Spring 2021

The Ohio Water Table

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Miami Conservancy District Dams Storing Water More Often Than Ever Before

By **Mike Ekberg**, Manager Water Resources, Miami Conservancy District

Miami Conservancy District (MCD) flood protection dams are storing water more often than at any other time since the dams were completed almost 100 years ago. That's because the Miami Valley's climate is getting wetter. Can the flood protection dams handle more rain?

A rising 30-year average precipitation

Average annual precipitation in the Miami Valley for the 30-year period of 1951 to 1980 was about 37 inches a year. Average precipitation for the last 30 years (1991 – 2020) has climbed to almost 42 inches a year—a nearly 14 percent Increase.

Average precipitation increased for every month except August (Figure below). Average precipitation for the months of January, April, May, June,

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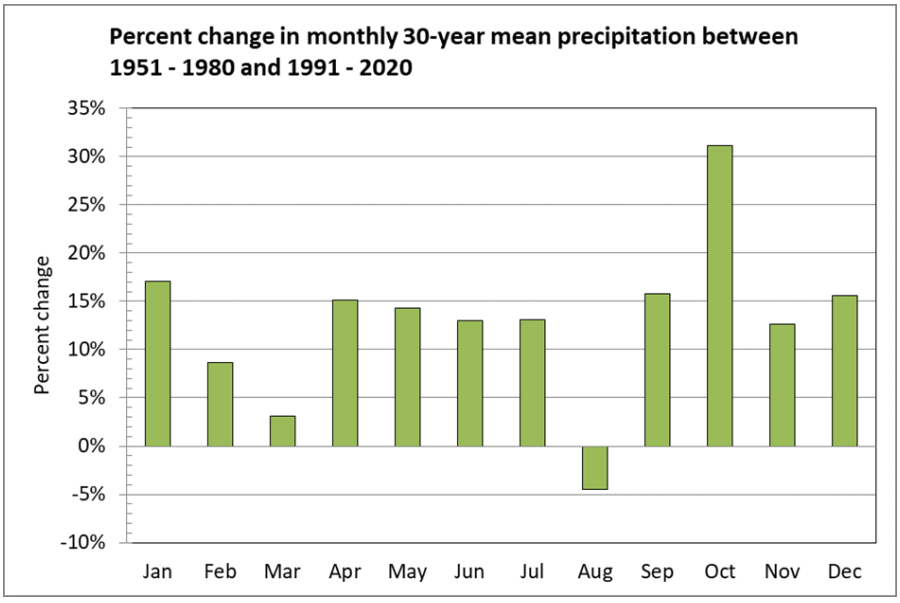

Inside this issue:

President's Column

Eugene Braig, WMAO 2020-2021 President

It's been an odd year, this last spring-to-spring cycle, eh? I haven't been into my campus office for about a year now, since my last emergency retrieval of a small few references and materials that I felt necessary for teaching and working from home (and I sincerely miss the rest of my bookshelves' fishy and laky contents). We (in the universal sense) still know relatively little about SARS-CoV-2 and the possible long-term effects of the COVID-19 that it causes; however, we know way more now than we did then. At that time, my greatest sensation was of uncertainty. Now—with case numbers still fluctuating but mortality rates in pretty clear decline, with the remarkably rapid development of safe vaccines using truly remarkable technology, with the development of other remarkable technologies to track occurrences of the virus (e.g., A rising weapon against the corona-virus? Sewage. | Ohio Water Resources Center (osu.edu)), etc.—my overall sensation is still of uncertainty. While 2020's uncertainty inspired an existential dread, 2021's is, however, generally hopeful. I expect the state of the pandemic-ridden world to improve substantially in the very near future; I'm just not certain how much or how fast. As of this writing, I personally am one of two vaccine doses in; by the time you read this, I'll be fully vaccinated. Hope. Two of my water-related team activities were also recognized with awards (one statewide and the other national) in the past year, further improving my outlook. Yay, teams!

That last office run to campus coincided with our March 2020 joint Water Management Association of Ohio (WMAO)–Environmental Professionals Network mini-conference. For it, I broadcast my small part from a studio with only two others physically joining me. That was our first virtual programming effort, and frankly was a surprising success given that we commuted to a virtual format in a matter of days. Virtual programming has become old hat now, for both WMAO and me personally. Our latest collaborative spring seminar this past March, *Equity Strategies in Water Affordability for Marginalized Communities* (check out the video link from wmao.org), was on a topic that I feel is extremely important and becoming more so, incorporated a student–professional networking session to follow (in which some of our speakers stayed on to participate), and was less surprising in its success because our successes in virtual programming have now come to be expected.

In case you haven't noticed, we're trying something new with our luncheon seminars this year (virtual thus far). Each WMAO division on rotation is proposing a topic and recruiting a speaker. I'm excited for this experiment. I love the potential to diversify our luncheon topics and thus our potential audience. I'm excited for the potential for our divisions to simply make their missions better known to Ohio's water management community (and potentially beyond) through this outreach effort. Etc.

The Ohio Lake Management Society was first up in February with a presentation on funding initiatives by the Ohio Lake Erie Commission.

> *"...climate of hope (and the fact that we need to commit to contracts months in advance), we anticipate autumn's annual conference (November 3 & 4) — our 50th!—will return to some semblance of in-person programming."*

The Ohio Dam Safety Organization was up in April with a discussion about the causes of recent headline -grabbing dam failures. Remember to keep an eye on wmao.org for all our programs as they enter the bimonthly (as in every other month) queue.

Finally, given the coming climate of hope (and the fact that we need to commit to contracts months in advance), we anticipate autumn's annual conference (November 3 & 4)—our 50th!—will return to some semblance of in-person programming. The conference committee is working hard (for the moment, still meeting virtually) to develop a quality program and theme, and speakers are already submitting abstracts. Of course, click "Conference" in the header of wmao.org to stay informed, plan to submit your own abstract (all ye water researchers and managers), and plan to attend whether speaking or not. Personally, I truly look forward to seeing you there.

…And maintain hope, friends!

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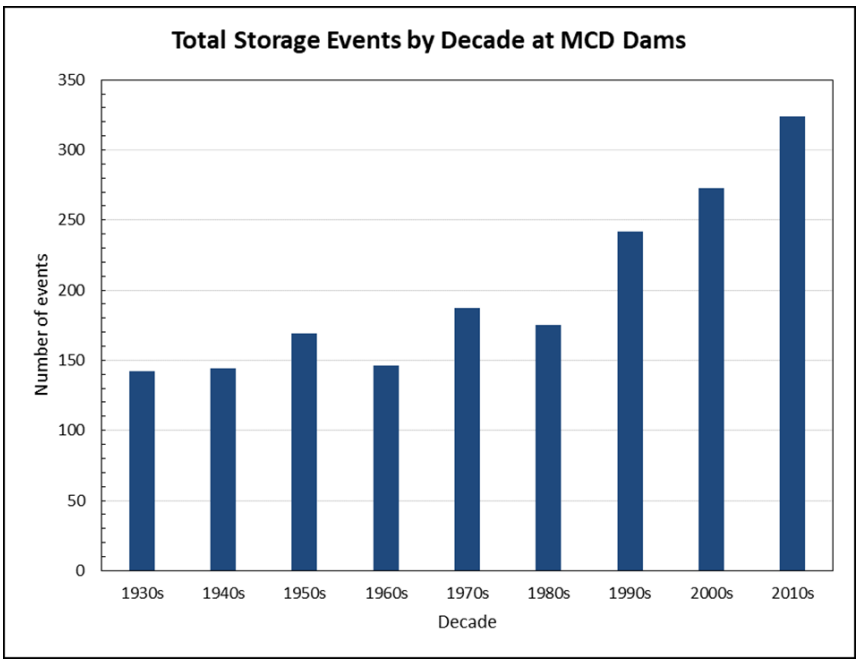
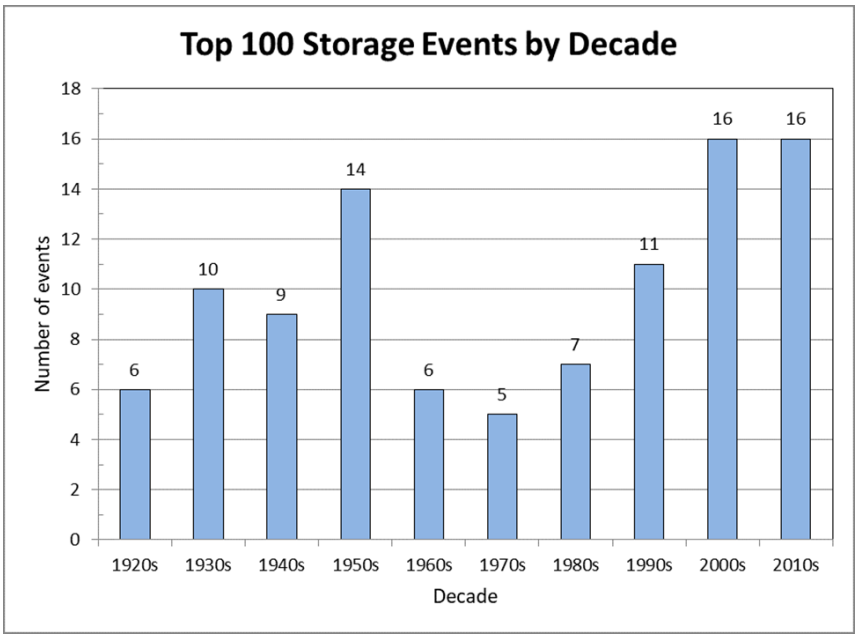
July, September, October, November, and December increased by more than 10 percent. October showed the largest increase in average precipitation—more than 30 percent.

With increased precipitation comes increased runoff and higher river flows. When river flows become high enough to be a flood threat, our flood protection dams go into action and begin to store water. When any one or more of our dams begin to store water, we call that a "storage event." Storage events at each of the dams are recorded separately. So if all five dams are in storage at the same time, it is counted as five storage events. The storage event ends at each dam when that dam is no longer holding back any water.





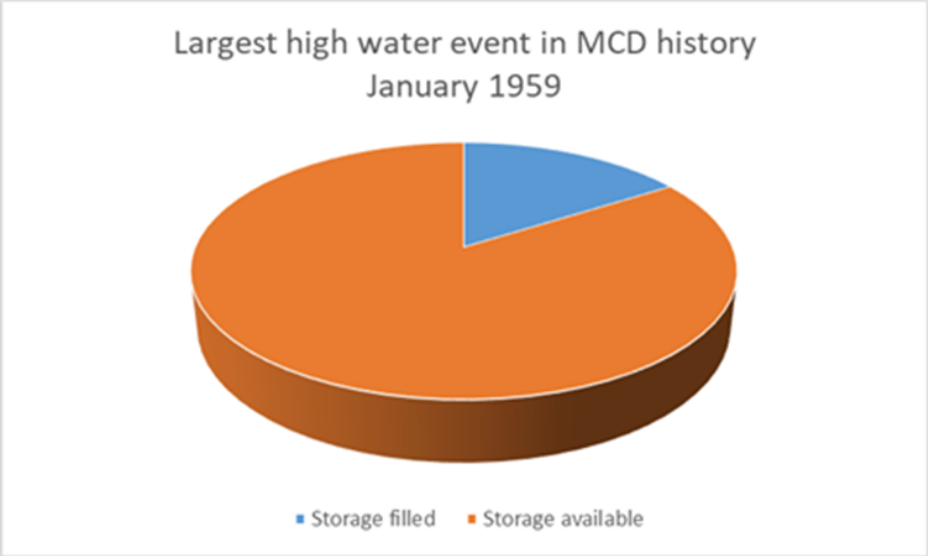
Waters stored behind dams more frequently

MCD tracks the number of storage events that occur each year. The chart to the right show the number of storage events that have occurred during each full decade since the dams were completed in 1922. You can see how the number of storage events has climbed throughout the decades of the 1990s, 2000s, and 2010s. Prior to the 1990s, no single decade had more than 200 storage events. The number of storage events in the last three decades all exceeded 200, and storage events for the decade of the 2010s exceeded 300.

More frequent large storage events

Increasing frequency of storage events at MCD dams is one thing. What about the size of those storage events? The answer seems to fall in line with simple odds. All other things being equal, the more storage events there are, the greater the chance of having really large events.

We rank storage events based upon the total storage volume of water held behind our five dams. The following chart shows the number of events by decade that rank in the top 100 largest storage events. You can see that 32 of the top 100 largest events took place in the last 20 years. The decades of the 2000s and 2010s each had 16 storage events that ranked in the top 100. Only the 1950s comes close to this number. That decade produced the largest storage event since the MCD flood protection system was built—the January 1959 event.



MCD flood protection system is resilient

The climate of the Miami Valley is changing and getting wetter. Flood risk is increasing. Fortunately, the MCD flood protection system is well designed to respond to these changing conditions in the Miami Valley.

The system was designed to withstand a very large event—the 1913 flood event plus 40 percent more runoff (which is the equivalent of 11-14 inches of rain over three days). The January 1959 event was the largest storage event since the completion of the flood protection dams. The 44.8 billion gallons of floodwater the dams held back used only 16 percent of the five dams' total storage capacity. That means 84 percent of the capacity has never been used but is there if we need it.

The MCD flood protection system is resilient—based on design, capacity and performance. Resiliency is a good thing to have in a rapidly changing world.

erc
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50th Annual
Water Management Association of Ohio
Meeting and Symposium

November 3 & 4, 2021

Crowne Plaza Columbus North - Worthington

Engaging Water Professionals Through the Decades

CALL FOR ABSTRACTS

Presentations & Posters

Abstracts are sought for 20-minute oral presentation by **JUNE 15th** or for posters by October 8, 2021.

Student Research Projects

Abstracts are also sought for posters featuring student research projects. The WMAO Conference Planning Committee will award 1st and 2nd place prizes ($250 and $100, respectively) for the posters that best capture and explain the research project.

Abstract authors for oral presentations will be notified on status of acceptance in late summer.

WMAO award nominations are due by September 15, 2021:

Award Nominations

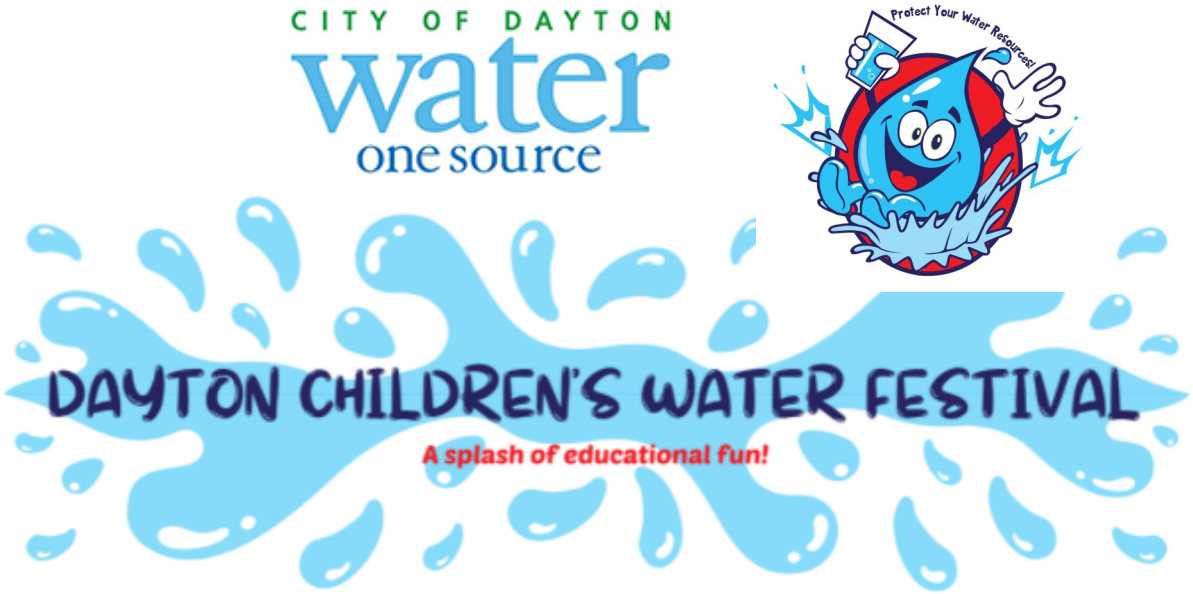
The Show Must Go On!
Dayton 2021 (Virtual) Children's Water Festival

By **Dana Oleskiewicz**, WMAO Administrative Director

One year ago, personal and professional lives changed significantly as in-person gatherings were restricted thus making program delivery in water education look very different. WMAO responded rapidly by offering online seminars through Zoom. Our week-long annual meeting last November was entirely virtual with a successful agenda and awards luncheon that essentially replicated the high-quality outreach for which WMAO is known. As we look forward to face-to-face meetings again, the virtual platform will remain as a useful tool in reaching our audiences.

That experience positioned WMAO to offer similar services to other Ohio water resource organizations. We have partnered with the City of Dayton to deliver the technology necessary to host the annual Dayton Children's Water Festival (website linked below). Seventy-two teachers representing 103 classes with over 1,800 students plan to participate through a Zoom webinar broadcast May 11 - 14, 2021.

Live presentations along with catchy videos will be used to give instruction on basic water resource information, accompanied by in-class activity kits delivered to schools the week prior to the event. Translations into Spanish, Portuguese, Swahili, and Arabic will be offered to cover language needs of students. We are honored to be part of this venture along with the City of Dayton, Boonshoft Museum, Miami Conservancy District, University of Dayton Rivers Institute, Dayton MetroParks, and Ohio EPA.



Children's Water Festival | Dayton, OH

ABOUT THE FESTIVAL

- The Dayton Children's Water Festival is an annual, educational science field-trip for 4th-grade students offering a series of interactive presentations on water themes that encourage students to become life-long stewards.
- Started in 1997 by the City of Dayton Department of Water, the festival has reached over 43,000 Dayton-area students.
- A multi-organization planning committee, sponsors, presenters, and many volunteers make this free event possible!
- Each year, we are proud to work with organizations and individuals who are committed to the environment and the region's water resources.

Ohio Floodplain Management Association

OFMA Award Nominations Now Being Accepted

During the annual Floodplain Management Conference, Ohio Floodplain Management Association (OFMA) recognizes communities, individuals and agency partners that help promote the best practices in floodplain management. **OFMA needs your help to identify communities and clients who demonstrate leadership for floodplain management, or implement innovative projects and activities to reduce flood risk.** We encourage you to nominate deserving peers and projects. Selected nominees will be recognized at the 2021 Floodplain Management Conference December 7 & 14, 2021. The OFMA award categories are:

Floodplain Administrator of the Year is designed to honor an individual who is a role model and inspiration because of their contributions to an outstanding local program for comprehensive floodplain management. The nominee must be employed by a county, city or village as a local floodplain manager.

Innovation in Floodplain Management is awarded to those demonstrating creative approaches for achieving flood loss reduction, stewardship of floodplain resources and functions, resiliency in the face of disasters in their communities or the state. The nominee may be an individual, organization, public or private sector, government agency, regional agency or academic institution that is currently working or contributing to active water resource management programs or projects.

Most Valuable Contribution to Floodplain Management is a tribute to Peter G. Finke for his distinguished service and leadership in the formation of Ohio's Floodplain Management Program. It is considered for those who have extensive service (over the course of a career) and have improved the quality of life for all Ohioans through better water resource management. Consideration may be given to individuals working in floodplain management, stormwater management, coastal management or the natural benefit and function of floodplains. The recipient will be selected based upon their outstanding contribution to the multifaceted aspects of floodplain management.

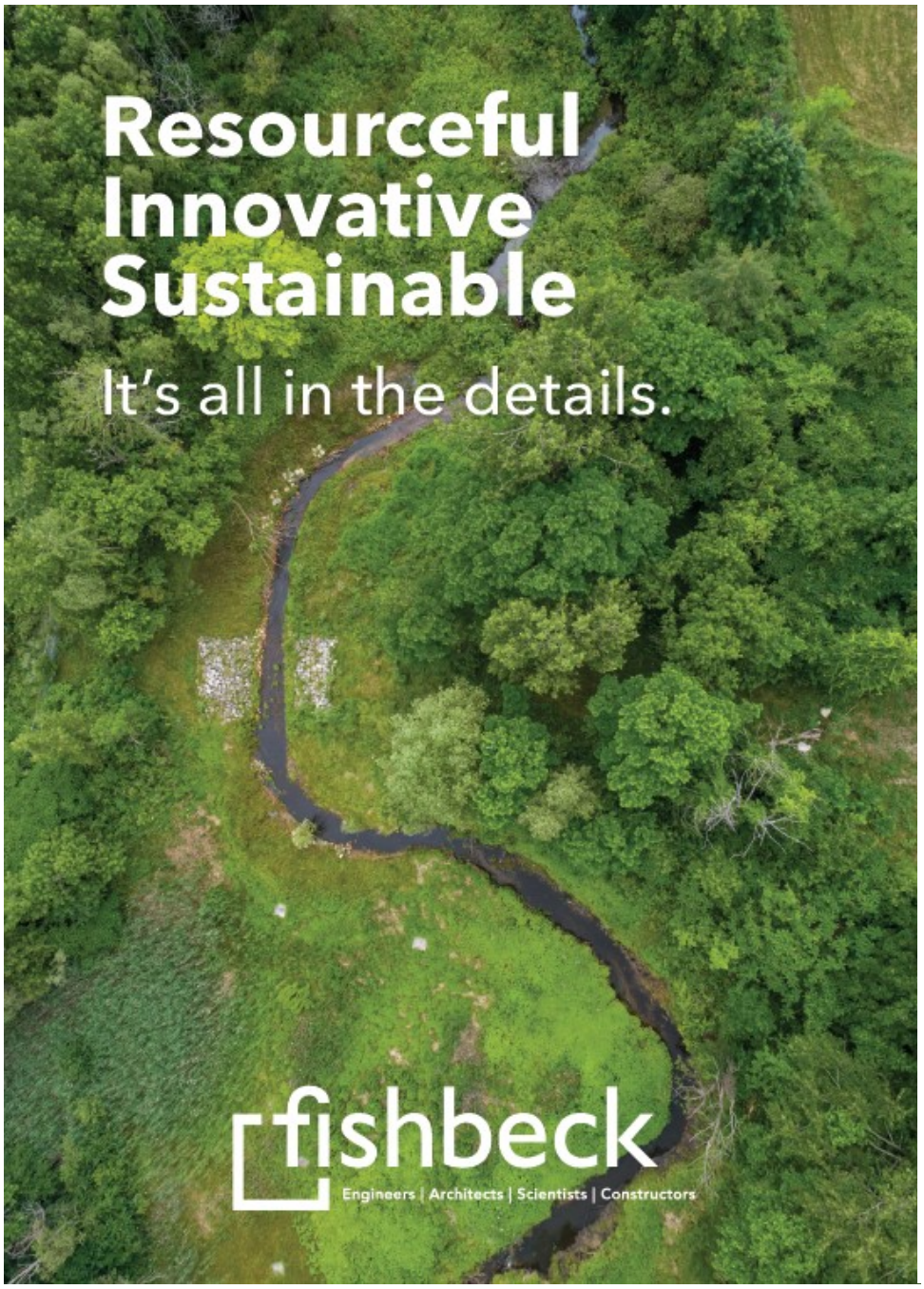
The OFMA nomination process is simple. Basic information about the nominees' merit and accomplishments, their contact information, and your relationship/perspective (concerning the nominee's worthiness) are what we need. Please consider completing a nomination form and provide brief supporting material to help the Award Committee to select the most deserving nominee.

The nomination form and information on where to submit are available from the OFMA web site at www.ofma.org. **Nomination DEADLINE is October 15, 2021**! Please direct any questions or suggestions to:

Stephen Moore, OFMA Awards and Scholarship Committee Chair
655 Blacklick Street
Groveport, Ohio 43125
Phone: (614)830-2046
smoore@groveport.org

THANK YOU for your time and consideration of the deserving individuals, agencies, organizations and programs working to achieve the best practical water resource management across Ohio.

The OFMA nomination process is simple. Basic information about the nominees' merit and accomplishments, their contact information, and your relationship/ perspective….



H2Ohio Technology Assessment Program Selects Technologies

News Release - Ohio EPA; April 12, 2021

As part of Governor DeWine's H2Ohio initiative, Ohio EPA announced today that it has identified ten emerging technologies that could play an important role in the reduction of harmful algal blooms (HABs) in Lake Erie. The technologies will be further evaluated through the H2Ohio Technology Assessment Program (TAP) which was created at the Sept. 2020 Ohio Lake Erie Commission meeting to guide the State in addressing HABs in Lake Erie.

H2Ohio TAP completed an initial screening of technology proposals, and they have now been submitted to a third-party technical team with experience in environmental technologies. This team will complete a more in-depth evaluation of efficacy and scalability of the proposed technologies in addressing HABs and nutrients, particularly in Lake Erie.

The technologies selected include:

Automated Drainage Water Management, which was submitted by Ecosystem Services Exchange. Automated drainage water management "weatherproofs" cropland fields by actively controlling water levels in soil to manage for optimal growing conditions in periods of too little to too much precipitation. When applied in a conservation systems approach, this improves the environmental performance of agriculture and farm economic viability in tile-drained landscapes.

QuickWash® Phosphorus Recovery, submitted by Applied Environmental Solutions (AES). QuickWash is a two-stage process that recovers phosphorus from wastewaters and liquid manures using acids and hydrated lime, resulting in a product that can be used as a fertilizer.

ClariPhos™, submitted by Bishop Water Technologies. ClariPhos is an inorganic liquid coagulant that binds phosphorus in wastewaters and lagoons more efficiently than traditional chemical coagulants. This allows wastewater treatment plants to more effectively lower phosphorus in wastewater to ultra-low levels.

BioChelate™, submitted by Solugen Inc. BioChelate™ Pro is a bio-based and phosphorus-free high-performance water cooling tower product to prevent corrosion. This product provides industrial users and water treatment plants increased corrosion and scale control protection without the nutrient discharges associated with the traditional phosphonate-based corrosion treatment chemicals.

Hypernucleation Flotation Technology, submitted by AECOM Technical Services, Inc. (AECOM). Hypernucleation Flotation Technology is an advanced dissolved air flotation, liquid-solid separation technology that efficiently harvests algae, associated nutrients, and algal toxins from water.

Intermittent Baffled BioReactor, submitted by Frontier Environmental Technology, LLC. Intermittent Baffled BioReactor is a high efficiency, low maintenance technology designed for small flow wastewater treatment in decentralized communities that uses biological processes to remove organic pollutants.

Phoslock® Phosphorus Locking Technology, submitted by SePRO. Phoslock is a phosphorus binding agent that inactivates excess phosphorus in water bodies by applying it to surface water as a dry clay or slurry, or by injecting it into sediment.

Electric Cell Lysis, submitted by Neundorfer, Inc. The Electric Cell Lysis technology utilizes, precisely controlled, electrical pulses to break down liquid, organic wastes in manure lagoons. This allows livestock farmers to reduce nutrients, pathogens, and odor in land-applied manure, resulting in more effective manure utilization and allowing a reduction in commercial fertilizer application.

Nutrient Regeneration (Regen), submitted by Kurtz Bros., Inc. Regen is a process for removing nutrients from biomass sources, such as manure lagoons and converting them into stable commodity products that can be marketed and distributed throughout a watershed to provide an alternative nutrient source to synthetic fertilizers.

Dispersible Granule Struvite Fertilizer, submitted by The Andersons Plant Nutrient Group. Struvite Dispersible Granule technology is a high-efficiency fertilizer in precisely engineered particle sizes that pairs with plant biochemistry to only release nutrients when crops are ready to absorb them.

Additional information about the Technology Assessment Program can be found in the program's fact sheet.

The Ohio Lake Erie Commission was established for the purpose of preserving Lake Erie's natural resources, protecting the quality of its waters and ecosystem, and promoting economic development in the region. The director of the Ohio Environmental Protection Agency (Ohio EPA) serves as the commission's chairman. Additional members include the directors of the state departments of Transportation, Health, Development Services, Agriculture, Natural Resources, and seven additional members of the public appointed by the governor.

Launched by Governor Mike DeWine in 2019, H2Ohio is a collaborative water quality effort to provide clean and safe water to Ohio. The Ohio Department of Natural Resources, Ohio Department of Agriculture, Ohio Environmental Protection Agency, and Ohio Lake Erie Commission each has a significant role in H2Ohio through the natural infrastructure of wetlands, the reduction in nutrient runoff, and increasing access to clean drinking water and quality sewer systems. To learn more, go to h2.ohio.gov.

Upcoming Events

May 19, 2021 - MS4 Bootcamp Training

May 19 - 21, 2021 - Ohio Stormwater Conference

June 16, 2021 - Water Luncheon Seminar (TBA) by OFMA

November 3 & 4, 2021 - WMAO 50th Annual Conference and Symposium

December 7 & 14, 2021 - OFMA Annual Meeting

WATER MANAGEMENT ASSOCIATION OF OHIO

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Dana Oleskiewicz, Administrative Director

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

VISION: To be recognized statewide as the go-to community for people who manage and safeguard Ohio's water resources.

MISSION: To support Ohio's water resource professionals with essential information, education, and networking opportunities

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