

The Ohio Water Table

A Publication of the Water Management Association of Ohio

No. 134 / Quarterly



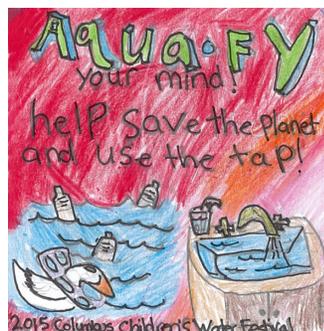
Ohio Water Resources Center Leads “Sink or Float” Activity at Central Ohio Children’s Water Festival

On May 19, 2015 approximately 500 fifth-grade students attended the eighth annual Central Ohio Children’s Water Festival at Franklin Park in Columbus, Ohio. The Festival promotes environmental awareness of our valuable water resources through interactive displays, hands-on activities and fun workshops. The Ohio Water Resources Center (OhioWRC) led a workshop entitled: “Sink or Float-Buoyancy”. The students enjoyed learning about densities of objects and liquids, guessing the probabilities that specific objects will sink or float, and building their own paper boats. The highlight was trying to sink the paper boats using metal washers.

The Festival included volunteers from the City of Columbus Department of Public Utilities (DOW), Ohio EPA, and Franklin Soil and Water Conservancy District. Also participating were employees from consulting companies like MWH, CH2M, ARCADIS, Burges & Niple, T&M Associates, Brown and Caldwell and many others. The event relies on the commitment of the organizers, volunteers and sponsors and would not happen otherwise. Special thanks to Lorraine Winters, Columbus DOW, and Tim Wolfe, MWH, who served as overall co-coordinators of the water festival.



Student attempting to place as many washers as possible on the paper boat before it sinks.



The winning window cling encouraging the use of tap water created by Serafina Rees of Wickliffe Progressive Elementary.

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Points of Interest:

- Ohio Lake Management Society introduces new Manager for the Citizen Lake Awareness and Monitoring Program.
- Research project investigates the impact of dam removal on the Olentangy River.

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President's Column

Boris E. Slogar, P.E.

Stormwater Management – the Forgotten Utility

We are all used to paying for water, electricity, gas, trash, and even sewer bills. Not that anyone greets these bills enthusiastically, but I would argue that most folks understand the need for these utilities and services and when we get those bills, we pay them and move on. For many of us, concerns about storms and runoff are usually limited to how it affects our weekends and recreational activities. Other than that, stormwater is largely ignored...unless a flood occurs.



Flooding tends to take center stage in spring and early summer across much of Ohio. In urban settings, storm sewers are sized to handle “normal” storm events which take the runoff from our roofs, driveways and roads and pass that runoff into our streams and rivers. Most of the time, this process happens without much worry or notice. But as we all are well aware, stormwater systems can be overwhelmed and when that happens, water ends up where we don't want it.

A reasonable question to ask is why aren't urban storm systems designed to handle greater amounts of water? The short and simple answer is that it would be far too expensive to make that a reality. To use an analogy, consider our road systems. Roads wear out and need to be replaced or resurfaced about every 10 years or so. While we can certainly engineer and design roads that last twice or three times as long, the cost to do so would be prohibitive.

“...stormwater systems can be overwhelmed and when that happens, water ends up where we don't want it.”

As our watersheds have become further populated containing more hard surfaces and greater amounts of pipes and culverts, rainfall which used to permeate into the soil in wide open spaces now ends up accelerating on concrete, steel, and plastic surfaces. These surfaces, in turn, convey that stormwater quickly into our streams and rivers. This ends up passing more water into streams and rivers knocking things out of equilibrium, and this in-turn creates flooding downstream.

If you consider this entire process that links urban and rural areas, managing stormwater runoff becomes a complex issue. Traditionally, the approach to handling flooding problems in urban settings is to collect and convey stormwater quickly and to pass it along further downstream. While this may take care of the problem in one area, it tends to pass it along to someone else. So the question is how can this problem be managed in an effective, equitable, and holistic manner? Another issue to consider is how do we maintain and upgrade the existing stormwater infrastructure?

Solutions for these problems are readily identified and tend to be straightforward to design. The problem of course, lies in paying for and implementing the solutions. Stormwater utilities, petition-ditch law, assessments, and conservancy district laws are all some of the vehicles available to fund maintenance and improvements. Each of these has their advantages and it is time to review these tools as well as to consider others.

Interest in stormwater issues is on the rise and I would be remiss if I didn't point out that WMAO's Stormwater Division focuses on much of this topic. As a matter of fact, the annual Ohio Stormwater Conference usually held around May is one of the largest in the nation. Learn more at www.ohioswa.com. Also, be sure to look for stormwater presentations as part of WMAO's annual conference November 17 and 18 in Columbus.

OWRC Leads “Sink or Float” Activity

Continued from Page 1

During the day, students from a number of Franklin County schools attend presentations to learn about water supplies, water and wastewater treatment, water distribution systems and wastewater collection. They also participated in interactive hands-on workshops – where they learned about water as a resource, how irreplaceable it is and how critical it is for our lives. The Ohio WRC “Sink or Float-Buoyancy” workshop was one of the many interactive activities students could participate in.

An unforgettable part of the event is the lunch welcome by Columbus’ Mayor Michael B. Coleman, members of the Columbus City Council, and representatives from the Department of Public Utilities DOW. Mayor Coleman announced Serafina Rees as the winner of the window cling contest and called Serafina and her teacher Ms. Oberlin to the stage to recognize their efforts and provide them with a \$1000 award for their school. Before dispersing for lunch the Columbus pipe-tapping team demonstrated their talents for the students.

WMAO Award Winner from 2013 Update

In 2013 WMAO selected Bluyé DeMessie of Mason High School as our Ohio Science Fair prize winner for grades 10-12. His project was inspired by a trip to visit relatives in Ethiopia where he was shocked to find out about the unavailability of clean water. After he returned home, Bluyé developed a method to turn agricultural waste such as that found in Ethiopia and other developing countries into bio-charcoal. The bio-charcoal could then be used to purify water with a relatively low contact time. Evidently, WMAO was not the only organization to recognize Bluyé’s talent. According to the April 24, 2015 edition of the *Cincinnati Enquirer*, he also was awarded the grand prize at the 2013 and 2014 Intel International Science and Engineering Fair and the 2014 Siemens Competition in Math, Science and Technology. Bluyé has been accepted by Harvard, Yale, Princeton, Columbia, Cornell, MIT, Caltech, Johns Hopkins, University of California at Berkley, Washington University of St. Louis, and The Ohio State University. His final college selection was not identified by the *Cincinnati Enquirer*.

Save the Date!

WMAO 44th Annual Meeting and Symposium

MOVING THE NEEDLE: Policies, Programs, and People that Drive Change

November 17 & 18, 2015

Doubletree Hotel - Columbus Worthington,
175 Hutchinson Ave., Columbus, OH

Ohio Lake Management Society



Eugene Braig, OLMS President

I come to you this quarter from the tiny Shaker desk in my home's loft, pecking at the reduced keyboard of my office laptop. Yes, I am a division president in temporary exile. The building that holds my office is undergoing extensive renovation, so I'm out until mid-July at the earliest. In part, this means that the routine afforded by the desk from which I ordinarily write—along with easy access to all my usual references, access that ordinarily consists of an easy swivel of the chair—is denied to me. Frankly, it's even harder to find time to write in the absence of the ease of routine.

Most of my professional life (read the books, journals, and stacks of printed articles with which I professionally identify) is sequestered away in plastic bins and cardboard boxes, all out of my reach until I am given permission to reoccupy my office. Selecting the small set of literature to carry with me, those things that I might want to access or distribute in service to the travels and received inquiries that make up typical workdays of an extension professional, was an oddly heart-sickening exercise. I never realized how paternal my feelings towards my collection of fishy and limnological literature actually were...

...And speaking of wistful breaks from routine, the Ohio Lake Management Society (OLMS: <http://olms.org/>), now a division of the Water Management Association of Ohio (WMAO), is changing a couple more of its long-running routines. The first, OLMS's newsletter *Shorelines*, has ended its run as an independent publication. OLMS's merging with WMAO provided us with several opportunities. Our annual conference, e.g., merged into WMAO's beginning with 2013. Now, OLMS's governing board has decided that the benefits of reducing administrative effort and especially the opportunity to reach a more extensive audience realized by dissolving *Shorelines* into WMAO's newsletter *The Ohio Water Table* far outweighed the loss of a publication with an independent identity. Watch for more lake-centric articles in *Water Tables* to come. ...And I challenge all OLMS members to provide those articles for publication in *The Ohio Water Table*. Warm up them typin' fingers, OLMS-ians.

A second break from routine: Dana Oleskiewicz, WMAO's endlessly valuable contracted administrator, has stepped down as coordinator of OLMS's super-effective volunteer monitoring program, Citizen Lake Awareness and Monitoring (CLAM: <http://olms.org/citizen-lake-awareness-and-monitoring/>). CLAM will now be coordinated by the able Susan James (419-938-6671 or smjames63@gmail.com) on contract with the Mohican School in the Out-of-doors, Inc. As is my want, I again challenge all OLMS to contact Susan to get active with CLAM or to do some active recruiting with your own clientele on CLAM's behalf.

Until next time...



New Manager for Citizen Lake Awareness and Monitoring Program

There's a new face in the CLAM program. Well, kind of new. Many of you met me at the WMAO conference last year. My name is Susan James, and I'm the new field manager for the CLAM program. Dana Oleskiewicz will remain on staff as the administrative manager. Dana suggested that the WMAO and OLMS membership might like to know a bit about me. I've actually been involved with CLAM since 2006, assisting Steve James with data collection on Pleasant Hill Lake. We both work for Mohican Outdoor School, which has contracted with OLMS to provide the field management of CLAM.



My background is mechanical engineering, and I practiced engineering for about ten years. Around 2000, though, I decided that engineering wasn't really what I wanted to do. After a lot of soul searching and noticing a "help wanted" ad at MOS, I applied with the outdoor education program that my daughter attended, and I've been working at Mohican Outdoor School since. I am the Operations Coordinator at MOS, and wear many hats, so to speak. I am responsible for many administrative duties, including curriculum development, scheduling of staff, payroll, technology management, and serving as a liaison with lead teachers of attending schools. I also train staff and provide professional development training to local educators. I'm a trainer/facilitator in curricula such as Project WET and Wonders of Wetlands, and an international data collection program, GLOBE. Over the past five years, I've been working with students to collect surface temperature data for the GLOBE program, but the GLOBE program also collects hydrology (and other) data used by NASA and NOAA scientists. With my experience over the past fourteen years at MOS, field administration and volunteer training within the CLAM program are a perfect fit.

I'm a trainer/facilitator in curricula such as Project WET and Wonders of Wetlands, and an international data collection program, GLOBE.

On a personal note, Steve and I live near Bellville, Ohio with our dog, Charlie (some of you have already met Charlie), and three cats. I'm very involved in music (to the point of it being another "passion"), and enjoy spending time with our grandchildren, camping, fly fishing, bird watching, and gardening.

At the heart of all of this is a passion for the natural environment, and a love of hands-on science and getting others excited about science and the environment. I believe that the CLAM program is such a wonderful opportunity to get citizens involved and engaged with water studies that serve a very real and important purpose. I look forward to serving the WMAO and OLMS organizations!

CLAM Update



By Susan James, CLAM Program Manager

The CLAM program has started for the 2015 season. We had a somewhat slow start with the changeover in field management, but all volunteers have their equipment and supplies and are taking field data.

New volunteers were trained in CLAM protocol in May and June. Eight volunteers were trained on May 30th through a collaborative effort with Richland County Soil and Water Conservation District. Volunteers will



Volunteer training at Charles Mill Lake on May 30th. Demonstration of Secchi Disk transparency measurement and determination of water color by Pleasant Hill Lakekeeper Steve James.



collect transparency data on Charles Mill Lake, Pleasant Hill Lake and Clearfork Reservoir. Additional

volunteers with the Portage

Lakes Advisory Council were trained in data collection by Bill Zawiski of Ohio EPA, and in CLAM Protocol by Susan James, on

June 24th. More about the Richland County training can be found at http://www.richlandsource.com/news/lake-water-quality-monitored/article_1fe6c3dc-0de2-11e5-a6ad-2b5dbe1269df.html.

A new component to the CLAM program this year will be the pilot testing of using a fluorimeter with data collection. A fluorimeter measures chlorophyll (green pigment) and phycocyanin (blue-green pigment) concentration, and could possibly be used in the future to monitor for increases specifically to determine the presence of various algae and plankton, and cyanobacteria, in MWCD lakes and minimize the use of expensive chlorophyll water testing at a lab. Look for more about this pilot test in future

Hidden Lake Community Partners with TerrAqua to Monitor

By Emma Grace Matcham, TerrAqua Past-President

This summer, TerrAqua and Hidden Lake EcoGroup are continuing their partnership to monitor the lake for algal blooms. Last year the lake remained very clear throughout summer, despite some temperature and color variations. Variation between testing sites was very low within Hidden Lake, so this year they are testing one site with higher frequency. Even in the deepest part of the lake, Sechi depth has consistently reached the bottom of Hidden Lake this year. TerrAqua will be joining the Hidden Lake EcoGroup again on July 9th to collect data and review testing protocols. They hope to hold a joint training session later in July so that new members can gain CLAM certification.



TerrAqua students and Hidden Lake residents monitor water quality with the CLAM Program.



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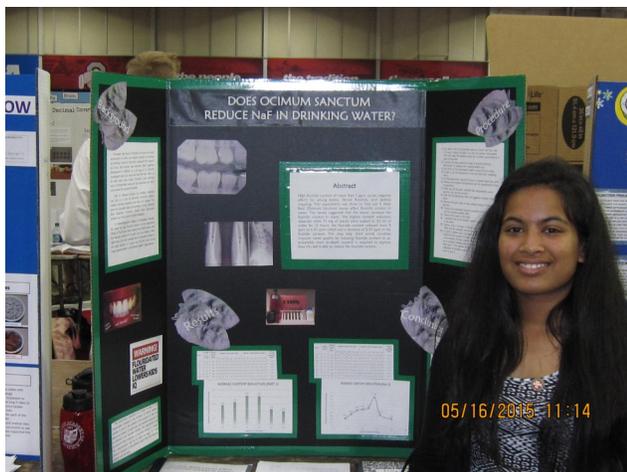
2015 State Science Day WMAO Awardees

The 2015 State Science Day was held at The Ohio State University in French Field House, on Saturday May 16, 2015. Twenty-four students requested to be judged for the two WMAO awards: 15 were in the lower 7th-9th grade category, and 9 were in the upper 10th-12th grade category. The Peter G. Finke Water Management Award in each grade category includes: a \$250.00 check, a plaque, recognition in WMAO's "Water Table" publication, and an invitation to the WMAO Fall Conference in November. Peter Soltys, Bob Vertrees, Zach Smith, and Rick Weber did the judging this year for WMAO.

The WMAO 2015 State Science Day awardee in the lower grade category is Shivangi Mohta, an 8th grade student at Solon Middle School in Solon, Ohio. Shivangi's project was titled "Can Ocimum Sanctum Reduce NaF in Drinking Water?" Shivangi conducted an extensive online search to understand that high fluoride levels occur naturally in drinking water in certain parts of the world where traditional treatment is cost-prohibitive.

From her research she noted the benefits of fluoride to prevent dental cavities, but also realized that high fluoride levels in drinking water may have a negative impact on human cognitive development in children, and cause dental fluorosis and skeletal crippling. She discovered that there has been limited success in lowering fluoride levels using holy basil. Shivangi constructed her experiment to find the optimum mass of holy basil leaves to soak in 9 ppm sodium fluoride solution to obtain the greatest reduction of fluoride concentration. She then used her results to find the optimum residence time to soak the tulsi leaves to achieve the greatest reduction of fluoride concentration. Shivangi's science teacher at Solon Middle School is Mr. Scott Kendra.

The WMAO 2015 State Science Day awardee in the upper grade category is Ashley E. King, a 12th grade student at Hudson High School in Hudson, Ohio. Ashley's project was titled "Bioaugmentation and Biomanipulation as Bioremediation of Depleted Oxygen Zones." Ashley investigated biological processes which occur in oxygen depleted water caused by algal bloom decomposition. She experimented with three different algae species subjected to different combinations of soil and sediment microbes to observe which combination of microbes were most effective in prohibiting algal growth. Her project was the final part of a three-year STEM project. Ashley demonstrated a thorough understanding of her project and made effective use of the scientific method. Ashley's science teacher at Hudson High School is Mrs. Sheila Baldessari.



Shivangi Mohta, an 8th grade student at Solon Middle School in Solon, Ohio, with her project entitled, "Can Ocimum Sanctum Reduce NaF in Drinking Water?"



Ashley E. King, a 12th grade student at Hudson High School in Hudson, Ohio, with her project entitled, "Bioaugmentation and Biomanipulation as Bioremediation of Depleted Oxygen Zones."

Ohio Floodplain Management Association

OFMA Provides Local Floodplain Managers Scholarships for 2015 Conference

Are You a Scholarship Candidate?

To ensure that local floodplain managers have a chance to develop and grow their professional expertise, OFMA's Managing Board has approved the granting of scholarships for attendance at the annual conference. Most years there are **6 to 8 scholarships available for community floodplain managers**. Scholarships cover the cost of registration and may include one night's lodging for floodplain managers who work and live in communities located outside of Franklin and the contiguous counties. Scholarships are not awarded to Federal or state agency representative or a private sector consultant.

Requests for a scholarship must be submitted on the local government letterhead, and specifically address what service the recipient is willing to provide (supported by their community) in exchange for the financial assistance to attend the annual conference. Scholarship recipients must agree to at least one of the following service commitments:

- Host a local floodplain management workshop or training event (within one year of scholarship award) that includes securing a facility, inviting attendees, and coordinating the agenda with OFMA and ODNR;
- Actively participate on the annual conference planning committee for the year following the award of a scholarship (may involve 2-3 one-day coordination meetings in Columbus, Ohio);
- Serve the OFMA organization in a position of leadership (committee lead, officer, special project support) for at least one term or completion of a project.

Scholarship application DEADLINE is JULY 31, 2015. Scholarship recipients will be notified in writing and provided with a *Scholarship Contract* (available for review on the OFMA web site at www.ofma.org). ODNR, Floodplain Management Program will coordinate the payment of conference registration upon receipt of a signed (OFMA President, recipient and recipient's supervisor) *Scholarship Contract*.

Please direct any questions or requests to:

Cindy Crecelius, OFMA Awards and Scholarship Committee Lead
179 Baranof East
Westerville, Ohio 43081
Phone: (614) 891-1595
ccconsults.cjc@gmail.com

If you prefer to fax supporting materials, please use the ODNR, Floodplain Management Program FAX No. (614) 265-6767, Attention: Alicia Silverio.

This is your opportunity to network with your peers and to take advantage of the professional development activities available through the Ohio Floodplain Management Association!

A Water Luncheon Seminar



Presented by:
The Water Management Association of Ohio
and
The Ohio Water Resources Center

July 29, 2015; 11:30 a.m. - 1:00 p.m.

Wilma H. Schiermeier Olentangy River Wetland Research Park,
The Heffner Building, 352 Dodridge St. Columbus, OH 43202



From St. Rt. 315, exit east onto Ackerman Rd, continue past Olentangy River Rd onto W. Dodridge St, then left into Park driveway.

The Legion of Bloom: Algae, Remote Sensing, and Lake Erie

Aurea L. Rivera, P.E., IMAGINEERING RESULTS ANALYSIS CORPORATION,
Precision Agriculture, Energy, ISR Solutions; Dayton: www.imagineeringresults.com

The City of Toledo Water emergency of August 2014 brought to the nation's attention the threat algae blooms present to cities, Lake Ecosystem, and the way of life for Lake Erie. As a result the algae bloom mitigation effort is actively managed by multiple stakeholders, visible, and accountable for results.

This presentation breaks out the Lake Erie's algae bloom process into its main components: geography drivers, nutrient loading sources (agriculture, water discharge practices), and climate (global warming). The presentation will describe the cyanobacteria byproducts, spectral signatures, and the remote sensing platforms used in the bacteria characterization. A signature-driven model for the early identification of an algae bloom event will be discussed. Ohio nutrient mitigation efforts will be described (Senate Bill 150, and Senate Bill 1). Finally, a forensic view of Great lake St. Mary's algae bloom events will be presented with the goal of providing a lessons learned framework.

Please register by July 24, 2015. Late or on-site registrations cost \$5 extra and are not guaranteed a meal. For registered engineers who need Professional Development Hours (PDHs), this presentation offers 1 PDH.

WMAO Member (\$15) Nonmember (\$18) Student (\$7) Special meal? _____

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Organization _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

Please send form and check to: WMAO-Luncheon, 8440 E. Washington St. #206, Chagrin Falls OH 44023.

OR, register online with a credit card at: www.wmao.org

Proceeds from the luncheon benefit the continued operation of WMAO and our scholarships. Sponsorship opportunities are available for those interested in providing extra support. More information on sponsorship is available at www.wmao.org

Research Highlights from State of Ohio Water Resources Center

The Ohio Water Resources Center is a federally authorized center situated at The Ohio State University. We fund State relevant water related research. Below are highlights from a ongoing project conducted by Dr. Kristin Jaeger, Assistant Professor, and Dr. Mažeika Sullivan, Associate Professor, both in the School of Environment and Natural Resources at the Ohio State University. If you are interested learning more about our research projects see the Ohio Water Resources Center webpage at wrc.osu.edu.

Their project, entitled “**Linked geomorphic and ecological responses to river restoration: Influence of dam removal on river channel structure and fish assemblages**,” aims to investigate linked short-term response of the Olentangy River following the removal of low-head dam, with a focus on fish community assemblages in both actively and passively restored river reaches. Recreational fishing is a major revenue generator within the state. Therefore, how fish assemblages respond to dam removal reflects a critical knowledge gap in the burgeoning dam removal and river restoration research.

Dr. Sullivan’s ongoing work in the Olentangy River system over the last four years serves as a rare baseline ecological data set that both researchers can build on to quantitatively evaluate river channel geomorphic change (the physical shape of the river) and changes in the ecological fish community as a consequence of the removal of the 5th Avenue Dam on the Olentangy River (Figure 1). In the short term, geomorphic response upstream of the dam following its removal included decreased cross-sectional area in the former impoundment, increased and more varied streamflow velocity and channel incision into the reservoir sediment, which has generally flushed finer sediments from the previously impounded, unrestored portion of the river and resulted in coarsening of riverbed sediments at this reach. These geomorphic changes translate to habitat changes for fish. Upstream of the removed dam (at the actively restored reach), fish assemblage composition shifted significantly and was accompanied by a significant decrease in species richness and diversity. These changes represented changes in the relative abundance of taxa. Between year 1 and year 2 post-dam removal, diversity increased significantly at the upstream restored and downstream reaches (Figure 2).



Figure 1. Student Ellen Comes uses McNeil sampler on the Olentangy River to characterize riverbed sediment.

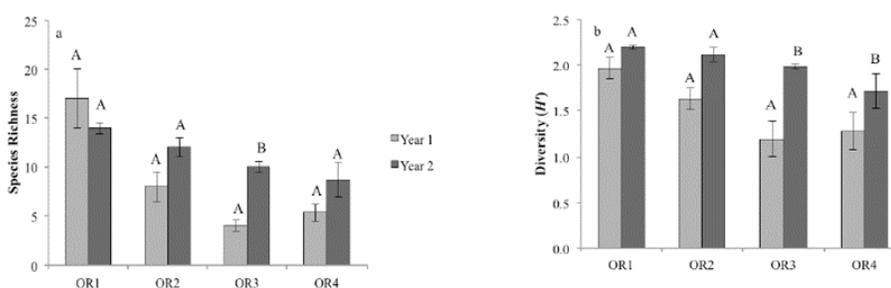


Figure 2. Fish assemblage (a) species richness and (b) diversity (H') in years 1 & 2 following dam removal of the Olentangy River study reaches. OR1 is the upstream of an existing dam control reach; OR2 is the upstream of the removed dam, unmanipulated experimental reach; OR3 is the upstream of the removed dam, restored experimental reach; and OR 4 is the downstream of the removed dam experimental reach. Significant differences based on t-tests are indicated by different letters ($p < 0.05$). Error bars represent +1 SE from the mean. From Dorobek, Sullivan, and Kautza (In press).

Researcher Profile: Dr. Kristin Jaeger works across a range of spatial scales including reach to network scale and headwaters to large mainstem rivers. Her research interests focus on how stream channel morphology and flow regimes adjust to perturbations, either natural or anthropogenic. Her ongoing projects include work on geomorphic response to surface mining, large wood dynamics in mountain channels, and characterizing spatiotemporal patterns of streamflow permanence in dryland systems.

WATER MANAGEMENT ASSOCIATION OF OHIO

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Dana Oleskiewicz, Administrative Director

www.wmao.org

The Water Management Association of Ohio (WMAO) is the one organization dedicated to all of Ohio's water resources.

VISION: The Water Management Association of Ohio will be the most effective and respected independent water resources organization in Ohio.

MISSION: The Water Management Association of Ohio promotes the comprehensive understanding, conservation and multifaceted use of Ohio's water resources.

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