

H2Ohio

H2Ohio Accomplishments for Fiscal Year

2021



"We have a moral obligation to preserve and protect our natural resources. My H2Ohio plan is a dedicated, holistic water quality strategy with long-lasting solutions to address the causes of Ohio's water problems, not just the symptoms."

– Mike DeWine, Governor



MIKE DEWINE
GOVERNOR OF OHIO

www.Governor.Ohio.gov



Department of
Agriculture



OHIO DEPARTMENT OF
**NATURAL
RESOURCES**



Lake Erie
Commission



Letter from the Governor

Dear Ohioans,

It has been exciting to see the ongoing progress H2Ohio has made through its second year! This second annual report about the H2Ohio initiative outlines the investment this program has made in safe and clean water for Ohio.

Many projects have been implemented over the biennium that will go far toward improving Lake Erie's water quality and improving water infrastructure in communities that need it the most. These investments in safe and clean water for Ohio were made possible because of the support from the Ohio General Assembly and the support of a number of other partners who value water quality. I thank all of you for your dedication to this ongoing effort.

As summer winds down, Ohio's farmers in the Maumee River Watershed are finishing up their first year of using H2Ohio best management practices to prevent nutrients from leaving their fields. The Ohio Department of Agriculture is now enrolling farmers in 10 additional counties in the Western Lake Erie Basin into the H2Ohio program, and I'm encouraged by the number of producers who are stepping up to implement these conservation measures. We know that more conservation is necessary if Ohio is going to reduce the harmful algal blooms in Lake Erie.

In addition to the H2Ohio agricultural practices being implemented on farms, thousands of acres of wetlands are being restored in the Maumee Watershed and statewide through assistance of the Ohio Department of Natural Resources. By allowing natural wetland processes to remove

nutrients before they reach the Maumee River and flow into Lake Erie, these projects will help reduce the severity of algal blooms over the long term.

H2Ohio is a tool for Ohioans to access clean and safe water. Through Ohio EPA's efforts, over a dozen drinking and wastewater infrastructure projects are moving forward, including working with the City of Cleveland to replace lead service lines to day cares. We must be aggressive about protecting Ohio's children from toxic lead in drinking water, and the best way to do that is to remove and replace the pipes. Kids younger than 3 are at the greatest risk for lead poisoning, and by prioritizing the replacement of lead service lines at day cares, we're protecting our most vulnerable citizens from any potential side effects.

Though H2Ohio is making great strides, water concerns continue to exist throughout the state, and we will continue to work to address these problems through H2Ohio and other statewide initiatives. By investing in our water now, Ohio can ensure a better, healthier future for generations.

Very respectfully yours,



Mike DeWine
Governor of Ohio



Executive Summary

Providing Clean and Safe Water to Ohio

We drink water every day and cannot live without it. It's vital to Ohio's farming, tourism, and manufacturing industries. Fortunately, Ohio has abundant water. Lake Erie and about 8,000 other interior lakes, along with 60,000 miles of streams and rivers, such as the Ohio River, are truly assets for the state. Even with these natural resource treasures, many of these water bodies experience harmful algal blooms, and too many Ohioans do not have the infrastructure needed for clean and safe water. These problems cause human health challenges as well as negatively affecting tourism, outdoor recreation, real estate, and businesses that rely on clean water.

In July 2019, the Ohio General Assembly agreed to invest \$172 million in the H2Ohio initiative, and since then, the H2Ohio team has been carrying out a comprehensive, data-driven effort to address Ohio's water challenges. This report is a review of activities carried out in the second year of the H2Ohio initiative.

For the second year, substantial resources were focused on the Western Lake Erie Basin to address nutrient runoff that causes harmful algal blooms on Lake Erie. The Ohio Department of Agriculture worked with local Soil and Water Conservation Districts to enroll farmers in the most cost-effective best management practices (BMPs) in 14 counties in the Maumee River Watershed. Because of the timing of the enrollments, additional information about producer enrollments will be provided through an addendum to this report in late fall.

To further the efforts of the BMP work, the Ohio Department of Natural Resources (ODNR) continued work to restore and enhance wetlands, primarily in the Western Lake Erie Basin, as well as around the state, where algal blooms plague other waters. ODNR advanced 33 wetland projects, which will filter 44,000 acres of watershed.

Ohio EPA continued its partnership with communities across Ohio by investing \$74 million in drinking and wastewater infrastructure work targeting disadvantaged communities. Additionally, H2Ohio funds were used to replace lead service lines and lead fixtures for day care facilities in Cleveland. Children are extremely susceptible to harm from lead exposure, and H2Ohio funds combined with federal funds targeted a specific need to protect the most vulnerable. With its second year of funds, Ohio EPA leveraged \$42.9 million in additional funds for infrastructure, home sewage, and lead remediation projects.



The following pages provide a more detailed breakdown of the H2Ohio work undertaken by the Ohio Department of Agriculture, the Ohio Department of Natural Resources, and the Ohio Environmental Protection Agency.

Ohio Department of Agriculture

Agriculture Incentive Program



The Ohio Department of Agriculture (ODA) continues to see strong interest from agricultural producers who want to participate in the H2Ohio initiative. Over the past year, agriculture has realized numerous successes in ODA's portion of Governor DeWine's H2Ohio initiative.

With the passage of Ohio's biennium budget for fiscal years 2022 and 2023, ODA plans to dedicate nearly \$60 million annually toward the H2Ohio initiative over the next two years. ODA will continue the program in the originally targeted 14 counties of the Maumee River Watershed and expand the program to the remaining 10 counties in the Western Lake Erie Basin (WLEB).

ODA will continue to offer seven BMPs aimed at reducing nutrient loss from cropland through better nutrient management, erosion management, and water management.

ODA will also launch a statewide watershed management program, created through the passage of House Bill 7 in 2020. This new watershed management program will assess water quality concerns at the regional level throughout the state and identify management practices to protect watersheds and improve water quality in areas of impairment.



Department of Agriculture

10 Best Management Practices



1 Voluntary Nutrient Management Planning:

Nutrient management plans give farmers information on where, when, and how much fertilizer to place.



2 Variable-rate fertilization:

To reduce fertilizer application without the risk of losing yield, farmers apply specific levels of fertilizer based on the need of each sub-acre.



3 Subsurface nutrient application:

Farmers apply fertilizer below the surface to reduce nutrient loss.



4 Manure incorporation:

Farmers mix manure into the soil to keep it in place and minimize nutrient loss.



5 Conservation crop rotation:

Farmers plant certain crops that reduce erosion and enrich the soil, which reduces runoff and sediment delivery.



6 Cover crops:

Farmers plant cover crops after the main harvest to reduce erosion, hold nutrients in the soil, and improve soil health.



7 Drainage water management:

Drainage is managed to slow runoff and give phosphorus time to settle into the soil.



8 Two-stage ditch construction:

Modified drainage ditches are used to slow water flow and allow phosphorus to settle.



9 Edge-of-field buffers:

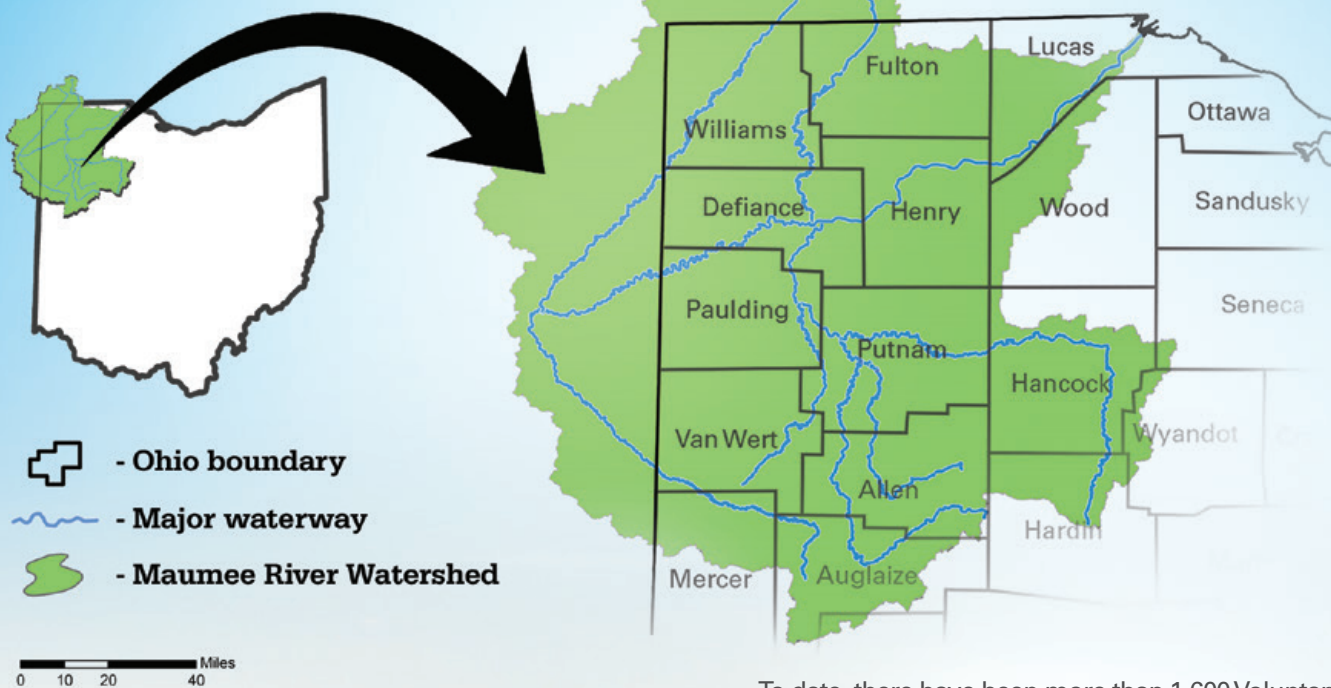
When trees, shrubs or strips of grass are planted along farm fields in the right place, the plants hold on to phosphorus and prevent its release into the water.



10 Wetlands:

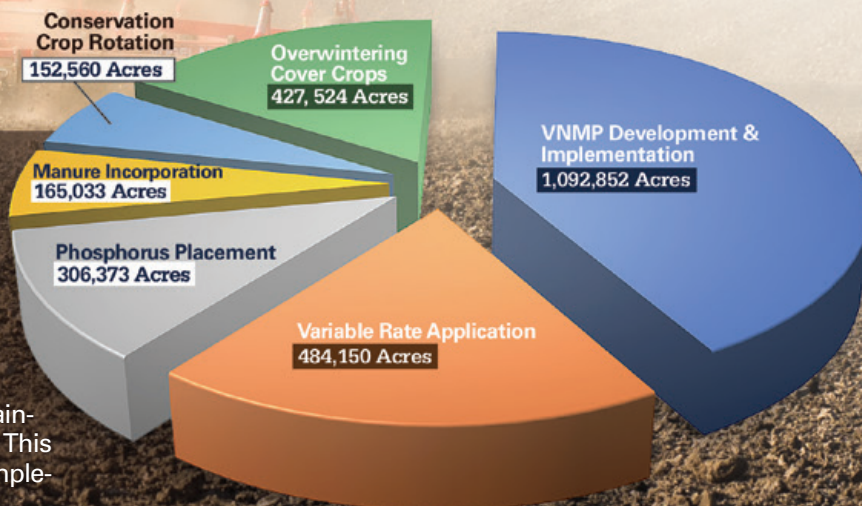
Wetland vegetation and soils absorb phosphorus, slow down the movement of water, offer a natural filtering process, and allow phosphorus to settle.

Maumee Watershed Project Area



To date, there have been more than 1,600 Voluntary Nutrient Management Plans (VNMPs) submitted, reviewed, and approved by local Soil and Water Conservation Districts (SWCDs) from agricultural producers participating in the H2Ohio program. These plans represent over 825,000 acres of cropland across the 14-county project area. While this represents most of the plans enrolled in the program, additional VNMPs are still being reviewed and approved by SWCDs. Through these plans, producers are testing their soil, eliminating unneeded phosphorus applications, and reducing phosphorus loss through improved application methods.

H2Ohio Cropland Practice Enrollment - 2021



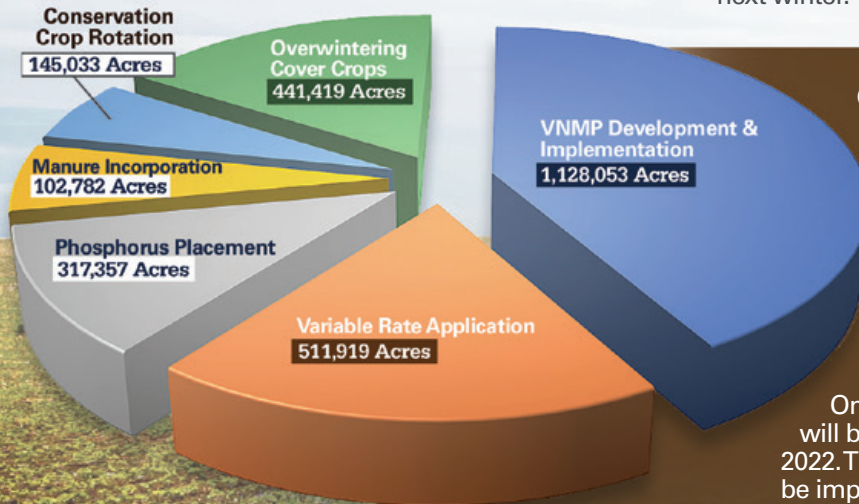
The VNMP is the baseline practice, and it must be completed and approved prior to implementing other practices. The VNMP uses current soil test data and crop production plans to develop nutrient recommendations, matching nutrient applications to needs of the soil and the crops. This eliminates unneeded nutrient applications while maintaining crop production for the producer. This chart shows all practices that are to be implemented in 2021.

Nutrient application for 2021 crop production has been completed, and program participants are currently certifying the implementation of their VNMPs, as well as commercial fertilizer applications completed through the Variable Rate and Phosphorus Placement practices. These practices will be certified and checked by SWCDs through early fall 2021.

While some Manure Incorporation practices were completed this spring, most of the acres enrolled in this practice will be completed through August and September 2021. Certification and payments for this practice will be completed through this fall.

Additional practices included in H2Ohio include Conservation Crop Rotation and Overwintering Cover Crops. Many of the conservation crop practices have been started but cannot be certified as complete until late next winter.

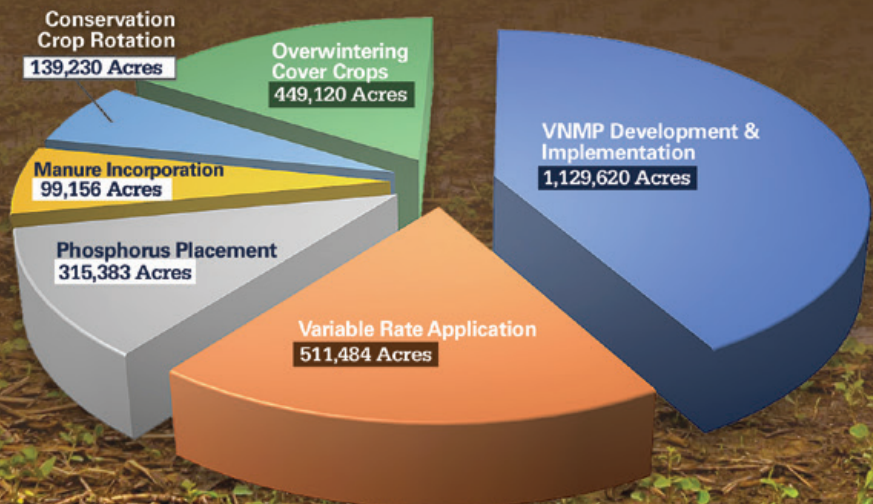
H2Ohio Cropland Practice Enrollment - 2022



Contract extensions are being signed by program participants for practices to be implemented during crop years 2022 and 2023. Once signed by producers, the extensions will be approved by SWCD Boards of Supervisors and ODA. ODA's goal is to have all contract extensions in the Maumee Watershed approved by Oct. 1, 2021.

Once extensions are approved, producers will be able to start implementing practices for 2022. These charts show all practices that are to be implemented in 2022 and 2023.

H2Ohio Cropland Practice Enrollment - 2023



WLEB Expansion Project Area

ODA is expanding the H2Ohio program to 10 additional counties in the Western Lake Erie Basin (WLEB). Producers are eligible to sign-up for a one-year contract for crop year 2022 that includes VNMP development, Conservation Crop Rotation-small grains, and Overwintering Cover Crops. Once the VNMP has been completed, producers can apply for additional H2Ohio practices for crop years 2023, 2024, and 2025 in the spring of 2022.

Project Area, ODA has developed goals for program applications that are shown in the figure on the following page. The goals for the WLEB expansion were based on similar participation and signup that was enrolled for the Maumee Watershed Project Area. The 650,000 acres of cropland in the WLEB expansion area represents a little more than 40% of the overall cropland area in the 10-county area. Goals for the remaining BMPs were developed in a similar manner. ODA plans to commit more than 60 million dollars in funding over the next two years for this effort.

Based on program enrollment in the Maumee Watershed

Western Lake Erie Basin Program Expansion

-Original Counties

Williams, Fulton, Lucas, Defiance, Henry, Wood, Paulding, Putnam, Hancock, Van Wert, Allen, Hardin, Mercer, and Auglaize

-Expansion Counties

Shelby, Ottawa, Sandusky, Erie, Seneca, Huron, Wyandot, Crawford, Richland, and Marion



Year 1 – Practices	Rates	Goal Acres	Dollars
VNMP Development	\$10	650,000	\$6,500,000
Conservation Crop Rotation - Small Grains	\$35	62,500	\$2,187,500
Overwintering Cover Crop	\$25	52,500	\$1,312,500
Estimated Totals			\$10,000,000

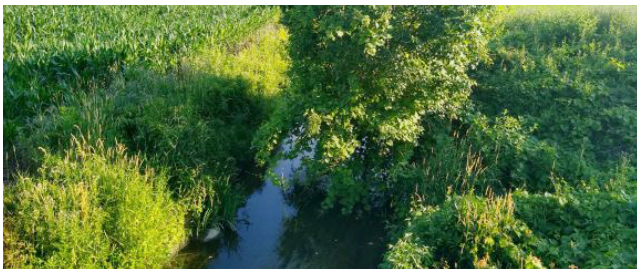
Years 2,3 & 4 – Practices	Rates	Goal Acres	Dollars
VNMP Implementation	\$10	562,500	\$5,625,000
VRT Phosphorus Application	\$5	220,000	\$1,100,000
Subsurface Phosphorus Place	\$25	130,000	\$3,250,000
Manure Incorporation - All Other	\$60	45,000	\$2,700,000
Manure Incorporation - Poultry Dry	\$35	30,000	\$1,000,000
Conservation Crop Rotation - Small Grains	\$35	60,000	\$2,100,000
Conservation Crop Rotation - Forage	\$35	5,000	\$175,000
Overwintering Cover Crop	\$25	190,000	\$4,750,000
Drainage Water Management Structures with Maintenance	\$4,000	200	\$800,000
Drainage Water Management Structures without Maintenance	\$1,500	300	\$450,000
Estimated Totals			\$22,000,000

H2Ohio Program Successes/ Assessment

Reducing phosphorus loading and improving water quality entering Lake Erie was the primary focus of ODA's H2Ohio program efforts over the past year. Through a Cost Curve Model developed for H2Ohio in 2019, BMPs offered through the program were selected based on the effectiveness to reduce phosphorus loading and the cost to implement the practices.

There are more than 1 million acres of cropland enrolled in H2Ohio BMPs for 2021, representing more than 40% of the cropland across the entire project area. ODA has developed a conservative estimate of a 10% phosphorus load reduction based on 2021 enrollment. ODA will be tracking completed practice implementation moving forward and will develop load reduction estimates based on actual implementation in the coming months.

To better understand phosphorus losses and the impact of BMPs, ODA is also working with researchers to develop better tools to estimate phosphorus load reductions. ODA is working with researchers with the U.S. Department of Agriculture's Agricultural Research Service and The Ohio State University to better understand phosphorus losses from cropland and how to reduce them. Moreover, ODA is working with the Blanchard River Watershed Demonstration Farms to better understand the cost of these BMPs and their impact on crop production and yield.



ODA Regional Watershed Program

The ODA Watershed Program is a Statewide Watershed Planning & Management Program, authorized by House Bill 7 and administered by ODA's Division of Soil & Water Conservation. The purpose of the program is to improve and protect the state's watersheds through better planning, management, and engagement in local, regional, and state-level conservation activities.

Watershed management is divided into seven regions based on the U.S. Geological Survey's six-digit hydrologic unit codes. Each region will have a watershed manager to lead watershed planning and management efforts. Watershed managers will develop and implement new conservation efforts in the region, as well as support existing conservation activities.

ODA Watershed Program Regions



1 – Western Lake Erie Basin

2 – Eastern Lake Erie Basin

3 – Wabash River/Great Miami/Little Miami

4 – Scioto River Watershed

5 – Muskingum River Watershed

6 – Mahoning River Watershed

7 – Hocking River/Ohio River Tributaries

ODA anticipates that all regional watershed managers will be hired by October 2021. Watershed managers will work closely with SWCDs and will be housed in the SWCD office central to their region. The ODA Watershed Program will work with the H2Ohio team and in collaboration with the Ohio Agricultural Conservation Initiative (OACI) to expand the reach of conservation efforts across the state.



Ohio Department of Agriculture Conclusion

Based on scientific research, the agricultural best management practices that H2Ohio is implementing will reduce nutrient runoff. If producers increase the use of BMPs, phosphorus loading into the Maumee River Watershed will decrease over time as will the recurrence of algal blooms in Lake Erie. In combination with additional wetland restoration and efforts to reduce other contributions of phosphorus through household sewage treatment system repairs, H2Ohio is leading Ohio toward a reduction of phosphorus in Lake Erie.

Robust participation from producers in the 14-county target area in the Maumee River Watershed showed that there is interest from farmers in implementing solutions. That participation, matched with anticipated robust participation within the 10-county expansion area, will help Ohio achieve its phosphorus reduction goals for the Western Lake Erie Basin.

In this second year of the H2Ohio initiative, partnerships continue to be valuable in achieving program success. ODA has continued a close working relationship with the Ohio Agriculture Conservation Initiative (OACI) in implementing agriculture's H2Ohio programs. Produc-

ers enrolling in the H2Ohio program are also registering with OACI in an effort to continue momentum toward improving soil health and water quality. OACI registration requirements will be included in the H2Ohio contract extensions offered to producers starting in 2021.

ODA appreciates the additional funding provided by the Ohio General Assembly and federal partners that have awarded grant funds through the Regional Conservation Partnership Program (RCPP) and other federal programs. Combined, this funding will allow H2Ohio to fund two additional years of its agricultural program.

In the near future, watershed managers provided through House Bill 7 will help identify regional needs and appropriate BMPs as H2Ohio targets expansion into other agricultural watersheds in the state.

Ohio Department of Natural Resources

Wetlands



The focus of the Ohio Department of Natural Resources within H2Ohio focuses on improving water quality by restoring and enhancing nutrient-reducing wetlands across the state. Today, there are nearly 60 H2Ohio wetland projects underway or complete.

Wetland Restoration for Water Quality

Over time, wetlands naturally improve water quality by trapping, filtering, or removing excess nutrients and other pollutants in surface water. Although designing projects that filter the largest amount of nutrients has been the goal through the H2Ohio initiative, wetlands provide additional benefits. Wetland and floodplain restoration also can help mitigate high flow events in rivers or streams to minimize property damage and pollution caused by downstream erosion and flooding. At the same time, wetlands are among the most productive ecosystems for wildlife habitat. Because of this, wetlands provide priceless recreational opportunities for birdwatchers, waterfowl hunters, and boaters, as well as critical habitat for uniquely adapted plant and animal species.



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ODNR's H2Ohio Program Structure

The ODNR team, which includes staff from a variety of divisions with different expertise, collectively identified high-impact wetland restoration, and enhancement project opportunities. The projects are focused on waterways that have experienced increased frequency and intensity of harmful algal blooms in recent years.

The highest priority H2Ohio wetland projects are located in watersheds that contribute high levels of nutrient runoff; are situated to filter the drainage from a large area of agricultural landscape; are sized to have a wetland pool area that is efficient, relative to the contributing watershed; and that offer intangible benefits, such as an ease of design-build execution or the assurance of long-term support from project partners.




ODNR's current H2Ohio projects rely on a close partnership with an experienced nonprofit or local government conservation partner. ODNR is currently working with 13 nonprofit conservation partners. Working side by side with H2Ohio program staff, these partners are developing a customized scope of work and timeline and are managing environmental permitting, contracting, and implementing progress.

With two years of wetland project implementation under its belt, ODNR has more than doubled the number of acres to be improved by wetlands, as well as the number of projects underway or complete. Thanks to hard work, strong partnerships, and monetary support from Governor DeWine and the Ohio General Assembly, ODNR has been able to forge ahead with the mission of reducing nutrients in Ohio's water.


Year 2 Totals:

33 
wetland projects

\$32.7 million 
to support wetland project implementation


\$5 million for H2Ohio project support from the Ohio Water Development Authority

\$4.3 million

 allocated to establish independent project monitoring program

13 

nonprofit conservation partners engaged

44,000 
acres of watershed filtered by wetland projects

5,052 
wetland acres to be created, restored or enhanced

90 
threatened or endangered species dependent on wetlands will benefit from additional habitat

20,000+ 
trees have been planted in wetland buffers

H2Ohio Program Successes / Assessment

In June 2020, ODNR broke ground on the first H2Ohio wetland project: the Fruth Wetland Nature Preserve project in Seneca County. After more than a year of construction and a strong collaboration with the Seneca County Parks District, a brand-new wetland stands where there was once just a wet field. ODNR Director Mary Mertz joined the H2Ohio team to cut the ribbon on the fully functional wetland in July 2021.



The path through the Fruth Wetland Nature Preserve project is lined with educational signs with the goal of teaching people the importance of wetlands for water quality and wildlife habitat. Similar signs have been posted at several other sites.



Current H2Ohio Projects

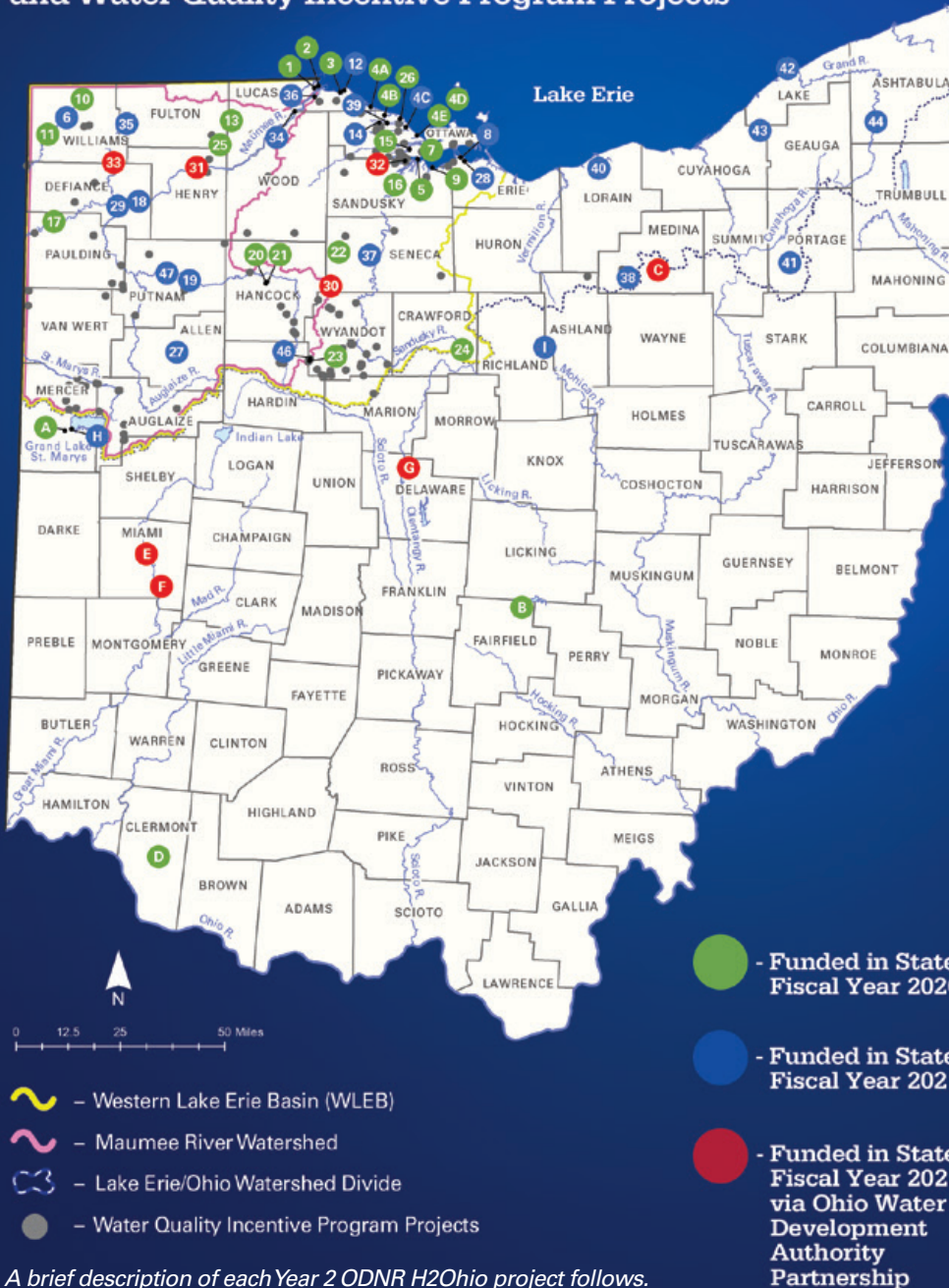
ODNR has 59 total wetland projects in progress, 33 of which were added in year two of the H2Ohio initiative. The projects represent a wide variety of wetland sizes and types, including the conversion of a former drinking water reservoir into a 3-acre wetland treatment train and transforming the site of the former Chippewa Lake Amusement Park to protect Ohio's largest glacial lake.



Lake Erie Basin Projects

- 1 Cullen Park Wetland Restoration
- 2 Grassy Island Wetland Restoration, Design Phase
- 3 Maumee Bay State Park Wetland Reconnection
- 4A Ottawa National Wildlife Refuge Wetland Reconnection Projects
- 4B Magee Marsh Turtle Creek Bay Wetland Reconnection
- 4C Toussaint Shooting Club Reconnections: Bob's Bay and Main Marsh
- 4D Bohling Marsh Wetland Reconnection
- 4E Darby Refuge Wetland Reconnection
- 5 Muddy Creek Bay Wetland Restoration
- 6 Montpelier Wetland Restoration
- 7 Inner Bay Shoals and Islands Restoration, Design Phase
- 8 Moxley Wildlife Area Wetland Reconnection Project
- 9 Inner Bay Coastal Wetlands Restoration, Design Phase
- 10 St. Joseph Confluence Wetland Reconnection
- 11 St. Joseph River Restoration Project
- 12 Mallard Club Nutrient Reduction and Orchid Restoration
- 13 Oak Openings Preserve Wetland Restoration
- 14 North Ridge Hunt Club Wetland Restoration
- 15 Little Portage Nutrient Reduction & Coastal Wetland Restoration
- 16 Redhorse Bend Preserve Wetland Restoration
- 17 Forder Bridge Floodplain Reconnection
- 18 Independence Dam Canal Reconnection & Wetland Creation
- 19 Blanchard River Floodplain Restoration
- 20 Oakwoods Nature Preserve Wetland Restoration Project, West
- 21 Oakwoods Nature Preserve Wetland Restoration Project, East
- 22 Fruth Wetland Nature Preserve
- 23 Andreoff Wetland Restoration
- 24 Sandusky River Headwaters Preserve Wetland & Habitat Restoration
- 25 Van Order Wetland and Forest Restoration
- 26 Navarre March Wetland Restoration & Reconnection
- 27 Baughman Petition Ditch
- 28 Sanford Agricultural Drainage Treatment Train Project
- 29 Defiance East River
- 30 Springville Marsh Wetland Extension
- 31 Maumee River Floodplain
- 32 Buehler Farms Treatment Wetland
- 33 The Weisgerber-Pohlman Nature Preserve
- 34 Clark Island Restoration, Design Phase
- 35 Goll Woods Wetland Extension
- 36 Duck and Otter Creek Wetland and Stream Restoration
- 37 Clary-Boulee-McDonald Nature Preserve
- 38 Bluebell Preserve Restoration Project
- 39 Rust Tract Wetland Restoration
- 40 Martin's Run Wetland and Stream Restoration Project
- 41 The Bird Family Bog Rehabilitation Project
- 42 Headlands Dunes Coastal Wetland Restoration Project
- 43 Fosters Run Restoration
- 44 Ashcroft Woods Scali Preserve
- 46 Upper Blanchard River Watershed Project
- 47 Sugarcamp 7 Blanchard Habitat Project

H2Ohio Statewide Projects and Water Quality Incentive Program Projects



Ohio River Basin Projects

- A Burntwood-Langenkamp Wetland Conservation Area
- B Brooks Park Wetland Creation & Water Quality Initiative
- C Chippewa Lake Wetland Restoration
- D East Fork Lake Nutrient Reduction & Wetland Initiative
- E Springcreek Confluence Off-Channel Wetlands
- F Tipp City Off-Channel Wetland
- G O'Donnell Wetland Restoration and Treatment Train
- H Mercer Wetland Complex Restoration
- I Black Fork Forest Preserve Wetland Restoration Project

A brief description of each Year 2 ODNR H2Ohio project follows.

Lake Erie Basin Projects

- 4C. **Toussaint Shooting Club Reconnections: Bob's Bay & Main Marsh**
Ottawa County | Sandusky Bay Watershed | Coastal
Project size: 995 Acres
Partner: Ottawa Soil and Water Conservation District
- 6. **Montpelier Wetland Restoration**
Williams County | Maumee River Watershed | Inland
Project size: 98 Acres
Partner: The Ohio State University
- 8. **Moxley Wildlife Area Wetland Reconnection Project**
Erie County | Sandusky Bay Watershed | Coastal
Project size: 52 Acres
Partner: Erie Soil and Water Conservation District



- 12. **Mallard Club Nutrient Reduction and Orchard Restoration**
Lucas County | Maumee River Watershed | Inland
Project size: 80 Acres
Partner: Ducks Unlimited
- 14. **North Ridge Hunt Club Wetland Restoration**
Ottawa County | Western Lake Erie Basin | Coastal
Project size: 30 Acres
Partner: Ducks Unlimited
- 18. **Independence Dam Canal Reconnection & Wetland Creation**
Defiance County | Maumee River Watershed | Inland
Project size: 29 Acres
Partner: Ohio Division of Natural Resources, Division of Parks and Watercraft
- 19. **Blanchard River Floodplain Restoration**
Putnam County | Maumee River Watershed | Inland
Project size: 50 Acres
Partner: Maumee Watershed Conservancy District
- 27. **Baughman Petition Ditch**
Allen County | Maumee River Watershed | Inland
Project size: 20 Acres
Partner: City of Defiance
- 28. **Sanford Agricultural Drainage Treatment Train Project**
Erie County | Sandusky Bay Watershed | Coastal
Project size: 495 Acres
Partner: Erie Soil and Water Conservation District
- 29. **Defiance East River**
Defiance County | Maumee River Watershed | Inland
Project size: 495 Acres
Partner: City of Defiance

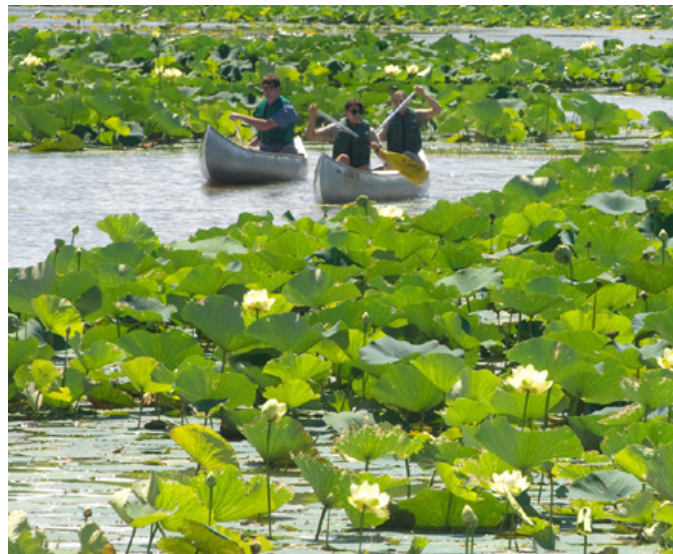
- 30. **Springville Marsh Wetland Extension**
Defiance County | Maumee River Watershed | Inland
Project size: 65 Acres
Partner: Ohio Department of Natural Resources, Division of Natural Areas and Preserves
- 31. **Maumee River Floodplain**
Defiance County | Maumee River Watershed | Inland
Project size: 65 Acres
Partner: Black Swamp Conservancy
- 32. **Buehler Farms Treatment Wetland**
Ottawa County | Sandusky Bay Watershed | Coastal
Project size: 45 Acres
Partner: Ottawa Soil and Water Conservation District
- 33. **The Weisgerber-Pohlman Nature Preserve**
Defiance and Williams Counties | Maumee River Watershed | Inland
Project size: 65 Acres
Partner: Black Swamp Conservancy
- 34. **Clark Island Restoration, Design Phase**
Lucas County | Maumee River Watershed | Inland
Project size: 40 Acres
Partner: Toledo-Lucas County Port Authority
- 35. **Goll Woods Wetland Extension**
Fulton County | Maumee River Watershed | Inland
Project size: 15 Acres
Partner: Ohio Department of Natural Resources, Division of Natural Areas and Preserves
- 36. **Duck and Otter Creek Wetland and Stream Restoration**
Lucas County | Maumee River Watershed | Inland
Project size: 15 Acres
Partner: Ohio Department of Natural Resources, Division of Natural Areas and Preserves



- 37. **Clary-Boulee-McDonald Nature Preserve**
Seneca County | Sandusky River Watershed | Inland
Project size: 162 Acres
Partner: Black Swamp Conservancy
- 38. **Bluebell Preserve Restoration Project**
Medina County | Central Lake Erie Basin | Inland
Project size: 21 Acres
Partner: West Creek Conservancy
- 39. **Rust Tract Wetland Restoration**
Ottawa County | Sandusky Bay Watershed | Coastal
Project size: 216 Acres
Partner: Ducks Unlimited
- 40. **Martin's Run Wetland and Stream Restoration Project**
Lorain County | Central Lake Erie Basin | Inland
Project size: 19 Acres
Partner: City of Lorain
- 41. **The Bird Family Bog Rehabilitation Project**
Portage County | Cuyahoga River Basin | Inland
Project size: 170 Acres
Partner: West Creek Conservancy
- 42. **Headlands Dunes Coastal Wetland Restoration Project**
Lake County | Central Lake Erie Basin | Coastal
Project size: 16 Acres
Partners: Ohio Division of Natural Resources, Division of Parks and Watercraft
- 43. **Fosters Run Restoration**
Cuyahoga County | Central Lake Erie Basin | Inland
Project size: 37 Acres
Partner: Cleveland Metroparks
- 44. **Ashcroft Woods Scali Preserve**
Ashtabula County | Grand River Watershed | Inland
Project size: 50 Acres
Partner: Western Reserve Land Conservancy



- 46. **Upper Blanchard River Watershed Project**
Wyandot County | Western Lake Erie Basin | Inland
Project size: 30 Acres
Partner: Wyandot Soil and Water Conservation District
- 47. **Sugarcamp 7 Blanchard Habitat Project**
Putnam County | Maumee River Watershed | Inland
Project size: 20 Acres
Partner: Private Landowner



Ohio River Basin Projects

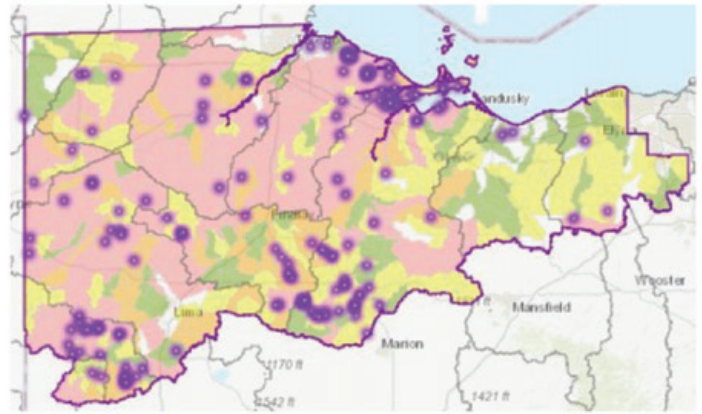
- C. **Chippewa Lake Wetland Restoration**
Medina County | Cuyahoga River Watershed | Inland
Project size: 50 Acres
Partner: Medina County Parks
- D. **Harsha Lake – East Fork Lake Nutrient Reduction & Wetland Initiative**
Clermont County | East Fork Little Miami River Watershed | Inland Southwestern Ohio
Project size: 3 Acres
Partners: Clermont Soil & Water Conservation District, Village of Williamsburg
- E. **Springcreek Confluence Off-Channel Wetlands**
Miami County | Great Miami River Watershed | Inland Western Ohio
Project size: 55 Acres
Partner: Miami County Parks
- F. **Tipp City Off-Channel Wetland**
Miami County | Great Miami River Watershed | Inland Western Ohio
Project size: 55 Acres
Partner: Miami County Parks
- G. **O'Donnell Wetland Restoration and Treatment Train**
Delaware County | Delaware Lake | Inland Central Ohio
Project size: 64 Acres
Partner: Ducks Unlimited
- H. **Mercer Wetland Complex Restoration**
Mercer County | Grand Lake St. Marys | Inland Western Ohio
Project size: 60 Acres
Partner: Ohio Department of Natural Resources, Division of Wildlife
- I. **Black Fork Forest Preserve Wetland Restoration Project**
Richland County | Mohican River Watershed | Inland
Project size: 60 Acres
Partner: Western Reserve Land Conservancy

Program Interest

Outreach and awareness have increased over the last year. Landowners showed great interest in the new Water Quality Incentive Program (WQIP). WQIP accepted funding applications from farmers and landowners willing to replace cropland with wetlands and riparian buffers which act as filters to reduce nutrient loading into waterways, help reduce flooding, and/or stabilize streambanks to reduce soil erosion. Through the incentive program, ODNR approved 150 new projects to receive just over \$5 million in total funding to improve the water quality in Ohio. The program provided a one-time payment of \$2,000 per acre for projects. It was offered in combination with the Lake Erie Conservation Reserve Enhancement Program (CREP), a USDA conservation program. Projects were accepted in 23 out of the 27 Lake Erie CREP counties.

Out of the 150 approved projects, 133 are wetlands (2,422.5 acres) and 17 are forested riparian buffers (113.5 acres).

H2Ohio WQIP Project Locations



Monitoring and Measuring Success



To monitor the progress of wetlands while encouraging education on the importance of water quality, ODNR enlisted the Lake Erie and Aquatic Research Network (LEARN) to partner with ODNR on H2Ohio's wetland monitoring plan.

LEARN is a group of field stations, scientific laboratories, and diverse researchers within Ohio working together to promote collaborative research, education, and networking to address the challenges and opportunities facing Ohio's freshwater resources. The group is assessing the effectiveness and future role of implemented and planned wetland restoration projects under the H2Ohio initiative.

The program's monitoring plan allows LEARN researchers from Bowling Green State University, Heidelberg University, Kent State University, The Ohio State University, The University of Toledo, and Wright State University to sample across multiple wetland types either currently being constructed or planned for the near future.



As LEARN researchers report their findings, ODNR will be able to use that information to guide decisions about the design and placement of future projects and to make adjustments to improve existing projects.



Budget

Previously, ODNR was allocated \$31.8 million in House Bill 166 for fiscal year 2020 to develop a wetland-focused program that reduces surface water nutrient loading. The department received \$32.7 million in fiscal year 2021 from the General Assembly as well as an additional \$13.3 million from a controlling board request in the spring of 2021. The funding allowed ODNR to maintain a strong focus on reducing nutrient loading with 19 new projects in the Maumee and adjacent Western Lake Erie Basin watersheds. ODNR also expanded into the Central Lake Erie Basin in northeast Ohio with five new projects including Martin's Run Wetland and Stream Restoration in Lorain and Fosters Run Restoration in Cleveland.

Adding to an already generous state budget, ODNR secured \$5 million in funding from the Ohio Water Development Authority (OWDA). The funding from OWDA will focus on advancing high-priority Maumee River and Western Lake Erie Basin H2Ohio projects. The funds also helped to extend the H2Ohio monitoring program.

Governor DeWine's biennium budget provided an additional \$50 million to ODNR's H2Ohio efforts, showing that improving water quality remains a top priority. ODNR is using the new funding to expand its reach into the Ohio River Basin, while continuing efforts in the northern part of the state.

Wetland Vision – What's Next?

H2Ohio is eagerly identifying new opportunities for implementing strategic nutrient reduction wetlands to improve Ohio's water quality. In addition to continuing work on the Lake Erie Basin, ODNR has plans to continue spreading the benefits of H2Ohio across the state. The Ohio River Basin Wetland Grant Program that launched in 2021 will provide up to 100% project funding for high quality natural infrastructure, nutrient reduction, and water quality improvement projects. Applicants can apply for up to approximately \$500,000 in H2Ohio funding per project.

Ohio Environmental Protection Agency

Water and Wastewater Infrastructure



The Ohio Environmental Protection Agency (EPA) has many responsibilities for ensuring clean and safe water for the people of Ohio. The agency develops and supports innovative, practical, and effective solutions for clean streams and lakes as well as drinking water.

Ohio EPA received \$8.675 million in H2Ohio spending authority for fiscal year 2021 from the General Assembly. Ohio EPA's H2Ohio approach has been to concentrate on focus areas that will improve water quality, protect public health, and provide positive change to the lives of Ohioans. These focus areas are improving Ohio's water and wastewater infrastructure, replacing failed home sewage treatment systems, reducing lead exposure in day care centers, and researching promising technologies for water quality improvements. The following sections summarize the achievements to date, which set a strong foundation for continued improvements in Ohio's water quality.

Side note: Of the \$7.4 million spent on infrastructure, \$3.05 million went toward drinking water infrastructure project and \$4.3 million went to wastewater infrastructure projects.



Ohio Environmental Protection Agency

Improved Infrastructure

All Ohioans should have clean and safe drinking water. Still, many parts of Ohio lack some of the basic necessities of proper wastewater treatment and good, clean drinking water. This challenge is particularly difficult for communities that are economically disadvantaged and cannot afford to take on the significant debt associated with conventional infrastructure loan programs.

Ohio EPA directed \$7.4 million in H2Ohio funds toward this focus area. Grants ranging from \$25,000 to \$1.5 million were awarded to 13 entities throughout Ohio. With these funds, projects will be constructed to extend water and sewer lines to pick up households that desperately needed to be served, provide capacity for additional growth and economic development, and consolidate utilities in neighboring communities for greater efficiency.



Five drinking water projects will be constructed, serving an estimated 4,000 people. In fiscal year 2021, \$3.05 million in H2Ohio funds were awarded to these projects, which have a total construction cost of about \$12 million. When combined with other sources, H2Ohio funds make it possible for communities to be able to afford to proceed toward implementation.

Eight wastewater projects will be constructed, serving more than 6,000 homes. A total of \$4.3 million in H2Ohio funds were awarded to these projects which have a construction cost of about \$279 million. In addition to providing desperately needed services to Ohioans, these infrastructure projects have the additional benefit of promoting economic activity through construction-related jobs. Eight direct construction-related jobs are created for each \$1 million invested, according to research. Using this multiplier, the water and wastewater infrastructure projects to which H2Ohio funds were allocated account for the creation of about 320 jobs.

By the Numbers for the Ohio EPA

\$7,500,000 For Thirteen Critical Water and Sewer Projects



eight wastewater projects in Athens County, Coalton, Columbiana County, Findlay, Johnstown, Lucas County, West Union, Palestine-Hollansburg Joint Sewer District.



five drinking water projects in Canton, Lowell, Middleport, Mount Eaton, Morgan-Meigsville Rural Water District.

\$500,000



lead service line and fixture replacement for safer water at Ohio daycare facilities.



\$1,600,000

to replace failing household sewage treatment systems in 11 local health districts.

Grantee	Project Name	Project Type	H2Ohio Funding Awarded	Total Project Cost
Lowell	Waterline Replacement and Looping	Drinking Water	\$200,000	\$350,180
Mount Eaton	New WTP* and Wells	Drinking Water	\$500,000	\$3,500,000
Middleport	Water Distribution and Well Improvements	Drinking Water	\$500,000	\$4,000,000
Morgan-Meigsville Rural Water District	Morgan County SR 266/377 Water Extension	Drinking Water	\$350,000	\$350,000
Canton	Canton South Waterline Extension Phase 2	Drinking Water	\$1,500,000	\$3,807,469
Noble County	Waterline Extension Project: I-77 East: H2Ohio Amendment	Drinking Water	\$31,575	\$2,982,115
Athens County	U.S. 50 Sanitary Sewer Improvements Phase 5	Sewer	\$500,000	\$6,300,000
Coalton	Sanitary Sewer Replacement Phase 3	Sewer	\$500,000	\$1,960,000
Columbiana County	Hanoverton Sanitary Sewer System	Sewer	\$500,000	\$5,750,000
Johnstown	Sewer System Improvements	Sewer	\$500,000	\$1,000,000
Palestine-Hollansburg Joint Sewer District	Regional WWTP** and Sanitary Sewer Collection System	Sewer	\$1,000,000	\$8,000,000
West Union	Panhandle Subdivision Sewer Expansion	Sewer	\$1,000,000	\$4,500,000
Lucas County	Shoreland Avenue-Holiday Drive Sanitary Sewer Extension	Sewer	\$300,000	\$376,000
Findlay	Eagle Creek Utility Company Design	Sewer	\$25,000	\$25,000
Total	* water treatment plant ** wastewater treatment plant		\$7,406,575	\$42,900,764

Home Sewage



Ohio has nearly 1 million homes served by household sewage treatment systems (HSTS). When working properly, these systems can be a viable form of sewage treatment in rural areas that lack

centralized sanitary sewers. However, when malfunctioning, HSTS can release bacteria, viruses, nutrients, and other pollutants that contribute to poor water quality and threaten public health. H2Ohio funds are an important tool for targeting disadvantaged households.

Ohio EPA has awarded a total of \$1.6 million to 11 health

districts for this focus area. The health departments of Licking, Wayne, Meigs, Hamilton, Lake, Clark, Stark, Lora, Scioto, Clermont, and Columbiana counties received \$150,000 to repair or replace HSTS. These counties were chosen because of the prevalence of HSTS and the local health districts' past ability to work with homeowners to correct problems. Funds will be directed to disadvantaged homeowners, and depending on the household income and the number of residents, homeowners may qualify for grants of 50% to 100% of the total costs for HSTS repair or replacement. These funds will be used in conjunction with an additional \$1.65 million available from the state's Water Pollution Control Loan Fund, so that even more HSTS work is done in these counties. Together, these combined funds will repair or replace an estimated 400 HSTS, which will improve water quality and protect public health.



Lead Service Line Replacement at Day Care Centers



In recent years, there has been a growing concern about the effects of lead in drinking water, particularly for populations that are considered the highest risk – children and pregnant women. Ohio EPA has been working diligently with public water systems to reduce

this risk through the mapping and elimination of lead service lines to households.

In Year 2, the city of Cleveland received \$500,000 in H2Ohio funds to remove and replace city-owned lead service lines that supply water to day cares. The Cleveland Water Department estimates that more than 440 area day care centers are connected to lead pipes.

Using H2Ohio funds, the drinking water at these day care centers can be improved for thousands of children.

Technology Assessment Program

In November 2020, Ohio EPA issued a request for technologies for the H2Ohio Technology Assessment Program (TAP) to identify technologies that may help address harmful algal blooms (HABs) in Lake Erie. H2Ohio TAP was created at the September 2020 Ohio Lake Erie Commission meeting to guide Ohio in addressing HABs in Lake Erie.

H2Ohio TAP requested proposals of technologies that are innovative or new to Lake Erie that:

- Reduce nutrient loading to rivers, streams, and lakes.
- Remove nutrients from rivers, streams, and lakes.
- Reduce the intensity or toxicity of algal blooms.
- Recover nutrients from manure.
- Improve nutrient removal in wastewater treatment plants.

In April 2021, Ohio EPA announced that it identified 10 emerging technologies that could play an important role in the reduction of HABs in Lake Erie. The technologies will be further evaluated through the H2Ohio TAP.

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 the 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 maintain 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.

■ **Hypenucleation Flotation Technology**, submitted by AECOM Technical Services, Inc. (AECOM). Hypenucleation 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 Lysis technology uses precisely controlled electrical impulses 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 use 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 release nutrients only when crops are ready to absorb them.



Water & Wastewater Vision – What's Next?

For state fiscal years 2022 and 2023, Ohio EPA has \$10 million per year to continue protecting public health by improving water and wastewater infrastructure, replacing failed home sewage treatment systems, and reducing lead exposure by replacing lead service lines.



Conclusion

After two years of H2Ohio implementation, Ohio is on the right path toward cleaner and safer water for residents throughout the state. While investing in Ohio's waters is necessary, many of the benefits of these investments will take several years to be realized. After the second year, H2Ohio has invested tens of millions of dollars throughout Ohio on nutrient reduction, wetlands restoration, infrastructure construction, and water technology throughout Ohio.

H2Ohio again focused resources on the problem of nutrient reduction and harmful algal blooms, especially in Lake Erie. From past work, Ohio recognizes excess nutrients from farm fields as the source of Lake Erie HABs which is why H2Ohio, through the Ohio Department of Agriculture, has pursued agricultural best management practices to reduce nutrient runoff. If producers contin-

ue to increase their use of BMPs, phosphorus loading into the Maumee River Watershed will be reduced over time, along with the recurrence of algal blooms in Lake Erie. In combination with additional wetlands restoration and efforts to reduce other contributions of phosphorus through HSTS repairs, H2Ohio is leading Ohio toward a reduction of phosphorus in Lake Erie. Further, the contributions toward water infrastructure help assure safe and clean water quality for thousands of Ohioans.

Ohio EPA has been partnering with communities across Ohio to ensure clean and safe drinking and wastewater. There is substantial need for water infrastructure in both urban and rural areas. The H2Ohio initiative is making investments to improve the quality of lives.

Agency	Appropriation	Expended	Encumbered	Remaining at year-end
Agriculture	\$29,058,000	\$658,219	\$28,371,555	\$28,226
Environmental Protection	\$11,716,575	\$8,219,137	\$3,497,438	\$0
Natural Resources	\$27,691,060	\$1,683,378	\$25,990,409	\$17,274
Total	\$68,465,635	\$10,560,734	\$57,859,402	\$45,499

H2Ohio

H2Ohio Accomplishments for Fiscal Year

2021



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