

# **Source Water Challenges Associated with using a Large Industrialized River as a Drinking Water Source**

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# Source Water Protection

**A  
systematic  
program to  
maintain or  
improve  
the quality  
and  
available  
quantity of  
water that  
can be  
used as a  
source of  
drinking  
water.**



# Source Water Protection:

- 1986 – SDWA Amendments – Wellhead Protection Program
- 1996 – SDWA Amendments expanded the concept of WHP to Source Water Protection
- First Barrier - Focused on the water ***BEFORE*** it reaches our treatment plants.

# Source Water Protection Process

1

Getting Started

- Form a Committee
- Set Some Goals
- Talk to Others

2

Evaluating Threats

- Delineate Water Source
- Gather Data/Create Inventory
- Conduct Studies
- Prioritize

3

Source Mgmt.

- Management Strategies
- Regulatory Approach
- Non-regulatory Approach

4

Outreach & Education

- Form a Committee
- Public Education
- Industrial Outreach

5

Monitoring

- Data Gathering
- Data Analysis
- Establish Baseline
- Emerging Contaminants

6

Contingency Planning

- Spill Notification
- Emergency Response and Training
- Resiliency

# Current Events (2014-2015)

- Harmful Algal Bloom
- Spills



# GCWW and NKWD Source Water Partnership





# Greater Cincinnati Water Works

- Water to 1.1 Million People in SW Ohio and Northern Kentucky.
- Up to 260 million gallons of water per day from two treatment plants.
- Draws water from two *very* different sources
  - The Ohio River
  - The Great Miami River Buried Valley Aquifer

# Northern Kentucky Water District

- Serves approximately 300,000 people in Campbell and Kenton counties
- Wholesales water to portions of Boone, Grant and Pendleton counties
- Three (3) Water Treatment Plants with a Capacity of 64 Million Gallons Per Day
- Draws water from 2 sources

Ohio River

Licking River

# The Ohio River: A robust source of drinking water

- Plentiful Water Supply
- Improving Water Quality
- Several regulatory programs protect the river
- Small incidental spills diluted quickly



# The Ohio River: A robust source of drinking water

- Spills exit area quickly under moderate to high flow conditions.
- Large catchment negates many effects of localized droughts
- Strong civic pride
- Minimal industry for 50 miles upstream of intakes.

# Challenges Developing a Source Water Protection Program for the Ohio River

- Large industrialized multi-state upstream area
  - Preparing a single plan for two states
    - Wide Variety of potential contaminant sources
      - Local Issues vs Watershed Issues
        - Complex risk scenarios
          - Transportation and Spills

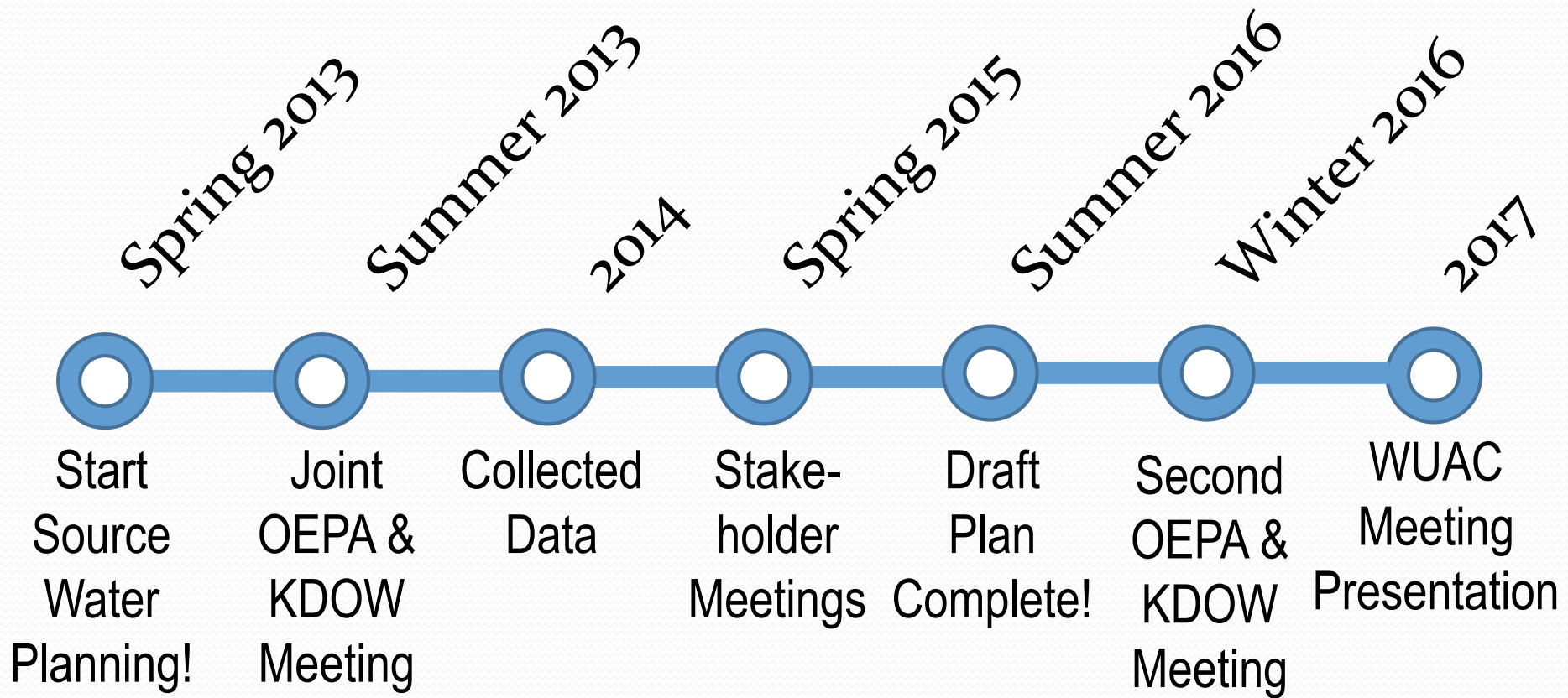
# Setting Program Goals

Minimize Threat Of Releases to the  
Ohio River  
Form a Source Water Partnership  
Maintain an Updated Potential  
Contaminant Source Inventory

Improve Communication with  
Build Stakeholder Groups  
Ohio River Upstream Utilities  
Upstream Intakes

Educate Industry and the Public  
Timely Notification to GCWW and NKWD of  
about Spills or Releases

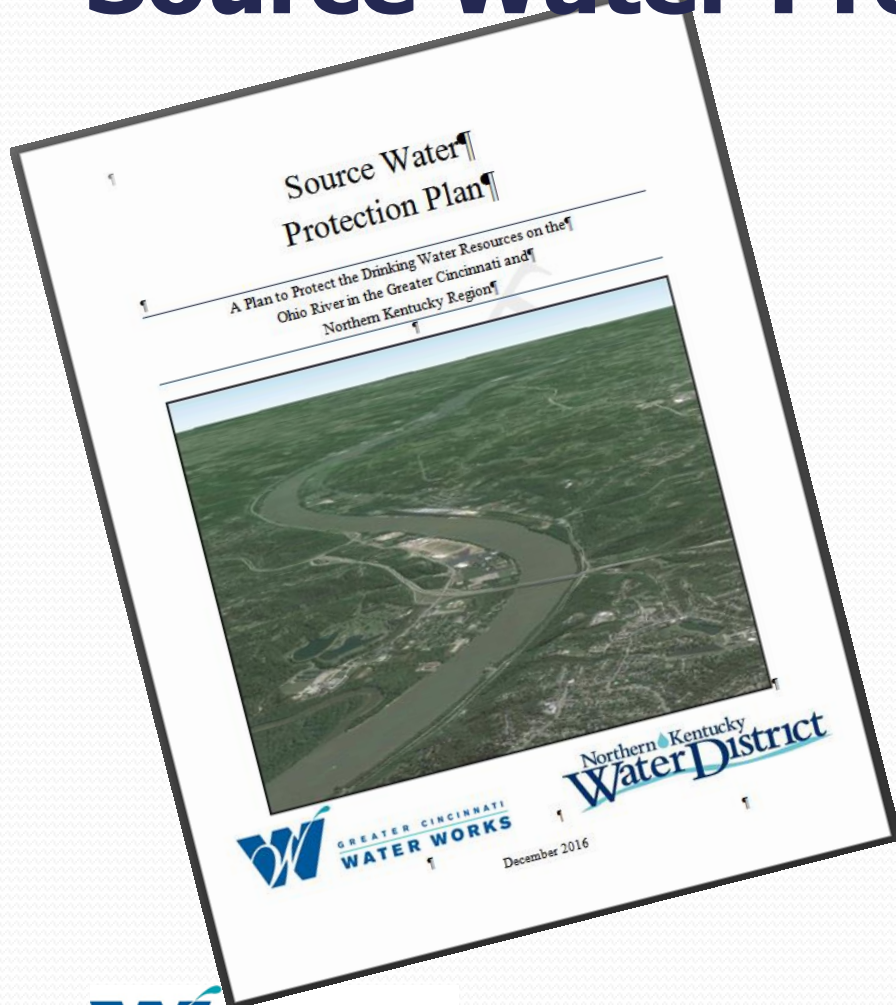
# Joint Source Water Protection Plan Preparation Timeline



# Approach for SWPP in the Cincinnati Area (Ohio River)



# Components of the GCWW/NKWD Source Water Protection Plan



1. Introduction
2. Delineation
3. Potential Contaminant Source Inventory (PCSI)
4. Prioritization of Potential Contaminant Sources
5. Protective Strategies
6. Education and Outreach
7. Contingency Planning
8. Monitoring
9. Implementation
10. References

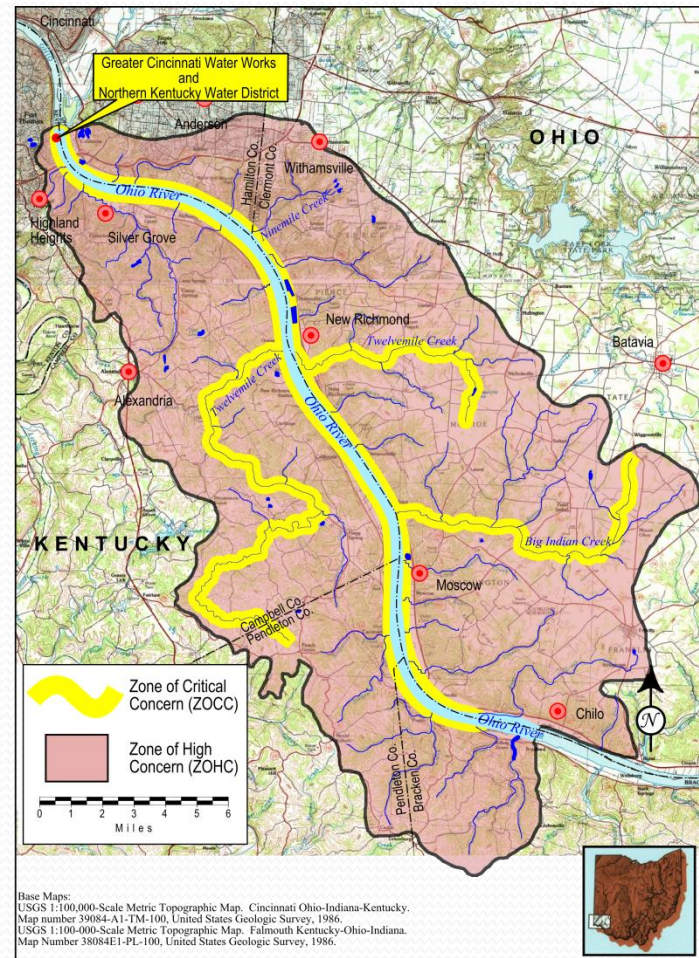
# Working with the Stakeholder group

- Clermont, Campbell, Kenton and Hamilton County EMA's
- OKI
- Thomas More College
- Campbell County Soil Conservation District

- ORSANCO
- Duke Energy
- Continental Building Products
- Clermont Water
- SD-1

# Inner Management Zones

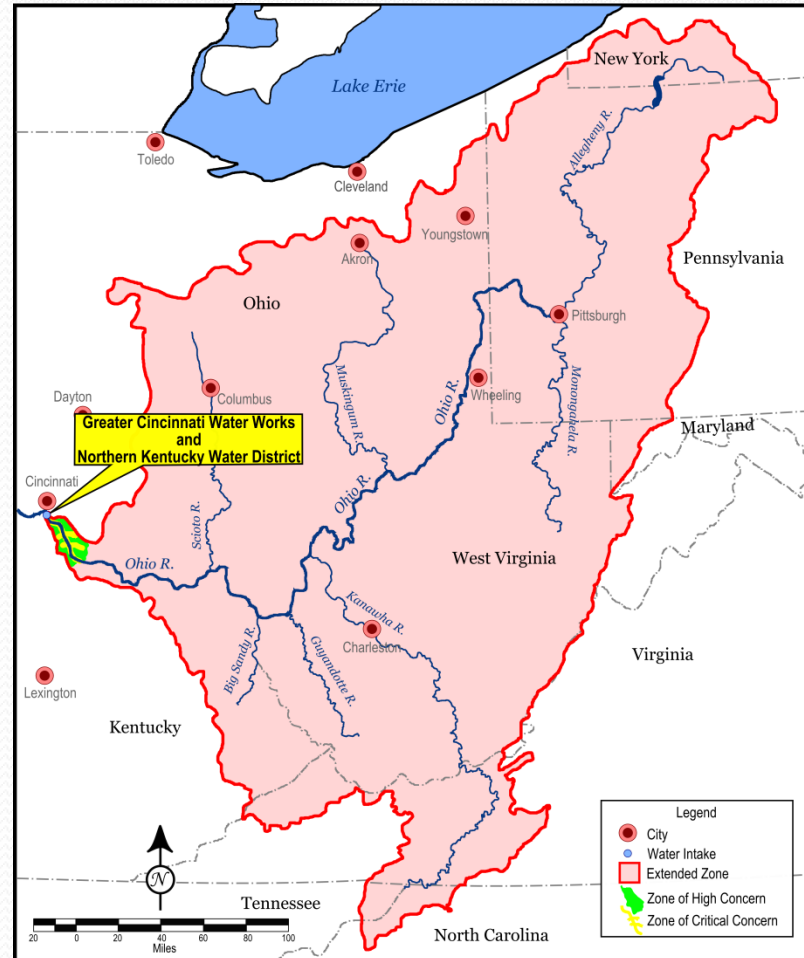
- 1.) Zone of Critical Concern  
(Innermost Protection Zone)
- 2.) Zone of High Concern  
(Outer Protection Zone)



# Source Water Area

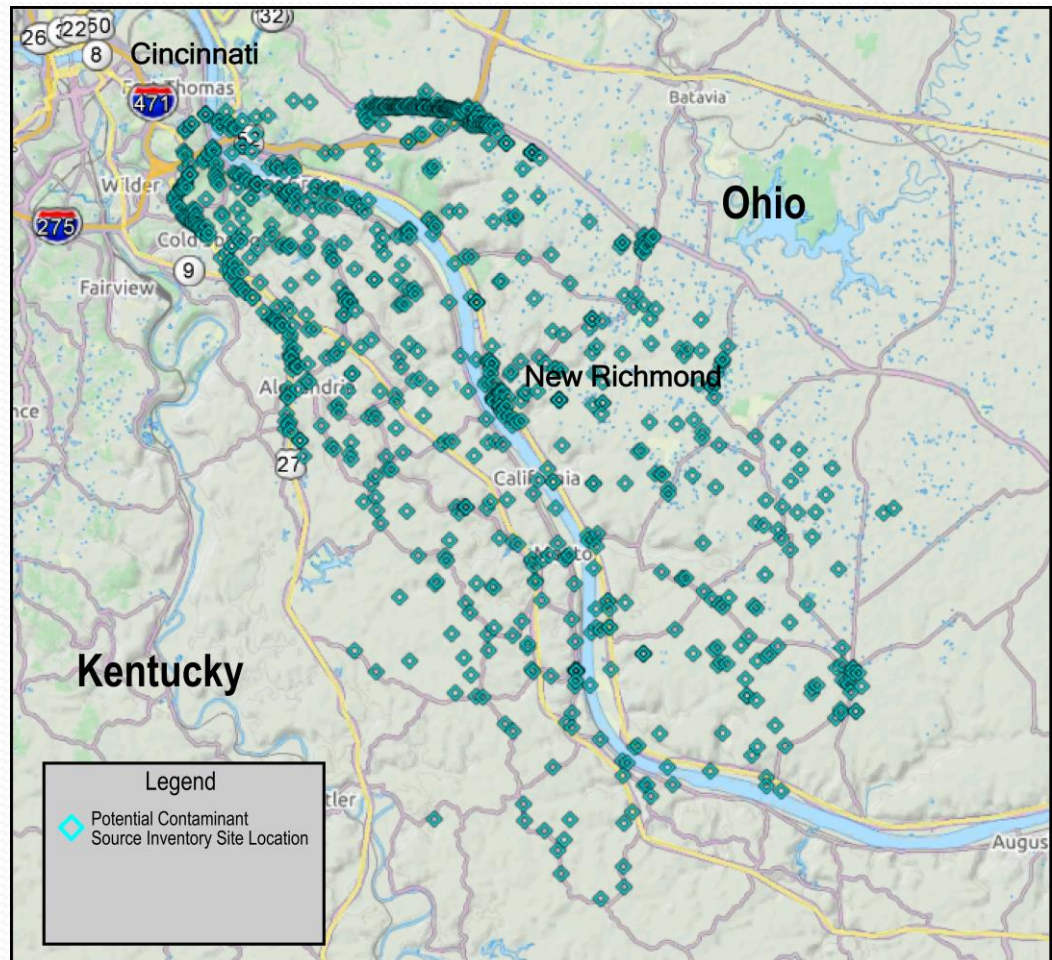
The Source Water Area:

- 71,000 square miles
- Portions of 8 states
- Portions of 4 US EPA Regions
- Multiple Large Urban Areas
- Several Major Tributaries
- Heavily used Transportation Corridors



# Potential Contaminant Source Inventory

*“The water quality threats to a river system as complex as the Ohio River are complicated, change on a frequent basis, and require data from multiple sources to fully understand.”*







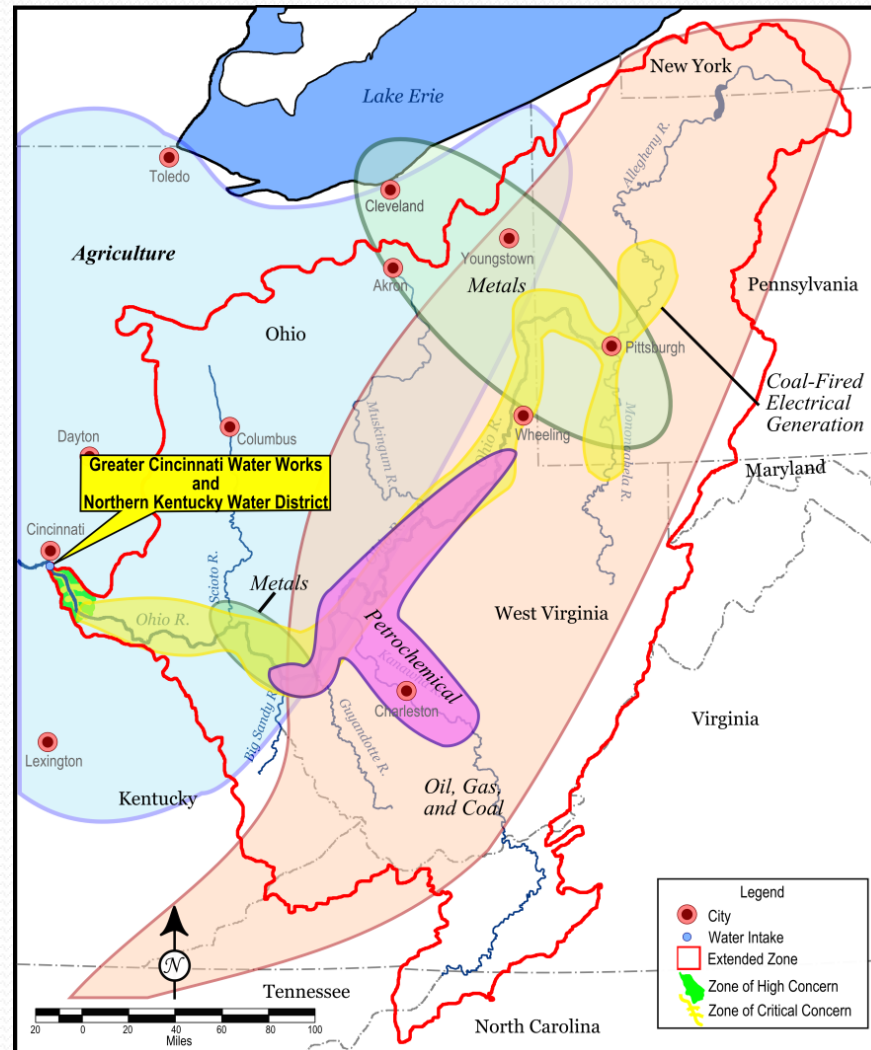


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# Top Potential Contaminant Sources in the ZOCC



# Upstream PCS's



# Non-Point Source Contaminants

- 
- **Agricultural and Livestock Runoff**
  - **Industrial Runoff**
  - **HAB Triggers**
  - **Nutrient Compounds**
  - **Airborne Deposition**
  - **Turbidity**

# Summary of water quality threats

- Spills
- WWTP's, CSO's
- NPDES Discharges
- Illicit discharges
- Large-volume chemical storage/Faulty Secondary Containment
- Pipeline breaks
- Non-Point Source Runoff
- HAB Triggers
- Coal Ash Impoundment Failure
- Barge accidents
- Derailments

# Combs-Hehl Bridge Program



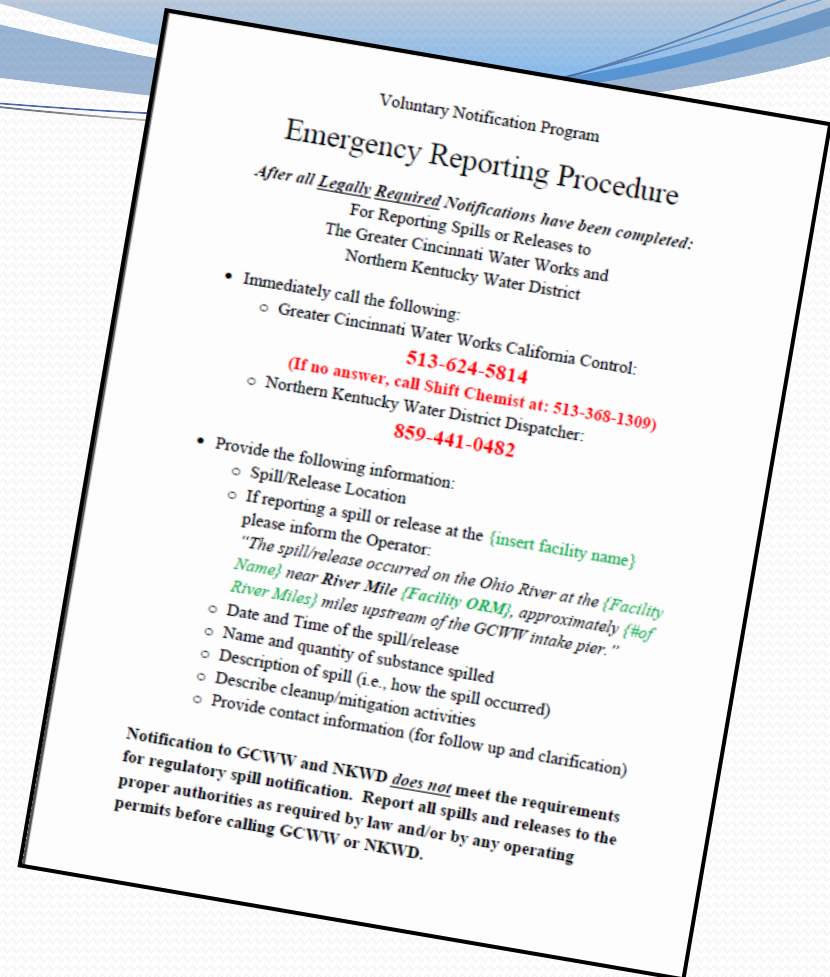
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# Spill Notification Programs



# Voluntary Notification Program

- Provide contact information to upstream facilities during onsite meetings, interviews, inventory visits, etc.
- Participants (so far):
  - Duke Energy
  - Dynegy Zimmer Power Plant
  - Continental Building Products



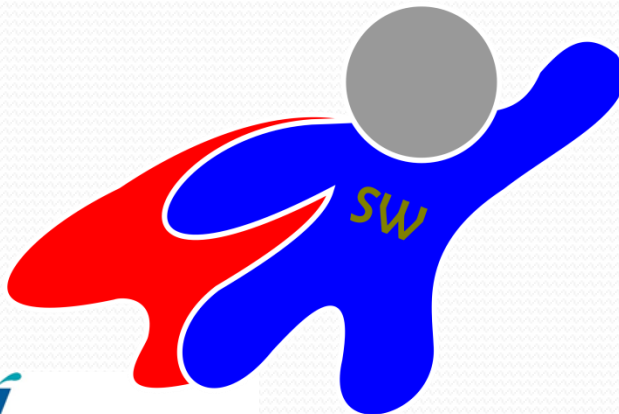
- Caremuse Limestone Mine
- Campbell County Police
- CSX
- Clermont County EMA

# "Source Water Defender" Program

- Most upstream businesses are not subject to City ordinances and are not our customers.
- Need a program to engage and motivate upstream businesses to participate in the program.
- Need to make it simple and easy to participate (and administer).

Recognition Program for businesses in the ZOCC and ZOHC that:

- ✓ Enact BMPs
- ✓ Reduce hazardous material inventory
- ✓ Facility personnel spill response training
- ✓ Participate in VNP
- ✓ Meet every two years for site reconnaissance and update the PCSI and hazardous material inventory.
- ✓ Periodic Self-inspection of Secondary Containment Structures
- ✓ Notifying GCWW/NKWD of changes to chemical storage and use.



# Public Education & Outreach

- Committee not yet formed
- Will work with the Planning Committee to develop logos, brochures, presentation materials, etc
- Exploring the possibility of utilizing local University students as part of “Capstone” projects to assist with digital media.

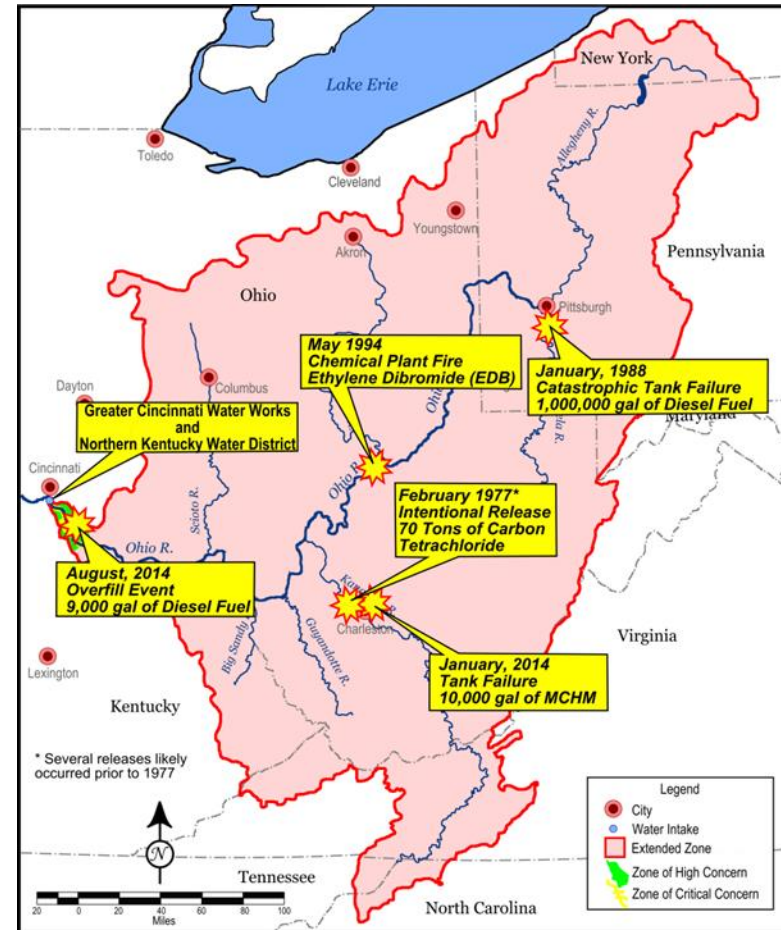
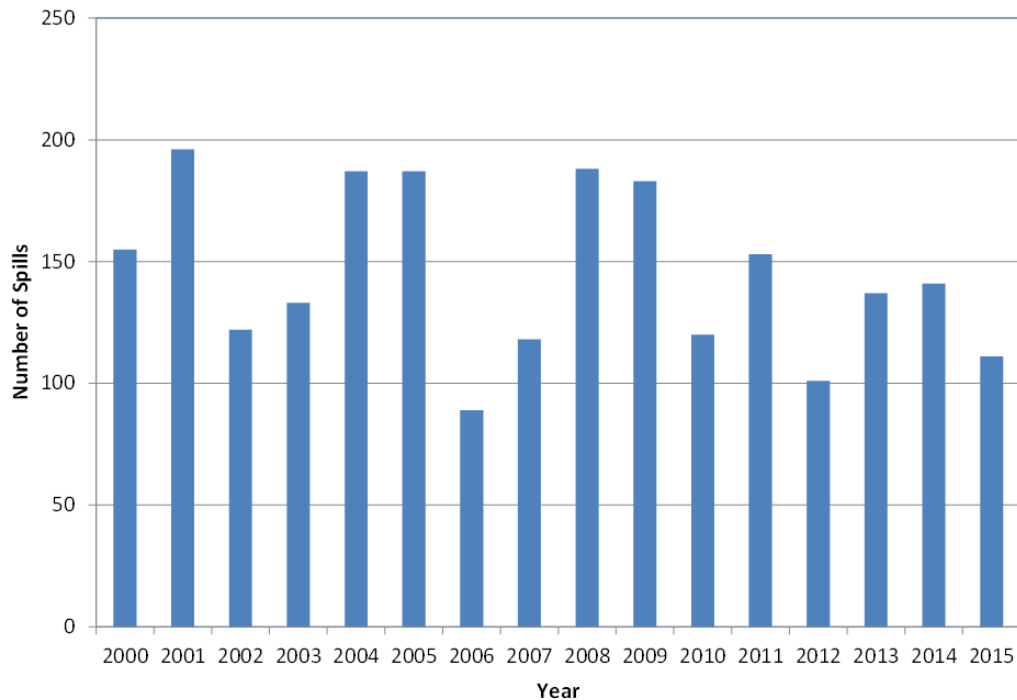


# Monitoring

- Benefits Public Safety
- Early Warning and Spill Tracking
- Baseline water quality data



# Contingency Planning



# Limitations

- Lack of Standardized Inventory Data Format
- Size of the upstream area including large industrial, agricultural, and urban areas
- Creating Non-Point Source Program, especially relative to HAB triggers
- Engaging (sometimes far) upstream partners in a meaningful way.
- Assessing, analyzing and communicating risks associated with upstream uses.
- Managing and using significant quantity of PCSI data.

# Next Steps

- Ongoing: Monitoring
- Plan Submittal: Ohio EPA and KDOW
- Detailed ZOCC and ZOHC Inventory
- Bridge Program
- Source Water Defender Program Development

# Questions?



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