Current and historical lake data for each site monitored by the district is available online by visiting RMB Labs at www.rmbel.info and utilizing the lake data portion of that site.