unsafe for any human contact.

Dr. Tim Keeton, Alma College biology professor, was quoted in an August 13, 2015 Morning Sun article. "I can't say that the Pine River is deadly dangerous every day, but it is on certain days."

In defense of city officials, the suspected source of pollution is believed to be from livestock waste runoff which finds its way into the river via field tiles and roadside ditches.

Even though the source of the runoff originates upstream of Alma, the Pine River within the city limits is very likely a hazard for anyone having contact with the water or fish. There have been several newspaper articles on the health concerns but the city can do so much more to warn people of the potential hazards of E. coli infections.

In response to health concerns, the Gratiot Health Department posted understated signs at the Alma boat launch and Luneack Landing.

These signs imply that the water may be unsafe for swimming but they offer no warning against any other water activities such as fishing or boating.

On Aug. 10 I attended a presentation by Alma college student Hunter Wilson and Professor Amanda Harwood who had tested resident fish taken from the river by a control group of monitored anglers. The results are eye opening to say the least.

Eighty-eight percent of the fish were contaminated with coliform bacteria and of those fish 73 percent had the presence of E. coli on their outer skin. Seventy eight percent of anglers had E. coli on their hands after catching the first fish and 100 percent of the anglers had fecal coliform bacteria on their hands at some point.

Seventy-eight percent of the anglers tested positive for E. coli bacteria after simply dipping their hands in the water. E. coli were also present on angler's hands even before a fish had been caught by simply having contact with the line, bait or water.

Testing has not been completed to identify the strains of E. coli located in the Mill Pond, but according to Dr. Harwood the most virulent strains are most likely present in the <u>Pine River water</u>. (Google 0104:H4 and 0157:H7) She told me that she would not have contact with the water without protective clothing and bleach disinfectant.

Alma Mayor, Gregg Mapes was in attendance at the same Aug. 10 presentation. I would urge him and the Alma city commission to utilize the city newsletter and social media to more appropriately inform the public of the potential health risks.

To do any less exponentially increases the danger to the public which they were elected to serve.

"What is right is often forgotten by what is convenient."

- Bodie Thoene

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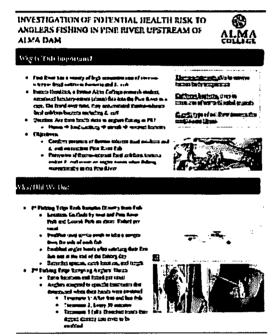
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## Opinion: Pine River in Alma from treasure to dying cesspool

## By Les Rosan, The Morning Sun

Monday, August 21, 2017



For 28 years I have watched the ebb and flow of the Pine River in Alma from my back window.

Historically this river was touted as an asset for the city and was always featured prominently in the Alma parks and recreation master plans.

Four city parks border the river and to facilitate easy access, canoe and boat launching points have been constructed along the river's edge.

With a laser focus on the river, park improvements included walkways, a fishing pier, and elevated observation platforms. The river was exactly as described, a true asset and a gem for the city. However, much like a dark storm cloud, ominous changes were threatening just over the horizon.

River changes occurred over time and were insidious enough that the city remained focused on further development along the Pine River corridor.

"The City of Alma shall remain committed to the preservation and enhancement of the Pine River corridor. Special emphasis will be given within the downtown area to continue the efforts aimed at developing a linear park along the Pine River." (Alma Master Plan 2002)

In February 2004 the city received a contracted feasibility study from the consulting firm of Wade-Trim. This riverfront development plan produced by Wade-Trim was a lofty goal of a progressive and forward looking city administration. Even though the objectives were admirable a number of issues beyond anyone's control ultimately sabotaged the project.

The city was successful in relocating a metal scrap yard and demolishing an abandoned lumber retailer, but the newly created green space is where the best intentions met the hard cold facts of reality. No development partner with the necessary financial resources ever materialized to facilitate the lofty goals of the 2004 Wade-Trim report.

Fast forward to 2017 as the river has now transitioned from a beautiful asset to a glaring detriment that has lowered property values, driven away developers and endangered public health. The Pine River is polluted with elevated levels of fertilizer nutrients and antibiotic resistant E. coli bacteria. The elevated fertilizer levels have dramatically increased vegetation growth in the river. As this vegetation dies each fall, the decaying process increases the sediment load and continually robs the river of dissolved oxygen.

Testing by Alma College, using Michigan Department of Environmental Quality (MDEQ) protocols have revealed that the river is often contaminated with antibiotic resistant E. coli bacteria levels that render the river