

Hello Hess Lake Residents,

Does Wheeler Drain and Alger Drain/Creek impact Hess Lake?

Let's take a look at what all the experts have stated in the various Hess Lake Engineering Studies going back to 1982.

Note: Excessive Phosphorus is what could fuel harmful algae blooms.

Wheeler Drain is approximately 6 miles long and is south of Hess Lake. A number of other drains flow into Wheeler Drain, including, Cox, Wren, Van Horn, Downing and others.

Wheeler Drain contributes approximately 3 billion gallons of water to Hess Lake every year per figure 6 of the 1982 Edmands Study. Certainly this can change based on rain events.

Hess Lake holds about 1.6 billion gallons of water per the 2020 Progressive AE Study.

The Watershed south of Hess Lake is approximately 15 square miles and is about 39% Agriculture per 2020 Progressive AE Study.

1982 Edmands Study

A. 57% of the water and 55% of the phosphorus comes into Hess Lake from Wheeler Drain and is considered a major contributor. Figure 6

B. 13% of the water and 26% of the phosphorus comes into Hess Lake from Alger Drain/Creek. Figure 6

C. 12% of the phosphorus may come from Septic Systems via shallow ground water. Figure 6

1993 Study by Fishbeck, Thompson, Carr & Huber

A. "The primary source of the excess phosphorus entering Hess Lake is from the Wheeler and Alger Drains as stated in previous reports." page 1

1995 Report by Fishbeck, Thompson, Carr & Huber

A. "It is clear from the nutrient budget that the Wheeler Drain is the single most significant input of water and phosphorus." page 6

2019 Hess Lake Study by Dr. David Jude, Freshwater Physicians

A. "Wheeler Creek has been identified as a major contributor of sediment and nutrients (phosphorus and nitrates) to the lake, especially in spring. Wheeler drain used to drain the lake to the south, but developers redirected the drain north into the lake to drain marsh and other wetlands. Now it drains extensive agricultural lands, which are fertilized and often accumulate

water saturated with fertilizer, which is then drained into Wheeler Creek and then into Hess Lake. This source has been identified as a substantial component of nutrients entering Hess Lake.” page 5

B. “In Hess Lake too much phosphorus has fueled algae growth, which die and sink to the bottom decomposing as sediment.” page 9

C. Nitrates - “Wheeler Drain concentration was 0.93 mg/L, a high value, showing the high inputs of nutrients coming in from that drain.” page 36

2020 Progressive AE Hess Lake Study

A. “The watershed is drained by Alger Creek and the Wheeler Drain, as well as several small, unnamed tributaries. “ page 5

B. “Currently, the Wheeler Drain drains approximately 6,270 acres or about two-thirds of the watershed.” page 5

C. “Wheeler Drain is the largest single source of water to Hess Lake (Edmunds Engineering, Inc . 1982).” page 8

D. “In the mid-1990s, additional sediment basins were constructed, check dams were installed, streambanks were stabilized, and a number of conservation practices were implemented all designed to reduce the impact of Wheeler Drain on Hess Lake (FTC&H 1996) . Maintenance of existing structural controls on Wheeler Drain is essential to optimizing their effectiveness.” page 29, This was a \$250,000 Project

E. “Wheeler Drain: To reduce nutrient and sediment loading from Wheeler Drain, the upstream sediment basin should be inspected and cleaned annually to optimize removal of sediments and nutrients . In addition, Wheeler Drain should be assessed to identify causes of stream instability and possible corrective actions.” page 31

F. \$6,000 per year has been budgeted for Watershed Management, page 32

G. “In general, lakes with a phosphorus concentration greater than 20 µg/L (micrograms per liter, or parts per billion) are able to support abundant plant growth and are classified as nutrient-enriched or eutrophic.” page 11

Streamside Ecological Services, August 22, 2022 Study

A. “The croplands likely contribute a supply of sediment and nutrients to the drain, since little buffer exists along the field edges; the bottom of the drain is covered in fine sediments and dense aquatic vegetation grows along this entire reach.”

Other information

Hess Lake & Tributaries Water Quality Data:

1980 - 2018 Total Phosphorus Data collected by all groups listed below

In Lake Data

Mean 32.31 ug/L

Low <5 ug/L,

High 90 ug/L

19 separate years of data with 61 data points

Wheeler Drain Data

Mean, **104.69 ug/L**

Low, 20 ug/L,

High, 420 ug/L

6 separate years of data with 16 data points

Alger Drain/Creek Data

Mean, **159.7 ug/L**

Low 20 ug/L,

High 510 ug/L

6 separate years of data with 14 data points

Note: The above data indicates high level of phosphorus for both Wheeler & Alger Drains

Sources of Phosphorus Data:

2018 Progressive April & August Data & Drain Commissioner August 14, Wheeler Drain Data, Lake, Wheeler & Alger

2014 Savin Lake Data, three locations lake only, excludes aeration data

2009 Spicer Data, Wheeler Drain & Alger Only

2006 U.S.G.S Data, Lake only

2001 - 2010 Mi Corps Data, Lake only

1993 FTC&H Engineering Study, Tables 4 & 5, 1980 - 1992, Lake, Wheeler Drain & Alger

Summary:

It is apparent based on the comments by the experts from the Hess Lake Engineering Studies and the data listed above, that Wheeler Drain & Alger Drain/Creek are an issue for Hess Lake by contributing a significant amount of nutrients (phosphorus or nitrates) that could fuel harmful algae blooms.

Note: Harmful Algae Blooms were detected on Hess Lake in 2021 and 2022 by the United States Geological Survey along with EGLE .

If you have an interest, consider reading the 1982 Edmands Hess Lake Study for a good baseline on what is happening to our lake. Followed by the 2020 Progressive AE and 2019 Dr. Jude Studies. These studies are located under the Engineering Tab of the website listed below.

www.hesslake.org

If you have any questions, please give me a call or send me an email.

Take Care,

Bob Ripstra, Hess Lake Summer Resident

248-680-9763

rwripstra@outlook.com

Note: I do not represent the Hess Lake Improvement Board or the Hess Lake Improvement Association