

# On-Farm Nutrient Management to Improve Water Quality

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Director, Water Quality and Research



OHIO FARM BUREAU®

**How Ohio farmers felt  
this rainy season...**



**How some Ohio residents feel about their water...**



Farmers and Ohioans need to come together  
on water issues...



# WHO AM I?

Director of Water Quality  
and Research



Senior Research Biologist



B.S. - Turfgrass Science  
Minor Animal Science



M.S. - Natural Resources and  
Environmental Sciences



# WHO ARE WE?

- ✓ Ohio's largest general farm organization
- ✓ Grassroots member based
- ✓ Federation of 87 county Farm Bureaus
- ✓ Volunteer board and committees
- ✓ State Board



# Policy Development

Ohio Farm Bureau *members* define the position our organization takes on a great number of issues affecting farmers and rural residents.

These policy positions guide our legislative and regulatory action on these important issues.

# WHAT IS THE ISSUE?

- ✓ **Harmful Algal Blooms**
- ✓ **Gulf of Mexico - Hypoxia**
- ✓ **Loss of Public's Trust**
- ✓ **Maintain Balance**
- ✓ **Food and Environment Not Mutually Exclusive**

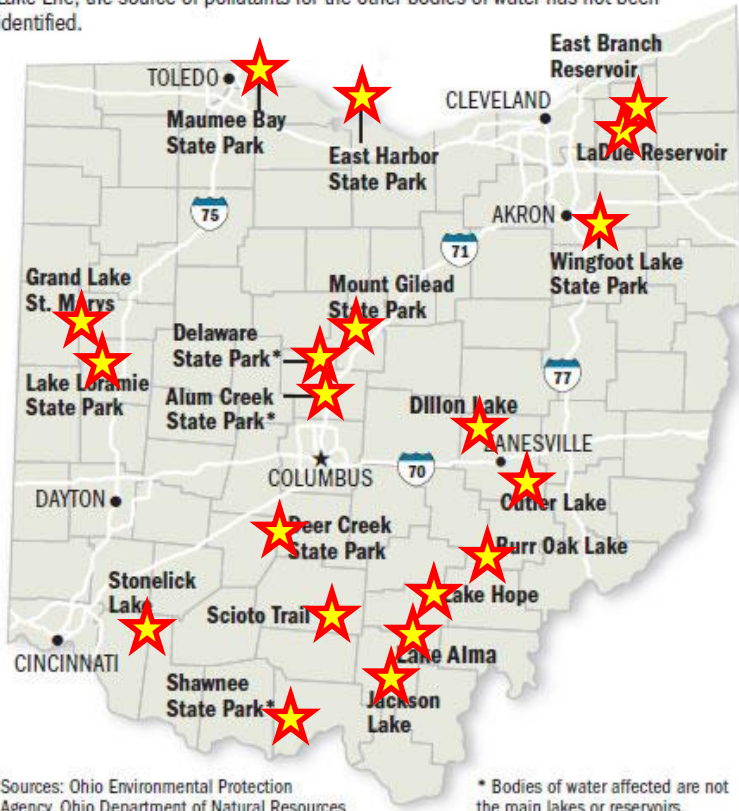




# WATER QUALITY ADVISORY

## LAKES WITH HEALTH WARNINGS

After the discovery of toxic blue-green algae at Grand Lake St. Marys this past summer, state officials issued algae health warnings for additional public lakes and ponds. Though farm pollutants are the suspected cause of algae issues at Grand Lake and Lake Erie, the source of pollutants for the other bodies of water has not been identified.



Sources: Ohio Environmental Protection Agency, Ohio Department of Natural Resources

by bluegreen algae  
d acceptable health  
reational use. People  
dvised to minimize  
d avoid ingestion of  
ke water.

# Summer 2010

# Late Summer 2011

An aerial photograph of a wide river with a small boat in the lower-left quadrant. The water is a vibrant green, with intricate, swirling patterns of lighter and darker shades, suggesting a large-scale environmental event like a phytoplankton bloom. The boat is a small, dark-colored vessel with several people on board, leaving a white wake behind it. The overall scene is a vast, textured expanse of green water.

Peter Essick - National Geographic, May 2013

# WHY THE CONCERN?

## *Cyanobacteria (blue-green algae)*

- ✓ Taste and Odor - Drinking Water
- ✓ Foul Beaches
- ✓ Reduce Dissolved Oxygen
- ✓ Toxins (Nerve, Liver, Skin)



**TOLEDO**  
**August 2014**





Toledo

Cleveland

Euclid

Sandusky

Brook Pk.

Parma

Shaker Heights

Warren

Maumee

Akron

Kent

Youngstown

Findlay

Mansfield

Canton

Marion

Steubenville

OHIO

COLUMBUS

Newark

Springfield

Zanesville

Dayton

Fairborn

Xenia

Lancaster

Ohio

Middletown

Marietta

PENNSYLVANIA

Norwood

Chillicothe

WEST VIRGINIA

Cincinnati

Scioto

Portsmouth

KENTUCKY

VIRGINIA

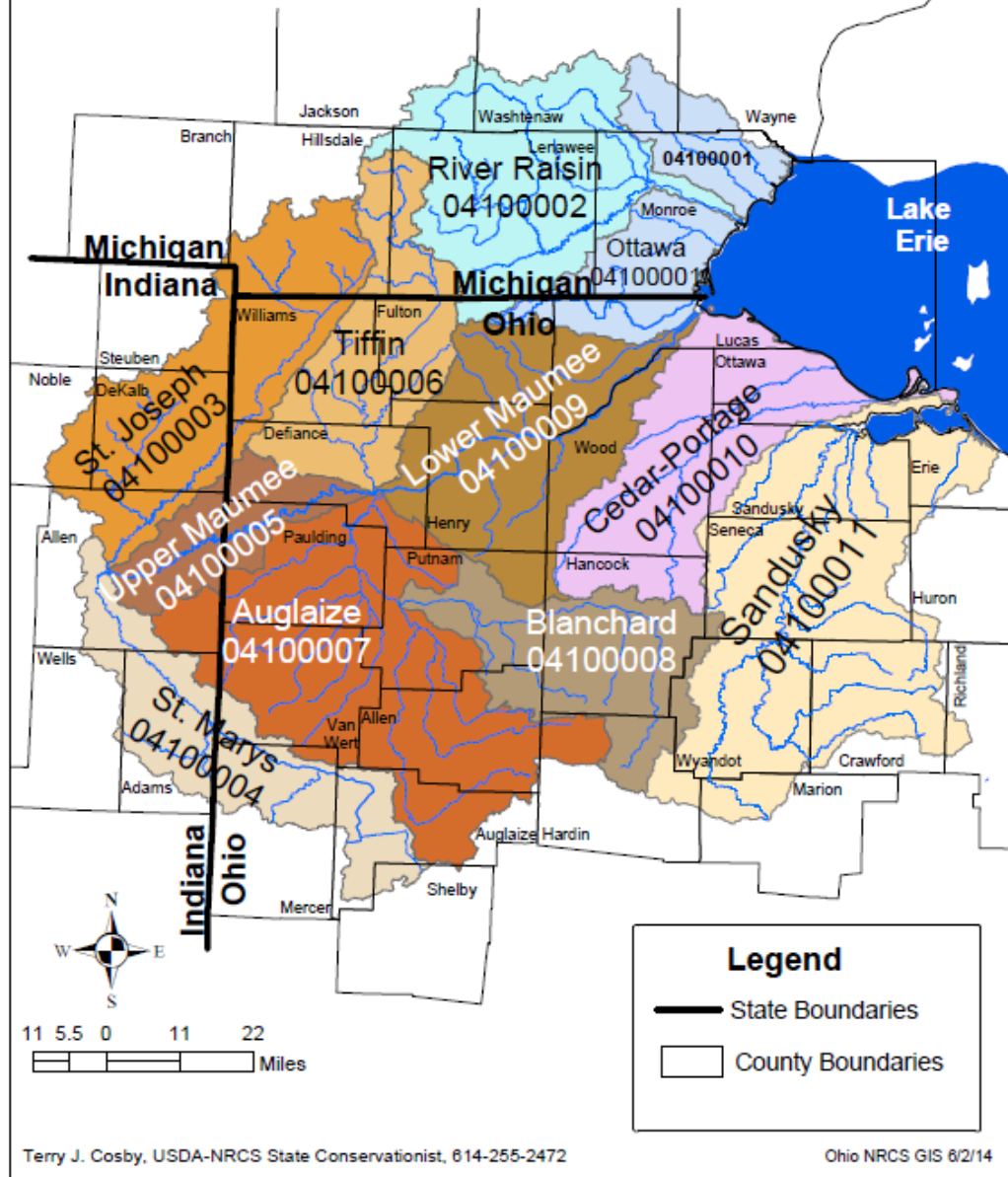
MICHIGAN

CANADA

NEW YORK

INDIANA

# Western Lake Erie Basin Drainage



Terry J. Cosby, USDA-NRCS State Conservationist, 614-255-2472

Ohio NRCS GIS 6/2/14



# Balance Needs & Wants

**Environmental**

**Economic**

**Scientific**

**Social**

**Political**



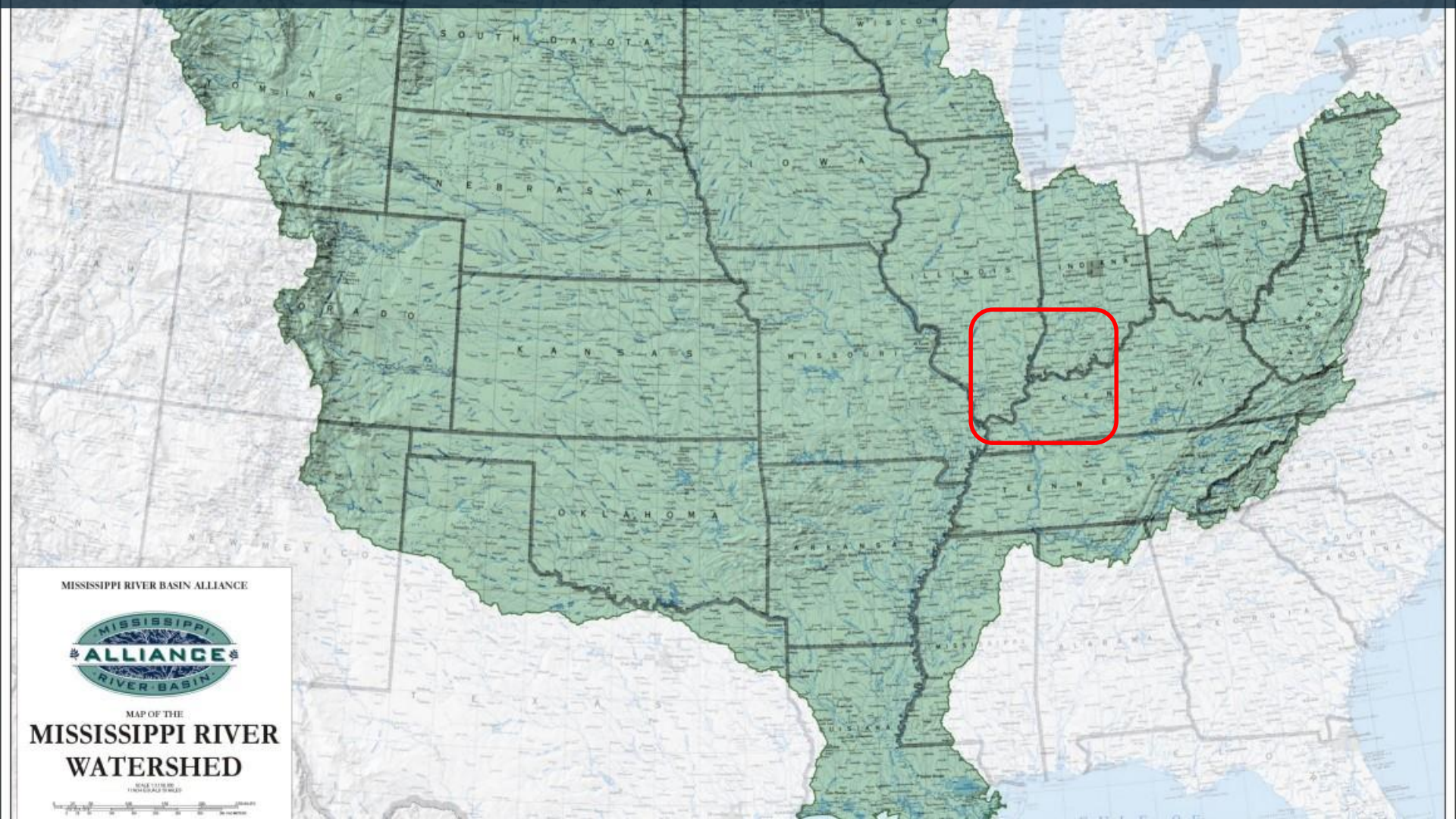
# Complex Challenge

- ✓ Multiple nutrient sources
- ✓ Varying farming methods
- ✓ Weather pattern change
- ✓ 475+ Soil series
- ✓ Distrust of science



# Ohio's Water Resources

## A Statewide/National Challenge



MISSISSIPPI RIVER BASIN ALLIANCE



MAP OF THE

**MISSISSIPPI RIVER  
WATERSHED**

SCALE 1:10,000,000



# Why Should We Care?

**The Columbus Dispatch**

**THE PLAIN DEALER**

**AKRON BEACON JOURNAL**  
—ohio.com— *There's something in it for you.*

**THE BLADE**

*One of America's Great Newspapers*

**The New York Times**



# Why Should We Care?



# Ohio Senate Bill 150

- ✓ **Fertilizer Applicator Certification  
(7000+ farmers certified so far)**
- ✓ **Revocation Ability**
- ✓ **Records Keeping**
- ✓ **Voluntary Affirmative Defense**



# Fertilizer Applicator Certification

- ✓ Educates on the time, place, form, amount, handling, and application of fertilizer.
- ✓ A component of a comprehensive state nutrient reduction strategy addressing all sources of relevant nutrients.
- ✓ Supports generally practical and economically feasible best management practices.

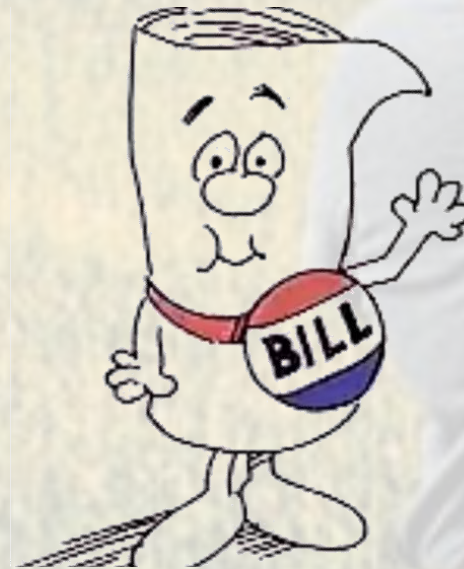
# Ohio Senate Bill 1

## Fertilizer & Manure Application Restriction:

- ✓ Frozen or snow-covered soil
- ✓ Saturated soil
- ✓ Manure: Greater than 50% chance of precipitation exceeding ½ inch in a 24 hour period
- ✓ Fertilizer: Greater than 50% chance of precipitation exceeding ½ inch in a 12 hour period

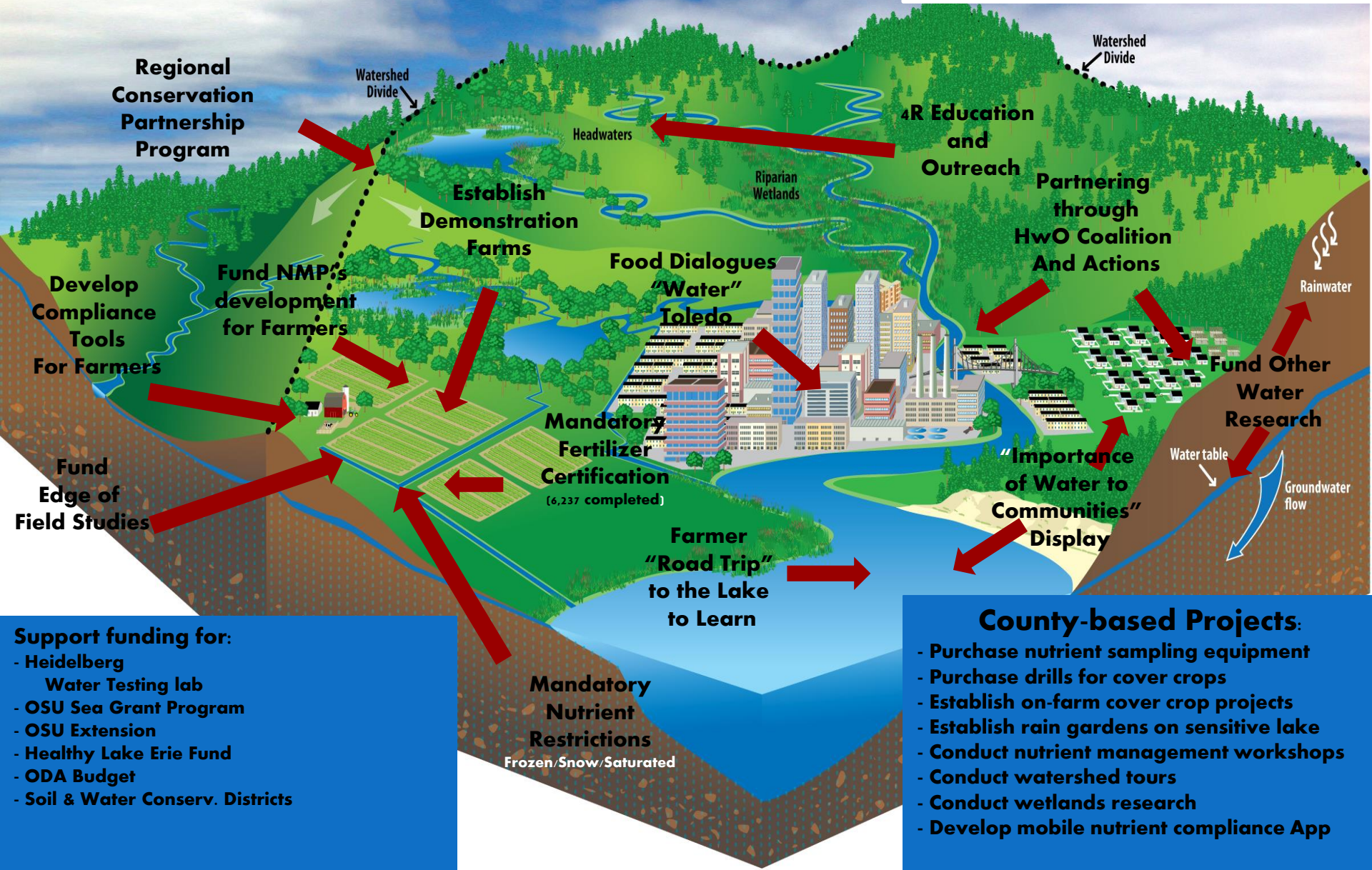
## Exceptions:

- ✓ Injection
- ✓ Incorporated within 24 hours
- ✓ Growing crop
- ✓ Potash or gypsum



# What Is OFBF Doing?

**\$1 million  
Commitment**



- Support funding for:**
- Heidelberg Water Testing Lab
  - OSU Sea Grant Program
  - OSU Extension
  - Healthy Lake Erie Fund
  - ODA Budget
  - Soil & Water Conserv. Districts

- County-based Projects:**
- Purchase nutrient sampling equipment
  - Purchase drills for cover crops
  - Establish on-farm cover crop projects
  - Establish rain gardens on sensitive lake
  - Conduct nutrient management workshops
  - Conduct watershed tours
  - Conduct wetlands research
  - Develop mobile nutrient compliance App

# OHIO NUTRIENT MANAGEMENT RECORD KEEPER

## Automatically record:

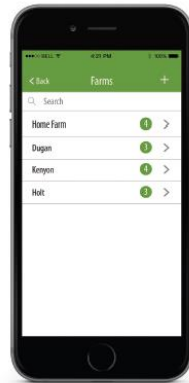
- Name of the responsible agricultural fertilizer certificate holder
- Date of application
- Location of the application area
- Temperature, precipitation, and other weather conditions at the time of application
- Weather forecast for the day following application
- 12 and 24-hour precipitation forecast for the day following the application

## With drop-down menus record:

- Rate of application.
- Analysis of fertilizer or manure applied.
- Application method.
- Soil conditions at the time of application.
- For surface applications: Whether the ground was frozen or snow-covered
- Whether or not the manure/fertilizer was applied to a growing crop
- Whether or not the manure/fertilizer was incorporated



**HOME SCREEN**  
Alerts the farmer of current weather conditions in their area.



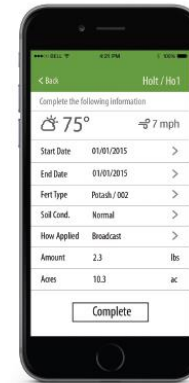
**FARM SELECTION**  
Farms are added through the app or web portal.



**FIELD SELECTION**  
Fields are added through the app or web portal.



**MAPPING/LOCATION**  
Use the device's GPS or manually select the field location.



**FERTILIZER APPLICATION INPUT**  
Select preloaded fertilizer materials to record the application rate, method and other necessary information.



# What can farmers do?

- ✓ Attend a workshop and get your certification
- ✓ Follow principles of 4R Nutrient Stewardship
- ✓ Develop and follow a nutrient management plan
- ✓ Keep & maintain records



# 4R Nutrient Stewardship

*“Improve agricultural production while contributing to social well being and minimizing environmental impacts”*



RIGHT SOURCE



RIGHT RATE



RIGHT TIME



RIGHT PLACE

**We must evolve our farming practices...**



**We must continue to be good neighbors...**



**Thank You!**

