

Lake and Pond Solutions



MD Pellet Program on Viewcrest Channel, Delavan Lake, WI.

by Sean Kollmer

Where We Begin..

Delavan Lake, is a premier recreational destination in South-East Wisconsin. Over 1900 acres and 52 feet deep, this fish factory is home to many species of game fish, including Walleye. Delavan is also frequented in the summer months by other recreational users including pleasure cruisers, speed boats and personal water crafts.

Many lakes have been impacted by increased human presence, so too is the case for Delavan. Its large watershed (17:1) is now largely comprised of agriculture and its tributaries and inlets are susceptible to sediment accumulation. This area of the U.S. is known for its healthy and organic soils, which supports a variety of healthy terrestrial and aquatic flora. An over abundance of nutrients however has its drawbacks. In the 1980's Lake Delavan's ecosystem began to decline drastically due to infestations of undesirable fish (carp) and excessive nutrients leading to anoxic conditions and blue-green algae blooms; something had to be done.

“..WHICH IS HOW THE AQUAFIX TEAM BECAME AN INTEGRAL PART OF THE FIGHT AGAINST DELAVAN'S EXCESSIVE ORGANIC SEDIMENT.”

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Rehabilitation efforts in 1990 were aimed at restoring the attractive lake back to its former glory. After a drawdown and much work to the lake including the addition of three sediment ponds in the tributary, the lake has made a positive comeback. However, its watershed continues to challenge lake managers. Sediment deposition remains a key topic, which is how the Aquafix Team became an integral part of the fight against Delavan's excessive organic sediment.

The Channel..

The Viewcrest Channel is located on the northern end of Delavan Lake's western bay. See Figure 2 on pg. 2

The horseshoe-shaped channel is home to 110+ semi-permanent boat slips. The northern end is open to boat traffic whereas after the last pier on the southern end, it becomes too shallow. However, the back of the channel is connected to the main lake via a three-foot diameter culvert.

Objective..

Due to the relatively stagnant nature of this modified channel, it is a strong candidate for sediment deposition. The breakdown of the organic components in the sediment through the use of Aquafix MD Pellets will allow for increased depth and flow, thus reducing stagnation and accumulation of floating plants and organic sediment.

Methods:

Using a 25 pound-per-acre rate, five monthly applications of 75 pounds were used, totaling 375 pounds for the season.

Before each application a technician measured the water and sediment depth at six locations using a measuring pole. [Locations shown in the top of Figure 2]. The locations were chosen based on proximity to identifiable structures. This was done to maintain a consistent and repeatable measuring area during the following months. A Global-Positioning-Satellite location was also recorded for each location in the event those structures were lost. A sampling site was designated to the beginning and the end of the channel as well as four evenly spaced locations around the curve.

The ten-foot pole included marked measurements down to 0.1 feet and included a disk with perforations and o-ring (Figure 1). Once the pole was placed in the water the pole was lowered down to the sediment, the perforated disk would remain on top of the sediment while the pole pushed through to hard-pan refusal. Upon extraction, the disk would fall back into place but the o-ring would remain at the deepest depth reached, indicating the depth of sediment.

With the recordings made, a small watercraft holding two people would apply the MD Pellets by hand, starting at point 6 and working towards point 1. The pellets were spread out as evenly as possible while avoiding other watercrafts.



Figure 1: Measuring Pole

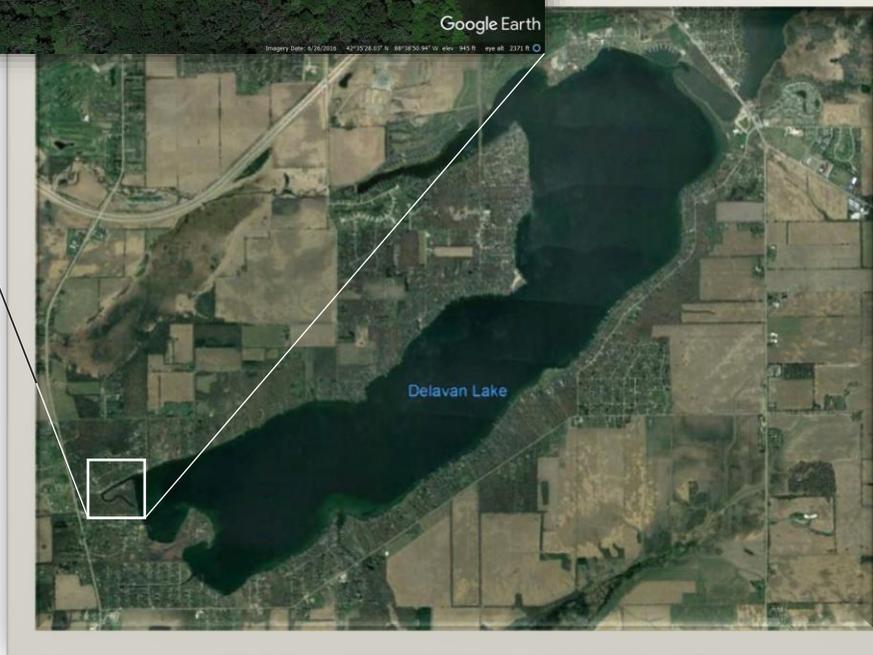


Figure 2: Close up of Viewcrest Channel on Delavan Lake.

Results..

Between the first recording and application on May 24th 2017 and the final recording (one month after the final application) on October 19th 2017 the average sediment depth throughout the channel decreased by 1.08 feet. An average between all six sample points during each sample period is depicted in Figure 3. Figure 4 shows that sediment decreased at each location between these two sampling dates, with the exception of point number 5, where it increased by 0.1 foot. Point 1 saw a 23.4 inch reduction in sediment. Point 2 = 22.2” reduction, Point 3 = 4.2” reduction, Point 4 = 13.2” reduction, and point 6 saw a 15.6” reduction between these sample periods.

Discussion..

The amount of deposited sediment observed over the course of this season has decreased in almost all locations. The slight increases in the fall are likely due to several variables, including rain events and plant senescence. The impact of the July flooding to the channel may have been delayed due to limited inflow and its protected location adjoining a large body of water. With a reduction in sediment comes an increase in average water depth, allowing for better navigation within the channel, its prime function.

Considering the amount of sediment that persists within the channel, particularly between point 5 and 6, and the proven success of the program during its first season, there is reasonable evidence to continue this program until determined otherwise. In the future, it may be beneficial to test the organic matter content of the sediment to better understand the potential effectiveness of the MD pellets in future applications.

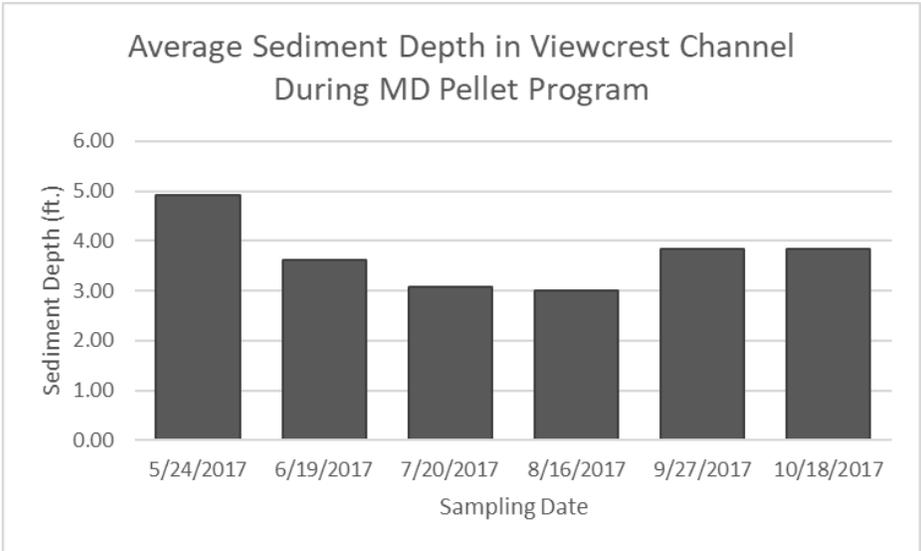


Figure 3: Average sediment depth between each of the six sample points during the monthly survey.

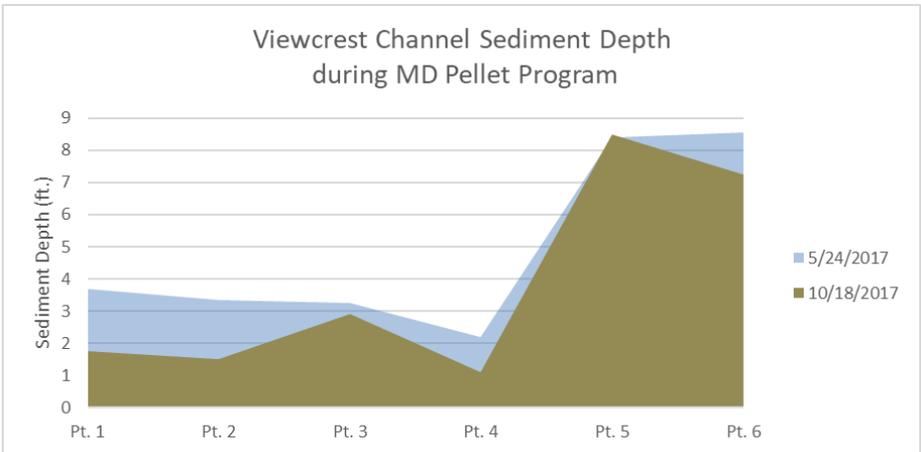


Figure 4: Actual sediment depth of each point during the first and last sample periods. Blue represents May and brown represents October.