

SILVER LAKE - WATER QUALITY STUDY 2013

Executive Summary

EnviroScience, Inc. (ES) was contracted by the Silver Lake Estates Board of Trustees for lake diagnostic services to evaluate current in lake conditions and guide future management programs in Silver Lake. In addition to determining the current condition of the lake's water quality and aquatic plants, the study evaluated the operation of the existing hypolimnetic aeration system.

Water quality was sampled at one location on July 26th, August 23rd and September 27th 2012. These analyses revealed that the lake is highly productive, or nutrient enriched, and is pretty much the same as it was in the 1970's. Oxygen is high in the upper waters, and depleted below 10 feet of depth.

The algal community is dominated by blue-green algae (cyanobacteria) and is responsible for the increased turbidity and 'scum' noted on the water surface during much of 2012. Although several species of toxin-producing algae were found, algal toxin concentrations were at acceptably low levels. Monitoring for algal toxins on a periodic basis is highly recommended due to the potential threat to human health these toxins pose.

The aquatic macrophyte (rooted plant) community in Silver Lake is dominated by water lilies and the exotic Eurasian watermilfoil. Periodic monitoring of the milfoil population is warranted because Eurasian watermilfoil has proved to be highly invasive in other Midwestern lakes. Treatment options, including biological control options, are available for Eurasian watermilfoil.

EnviroScience also performed an underwater inspection of the delivery piping of the hypolimnetic **aeration system**. This inspection noted that the pipe is partially clogged. A review of historical information suggests that the system was undersized and not as effective when it was first installed in 1982. Much more efficient air distribution systems are now available and a recommendation was made to investigate several such systems.

To help reduce the influx of nutrients to the lake, and thereby reduce the potential for unsightly and possibly dangerous algal blooms, EnviroScience recommends that the Village of Silver Lake consider adopting legislation requiring the use of non-phosphorus containing lawn fertilizers within the Village. We also recommend that the Trustees consider implementing an educational campaign and possibly a demonstration project to highlight the many benefits of naturalized backyards and shoreline.

EnviroScience also recommends that the Trustees move forward with a spring fish survey of the lake to gauge the overall health of the fishery and to provide recommendations for future stocking activities. Overall, the fishery will benefit from a catch-and-release program except for rough fish (carp and bullhead catfish) which should be removed whenever encountered.