Rush Lake (71-0147)- DRAFT

Rush Lake Watershed

Briggs Lake Chain Watershed
Rush Lake Watershed

Briggs Lake   Julia Lake

Rush Lake

★ Inflow
▲ Outflow

0   1.25   2.5   5 Miles
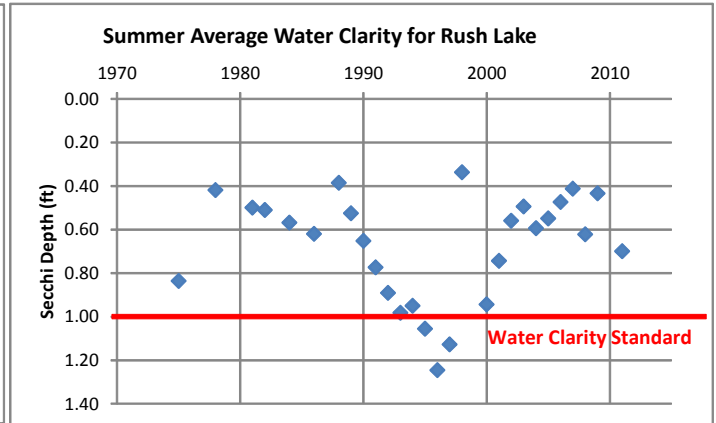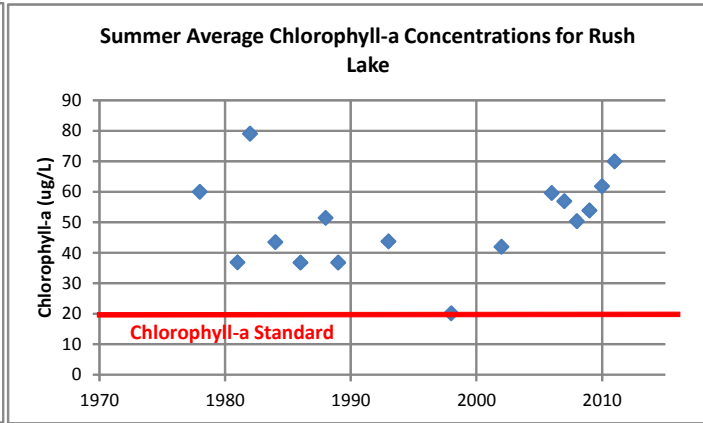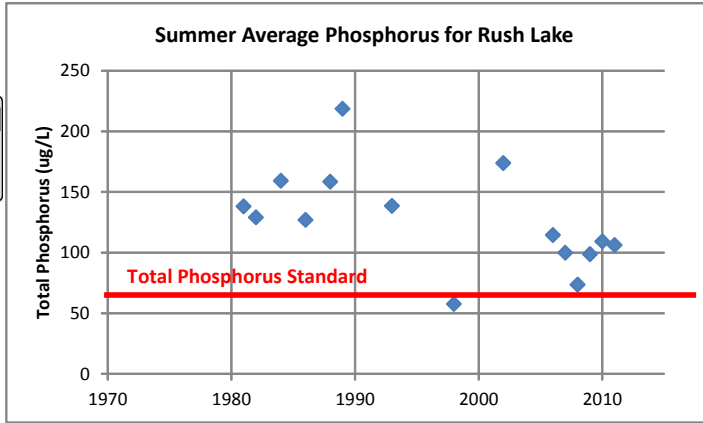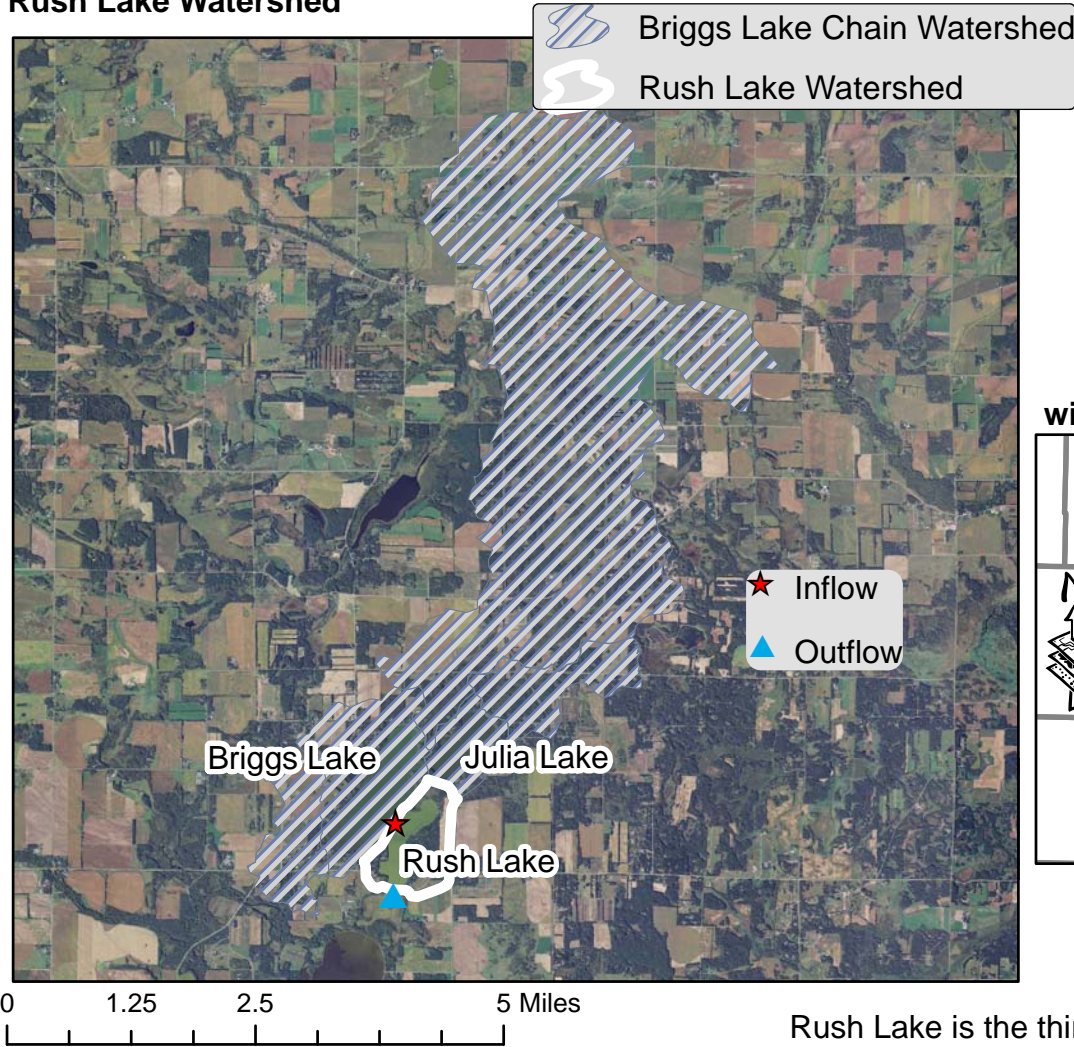
Project Location within MSC Watershed

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Rush Lake is the third lake in the Briggs Chain of Lakes which includes: Julia, Briggs, Rush and Big Elk Lake. A TMDL study was completed for Big Elk Lake in 2012.

Summer Average Phosphorus for Rush Lake

Total Phosphorus Standard

Summer Average Chlorophyll-a Concentrations for Rush Lake

Chlorophyll-a Standard

Summer Average Water Clarity for Rush Lake

Water Clarity Standard

Rush Lake Phosphorus Budget

- 5% Drainage Areas
- 42% Upstream Lakes
- 2% Groundwater
- 2% Atmosphere
- 49% Internal Load

Lake Data

Surface Area: 160 Acres
Maximum Depth: 10 feet
Littoral Area: 160 Acres Contributing
Watershed Area: 273 Acres

Classification: Shallow Lake

	% Reducion Required
Watershed	68%
Briggs Lake	53%
SSTS	100%
Atmosphere	0%
Internal	94%

Questions/Comments can be directed to:

Tiffany Determan
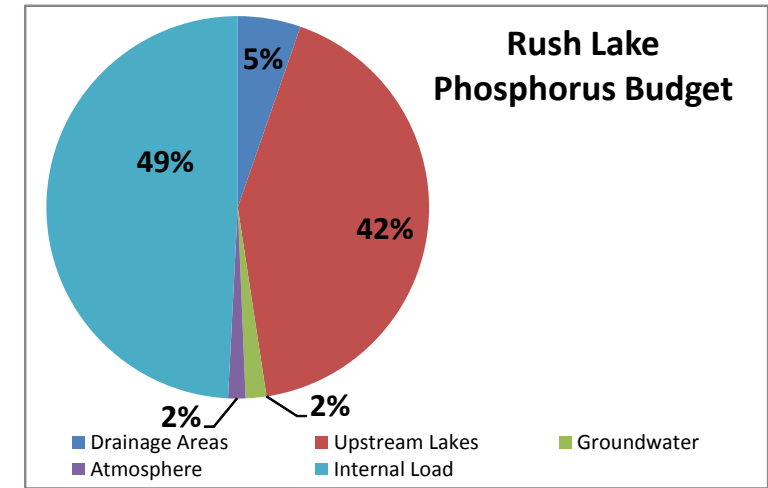Sherburne SWCD
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Summary

- In-lake summer phosphorus, chlorophyll-a and secchi disk depth have exceeded that standard for shallow lakes nearly all years sampled. Interestingly, there was a period of time (early 1990's) that water quality seemed to be improving.- any ideas on what was occurring at that time?
- Previous water quality studies as well as work conducted by the Briggs Lake Chain Association have provided a substantial dataset with which to identify sources contributing to water quality degradation; still, local knowledge and input are fundamental.
- Upstream lakes (Briggs & Julia) influence the quality of water in Rush Lake.
- Based on available information, internal nutrient recycling has a major impact on the quality of water in Rush Lake.
- 2009 MN DNR fisheries surveys indicate that rough fish, including carp are common in the lake chain.
- Julia and Rush Lakes received "whole-lake" treatment for curlyleaf pondweed from 2006-2009 and all three lakes continue to receive partial treatment. Notes from 2009 MN DNR aquatic plant surveys indicated that biomass was reduced and native species appeared to be on the rise.- is this accurate??

Recommended Activities

- The shallowness of Rush Lake makes it is susceptible to increased eutrophication with increases in phosphorus loading. Developmental pressure may have an impact on water quality; every effort should be made to minimize TP loading to the lake. For example, no untreated stormwater should be directed into the lake, the amount of impervious surfaces in developed areas should be kept to a minimum, natural buffers of vegetation should be maintained between lawns and the lakeshore.
- High priority should be placed on reducing the impacts from lakes upstream.
- Quantification of sediment release rates (internal nutrient recycling) would help in prioritization of cleanup strategies. Methods to reduce said source may include: management of rough fish communities, boating education/guidelines, alum treatments, or other innovative reduction strategies. Internal treatment should be considered after watershed sources have been exhausted.
- Lake goals should include establishment and/or maintenance of native aquatic plant community.
- The results of this work should be used to provide support to work currently underway by the Briggs Lake Chain Association including placement of stormwater reduction practices in key areas.
- Steps should be taken to educate lakeshore property owners and systems out of compliance with County/state codes should be brought into compliance.
- Continue in-lake monitoring program to assess trends and response to changes in the watershed.
- A shallow lake like Rush Lake is sensitive to changes in the biological community within. Shallow Lakes typically reside in two states: Clear water dominated by rooted plants, or algae dominated turbid waters without much aquatic vegetation. This fact should be considered by lake users during management planning.