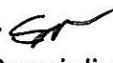


May 26, 2009

TO: Brian P. Murphy, Asst. City Manager/Economic Development Services 

FROM: Steven J. Vandette, City Engineer 
Jennifer Lawson, Environmental Specialist 

SUBJECT: Status of Water Quality Sampling of Outfalls to Sandshores Lake & Proposed Ferry Drain Project with US Army Corps of Engineers

Water Quality Analysis:

The Engineering Department to date has collected two sets of dry weather samples and two sets of wet weather samples (both during cold weather) at each of the 10 outfalls. Tests are being performed for e-coli and phosphorous to try to locate hotspots, determine the causes and develop an action plan to reduce this pollution. The results from the cold weather samples indicated relatively low levels of pollution. These results set the baseline from which to compare the results of the upcoming warm weather testing when e-coli and phosphorus levels typically increase.

Working with the ELV:

Meeting with residents: Engineering staff met with David Diener, ELV President, on March 12, 2009 to communicate the results our testing and we received from him a wealth of knowledge that he has about the lakes, their condition and various testing and maintenance programs that the association has conducted over the years. Since then we have communicated with him by e-mail on an as needed basis. Most recently, we received a copy of the ELV homeowner's association newsletter, which highlights city efforts and describes a fish kill for Sandshores Lake that is planned for this month (see attached). Previously we received copies of water quality testing that they have done over the years, which contains numerous other test parameters that relate to water quality for recreation purposes, full body contact, etc.

Catch Basin Cleaning: The DPW has been cleaning catch basins in the ELV neighborhoods. The DPW has completed catch basin cleaning twice in the past two years (Fall 2007 & Spring 2009), which is more often than the City-wide program. The DPW will continue to clean the catch basins on a one-year rotation basis.

Fish Kill: At the end of May, ELV is planning a fish kill to address the Gizzard Shad infestation that they have experienced on Sandshores Lake.

According to a 1991 study by a consultant for the ELV, the green hue in some of the lakes was due in part to an out of balance fishery population. In 2008, ELV had a fishery evaluation, which concluded that Gizzard Shad, a non-native invasive fish species, made up 42% of the fishery.

But as stated in the newsletter, "Will killing the fish be the silver bullet we are looking for to solve the problem of recurring algae on Sandshores Lake? It will not, as it is not any one thing that will restore any body of water." Nevertheless, both the City and ELV are looking for some level of improvement to the lake after the fish kill.

ELV has all the permits and have notified the City of their actions. They are currently waiting for the water table to go down. ELV will also be working with the DPW staff to ensure that all overflow valves are closed, to not allow any of the chemically treated water to enter into the Ferry Drain.

City's Next Steps:

The next round of water samples for the outfalls to Sandshores Lake will be taking place in late May, late June, mid July and late July. The samples will be collected twice during wet weather conditions and twice during dry weather conditions. The sample results typically take a week and a half to get back from the lab and a week or so are needed to do analysis on the results. Once these results are received and quantified, we plan to meet with Mr. Diener.

We also plan to work with the ELV to assess the Fish Kill program, and evaluate its success. Any data shared with the City will be added to our project file and analyzed upon completion of the water quality data analysis.

Ferry Drain Project:

The Ferry Drain project is separate from the Sandshores Lake testing, but the drain itself is adjacent to portions of the Emerald Lakes subdivision and is the outfall for the lakes. Engineering staff and the US Army Corps of Engineers (USACE), in cooperation with the Oakland County Water Resources Commissioner's Office, are working to develop a restoration plan for the Ferry Drain. This project will be a demonstration project within the Clinton River Watershed Area of Concern (AOC) for the purposes of improving the fish/wildlife habitat and stream corridor. Upon completion of the USACE project, the City of Troy will receive a complete bid-ready set of plans and specifications to address sediment and habitat restoration in the 1.5 miles of the Ferry Drain from South Boulevard to Rochester Road. This project has several side benefits including stabilizing eroded stream banks, removing sediment and improving hydraulic characteristics of the Drain as it relates to Emerald Lakes.

Grant monies are paying for the plans and specifications with the City match provided in soft costs. A source for construction funding has not yet been identified.

The Scope of Work includes the following:

Task 1 – Document Review: The City of Troy will provide to the USACE all relevant hydraulic, geomorphologic, biologic and geotechnical reports previously conducted within the riparian corridor of the Ferry Drain

Task 2 – Field Survey and Investigation: This task will include survey, sediment rating, habitat analysis and biological assessment.

Task 3 – Hydraulic and Sediment Modeling: A hydraulic analysis will be completed to provide existing and proposed shear stresses in the Ferry Drain, which are essential in determining whether a proposed structure or restoration design will be washed out under extreme flood events. In addition, the USACE will develop a qualitative sediment budget and identify upstream sediment sources. The USACE will model the bankfull flow and compare the output with the identified bankfull indicators in the field.

Task 4 – Conceptual Design: The USACE will develop a conceptual plan for stabilizing the stream banks in the Ferry Drain. Vegetative and bio-engineering techniques will be preferred over armoring and other hard engineering designs. In addition to the conceptual design, an educational component, requiring the City of Troy to partner with the Clinton River Watershed Council will be completed, directed towards all landowners adjacent to the Ferry Drain.

Task 5 – Final Design and Construction Documents: The USACE will prepare final construction documents for the City of Troy that will be used for bidding and construction purposes.

Task 6 – Construction Observation: Upon request by the City of Troy, the USACE will be available to perform construction observation of the proposed design.

Please let me know if you have any questions.