

US EPA ARCHIVE DOCUMENT

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# Source Water Protection

## Preventing HABs at the Source



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Office of Ground Water and Drinking Water - EPA



# Presentation Overview

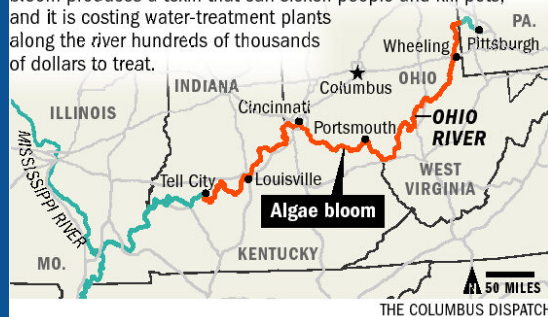
- Source Water Protection: Preventing HABs at the Source
- Building partnerships for watershed investment:
  - Tools for Collaboration: Overview of DWMAPS The Drinking Water Mapping Application to Protect Source Water
- Opportunities to protect drinking water
  - CWA-SDWA Integration
  - NRCS, USDA-FSA, USFS
  - Funding opportunities



# Source Water in the News

## Record bloom

The toxic-algae bloom on the Ohio River covers more than two-thirds of the river's length. It started upstream of Wheeling, W.Va., and was first spotted on Aug. 19. As of Friday, the bloom stretched to Tell City, Ind., about 650 miles downstream. The bloom produces a toxin that can sicken people and kill pets, and it is costing water-treatment plants along the river hundreds of thousands of dollars to treat.



Lake Erie

- 2014: 500,000 without water in Toledo, OH
- 600 miles bloom on Ohio River



*"...no water systems should have to provide more treatment than that which is necessary to address naturally occurring pollutant concentrations."*

--Tracy Mehan, AWWA



# A “growing” problem

NLA: 2007-2012

8.3 %



Cyanobacteria:  
More lakes in “most  
disturbed” condition

9.5%

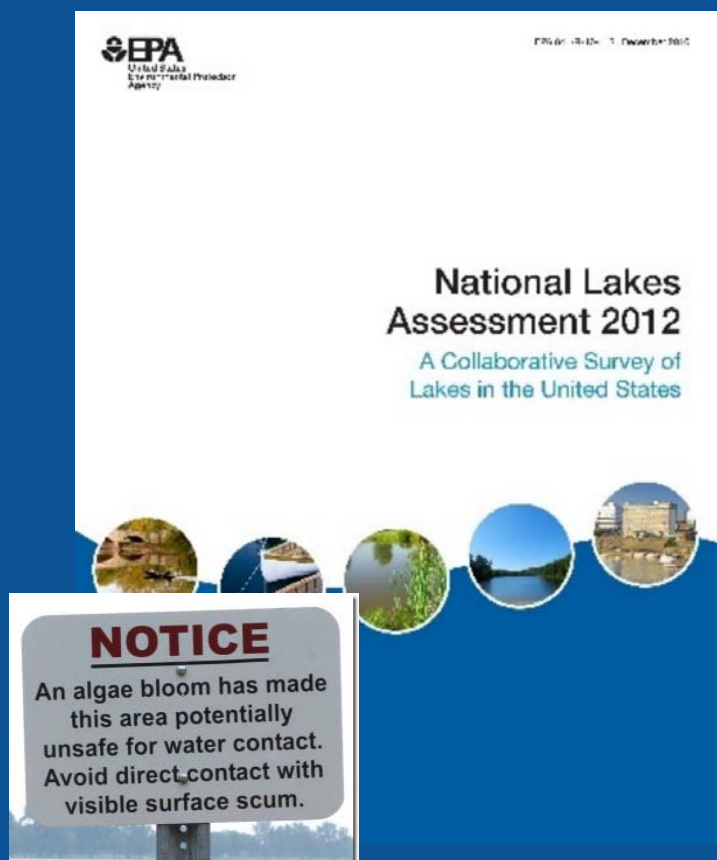


Microcystin: Lakes  
with detection

2015-2016



HAB-Related health  
Advisories





# Watershed Management: Mitigation

## Control and Removal

- ❖ *Physical*
  - ❖ *Mechanical mixing*
  - ❖ *Aeration*
- ❖ *Biological*
  - ❖ *Floating treatments*
  - ❖ *Shade*
- ❖ *Chemical*
  - ❖ *Algaecides*
  - ❖ *Flocculation*



Photo Courtesy of  
NOAA NCOSS

Treatment in the source?





# Watershed Management: Prevention

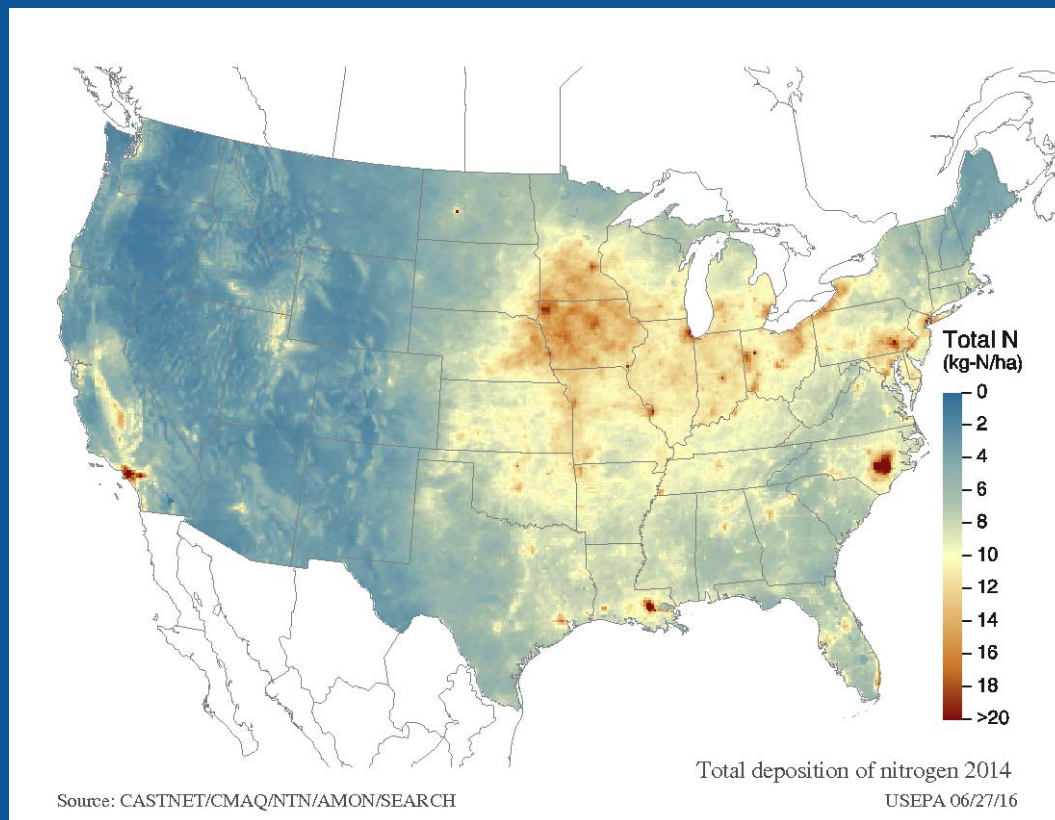
## Addressing HAB Drivers at Source

### ❖ Drivers:

- ❖ Nutrient pollution
- ❖ Hydrologic alteration
- ❖ Temperature pollution

### ❖ Sources:

- ❖ Agricultural and Urban runoff
- ❖ Atmospheric Deposition
- ❖ Point sources
  - ❖ POTW
  - ❖ CAFOS



Total Nitrogen Deposition, 2014





# Watershed Management: Prevention

## Addressing HAB Drivers at the Source

- ❖ **Solutions and Practices:**
  - ❖ Conservation measures
  - ❖ Land management
  - ❖ Stream and wetland restoration
  - ❖ Forest Management
  - ❖ Land preservation
  - ❖ Nutrient removal technologies
  - ❖ Enforcement





# Partnerships: Building Momentum

- ❖ Identify and communicate risks
  - ❖ Share monitoring data
- ❖ Find opportunities to rally support and cultivate champions
- ❖ Articulate drivers of risk to build shared understanding and a vision of success

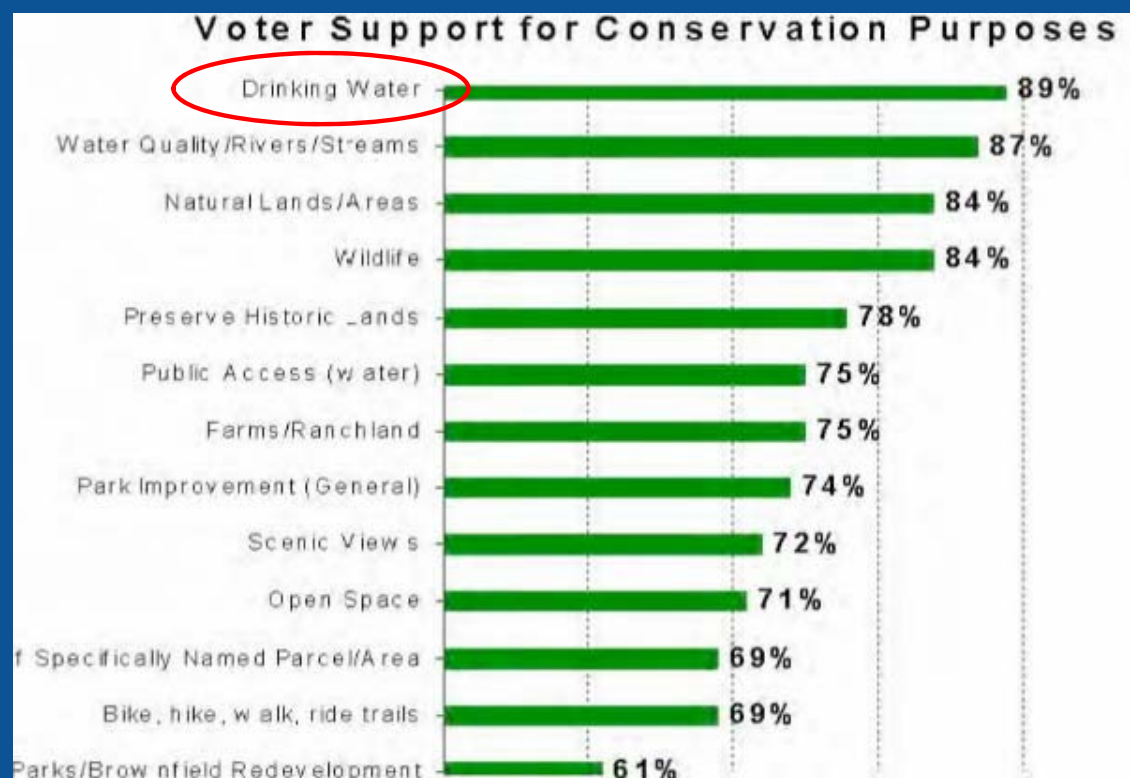
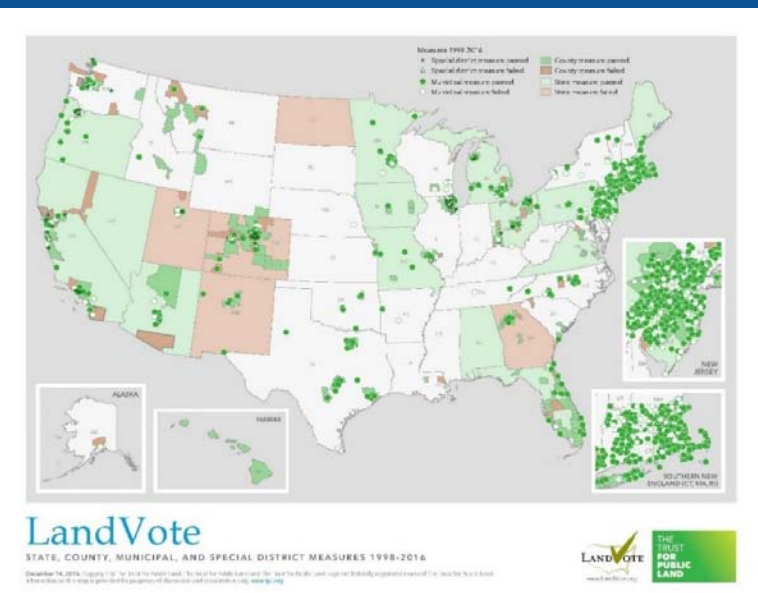


Toledo, OH and Lake Erie



# Drinking Water... it's popular!

Trust For Public Land's LandVote

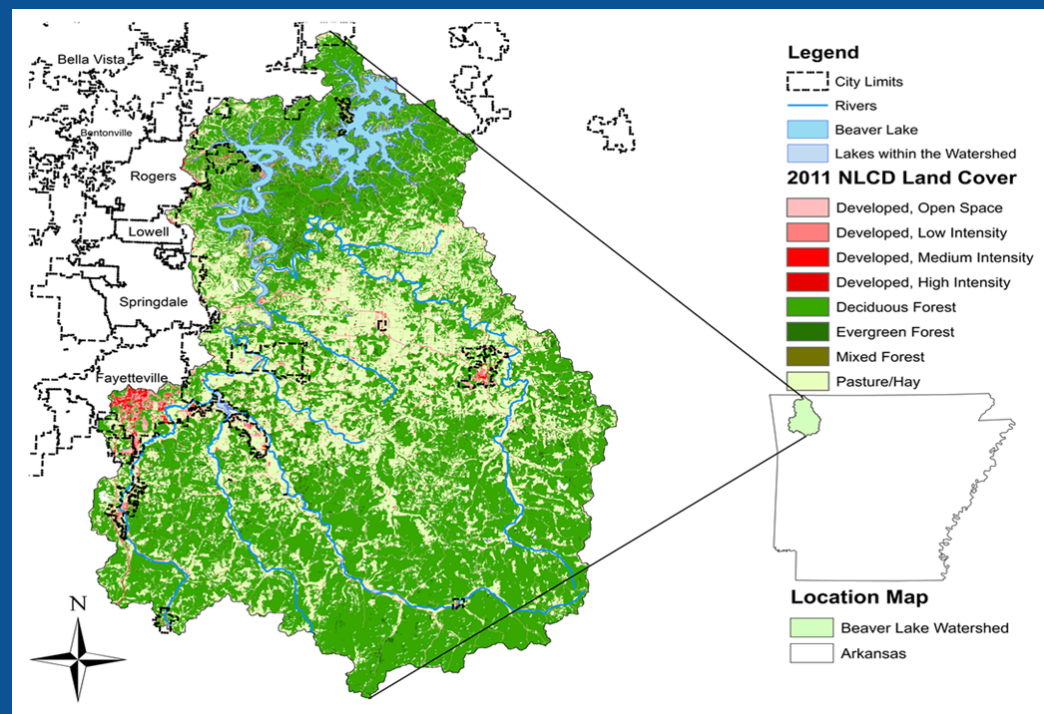






# Partnerships: Identifying Opportunity

- ❖ Articulate drivers of risk
- ❖ Build shared understanding of opportunities
- ❖ Communicate vision of success



Beaver Water:

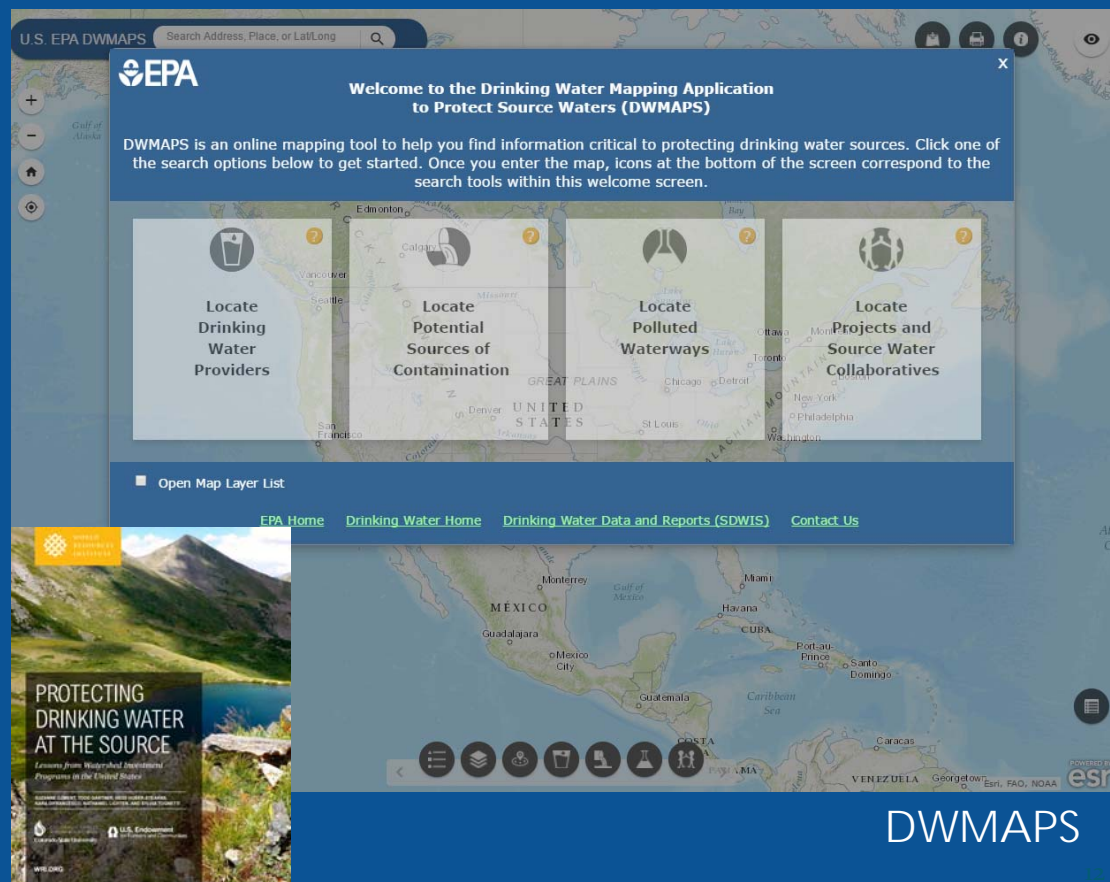
<https://www.youtube.com/watch?v=0DBs1jWTOGA>





# Tools for Collaboration

- ❖ DWMAPS (Drinking Water Mapping Application to Protect Source Waters)
- ❖ Source Water Collaborative *How to Collaborate Toolkit*
- ❖ WRI: *Protect Drinking Water at the Source*
  - ❖ 10 key lessons for building a watershed investment program



DWMAPS

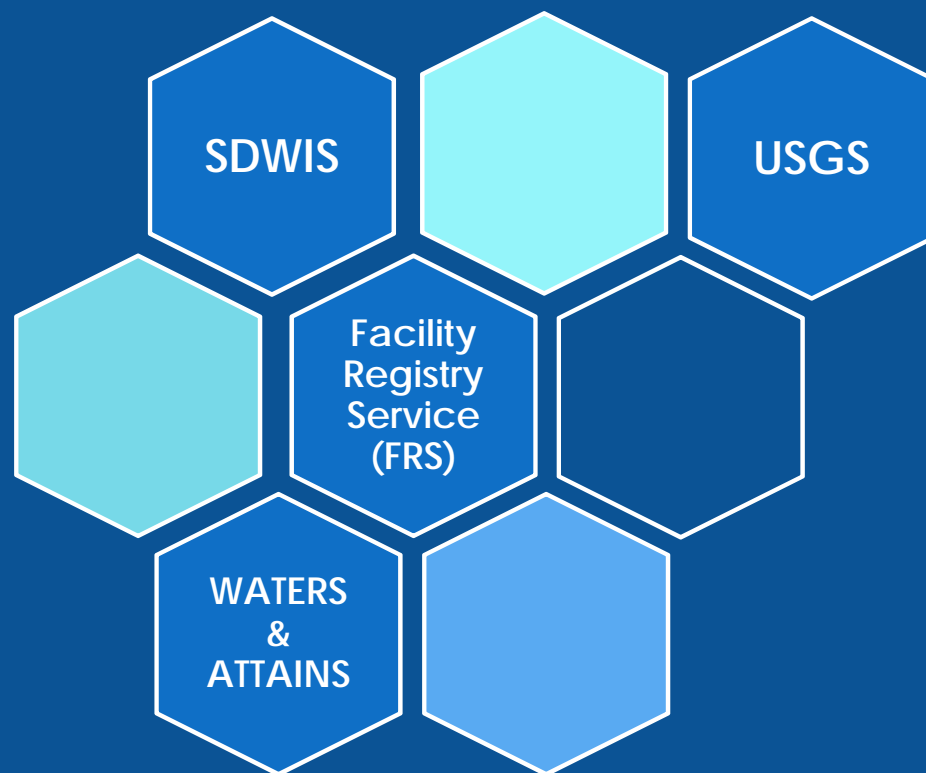


## DWMAPS & Esri Online Platform

**Project Goal:** Provide a nationwide online mapping tool for data critical to drinking water source protection.

- ❖ Esri ArcGIS Online
- ❖ Public information (no secure)
- ❖ Data viewing and access

### Key Data Sources





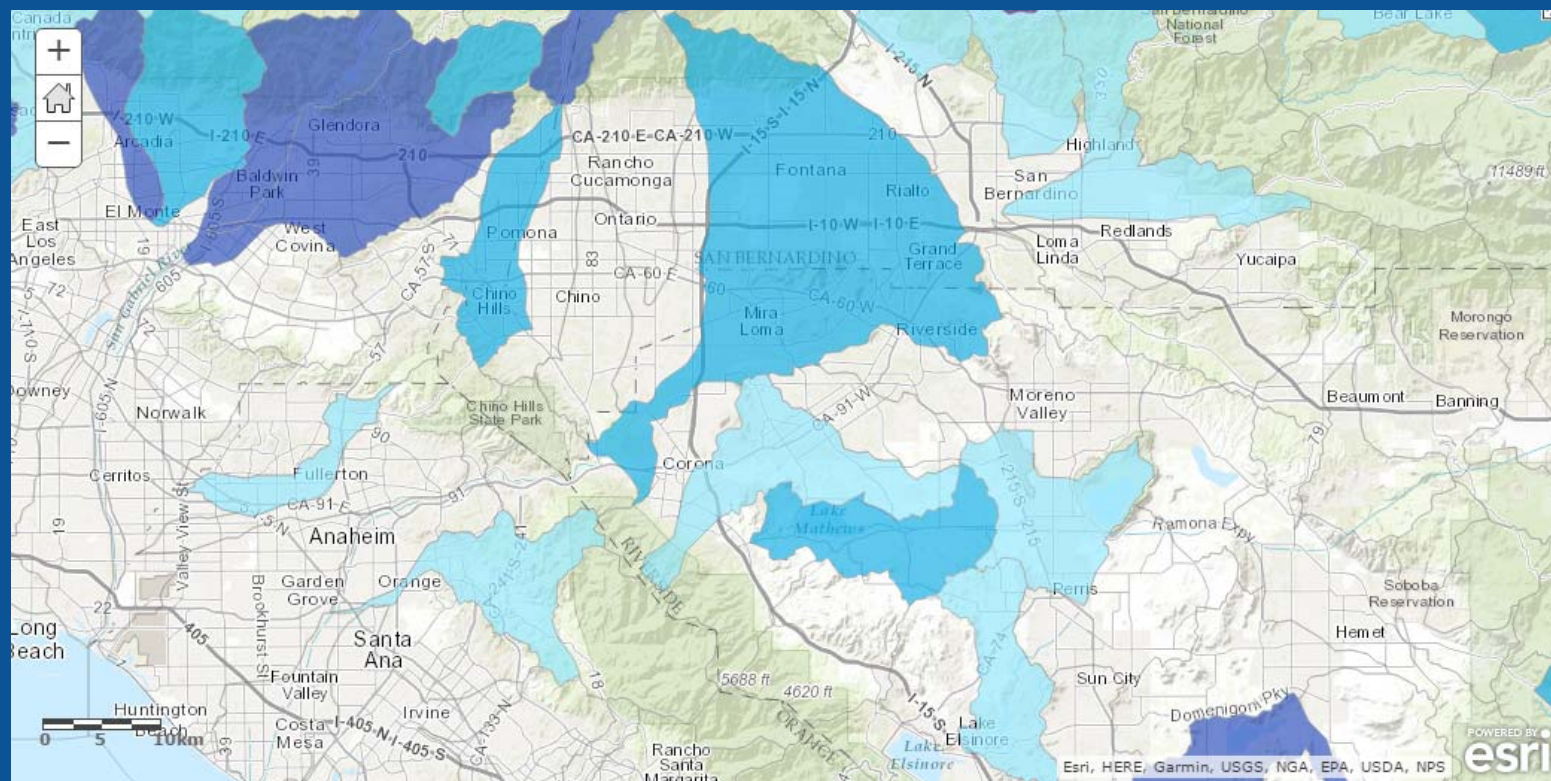
# DWMAAPS Uses

- ✓ View drinking water and watershed data to support source vulnerability assessments
- ✓ Identify HAB risk factors, including point and non-point pollution
- ✓ Manage and track water quality monitoring data
- ✓ Identify opportunity for protection strategies
  - ✓ Promote program integration (CWA-SDWA)
- ✓ Build strong partnerships and support program implementation



# Collaboration Tools: DWMAPS

View Significance  
of watershed to  
source water  
protection



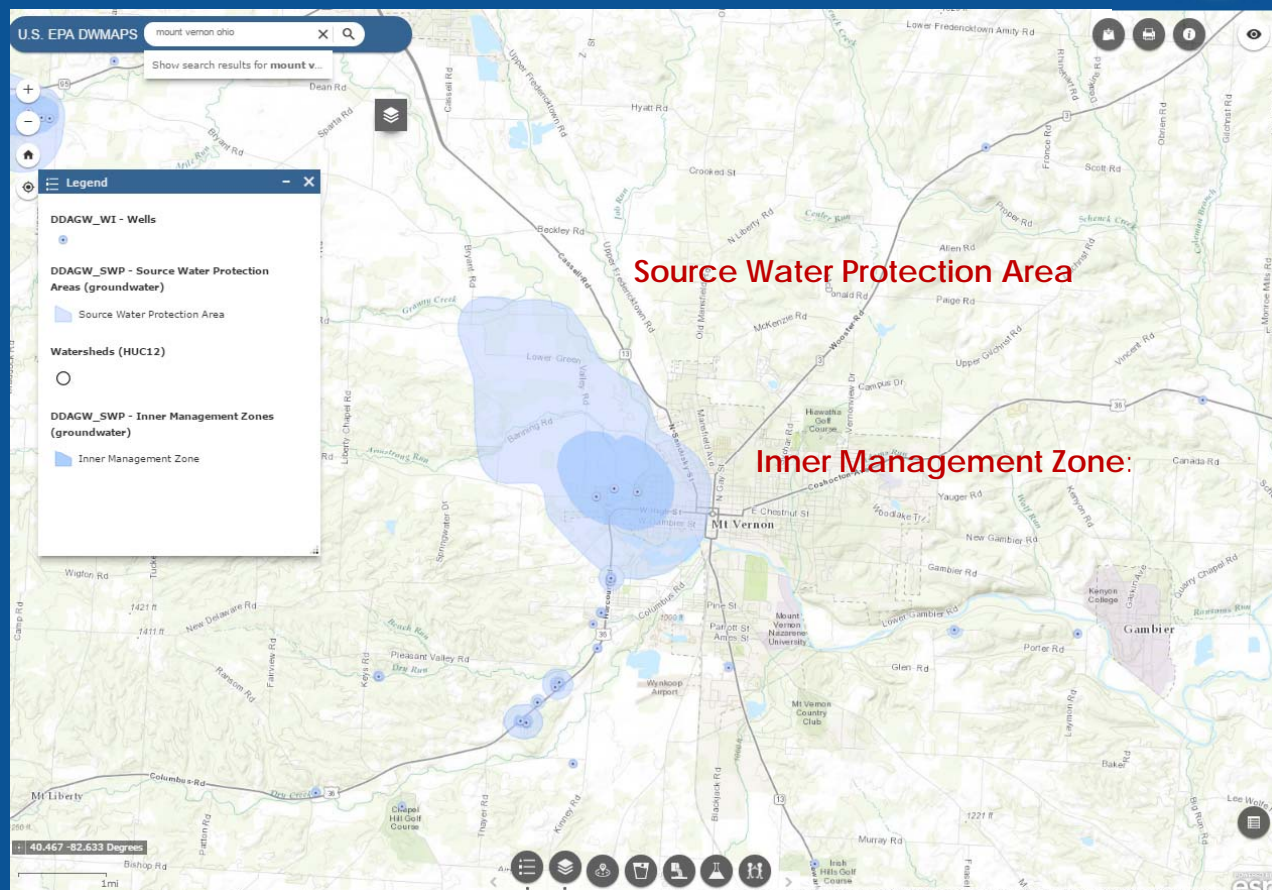
# of sources per HUC12 watershed



# Collaboration Tools: DWMAPS



Integrated with Esri  
ArcGIS online platform

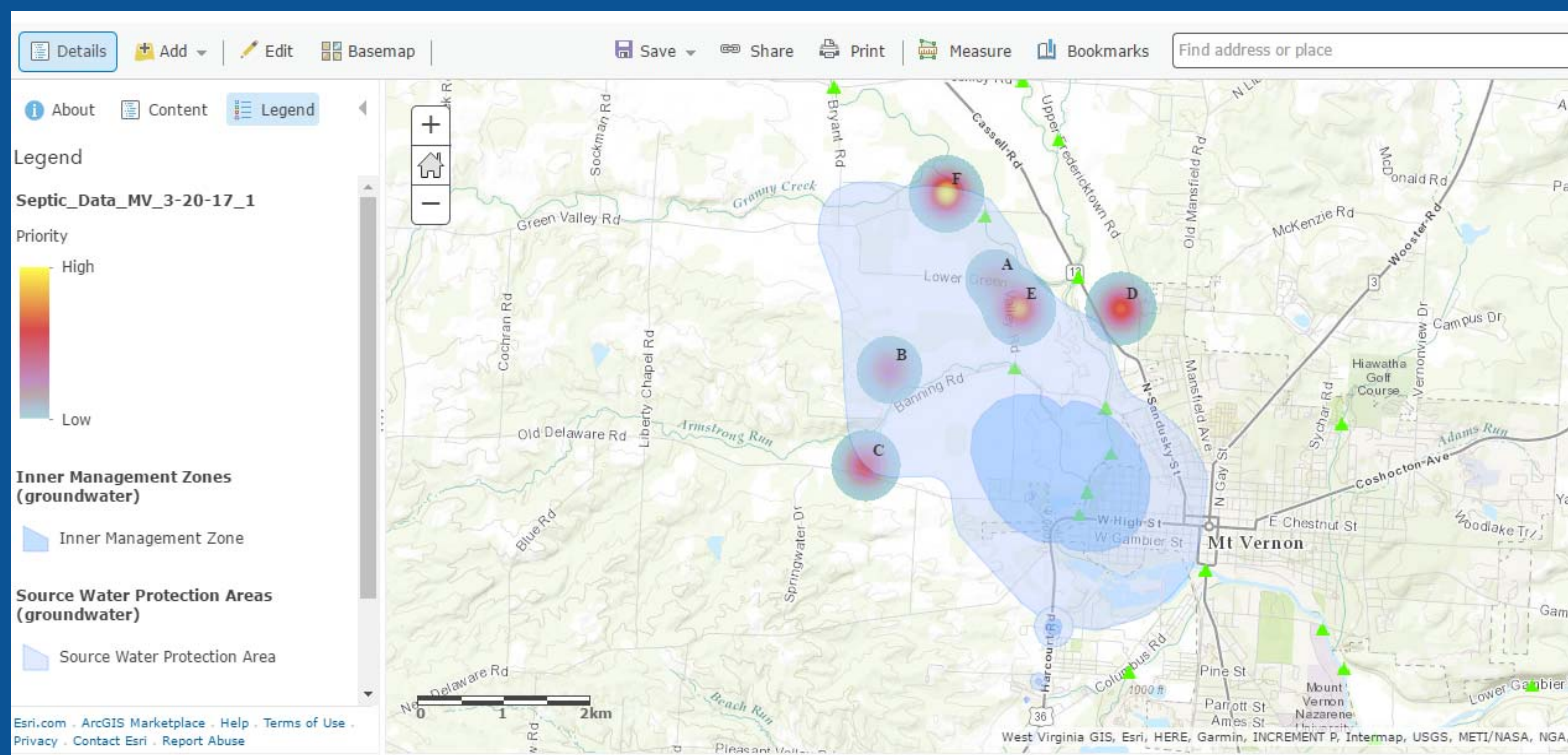


Ohio EPA SWAP Data viewed in DWMAPS



# Collaboration Tools: DWMAPS

upload and share  
monitoring data



Cyanobacteria cell density heat map



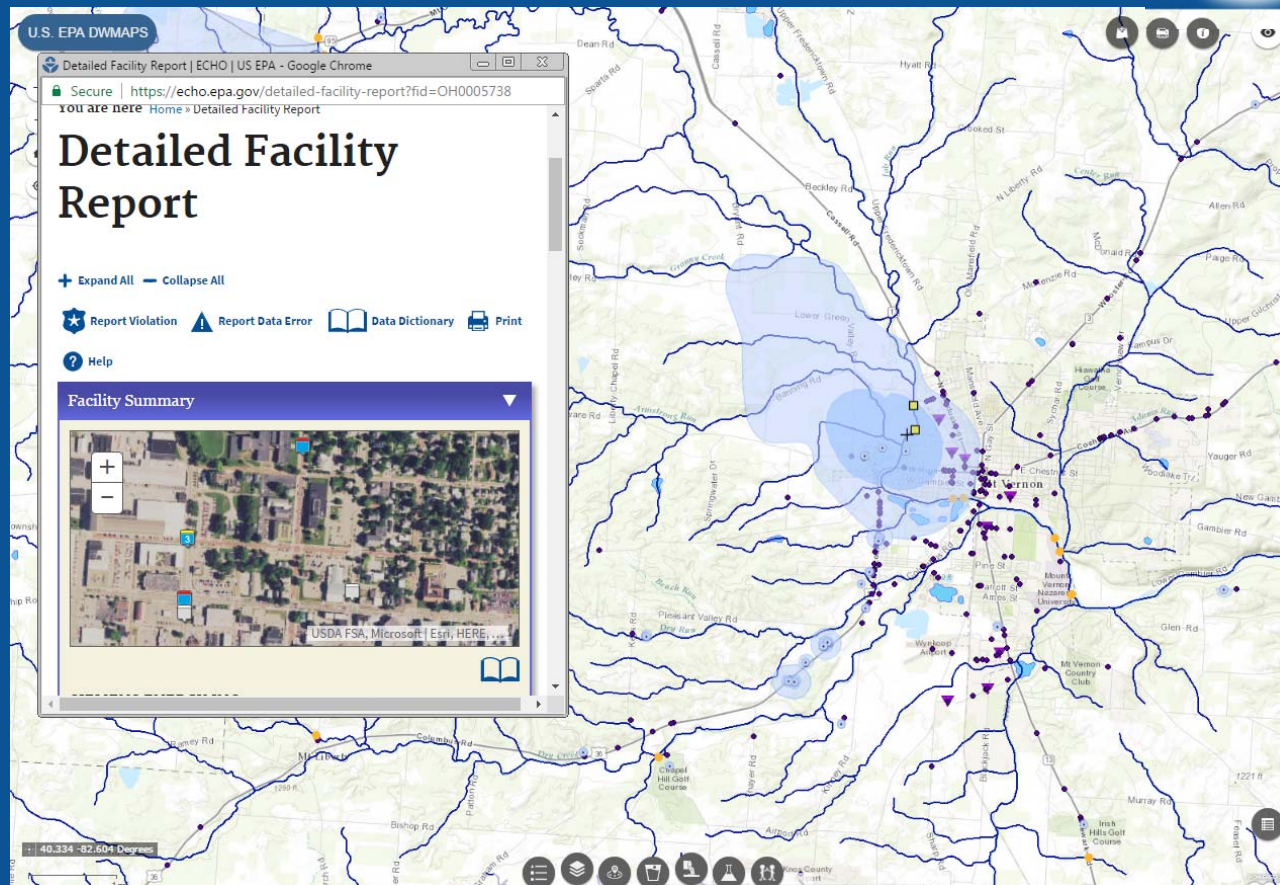
# Collaboration Tools: DWMAPS



DWMAPS contaminant source data.

## Point Source

- NPDES, RCRA, TRI, Oil & Gas, TSCA/FIFRA, Superfund, Brownfields, Hazard material routes, railroads, landfills, more.



Links to facility reports

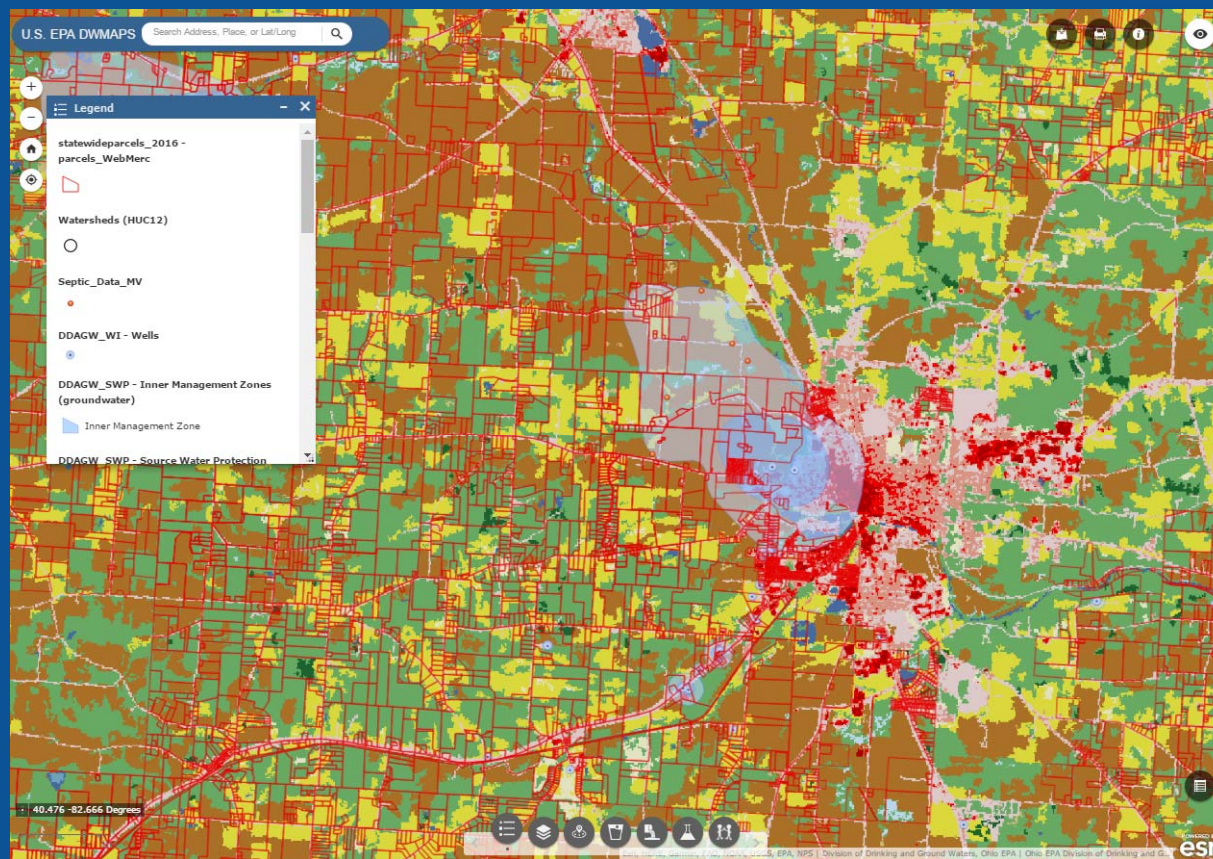
# Collaboration Tools: DWMAPS

DWMAPS contaminant source data.

## Non-point source:

- Land Use (NLCD)
- Impervious surfaces
- Natural Land Cover
- Protected Areas

- Parcel Data
- Zoning Maps



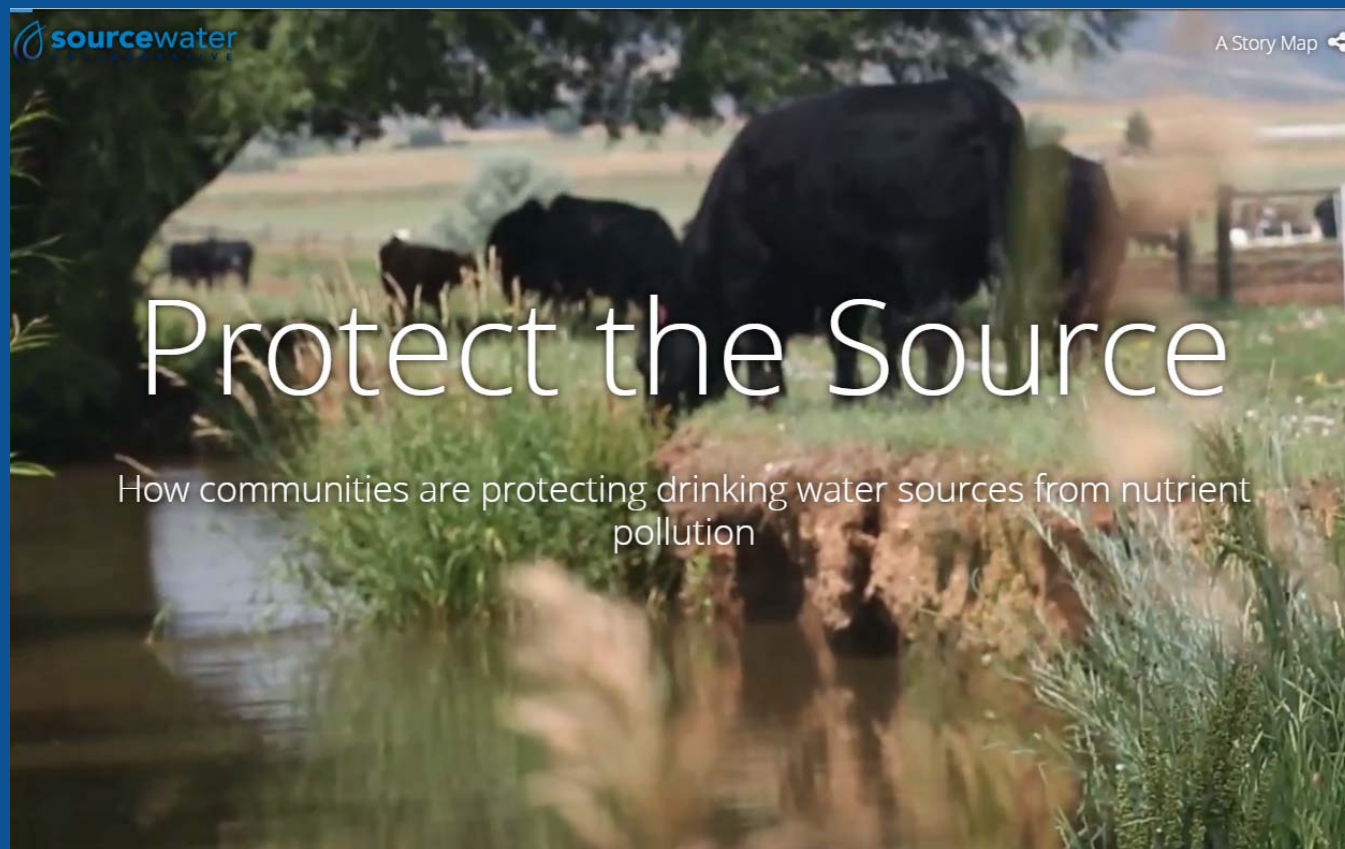
Land Use and Parcels



# Collaboration Tools: DWMAPS

Present your findings & build partnerships:

Mapping applications and story maps.



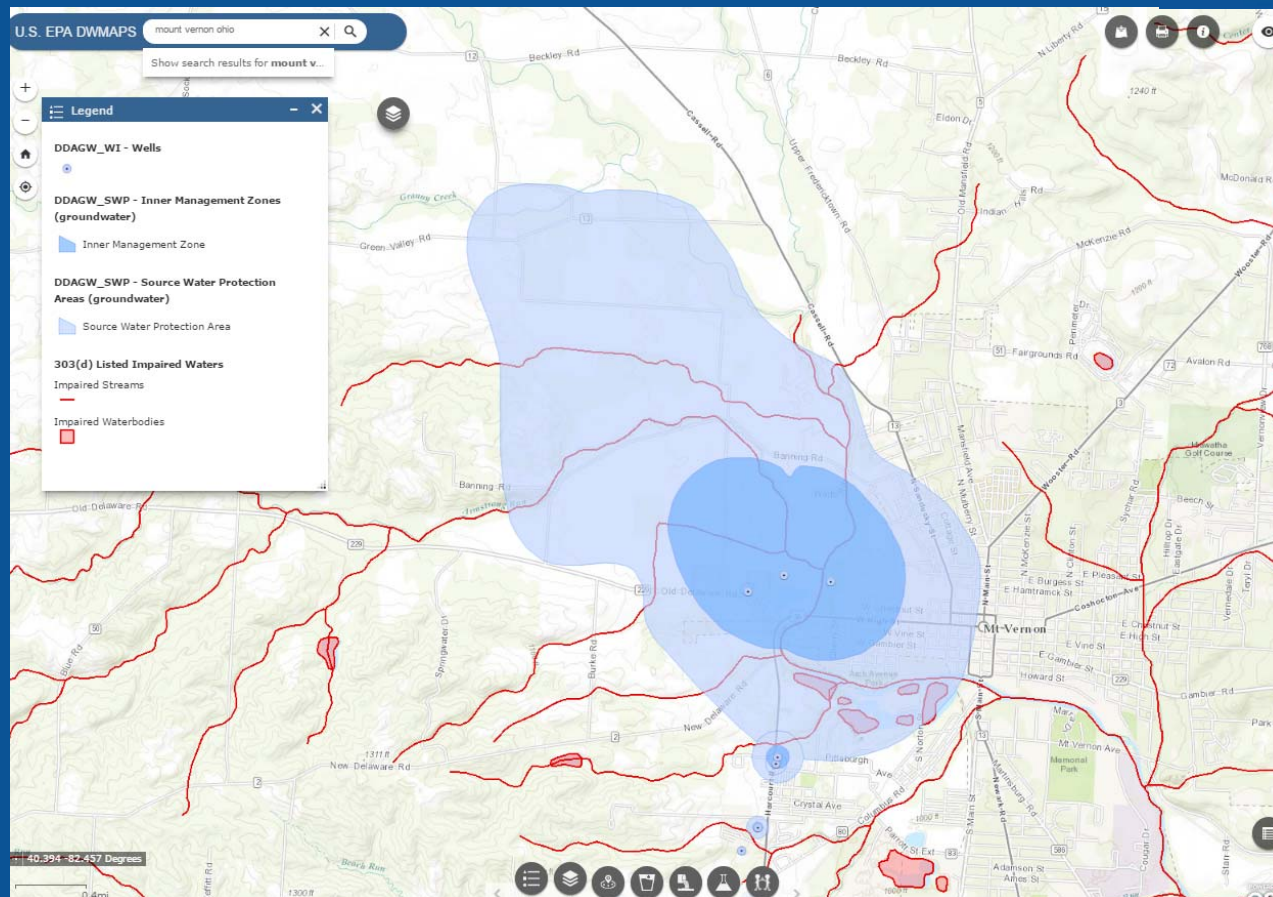
Source Water Collaborative Nutrient Pollution Story Map

# Collaboration Tools: DWMAPS

Identify opportunities for program integration:

Clean Water Act  
Opportunities:

CWA 305(B)  
CWA Impaired Waters  
303(d)  
TMDL  
NPDES



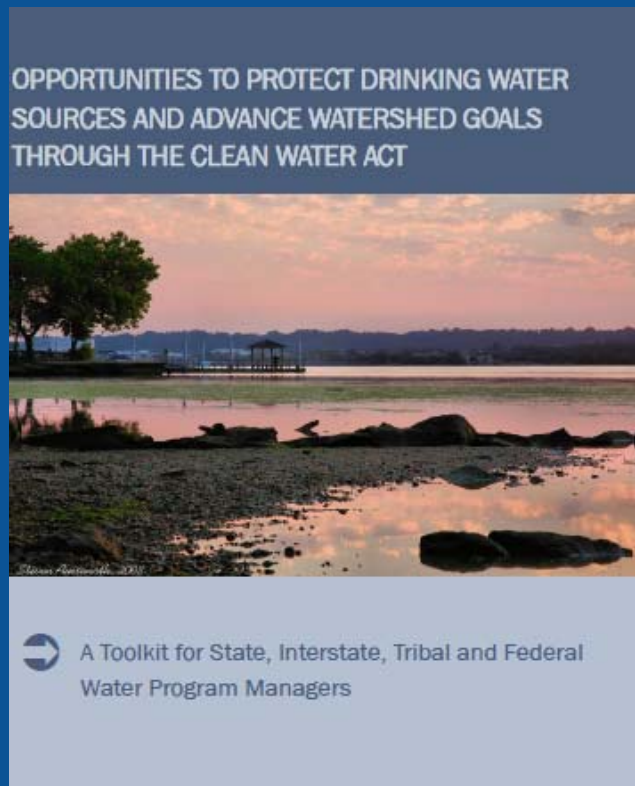
Waters Impaired for Nutrients



# Opportunities: Clean Water Act

## CWA-SDWA Toolkit:

- Water Quality Standards
  - Designated Uses
  - Water Quality Criteria
- Monitoring and Assessments
- TMDL priority setting
  - DW endpoints
- 319 program
- CWSRF & DWSRF



CWA-SDWA  
Integration Toolkit



Source to Tap  
Infographic





## Opportunities: USDA, NRCS, USFS

- Participate in decision-making processes:
  - State technical advisory committee
  - EQUIP Subcommittee Meetings
- Share DW data and communicate water quality priorities (319) (NWQI)
- Communicate successes
- RCPP grants
- Forest Management Plans







# Opportunities

- Public-Private Partnerships
- Corporations
- Local and regional land use planning



# Thank you!



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# Links



- DWMAPS: <https://geopub.epa.gov/DWWidgetApp/#>
- Esri ArcGIS online: <http://www.arcgis.com/home/index.html>
- Source Water Collaborative: <http://sourcewatercollaborative.org/>
  - Source to Tap: <http://sourcewatercollaborative.org/infographic/>
  - Planner's Guide: <http://sourcewatercollaborative.org/guide-for-land-use-planners/>
  - Conservation Partners Toolkit: <http://sourcewatercollaborative.org/swp-conservation-partners-toolkit/>
- World Resources Institute: Protecting Drinking Water at the Source: <http://www.wri.org/publication/protecting-drinking-water-source>
- CWA-SDWA Coordination Toolkit: <http://www.gwpc.org/cwa-sdwa-coordination-toolkit>