

H2Ohio Update

Lorain & Medina SWCD

November 15th, 2023

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Department of
Agriculture



What is H2Ohio?



Department of Agriculture

H2Ohio announced November 2019

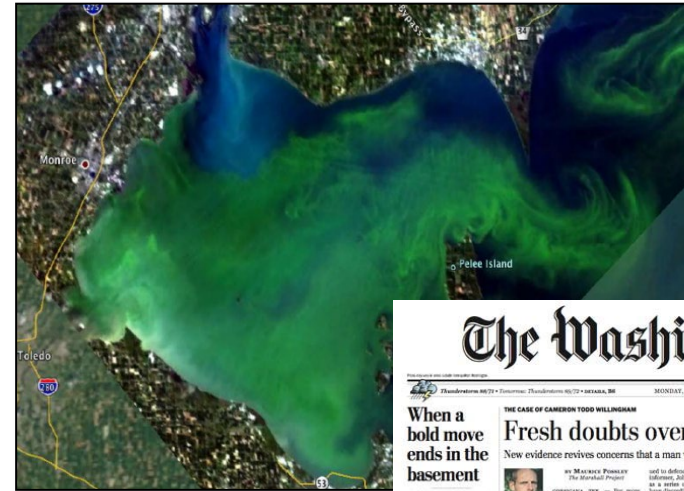
To address water issues

- harmful algal blooms
- failing drinking water systems
- wastewater, and home sewage treatment systems
- lead contamination

ODA's focus is Phosphorus and Nitrogen load reductions to Lake Erie from the Western Lake Erie Basin

The Domestic Action Plan (DAP) was signed in 2015, and establishes a goal of a **40% reduction** in Phosphorus loads from 2008 Levels

November 2019 – Jan 17th 2020 – First SWCD Training



What is H2Ohio?

- Water quality improvement program funded by the state of Ohio. Program is managed by Ohio EPA, ODNR, and ODA
- Announced in late 2019, began implementation in late 2020
- ODA has over **\$120 million dollars** encumbered to the project area to date



What is H2Ohio?



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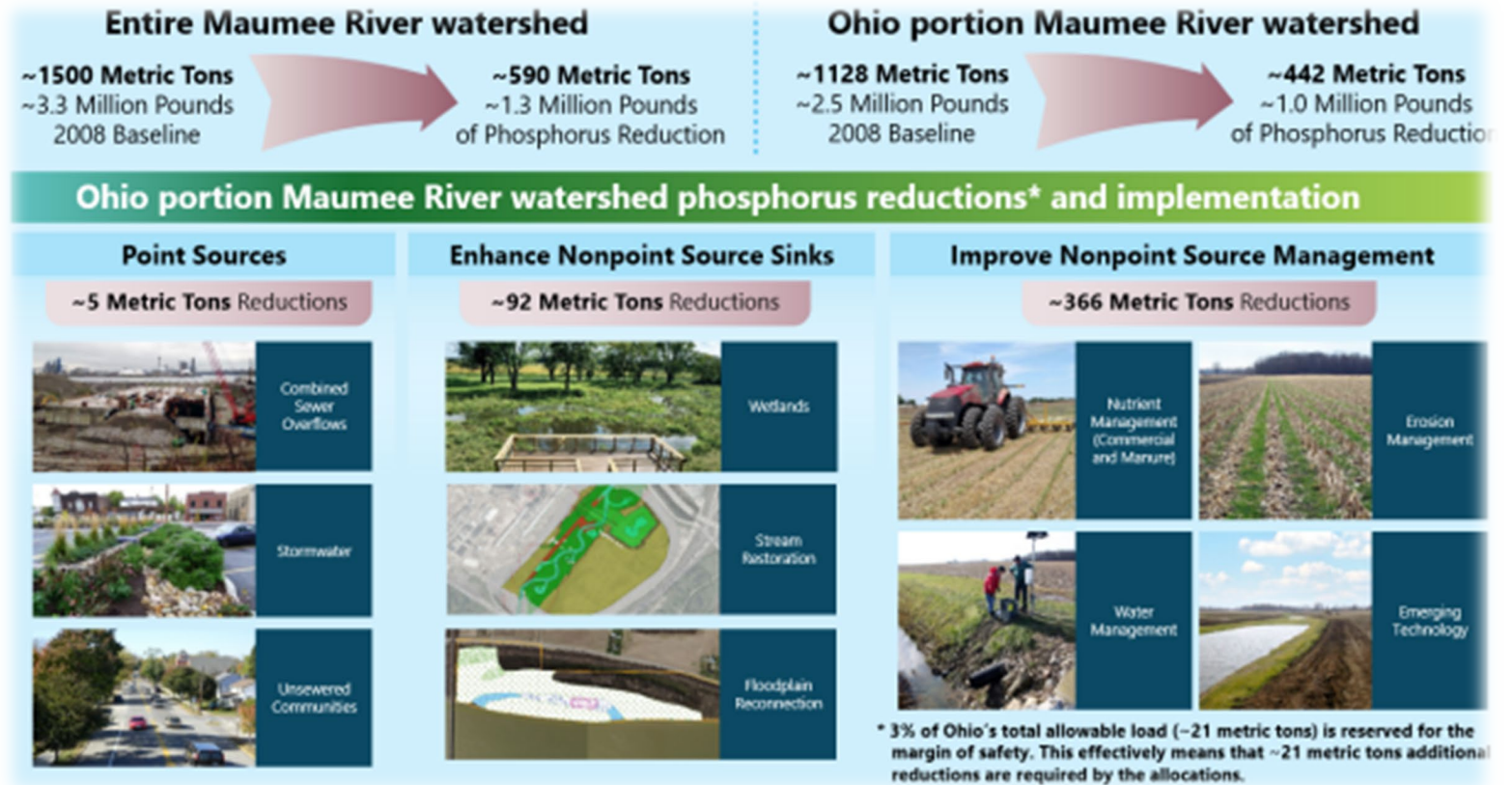
Maumee Watershed Project (Green) initiated in 2020

WLEB Expansion Project (Orange) initiated in 2021



What is the Goal

- 40% Phosphorus reduction in annual loads in Maumee
- Ohio's baseline load is approx. 2.5 million pounds annually
- Ohio's 40% reduction results in a reduction of roughly 1 million pounds
- Load reduction assigned to **agriculture NPS** is approximately **800,000 pounds annually**



H2Ohio - Practices

ODA

- Voluntary Nutrient Management Plan
- Variable Rate Phosphorus Fertilizer
- Subsurface Phosphorus Placement
- Manure Incorporation
- Conservation Crop Rotation
- Overwintering Cover Crops
- Drainage Water Management
- Two-Stage Ditches

ODNR

- Wetlands



Phosphorus Reduction Impact



1 Nutrient Management: Nutrient management plans contain information for farmers on where to place fertilizer, when, and how much.



6 Cover crops: When planted after the main harvest, cover crops reduce erosion, hold nutrients in the soil, and improve soil health.



2 Variable-rate fertilization: Applying specific fertilizer levels based on the need of each sub-acre. Reduces fertilizer application without risk of losing yield.



7 Drainage water management: Slowing down runoff to give phosphorus more time to settle back in the soil.



3 Subsurface nutrient application: Applying fertilizer below the surface to reduce



8 Two-stage ditch construction: Creating modified drainage ditches to slow water flow and allow the phosphorus to settle.



4 Manure incorporation: Mixing manure into the soil to keep it in place and prevent runoff.



9 Edge-of-field buffers: When trees or shrubs are planted along farm fields in the right place, the plants hold on to phosphorus and prevent its release into the water.



5 Conservation crop rotation: Planting certain crops that reduce erosion and enrich the soil, thus reducing runoff and decreasing the need for fertilizer.



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

How are we doing?



Maumee Watershed Project Area

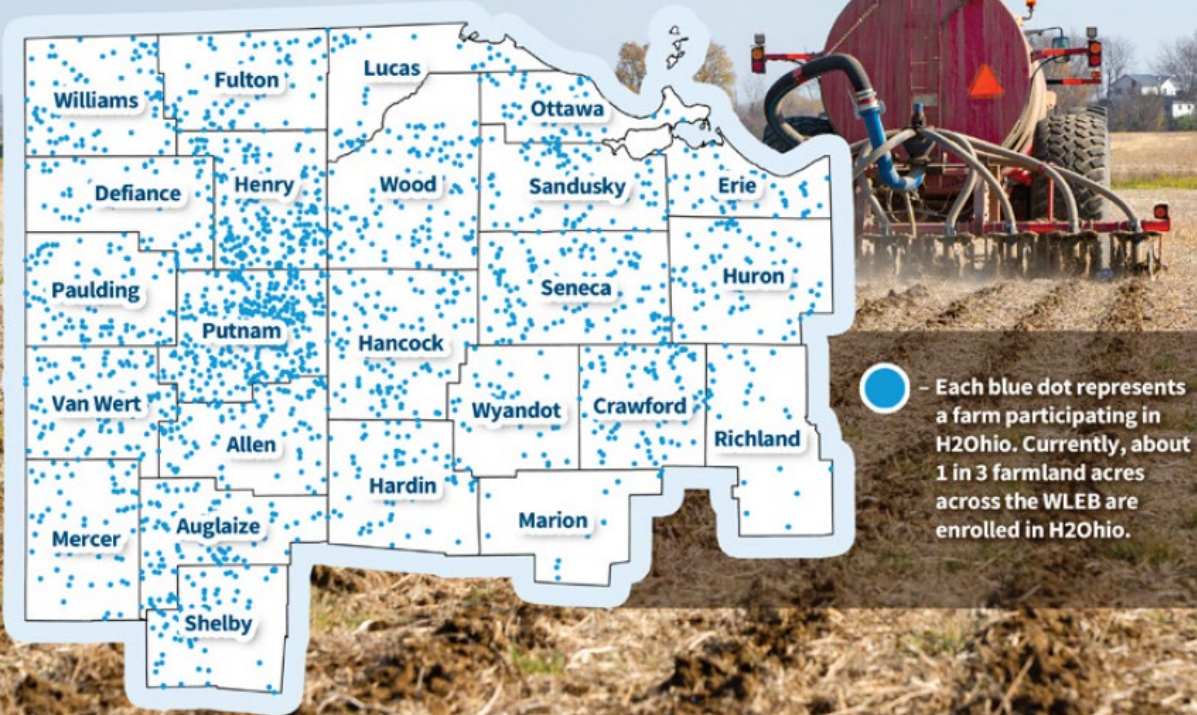
- **ENROLLMENT** - 920,000 acres of cropland (~34%)
- **CONTRACTS** – Approximately 1600, practices through crop year 2023
- **\$40 Million** in proposed BMPs annually

WLEB Expansion Project Area

- **ENROLLMENT** - 600,000 acres of cropland (~37%)
- **CONTRACTS** – Approximately 800, practices through crop year 2025
- **\$22 Million** in proposed BMPs annually

How are we doing?

H2Ohio Contract Density Map



- Producer interest in the H2Ohio program has exceeded all expectations
- The figure to the left represents the density of participating farms
- 1/3 of eligible cropland acres are participating in H2Ohio

Where are we going?

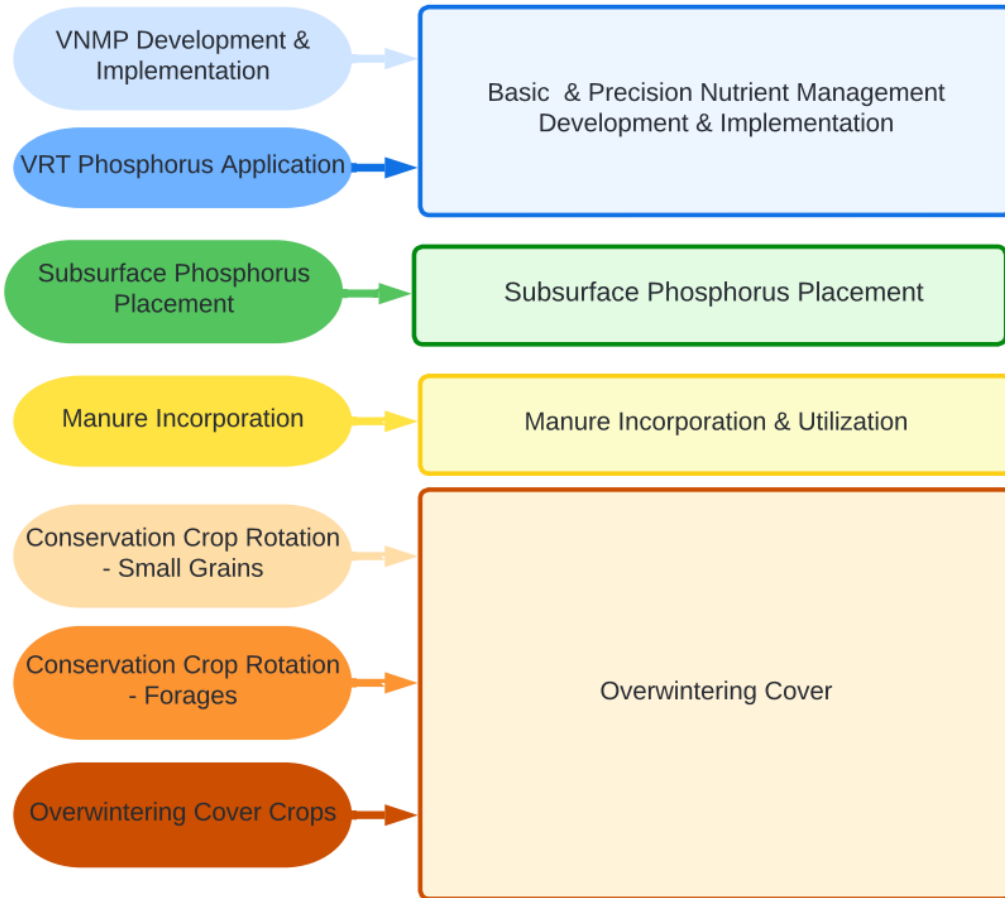


Goals: Maintain Practice Integrity while simplifying the Practice Standards

- Improve consistency County to County
- Accountability
 - Additional Quality Assurance
 - Improved Data Management
- Science-based reduction estimates
 - Field-level data
 - Data Quality

There will be a large learning curve from producers, retailers & SWCD

H2Ohio - Practices



Several changes to the existing practices are being developed

These changes include:

- Combining the Small Grains, Forages, and Cover Crop practices under 1 standard
- Broadening eligible manure application methods to meet practice requirements
- Develop incentives in fertilizer application practices to focus on management rather than application

Challenges



- Staffing
- Field Level Mapping
- Contract Management
 - Paper Contracts
 - Records of Decisions
- Data Management
- Verification
 - Plan consistency
 - Location to Location

Variable Rate Prescriptions



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- Roll into Precision Voluntary Nutrient Management Plan
 - Pay an additional incentive for precision vs. basic
- Most challenging practice for having to make interpretation decisions
- Had to make a phosphorus application to achieve payments
- Could not take credit if they did not make an application
- Had to create limits for starter applications
 - Variable Rate Placement > Placement > Variable Rate Application
- Producers who applied flat rate across the field
- Fertilizer Prices

Ohio Revised Code 905.324(A)

Except as provided in division (B) of this section, the director of agriculture, an employee of the department of agriculture, the supervisors of a soil and water conservation district, an employee of a district, and a contractor of the department or a district **shall not** disclose information, including data from geographic information systems and global positioning systems, used in the development or approval of or contained in a voluntary nutrient management plan.

Nutrient Management Plans

Education process

- Annual Decisions: Do I need more fertilizer? Could I get away with less?
- “Cheap” farmers may see benefits to applications
- Better utilization of nutrients in specific areas
- Generational farming, “Well that’s what grandpa did”



<https://www.pinterest.com/pin/471048442253923763/>



<https://www.caseih.com/>

Nutrient Management Plans

NRCS 590 Standard & Tri-State Fertilizer Recommendations

NRCS 590 – Updated 12-5-20 -

<https://efotg.sc.egov.usda.gov/#/details>

Updated Tri-State

<https://agcrops.osu.edu/node/3486>



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Agriculture**

Bulletin 974



TRI-STATE FERTILIZER RECOMMENDATIONS

for Corn, Soybean, Wheat, and Alfalfa



 THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

 MICHIGAN STATE
UNIVERSITY | Extension

 PURDUE
EXTENSION | LOCAL FACES
COURTEOUS CONNECTIONS

Nutrient Management Plans



(DD) "Voluntary nutrient management plan" means any of the following:

- (1) A nutrient management plan that is in the form of the Ohio nutrient management workbook made available by the Ohio state university;
- (2) A comprehensive nutrient management plan developed by the United States department of agriculture natural resources conservation service, a technical service provider certified by the conservation service, or a person authorized by the conservation service to develop a plan;
- (3) A document that is equivalent to a plan specified in division (DD)(1) or (2) of this section, that is in a form approved by the director or the director's designee, and that contains at least all of the following information:

Nutrient Management Plans



- Soil tests that follow 590 Guidance and are **not older than four years**;
- Records the **method and seasonal time of utilization and application of nutrients**;
- Identifies all nutrients applied, including **manure, fertilizer, sewage sludge, and biodigester residue**;
- Field information which includes **location, spreadable acreage, crops grown, and actual and projected yields**.

CNMP



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Who needs a CNMP?

- If you cannot turn the manure off

Who does not need a CNMP?

- Producer purchasing manure does not need CNMP

If producer has an approved CNMP that is in final years

- Would encourage producer to start the process of updating CNMP

How to prepare?



If producers create or utilize manure, they will need the following documentation for planning:

- Manure analysis: Including total N, ammonium N, total P or P₂O₅, total K or K₂O, and percent solids
- Manure production numbers

How to prepare?



H2Ohio is utilizing a digital planning and contracting platform making it easier for retailers, consultants, and producers to share information in real time.

Retailers and consultants can continue to use their current systems for making fertility recommendations.

Farmers & Retailers will be able to upload:

- Digitized Fields Boundaries as Shapefiles
- Up to date electronic Soil Tests (no older than 4 Years)
- Shapefile Fertilizer Recommendations
- Fields Names for Soil Tests and Field Boundaries will need to be consistent.



MyFarms



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- MyFarms is developing software to support H2Ohio Program enrollment, practice certification, and contract management
- MyFarms will incorporate program requirements into the enrollment process, and connect to existing data sources that producers are already using

The screenshot shows the H2Ohio MyFarms dashboard. The top navigation bar includes 'SAFE Link', 'Me', 'Fields', 'Operation', 'Data' (highlighted), 'Sustainability', 'N Balance', 'Declaration', 'N Solver', 'Reports', 'More', and 'Contacts'. The user 'Chris Fennig' is logged in. The 'Download' section is active, showing a table of farm data with columns for Year, Farm / Field, Details, Type / Map Name, Proprietary, and Shapefile. The table lists 10 entries for the year 2021, all categorized as 'Management Zone Manure Setback'. A 'Download' button is visible at the bottom right of the table.

Year	Farm / Field	Details	Type / Map Name	Proprietary	Shapefile
2021	70 70		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Ardenture		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Brad 1		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Clemens		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 COPAcademyField		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Fennig		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Griffin		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Home 1.8		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2021	70 Home 1.10		Management Zone Manure Setback	<input type="checkbox"/>	<input checked="" type="checkbox"/>



H2Ohio – VNMP Development



1. **VNMPs and CNMPs will be developed in the MyFarms application.**
2. VNMPs and CNMPs will be written to the current NRCS 590 Nutrient Management Standard.
3. Nitrogen and Phosphorus rates will follow 2020 Tri-State Fertilizer Recommendations (Ohio State Extension - Bulletin 974).
4. Phosphorus application rates shall not exceed a two-year recommendation, per the Tri-State Fertilizer Recommendations.
5. VNMPs and CNMPs may be developed by an ag retailer, independent crop consultant, or producer.
6. VNMPs and CNMPs must be reviewed and approved by the local SWCD Board of Supervisors or director's designee.
7. Average yield goals shall be used for fertilizer recommendations.

H2Ohio – VNMP Development



8. VNMPs and CNMPs developed through H2Ohio must meet the minimum requirements set forth in ORC 905.31(DD).

- Soil tests must be compliant with the Natural Resources Conservation Service (NRCS) field office technical guide and not older than four years.
- Documentation of the method and seasonal time of utilization and application of nutrients.
- Identification of all nutrients applied, including manure, fertilizer, sewage sludge, and biodigester residue.
- Field information regarding land subject to the plan, including the location, spreadable acreage, crops grown, and actual and projected yields.

H2Ohio – VNMP Development



Additional Considerations for VNMPs and CNMPs

- Soil samples for soil tests must represent 25 acres or less for a basic VNMP or CNMP.
- For precision VNMPs and CNMPs, one soil sample must represent no more than six acres for grid sampling and no more than 12 acres for a zone management system.
- Producers will be allowed to place up to 20 pounds of P2O5 as starter fertilizer at planting for corn, even when soil test P2O5 is above 50 ppm. Producers will also be allowed to apply up to 20 pounds of P2O5 as starter fertilizer for wheat establishment, even when soil test P2O5 is above 50 ppm. Starter applications must be included in the nutrient budget.
- When a Precision VNMP or CNMP is developed based on zones, soil fertility, soil types, cropping history, and crop management practices should be considered when delineating the zones.
- The Precision BMP requires a variable rate phosphorus prescription map in the VNMP or CNMP for the upcoming enrolled year. Assuming a non-zero nutrient recommendation in the VNMP or CNMP, the precision BMP requires at least one non-zero application rate to be present in the variable rate prescription map

H2Ohio – VNMP Implementation



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Sampling Method	Application Type*	Crop Year Payment Earned
≤6-acre grids OR ≤ 12-acre zone	VRT fertilizer OR VRT manure at or below recommendation, or no application	Precision Implementation
≤6-acre grids OR ≤ 12-acre zone	VRT fertilizer + Flat Rate starter (≤20 lbs P ₂ O ₅)	Precision Implementation
≤6-acre grids OR ≤ 12-acre zone	Flat Rate Starter Only (≤20 lbs P ₂ O ₅)	Precision Implementation
≤6-acre grids OR ≤ 12-acre zone	Flat rate fertilizer or flat rate manure	Basic Implementation
≤25-acre composite	Flat rate fertilizer or flat rate manure, No P ₂ O ₅ Applied	Basic Implementation



H2Ohio - Scenarios

Precision VNMP

Precision Implementation

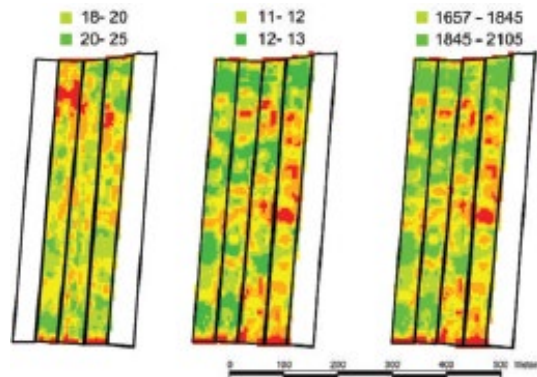
Subsurface P Placement

Overwintering Cover

Develop plan if needed, submit plan for approval



Variable rate phosphorus placement and establish cover crop in one trip in fall



Plant corn following spring



H2Ohio - Scenarios

Basic VNMP

Basic Implementation

Manure Incorporation & Utilization (Dry)

Overwintering Cover

Develop plan if needed, submit plan for approval



Poultry litter application & incorporate



Establish Forage



H2Ohio – Additional Programs



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- Equipment Purchase Assistance Program
- Farm Phosphorus Plots
- Drainage Water Management
- Working Lands Buffer Program
- Conservation Ditch Program



H2Ohio – Statewide Goals

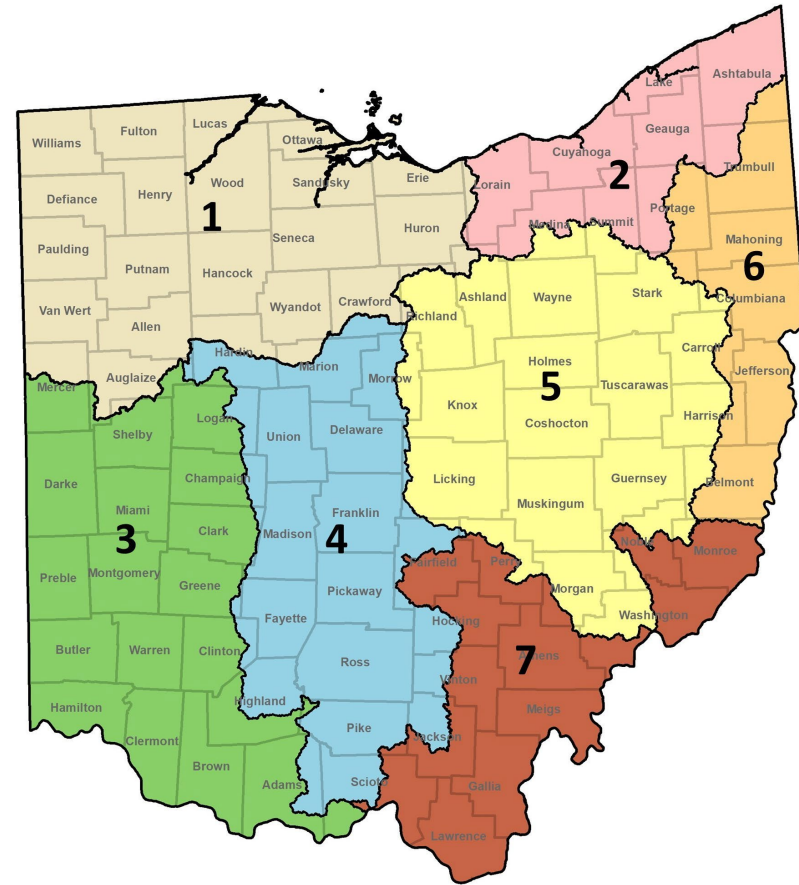


Planned \$10,000,000 Funds

- 500,000 – VNMP Development
- Planned Start: **First Quarter 2024**

Goals:

- Train and Develop staff capacity
- Determine Workload
- Determine ODA needs



H2Ohio – What's Next



WLEB – Water Quality -
Phosphorus Management

Across Ohio:

- Nitrogen
- Sedimentation
- Sustainability

Position ourselves make better
decisions



Questions?

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