



STATE OF MICHIGAN
 DEPARTMENT OF
 ENVIRONMENT, GREAT LAKES, AND ENERGY
 LANSING



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VIA E-MAIL

TO: Senate Appropriations Subcommittee on Natural Resources and
 Environment, Great Lakes, and Energy Members
 House Appropriations Subcommittee on Environment, Great Lakes,
 and Energy Members
 Kathryn Summers, Director, Senate Fiscal Agency
 Mary Ann Cleary, Director, House Fiscal Agency

FROM: Amy Epkey, Senior Deputy Director 

DATE: March 23, 2022

SUBJECT: Report on the Status of the Implementation Plan for the Western Lake Erie
 Basin Collaborative Agreement for Fiscal Year 2021

In accordance with Section 410 of Article 4, Part 2, of 2021 PA 87, attached is the Department of Environment, Great Lakes, and Energy's (EGLE) report on the Status of the Implementation Plan for the Western Lake Erie Basin Collaborative Agreement for fiscal year 2021.

If you need further information, please contact Phil Argiroff, Assistant Director, Water Resources Division, at 517-290-3039 or ArgiroffP@Michigan.gov; or you may contact me at 517-242-7407.

Attachment

- cc/att: Chris Harkins, Director, State Budget Office
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 Ben Dawson, Senate Fiscal Agency
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MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Legislative Report

STATUS OF THE IMPLEMENTATION PLAN FOR THE WESTERN LAKE ERIE BASIN COLLABORATIVE AGREEMENT

Report Period:
Fiscal Year 2021

Authority:
Section 410 of Article 4, Part 2, of 2021 PA 87

Western Lake Erie Basin Collaborative Agreement Update

Lake Erie has nuisance and harmful algal blooms (HAB) in the western basin and dissolved oxygen depletion in the central basin. In June 2015 Governor Rick Snyder signed the Western Basin of Lake Erie Collaborative Agreement (Agreement) with the Premier of Ontario and the Lieutenant Governor of Ohio. The Agreement with Ohio and Ontario calls for a 40 percent reduction in phosphorus loading to the Western Lake Erie Basin (WLEB) by 2025. Each party was to develop an implementation plan to accomplish this. Michigan published its final implementation plan in January 2016 after considering public comments. The Michigan Departments of Environment, Great Lakes, and Energy (EGLE); Agriculture and Rural Development (MDARD); and Natural Resources (MDNR) (collectively, the Quality of Life [QOL] agencies) are working together, building on Collaborative Agreement Implementation Plans, in part, to develop and implement the Domestic Action Plan (DAP), which was called for under Annex 4 of the Great Lakes Water Quality Agreement. The DAP was finalized and submitted to the United States Environmental Protection Agency (USEPA) in February 2018.

In accordance with Executive Directive 2019-14 and within the framework of the DAP, EGLE, MDARD, and MDNR developed an Adaptive Management Plan (AMP) that was approved and released on December 17, 2021. The AMP serves as a companion document to the DAP and identifies additional steps needed to ensure that Michigan meets its specific DAP objectives. The AMP outlines a process that will allow managers to determine systematically whether activities are succeeding or failing by integrating structured decision-making into planning and implementation efforts and include enhanced monitoring and assessment initiatives into a deliberative adaptive management process and decision-making feedback loop over time.

Section 410 of Article 4, Part 2, of 2021 PA 87, requires EGLE to compile a report on the status of the implementation plan for the WLEB Agreement. To learn more about the presence and timing of HABs, the report shall contain all the following:

- a) An estimated cost of removal of total phosphorus (TP) per pound at four major wastewater treatment plants (WWTP).

The Great Lakes Water Authority (GLWA) Water Resources Recovery Facility (WRRF) (formerly the Detroit WWTP) estimates an annual expense of approximately \$1 million to reduce TP loads by 400 metric tons. This is equivalent to about \$1.13/pound. The TP reductions are continuing, and the GLWA WRRF typically discharges from its main outfall in the 0.2-0.4 milligram per liter (mg/l) TP concentration range (the new limit is 0.6 mg/l growing season average). The TP reductions at the GLWA WRRF are the primary cause for the TP reductions at the mouth of the Detroit River into the WLEB. EGLE continues to hold bimonthly calls with the GLWA (which now operates the Detroit WWTP) and the Detroit Water and Sewerage Department.

The cost of TP reductions being made at the Monroe Metro WWTP and Downriver WWTP are not yet available. The National Pollutant Discharge Elimination System (NPDES) permit for the Monroe Metro WWTP was issued in May 2016 with more stringent TP limits (0.6 mg/l growing season average) that are consistent with those for the GLWA WRRF and has achieved those tighter limits by December 2021. Similarly, EGLE issued the NPDES permit for the Downriver WWTP in 2017 with the more stringent TP limits to be achieved by 2020 that are consistent with those specified in the GLWA

WRRF NPDES permit (i.e., a growing season average of 0.6 mg/l). The Downriver WWTP is required to achieve those tighter limits as well.

TP removal at the Ypsilanti Community Utilities Authority WWTP was implemented for protection of the lower Rouge River and prior to the Lake Erie TP load baseline year of 2008. As a result, costs of these control measures should not be attributed to the load reductions necessary to meet Lake Erie goals.

b) A description of the grants that have been awarded.

EGLE partnered with MDARD and provided \$400,000 toward a grant to Michigan State University to study the effectiveness of drain water management practices in reducing nutrient loads, including dissolved reactive phosphorus (DRP), from tiled fields. The study is focused on quantifying reductions of nutrients including DRP and TP from drain water management control structures implemented at farms in the WLEB. The calibration phase of the study ended in 2020 as monitoring was completed at test and control fields with unmanaged drainage. Tile drainage is now being controlled at the test fields, and monitoring is being conducted at the test and control fields.

The River Raisin Institute received a \$286,275 grant from EGLE to address agricultural sources of nutrients from the S.S. Lapointe Drain, a direct discharge to Lake Erie. The grantee was awarded a three-year grant in 2019 that will fund implementation of cover crops, filter strips, reduced tillage, drain water management, and nutrient management plans. The grantee has committed to providing \$110,855 in local match.

The Legacy Land Conservancy received a \$360,233 three-year grant from EGLE in 2019 to protect 4,750 linear feet of critical riparian property along the Upper River Raisin through the purchase of 5 permanent conservation easements. The grantee has committed to providing \$119,943 in local match.

The Lenawee Conservation District received a \$773,522 three-year grant from EGLE in 2019 to implement agricultural best management practices (BMP) to reduce nutrient loads from the River Raisin. The grantee has committed to providing \$542,641 in local match.

The Southeast Michigan Council of Governments (SEMCOG), in partnership with EGLE, has received \$300,000 from the USEPA to implement a regional project to address urban green storm water infrastructure. Local and county governments within SEMCOG's seven-county jurisdiction were eligible to apply to fund projects that address nutrient inputs from runoff to local rivers. Six communities were selected by SEMCOG's Regional Review Committee, which is comprised of local elected officials, and were awarded funding to complete projects by October 1, 2020.

The Delta Service Through Detroit Foundation received a \$308,167 grant from EGLE to implement a Detroit Urban Green Infrastructure project. This project will reduce impervious area and flows to the combined sewer system in the Baby Creek Sewer District (hydrologic unit code [HUC] 040900040407), increasing storm water infiltration and helping to reduce treated combined sewer overflows (CSO). The primary pollutant being addressed by this project is *E. coli* from CSO events with a secondary focus on

sediment, nutrients, chlorides, and other nonpoint sources. The reduction of CSO events will positively impact designated use impairments of total and partial body contact recreation and will also help mitigate impairments to the warmwater fishery and indigenous aquatic life and wildlife designated uses. The minimal projected volume of untreated storm water runoff captured is 135,770 gallons during a 2.34-inch rainfall, 2-year, 24-hour event resulting in a storm water volume reduction of over 15,150 feet due to the removal of a minimum of about 5 acres of impervious pavement, and the implementation of bioretention/rain gardens at commercial/faith-based properties.

The River Raisin Watershed Council (RRWC) received a \$100,967 grant from EGLE watershed planning funding to develop an Upper Wolf Creek Watershed Management Plan (WMP). The RRWC and its partners will develop a WMP that supports primary goals within the larger River Raisin watershed, including the attainment of water quality standards, achieving all designated uses, and protecting source water supply for the cities of Adrian, Blissfield, and Deerfield. The team will identify specific Critical Source Areas that are contributing to elevated *E. coli* bacteria, nutrients, and cyanobacteria blooms within Loch Erin and Lake Adrian via Wolf Creek. This could include, but is not limited to, leaking septic fields, farm runoff, storm water drainage pipes, and tile drains. This will help target future implementation efforts that will save time, money, and allow for better management outcomes. In addition, the team will develop a Geographic Information System story map to highlight the WMP project and assist with community outreach and involvement efforts. The grantee has committed to providing \$33,003 in local match.

The Washtenaw County Conservation District received a \$165,147 grant from EGLE to complete an Ottawa-Stony North WMP project. The Ottawa-Stony North WMP project will result in a 9-element approved WMP for an area of approximately 185,107 acres, most of which is classified as agriculture. This watershed discharges pollutants, such as *E. coli*, sediment, and phosphorus, directly into the WLEB. An agricultural inventory, water quality monitoring, Landscape Level Wetland Functional Assessment, and stakeholder focus groups will be conducted to gather information about current conditions of the project area. The WMP will also outline stakeholder-supported actions, agricultural inventories, and analysis of potential pollutant sources in the watershed. It will analyze the costs associated with reducing the pollutant loads and will outline how to best move forward with managing the watershed. The grantee has committed to providing \$47,296 in local match.

- c) A description of the work that has commenced on the issue of DRP, the expected objectives and outcomes of that work, and a list of the parties involved in that effort.

Developed Partnership Effort to Research DRP: EGLE partnered with the MDARD and provided \$400,000 toward a grant to Michigan State University to study the effectiveness of drain water management practices in reducing nutrient loads, including DRP, from tiled fields. The study is focused on quantifying reductions of nutrients including DRP and TP from drain water management control structures implemented at farms in the WLEB. The calibration phase of the study ended in 2020 as monitoring was completed at test and control fields with unmanaged drainage. Tile drainage is now being controlled at the test fields and monitoring is being conducted at the test and control fields.

- d) A description of the efforts and outcomes aimed at the TP reduction for the River Raisin watershed.

Little to no progress has been achieved in reducing nonpoint source (NPS) nutrients to the WLEB from the River Raisin since 2008. Initial monitoring results appeared to indicate significant nutrient reduction in the downstream monitoring location of the River Raisin, but recent results have shown an increase in nutrient loading in the last few years. Those initial reductions may have been attributable to conservation practices within the River Raisin that were removed, or they may have been attributable to lower stream flows and, thus, reduced loadings. EGLE is continuing to work with our federal partners, including the USEPA, United States Geological Survey, and National Oceanic and Atmospheric Administration, to better understand how flow and conservation practices impact nutrient loading from the River Raisin. As our understanding improves, a more definitive statement will be made regarding trends in loading from the River Raisin. Until that understanding is improved, all we can say is that the nutrient loadings from the River Raisin remain unchanged.

It is our opinion that the only way to achieve the NPS nutrient reduction goals for the WLEB will be through targeted BMP implementation. EGLE and MDARD will need to work together to develop the needed watershed planning to identify the highest priority locations for BMP implementation. Once these priorities have been identified, we must work with local stakeholders such as the agricultural community, conservation districts, Michigan Farm Bureau, and environmental groups to get the needed conservation practices in place. The QOL agencies are planning and implementing Agricultural Inventories for a list of high priority subwatersheds within the River Raisin watershed and the Maumee River tributaries.

The NPS Agricultural Inventory Process utilizes a modeling component, a desktop analysis component, and a windshield inventory to collect specific data to locate and prioritize sites that have the potential to impact water quality. This data and prioritization of sites is one part of the watershed management planning process for a given watershed.

The Agricultural Conservation Planning Framework (ACPF), the modeling component of the process, is an ArcGIS compatible toolbox that utilizes high resolution LiDAR (light detection and ranging) data to identify slopes within a given farm field, overland flow paths within a watershed, and candidate locations for specific BMPs such as grassed waterways.

The desktop analysis utilizes aerial photos and includes digitizing the entire HUC 12 watershed, which is necessary to run the ACPF tool and to complete components of the windshield inventory. The final component of the desktop analysis also uses the aerial photos to identify locations within the watershed that have land use activities that are causing visible impact to surface waters.

The final component is the windshield inventory, which includes driving the watershed and utilizing the digitized watershed boundaries to document what land use practices are being used that can be seen from the road. The land use practices documented include the type of crop being grown in fields, whether fall tillage occurs and the type of fall

tillage, whether cover crops are planted after harvest, whether manure applications are observed, and the percentage of residue that is left on the field after spring planting. In addition, windshield inventories are used to confirm that BMPs, such as filter strips, that were identified during the desktop analysis are still in place and a visual inspection of livestock operations that were identified as a priority during the desktop analysis.

These inventories will provide a baseline condition and a prioritized list of BMPs that will bring about the best chance for NPS reduction within each priority HUC 12 watershed. The QOL agencies will then use this information to work with local stakeholders as discussed above for implementation. Implementation will be tracked in a database that will allow the QOL agencies to better evaluate progress over the long-term. These Agricultural Inventories will allow the QOL agencies to establish achievable and trackable nutrient reduction goals for the HUC 12 watersheds in which they are developed.

MDARD has worked with the Erb Foundation to provide funding to the Environmental Working Group to develop the ACPF modeling tools in several HUC 12 watersheds in the WLEB and will provide all the geographic information tools needed to develop the ACPF in all of our remaining WLEB HUC 12 watersheds. These tools will allow the QOL agencies to develop the watershed planning needed to be successful. That said, implementation funding will be a significant hurdle to overcome.