

**OHIO LAKE ERIE COMMISSION MEETING**  
**Heidelberg University Campus Center Room 120**  
**44 Greenfield Street, Tiffin, Ohio**  
June 24, 2015

Prior to the meeting being called to order, Heidelberg President, Dr. Robert Huntington gave a welcome and shared a few words about Heidelberg University. Dr. Kenneth Krieger of the National Center for Water Quality and Research thanked the commission for meeting at Heidelberg and the opportunity to highlight the work of the National Center for Water Quality Research (the Heidelberg University lab). A brief tour of the lab will be offered following the close of the meeting.

**Call to Order and Roll Call – James Zehringer, OLEC (acting) Chair/Director, ODNR**

The Ohio Lake Erie Commission (OLEC) meeting was called to order at 10:05 a.m.

***Commission Members Present:***

James Zehringer, Director, Ohio Department of Natural Resources (ODNR)  
Brian Hall, Director's Designee, Ohio Environmental Protection Agency (OEPA)  
John Schlichter, Director's Designee, Department of Agriculture (ODA)  
Matt Perlik, Director's Designee, Department of Transportation (ODOT) – arrived at 10:13 a.m.  
Karen Fabiano, Director's Designee, Ohio Development Services Agency (ODSA) – arrived at 10:10 a.m.  
Gene Phillips, Director's Designee, Ohio Department of Health (ODH)  
William Murdock, Mid-Ohio Regional Planning Commission – arrived at 10:10 a.m.  
Harry Allen, Great Lakes Power Group  
J. Kevin Cogan, Jones Day  
Paul Toth, Jr., Toledo-Lucas County Port Authority

***Staff Present:***

Gail Hesse, Executive Director, OLEC  
Sandra Kosek-Sills, OLEC – was not in attendance due to illness  
Rian Sallee, OLEC  
Heidi Rife, OLEC

**Welcome and Agenda Overview: James Zehringer, OLEC (acting) Chair/Director, ODNR**

Director James Zehringer welcomed everyone to the meeting, provided a brief overview of the agenda and turned to Hesse for a brief item regarding the briefing packet and the agenda. Hesse mentioned that a briefing paper was included in the briefing packet on a proposed resolution regarding the Lake Erie Protection Fund allocation for SFY 16. The proposed resolution included an allocation for the Balanced Growth program from the LEPF similar to past years. Hesse mentioned there is a forthcoming meeting with Director Butler regarding the Balanced Growth program and that it was prudent to withdraw this resolution at this time. Action on the proposed resolution was withdrawn on the final agenda.

Director Zehringer asked for a motion on the minutes from the March meeting.

**Paul Toth, Jr. moved the following resolution:**

**Resolved**, that the Commission approves the meeting minutes for March 25, 2015.

Gene Phillips seconded the motion. No discussion was offered. The Commission members voted all in favor and the motion carried.

**Gene Phillips moved the following resolution:**

**Resolved,** that the Commission approves Ohio EPA as the fiscal administrator for SFY 2016.

John Schlichter seconded the motion. No discussion was offered. The Commission members voted all in favor and the motion carried.

**Lake Erie Protection Fund – Grants Committee Report**

Zehringer asked Amy Jo Klei, Grants Committee Chair, to present the recommendations for the Lake Erie Protection Fund grants program.

Klei explained that the Ohio Lake Erie Commission administers the Lake Erie Protection Fund (LEPF) grant program with revenue generated by the sales of the Lake Erie license plate and other donations. Following the funding framework adopted by the Commission, the 4th quarter grant cycle was open to proposals of up to \$15,000 with no targeted topics.

Projects must assist with implementation of the Lake Erie Protection and Restoration Plan (LEPR) and provide a direct benefit to Lake Erie and its tributary watersheds in Ohio.

The Commission received three applications for the 4th quarter of the LEPF small grants cycle. The Grants Committee reviewed all applications and recommends the following grants for funding for a total of \$29,994 from the SFY15 small grants allocation:

- “Gene Sequencing as a Tool for Identifying Native & Invasive Sphaeriid Clams in Lake Erie.” Heidelberg University. \$14,994

This project will develop a fast, reliable method of identification based on gene sequencing to determine the presence and distribution of native and invasive sphaeriid clams. Genetic barcoding will make it more practical for the identification of immature specimens of some taxonomic groups beyond the family and genus levels. Establishment of barcodes at the species and subspecies level will help researchers with faster identification in the field facilitating analyses of the biodiversity of Lake Erie and waterbodies throughout Ohio. Broader management implications of this project include potential application to many groups of aquatic organisms by agencies and researchers in routine monitoring and total maximum daily load (TMDL) studies, as well as surveys to detect invasive species.

- “Can Household Water Purification Filters Remove Microcystin from Drinking Water?” The Ohio State University. \$15,000

This project will determine whether specific brands of household pitcher-style water purification systems are effective at removing microcystin from drinking water. Water with a microcystin concentration of 5 micrograms per liter will be used for the experiments. Three common brands will be tested and microcystin concentration will be determined using enzyme-linked immunosorbent assay (ELISA) kits. Results of this study will be communicated with Ohio EPA and the Ohio Department of Health.

The SFY15 budget for LEPF small grants is \$150,000. With approval of the above projects, the remaining balance for SFY15 is \$23,439.

**John Schlichter moved the following resolution:**

**Resolved,** that the following Lake Erie Protection Fund grant proposal be funded:

- “Gene Sequencing as a Tool for Identifying Native & Invasive Sphaeriid Clams in Lake Erie.” Heidelberg University. \$14,994

Paul Toth seconded the motion.

**Discussion:** Director Zehringer asked if the clams are a big problem. Dr. Kenneth Krieger stated that there are 5 species of clams in Lake Erie. The difficulty in identification is their features. Their teeth are variable. State agencies only go on gene levels. This will provide a bigger picture with gene sequencing and barcoding and will facilitate future identification with accuracy and efficiency. There is a new microscope in the NCWQR lab which will allow for this. Klei said that this will allow for identification of the invasive clams as they are lower microorganisms than the Asian carp. Brian Hall, OEPA, asked if the study will be quantitative. Dr. Krieger said yes and will lead to an eDNA identification.

The Commission members voted all in favor and the motion carried.

**Gene Phillips moved the following resolution:**

**Resolved, that the following Lake Erie Protection Fund grant proposal be funded:**

- “Can Household Water Purification Filters Remove Microcystin from Drinking Water?”

The Ohio State University. \$15,000

Paul Toth seconded the motion.

**Discussion:** There was some discussion about whether the LEPF was the most appropriate source of funds for this project. Would it be more suitable for an agency such as ODH, or perhaps by the commercial vendors of the filter products.

Voting in favor: Zehringer, Hall, Schlichter, Perlik, Fabiano, Phillips, Murdock, and Toth. Voting opposed: Allen and Cogan. Motion passed.

Klei then turned to Hesse for a brief overview of the Balanced Growth SFY15 Project and present the recommendation for the project for action by the commission.

This project is recommended for funding as part of the budgeted allotment for the Ohio Balanced Growth Program for SFY 15. The Ohio Balanced Growth Program addresses the link between land use and water resources in the state of Ohio by providing technical resources for voluntary application by local governments.

In the Best Local Land Use Practices portion of the Ohio Balanced Growth Program, training, technical assistance, and information resources are provided to individual local governments to encourage the voluntary implementation of Balanced Growth economic development and water resource-protecting practices and policies. The Best Practices program began in April of 2006 with outreach to local governments within the Ohio Lake Erie Basin.

The proposed set of work tasks by Cleveland State University builds upon progress achieved in recent years in the development of resource materials and publication of “Linking Land Use and Ohio’s Waters: Best Local Land Use Practices”. There will be three primary elements of the proposed project including continuation of technical assistance to local communities, outreach on Best Practices tools and resources (e.g. workshops), and continuing development of relevant program materials. Materials to be developed will include a resource document for local communities summarizing transportation research, an inventory of Best Practice implementation in Ohio and additional case studies.

In addition to the primary tasks, the grantee will continue to collaborate with the Ohio Lake Erie Commission and the Ohio Water Resources Council and other state agencies on integrating Best Local Land Use Practices recommendations with state programs as applicable.

The Commission members voted all in favor and the motion carried.

**Gene Phillips moved the following resolution:**

**Resolved, that the following Balanced Growth grant proposal be funded:**

- “Best Local Land Use Practices 2015.” Cleveland State University. \$35,000
- Brian Hall seconded the motion.

Discussion: Paul Toth asked if we had heard from Kirby Date at the last meeting about this. Hesse responded that Date presented status of the program at the March meeting along with an ODOT representative on the transportation project funded by ODOT. The proposed project before the commission builds upon this work. Toth then asked if the study will be provided to everyone. Hesse said that the study will be provided to those involved and that results will be available on the Balanced Growth website.

The Commission members voted all in favor and the motion carried.

Hesse then turned to Rian Sallee for a brief update and overview on 3 key projects that ended this quarter.

#### **Otolith Chemistry of Asian Carps in Lake Erie**

- Otolith: Fish “ear bones”
  - Hard, calcium carbonate structures
- Otolith microchemistry can link adult fish collected in Lake Erie tributaries to their spawning areas
- Ability to rapidly identify invasive Asian carps spawning habitat will be critical in management efforts

#### **What did we do?**

- Determined chemical signatures of otoliths for common carp in the Sandusky, Maumee and Grand Rivers
- Compared chemical signatures of common carp to Asian carps (grass, bighead and silver)
  - Grass, silver, and bighead carps were raised by USGS in the same water chemistry and with the same food source

#### **What did we learn?**

- Established tributary chemical signatures of invasive Asian carps (bighead and silver)
  - Signatures will provide knowledge of spawning locations of Asian carp should they establish in Lake Erie

For more information:

John Farver

Chair, Department of Geology

Bowling Green State University

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Agency Advisor: Jeff Tyson, Ohio Department of Natural Resources

Discussion: Director Zehringer commented that this is a great step forward for future management of the fish.

#### **Impacts of Urban River Restoration Structures on Fish Communities**

- A nearly 5,000 ft section of the Ottawa River located on the University of Toledo Main Campus was restored/ rehabilitated

**What did we do?**

- Using a before/after – control/impact design, the effect of restoration on the fish community and stream habitat was analyzed

**What did we learn?**

- Minimal response from the fish community was observed post-installation, but habitat scoring improved
- Minimal response attributed to timing of post-project monitoring and possibly the scale of the project
- Literature and other Ohio projects have shown significant improvement in biological measures over time in similar restoration efforts
- Continued monitoring is recommended

For more information:

Hans Gottgens  
 Associate Chair, Department of Environmental Sciences  
 University of Toledo  
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 Agency Advisor: Cherie Blair, Ohio EPA

Discussion: Brian Hall, OEPA, asked how long after the restoration was the post-project monitoring conducted? Sallee said .

**Big Creek Stormwater Retrofit Implementation Project**

- Phase 2 of Big Creek Stormwater Retrofit Ranking Project completed in 2013
  - Big Creek is the 3rd largest tributary to the Cuyahoga River
- Developed retrofit sites from 156 potential locations identified in the Big Creek Watershed Balanced Growth Plan
  - Benefits of stormwater retrofits include:
    - reduced runoff volume,
    - reduced stormwater peak flow rate, and
    - improvement in overall water quality
- Next steps:
  - Extensive data collected through both phases will be used to develop projects for funding proposals

For more information:

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 Agency Advisor: Bill Zawiski, Ohio EPA

No discussion.

Director Zehringer proceeded to the next item on the agenda and introduced Laura Johnson, Heidelberg University to present on the GLRI-CSMI Assessment of Nutrient/Eutrophication Dynamics in Western Lake Erie

Ohio Lake Erie Commission, University of Toledo, Heidelberg University, Case Western University, The Ohio State University Stone Laboratory, and LimnoTech are all part of the GLRI project.

Director Zehringer asked who LimnoTech was. Laura proceeded to explain that they are one of the country's leading water sciences and environmental engineering consulting firms located in Ann Arbor, MI.

### **3 subprojects**

1. Quantifying the internal nutrient fluxes to the water column in the western basin
2. Integration of models designed for different spatiotemporal scales in order to better evaluate the effects of changing land use, climate, and other factors on nutrient loads to western Lake Erie
3. Developing a nutrient mass budget for the western basin of Lake Erie which includes sub-watersheds and overall modeling synthesis

Using aerobic measurements, internal phosphorus flux is estimated at 1483 metric tons based on a Western Basin Total Phosphorus Load from 1980-2013, created from data by Dr. David Dolan and Matthew Maccoux.

The Sandusky River SWAT model for the years 2008-2011 by Dr. Rem Confesor was then presented showing the simulated annual dissolved P exports based on actual crop rotations and typical management (rotational no-till, tri-state fertilization recommendations). Director Zehringer asked what the bright red indicators were on the models and what is going on there. Dr. Confesor explained that the red indicators were alfalfa fields. Fertilizer was broadcasted there regularly. Zehringer then asked if it was subsurface or both. Confesor explained that it was both.

Dr. Johnson then went on to explain the simulated annual dissolved P exports, kg/ha from 2008 thru 2011 showing the variances between the models. She then went on to explain the Western Lake Erie Ecosystem Model (WLEEM) developed by LimnoTech. It incorporates fundamental physics, chemistry, and biology from research over last 30 years and integrates observations from many types of sampling programs with hydrodynamics, wind waves and water quality linkage.

Dr. Johnson then moved onto the spring 2015 nutrient loading update. The Maumee River spring cumulative discharge has been steadily increasing from March to June from 0 to 3.27 km<sup>3</sup>.

Maumee River spring dissolved P loads updated June 15<sup>th</sup> predicted to June 22<sup>nd</sup> are 305 metric tons. Multi-sensor precipitation observed in inches over a 30 day period ending the morning of 6/22/2105 by the Midwestern Regional Climate Center has been anywhere between 6.0-15.0 inches. The Maumee spring runoff for the month of June has been 4 inches. March thru July for this year has yet to be determined.

The current HAB projection from NOAA will be a bloom between 5-8 severity and most likely stay between the 5-6 range.

Hesse asked John Schlichter, ODA that since the worst of the spring discharge came in late spring, is it possible that some of the phosphorus has been taken up by the plants? John answered that it varies and cannot be pinpointed. Dr. Johnson answered that sediment and data is still needed as of yet to determine the effects.

There were no further questions.

Director Zehringer then went onto the next agenda item to introduce Dr. Jeff Reutter of OSU and Ohio Sea Grant to present the Great Lakes Water Quality Agreement Annex 4 Targets.

Dr. Reutter explained Lake Erie contains three basins that face unique but interconnected challenges: a western basin, a central basin and an eastern basin.

The Western Basin is shallow with an average depth of 24'. It is warm, and it receives most of the total phosphorous load because of the size of the Detroit and Maumee Rivers. Since 1994 the Western Basin has received 61% of the whole lake annual TP load, while the Central Basin and Eastern Basin received 28% and 11%, respectively. As a result, algae blooms dominated by the blue-green alga (cyanobacteria - *Microcystis aeruginosa*) occur regularly, fouling shorelines during spring and summer. These species can form blooms that produce toxins (e.g., microcystin) that are dangerous to humans and wildlife.

The Central Basin is deeper with an average depth of 60'. Excess phosphorus contributes to algae growth which contributes to hypoxic conditions (depleted oxygen) when the algae die and decompose. The biological activity in the hypolimnion (cold bottom layer of the Lake) uses up the oxygen during the summer, leaving little to none for the aquatic community (which suffocates or moves elsewhere) creating Lake Erie's "Dead Zone."

The Eastern Basin is also deeper with an average depth of 80'. Excess phosphorus contributes to the growth of *Cladophora*. *Cladophora* isn't toxic, but it is a nuisance and may contribute to human health problems. Beyond clogging industrial water intakes and degrading fish habitat, rotting mats of *Cladophora* on beaches encourage the growth of bacteria and are a factor in beach closures. The presence of *Cladophora* is thought to create an environment conducive to the development of botulism which results in birds and fish deaths and depending on the type of botulism may be a concern for human health as well.

### **Lake Ecosystem Objectives**

The **Western Basin** is shallow and warm, and it receives most of the total phosphorous load because of the size of the Detroit and Maumee Rivers. As a result, algal blooms dominated by the blue-green alga (cyanobacteria - *Microcystis aeruginosa*) which can produce toxins (e.g., microcystin) occur regularly during spring and summer.

The **Central Basin** is deep enough to produce a thermocline. Decomposition of the algae contributes to hypoxic conditions (depleted oxygen). In addition, biological activity in the hypolimnion (cold bottom layer of the Lake) uses up the oxygen during the summer, creating hypoxic conditions.

The **Eastern Basin** is mainly impacted by nuisance algae -- *Cladophora*.

There are six Lake Ecosystem Objectives articulated in the Nutrients Annex of the Agreement. Lake Ecosystem Objectives are essentially environmental goals that represent what we would like to see in the Great Lakes. One of these pertains specifically to Great Lakes other than Lake Erie, so is not included.

It's important to note that the Agreement doesn't specify Lake Ecosystem Objectives by basins -- the subcommittee chose where the Lake Ecosystem Objectives applied based on where the issue is most significant. For example, low oxygen in central basin, nuisance algae in eastern basin, and cyanobacteria in the western basin and nearshore.

### **Proposed Bi-National Phosphorus Load Reduction Targets**

It is important to note that these basin specific targets work in concert --not in isolation. All tributaries to Lake Erie, including the Huron-Erie Corridor contribute phosphorus loads to Lake Erie.

The proposed targets are based on the best available science and modelling. It is also important to view the targets in the context of the immediate need to address the issues in Lake Erie in the short term; adaptive management will be crucial to achieving our environmental goals, meaning that we must continue to monitor the results of our actions and refine the targets as necessary based on new science.

We want to bring to your attention that we are not recommending a target for the EB Cladophora issues at this time. The models suggested that open lake phosphorus concentrations in the Eastern Basin would be reduced by the efforts to address cyanobacteria biomass and hypoxia, but the models of Cladophora-phosphorus uptake and utilization were insufficiently developed to allow the Task Team to evaluate the impact of the phosphorus reductions on Cladophora growth. The models also were not able to predict the impact of any proposed Eastern Basin tributary load reductions on nearshore growth.

While there is insufficient information at this time to recommend a loading target for the Eastern Basin, there is research underway by Environment Canada's Great Lakes Nutrient Initiative that we anticipate will inform the development of a target. In the meantime, the proposed reductions to the Western and Central Basins will result in load reductions to the Eastern Basin. We will need to monitor what, if any impacts these efforts have on the EB.

More monitoring, research, and modeling is also needed to improve our predictive capability regarding Cladophora growth in responses to P load. In fact, one of our recommendations for further work is the need to develop a site-specific load-response model for the north shore of the Eastern Basin. We recognize this is an important issue that we will need to address not only for Lake Erie, but for the other Great Lakes as well, such as Lake Ontario.

### **PUBLIC COMMENT PERIOD**

No Public Comment

**Zehringer adjourned the meeting at 12:00 p.m.**

Powerpoint presentation slides used at this meeting are on file at the Ohio Lake Erie Commission Office.

**NOTE:** Next Lake Erie Commission Meeting: Wednesday, October 7, 2015 - 10:00 a.m., National Museum of the Great Lakes, Toledo, Ohio.