

An Introduction to Portage County Seepage Lakes

The water quality in all lakes is a reflection of the type of land, land uses, and land management practices in their watersheds. Lake type, geology, and climate also play a significant role in water quality. Our land management practices also affect the quality of habitat and hence the diversity of animals that are found in and near a lake. The shoreline is the area most used by terrestrial and aquatic biota; this is often the most used (and disturbed) by people. Additional information about lakes and terminology used in this part of the Portage County Lake Study report can be found in the *Background Information* section of this report.

The seepage lakes included in this report includes: Becker, Bear, Emily, Jacqueline, Joanis, Lime, Onland, Pickerel, Severson, Skunk, South Twin, Sunset, Thomas, and Wolf Lake. Seepage lakes receive most of their water from groundwater, but also collect water from overland runoff and direct precipitation. Since groundwater in central Wisconsin travels at about a foot/day, water remains in these types of lakes longer than it does in drainage lakes or impoundments (Figure 1).

The water quality in these lakes tends to be quite different, as well. Groundwater brings dissolved minerals along with contaminants into the lake. Most groundwater in Portage County has high concentrations of dissolved calcium and magnesium (hardness) (Figure 2). When these minerals enter the lake, they change to a solid form and create a substance known as *marl*. The formation of marl can tie up phosphorus, making it unavailable for aquatic plants and algae. Although marl can prevent excess growth in lakes, the capacity of this protection is limited. Alkalinity is also generally higher in seepage lakes, which helps to make these lakes biologically productive and somewhat buffered against ill effects from acid rain.

Figure 1. Estimated length of time (years) water resides in Portage County seepage lakes.

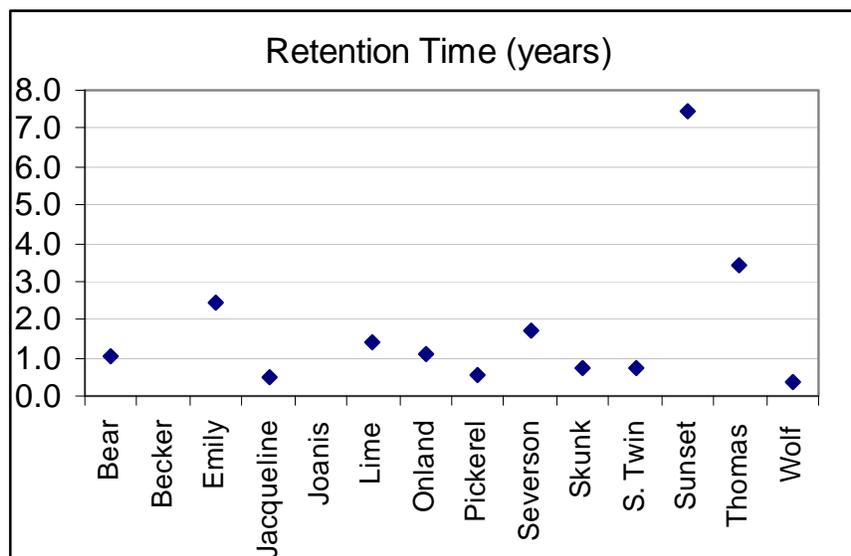
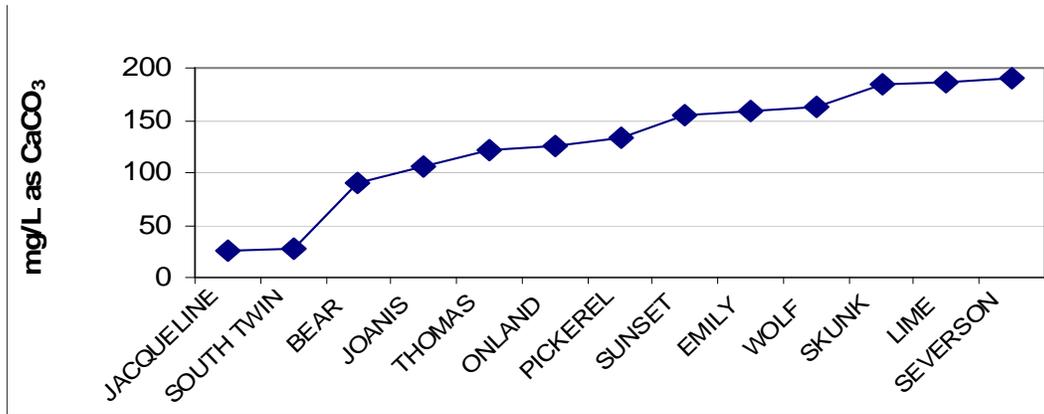


Figure 2. Average total hardness concentrations in Portage County seepage lakes.



For additional information, terminology, and concepts in this document please consult the *GUIDE FOR BACKGROUND INFORMATION AND INTERPRETATION OF PORTAGE COUNTY LAKE STUDY RESULTS AND RECOMMENDATIONS*.