



Burnsville: Alimagnet Lake Stormwater Pond Alum Treatments

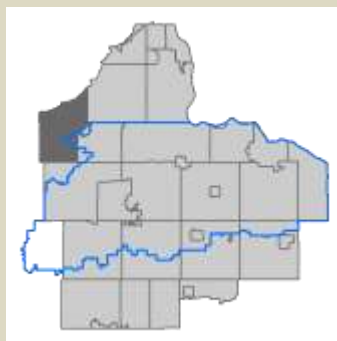
Pond Alum Treatments Help Improve Lake Water Quality

Alimagnet Lake, a nutrient-impaired water, receives too much phosphorus from the surrounding watershed. The application of alum in two City regional stormwater ponds keeps the phosphorus unavailable for algae growth, helping to improve water quality in the lake.

A project completed cooperatively by:

- City of Burnsville
- Vermillion River Watershed Joint Powers Organization

Location



City of Burnsville, Minn.

Stormwater Pond LA2-A is north of McAndrews Road and west of County Road 11, and LA3-A is west of County Road 11 and Frontier Lane.

As in other urban lakes, Alimagnet suffers from high nutrient loads that cause algae growth and reduce its ecological health and recreational value. Persistent algal blooms lead to cloudy water, unpleasant odors, and a reduction of dissolved oxygen that can lead to fish kills. The primary outside source of phosphorus to Alimagnet Lake is polluted stormwater from the watershed: runoff that contains fertilizer, leaves, and grass clippings.

In 2017, treatment of aluminum sulfate (alum) was applied to two of Burnsville's regional stormwater ponds, LA2-A and LA3-A, which drain to Alimagnet Lake. In this type of treatment, alum is applied using a boat and barge with spray attachments. After it is sprayed, the alum immediately bonds with phosphorus present in the water. The bonds form a non-toxic, white particle (or floc) that falls to the bottom of the ponds. The floc remains chemically stable and keeps the phosphorus unavailable for algae growth. The floc also creates a chemical barrier to phosphorus bound to the sediment at the bottom of the ponds.

The pond alum treatments are estimated to last approximately three years. The ponds near Alimagnet will be monitored after three years to determine if the treatments are still working effectively. Follow-up treatments will be applied if needed.



A boat with equipment, similar to this, applied alum to regional stormwater ponds in Burnsville to reduce the amount of phosphorus available for algae growth.



Vermillion River Watershed Joint Powers Organization

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The Vermillion River is a vital natural resource that is important to public health and recreation, as well as to preserving unique wildlife habitats. It flows from New Market Township in Scott County, through residential and agricultural areas in central Dakota County, and cascades into a 100-foot ravine before it enters the Mississippi River near the Cities of Hastings and Red Wing, Minnesota. Throughout its journey, the river reflects urban and rural life within its 335-square-mile watershed.

Problem:

- ❑ Too much phosphorus-loaded stormwater is draining to Alimagnet Lake
- ❑ Excess phosphorus is leading to algae blooms and problematic water quality conditions in the lake
- ❑ Alimagnet Lake is impaired for excess nutrients, (does not meet the State water quality standard), which requires actions to address the pollutant source(s)

Actions:

- ❑ Alum was applied to two regional stormwater ponds to reduce the amount of phosphorus reaching Alimagnet Lake

Benefits:

- ❑ Reduces phosphorus load by an average of 36 lbs./year in Alimagnet Lake
- ❑ Reduction in phosphorus helps meet water quality standards and removing the lake from the impaired waters list
- ❑ Assists in phosphorus reduction goals for East Lake, downstream in Lakeville
- ❑ Restores and protects water resources for public use

Costs and contributions:

- ❑ Vermillion River Watershed: \$16,256 cash
- ❑ City of Burnsville: \$16,256 cash, project administration, and oversight.



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.