



WATER WATCH

2011 Project Update #1

Hello Dakota Water Water volunteers,

The second half of the 2011 sampling season is upon us. Waterbodies, either new to the program this year or returning after some time away, include: Lake Alvin, Lake Kampeska, Lake Pelican, and the outlet of Still Lake. Unfortunately, high water was, and continues to be, a concern across the area this year. Unfavorable to unsafe conditions led several lakes to delay sampling this spring or cancel participation this year altogether. To date, data has been received from 17 different lakes and streams. Table 1 shows Secchi depth averages from the beginning of the sampling season through August 10th of this year. Many waterbodies have multiple sampling locations which, for the purpose of this table, have been combined for a system-wide average. “+” signs following a transparency value are the result of the water clarity being greater than the total depth at a site when at least one of the measurements were taken.

Up to this point in the season, nine of 13 lakes have shown Secchi depth averages of over 0.75 meters (about 2 ½ feet). Lake Herman may also have water clarity to this level, but the water at the sampling site has not been deep enough so far this year to confirm that. Split Rock Creek and West Pipestone Creek in Minnehaha County show generally poor transparency so far this season with 0.30 and 0.22 meters respectively. The creek connecting Still Lake to the Big Sioux River in Codington County however appears to have very good water clarity with the Secchi disk being clearly visible at 1 meter.

Table 2 shows the results of *E. coli* bacteria samples. Lake Alvin was only sampled on one day this year. Of those 12 samples collected, five exceeded the South Dakota standard for *E. coli* in recreational waters and only one showed no detectable amount of *E. coli*. The remainder of lakes sampled so far this year look very good with a minimal number of samples exceeding the ≤235 cfu/100mL standard. Those lakes that do have the occasional exceedance still have average *E. coli* numbers well below 235 cfu/100mL. West Pipestone Creek has shown consistently high *E. coli* levels in limited sampling this year, but is not assigned the immersion recreation beneficial use, and therefore does not have to follow the ≤235 cfu/100mL standard.

Table 1. Secchi Depth Averages by Lake

2011 Water Clarity by Lake (through 8/10/11)		
	Lake	Average Secchi Depth (meters)
	Lake Alvin	1.04
	Lake Andes	0.35
	Brant Lake	0.76
	Dry Lake	1.00+
	Lake Herman	0.63+
	Lake Kampeska	0.42
	Long Lake	0.52
	Lake Madison	1.15+
	Lake Pelican	0.92+
	Lake Poinsett	1.45+
	Split Rock Creek	0.30
	Still Lake Outlet	1.00+
	unnamed pond	0.55+
	West Pipestone Creek	0.22
Oakwood Lakes	East Oakwood	0.87+
	North Oakwood	1.07+
	West Oakwood	1.46+

Table 2. 2011 *E. Coli* data, April through August 10th, 2011.

Dakota Water Watch Midseason <i>E. coli</i> Results					
	Lake	<i>E. coli</i> cfu/100mL averages	Total Samples Collected	samples with >235 cfu/100mL <i>E. coli</i>	No Detections
	Lake Alvin	329	12	5	1
	Lake Andes	11	22	0	13
	Brant Lake	26	30	0	11
	Dry Lake	140	2	0	0
	Lake Kampeska	13	1	0	0
	Lake Pelican	164	5	1	1
	Lake Poinsett	18	3	0	2
	Split Rock Creek	379	8	3	0
	Still Lake Outlet	60	2	0	0
	unnamed pond	17	4	0	1
	West Pipestone	656	4	3	0
Oakwood Lakes	East Oakwood	127	7	1	1
	North Oakwood	217	6	2	1
	West Oakwood	50	13	1	6

pH

One parameter monitored on many lakes is pH. Many people know that pH is a measure of how acidic or basic/alkaline the water is, but aside from that, why is it important? First, a little background. pH is expressed on a scale from 1 to 14. 1 is most acidic and 14 is most basic with 7 representing neutral. The pH scale is logarithmic which means that a change of one number on the scale indicates a 10x change in the acidity or alkalinity. For example: a pH of 4 is 10x more acidic than a pH of 5 and 100x more acidic than a pH of 6. The question remains, why do we need to know the pH? Most organisms can only tolerate a specific range of pHs. For many freshwater aquatic animals, this is between 6.5 and 8.5. Below a pH of 6, food sources for fish begin to die off and reproduction is adversely affected. Although it varies by species, as the pH approaches 5, the fish themselves can no longer survive. On the other end of the spectrum, when pH gets above 9, it can begin to harm sensitive areas such as eyes and gills. pH can also affect the solubility of compounds such as phosphorus, an essential nutrient for plant growth. Nearly all waterbodies monitored by Dakota Water Watch are required by South Dakota Law have a pH between either 6.0 or 6.5 and 9.0 based on their assigned beneficial use.

Sources

- Izaak Walton League. 2006. Watershed Stewardship Action Kit-Recognizing and Reporting Water Quality Problems. p. 1-2.
- LAKE.ACCESS. 2011. pH: Measuring the Acidity and Alkalinity of Lakes. Data retrieved August 10th, 2011 from <http://www.lakeaccess.org/russ/pH.htm>.
- Lenntech. 2011. Acids and Alkalis in Fresh Water. Data retrieved August 10th, 2011 from <http://www.lenntech.com/aquatic/acids-alkalis.htm>

Datasheets

While everyone has been doing a very good job filling out datasheets accurately and completely this year, there are a couple of areas where you need to be extra careful:

- For the sample time, please use a 24 hours clock and round to the nearest 15 minutes (example: 1:21 pm would be 13:15).
- Take two Secchi depth readings because wave and lighting conditions can cause them to change slightly over a short period of time.
- Be sure to check the appropriate box for **“Secchi Disk was Visible on Bottom”** and **“Was the Water Depth Greater than Equipment Could Measure”**.
- Check either the “yes” or “no” box for the **“Are There Visible Algae Within the Water”**.

Pictures Please!

The next time you are out to collect samples, don't forget to bring your camera! Dakota Water Watch would always like to have new photos of monitors helping out their favorite waterbody. Photos of participants would make a wonderful addition to promotional material, data reports, and the Dakota Water Watch web page. Digital photos are the easiest to work with, but photos in any format would be very much appreciated. Thank you for your assistance.

As always, I hope everyone is enjoying the summer and thank you so much for your involvement in Dakota Water Watch. If you have any questions or concerns, please feel free to contact me. Thanks again.

Jeremy Hinke
East Dakota Water Development District
132B Airport Drive
Brookings, SD 57006
(605)688-6741 edwdd3@brookings.net