Feasibility Study
Apple Valley and Burnsville: Alimagnet Lake Alum Treatment

Figure 1. Photograph of Alimagnet Lake courtesy of City of Apple Valley

Alimagnet Lake, split between the Cities of Apple Valley and Burnsville, is an impaired water body. The impairment is caused by excess phosphorus, which results in algal blooms and poor recreational use. Significant effort to date to address phosphorus have focused primarily on reducing external load sources, or those sources that carry phosphorus to the lake. Much of the external load has been addressed, and now the focus is turning to internal phosphorus load sources, or those that come from within the lake itself. Phosphorus in the lake bottom sediments can be released each year, resulting in algae blooms and poor water quality conditions.

The feasibility study will evaluate options to address the internal phosphorus load with a specific focus on using alum. The application of alum, or aluminum sulfate, is a well-established method for treating internal phosphorus loads in lakes. Alum chemically binds to phosphorus in the water column creating a particulate material that settles to the lake bottom, creating a barrier that limits the release of phosphorus from the lake bottom sediments. The feasibility study is being completed since it is a requirement of a future grant application for the lake alum treatment.

Partners:

- Vermillion River Watershed Joint Powers Organization
- City of Apple Valley
- City of Burnsville
- Minnesota Board of Water & Soil Resources (BWSR)

Completion:

- 2023 (anticipated)

Location:

- Apple Valley and Burnsville

Watershed:

- Vermillion River

Costs and Contributions:

- VRWJPO: $9,000 cash match, grant administration, and project management
- City of Apple Valley: Technical assistance
- City of Burnsville: Technical assistance
- BWSR: $36,000 from competitive Clean Water Fund grant

Benefits:

- The study will determine how effective alum treatment will be, where and when it should be applied, how much should be applied, resulting water quality, and the cost and life expectancy of a lake alum treatment.
- The study will provide project partners with the information required to apply for future BWSR grant funding for an alum treatment in Alimagnet Lake.

Figure 2. Algae bloom photograph courtesy of the Minnesota Pollution Control Agency

Figure 3. Application of alum in a lake using a barge

A grant from the Clean Water Fund, one of four funds established by the Clean Water, Land & Legacy Amendment, supported this project. Clean Water Stories can be found on the Minnesota Board of Water and Soil Resources website.

Vermillion River Watershed Joint Powers Organization
4100 220th St. #103, Farmington, MN 55024
www.vermillionriverwatershed.org