

Lake Size

273 acres

Date of Application

June 2018

Project Sponsor

Long Lake Protection &
Rehabilitation District

Project References

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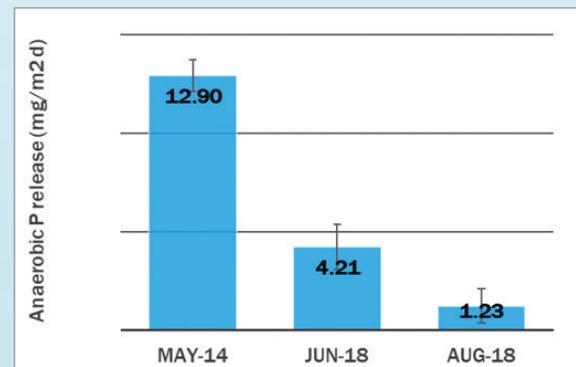
longlakewialum.com

Long Lake, WI

Long Lake is a 273-acre lake near the town of Balsam Lake, WI with an average depth of 11 feet and a maximum depth of 17 feet. The lake is eutrophic, experiences excessive summer algae blooms, and has poor water quality (high phosphorus (P) concentrations, large amounts of algae, low water clarity). A substantial amount of P has accumulated in the lakebed sediments over the years. The sediments release the P when oxygen levels decrease at the lake bottom. This leaching of P from the lakebed is called "internal loading" and ultimately increases the amount of P available for algal uptake and growth. Samples from the bottom of Long Lake confirmed that P was very high in the sediments and available for release into the overlying water column. Historically, about 70% of the P in the lake has originated from the sediments and the other 30% enters from the surrounding watershed.

HAB Aquatic Solutions conducted the first of three planned buffered alum applications over a 2.5-day period in June 2018. The 88-ac application zone received a dose of 42,246 gal of alum and 21,123 gal of buffer in 2018 and second application is scheduled for June 2020. Although the project is still ongoing, the lake is already realizing reduced internal P loading from the sediments, lower water column P, reduced algal concentrations and improved recreational opportunities for lake users.

The graph to the right illustrates the **dramatic reduction in P release rates** before (May 2014) and after the 2018 alum application at Long Lake. Specifically, P release was reduced by 67% five days after the alum application (June 2018) and by 90% two months after application (August 2018).



Long Lake P release rates: before (May '14) after (Jun '18 & Aug '18) alum application

Source: James, UW-Stout