

Hatfield Lake Aeration

City of New Richmond

November 2022

BACKGROUND

Hatfield Lake is an 86.47 acre lake located in St. Croix County, with a depth of nine feet. The lake is surrounded by public property, including two city parks - Hatfield Park and Freedom Park. A public access was constructed in 2010 with funding through the County Conservation Aids Program. The public access is used by anglers who use canoes and small boats with trolling motors, as well as ice fishing in winter. Hatfield Lake is located in the Lower Willow River Watershed, which is ranked high overall for nonpoint source characteristics.

Due in part to its shallow depth and nutrient content, Hatfield Lake exhibits symptoms of eutrophication. The purpose of the project is to increase dissolved oxygen levels in Hatfield Lake. Aeration serves as an effective method to destratify the water column by circulating water and adding dissolved oxygen, which allows fish to inhabit the entire lake rather than only a certain stratified layer and also improves conditions for organisms that fish prey on. Proper aeration also allows for lake-bottom sediments that release problem gases to instead be released at the oxygen-water interface and also reduce algae.

The Wisconsin DNR previously stocked northern pike and largemouth bass on an (almost) annual basis in Hatfield Lake from 2002 to 2014. The "Polar Vortex" in 2014 caused winterkill in Hatfield Lake. DNR staff have indicated that they will not stock fish again in Hatfield Lake until an adequate aeration system is installed.

In November of 2020, City Staff applied for a Surface Water Grant with the goal of installing a new aeration unit at the lake. The aeration unit would utilize some existing infrastructure that had been previously installed at the lake. In March of 2021, the City received a Surface Water Grant in the amount of \$9,832.50 for the installation of the aeration equipment.

Project Location



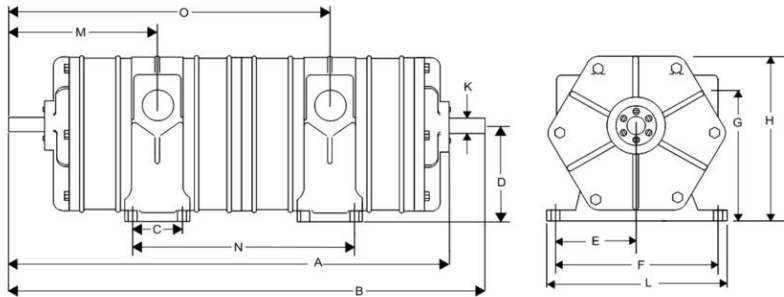
PROJECT

The City was able to use an existing building which was previously set up for aeration at Hatfield Lake. In addition to the building, piping which extended into the lake was found to still be in working condition. A new Conde' Model 12 pump was installed by Lake and Pond Solutions in September of 2022. The Conde' pump was installed with a 5HP motor along with associated check valve, filter, pressure relief valve, pressure gauge, piping and other appurtenant materials.



Model 12

Dry Air Vacuum Pump



INCHES

A	20.00
B	22.50
C	2.25
D	4.36
E	3.125
F	6.25
G	5.25
H	7.38
K	1.0
L	7.0
M	8.25
N	8.50
O	14.25

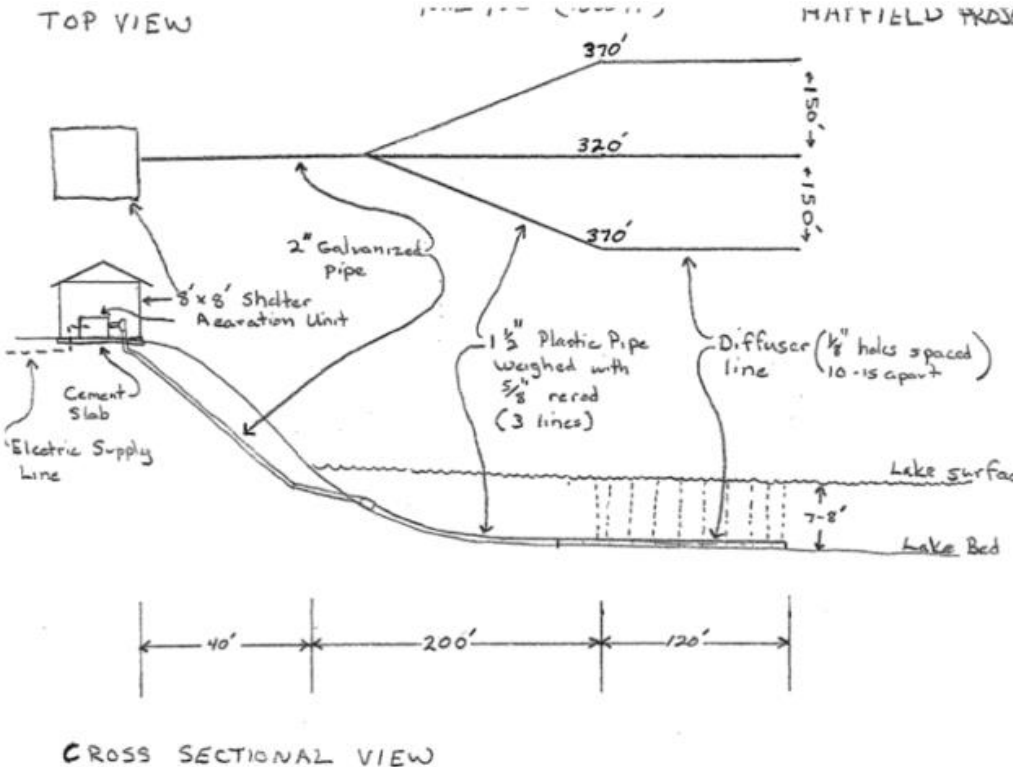
In addition to the new aeration unit, a new oxygen probe with handheld meter was installed at the building. The probe is located in the lake at the point of aeration. Weekly O₂ readings will be taken and recorded. In addition to reading the oxygen levels of the lake, the meter can also provide water temperatures.



Installed Aeration Unit



Aeration Piping Layout



The aeration unit was first started up to run full-time on November 14, 2022. The following data has been collected so far:

Date	Water Temp	DO %	DO ppm	Comments
11/14/2022	2.1° C	96.1	12.90	Winter start-up
11/21/2022	1.7° C	101.4	13.70	Ice formed on lake

