OWOW Tools and Resources for State Partners

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OWOW Mission

OWOW leads national efforts to protect and restore freshwater, coastal, wetland, and ocean ecosystems.

Using watershed, place, and system-based approaches and working in collaboration with states, tribes, federal agencies, and private partners, we:
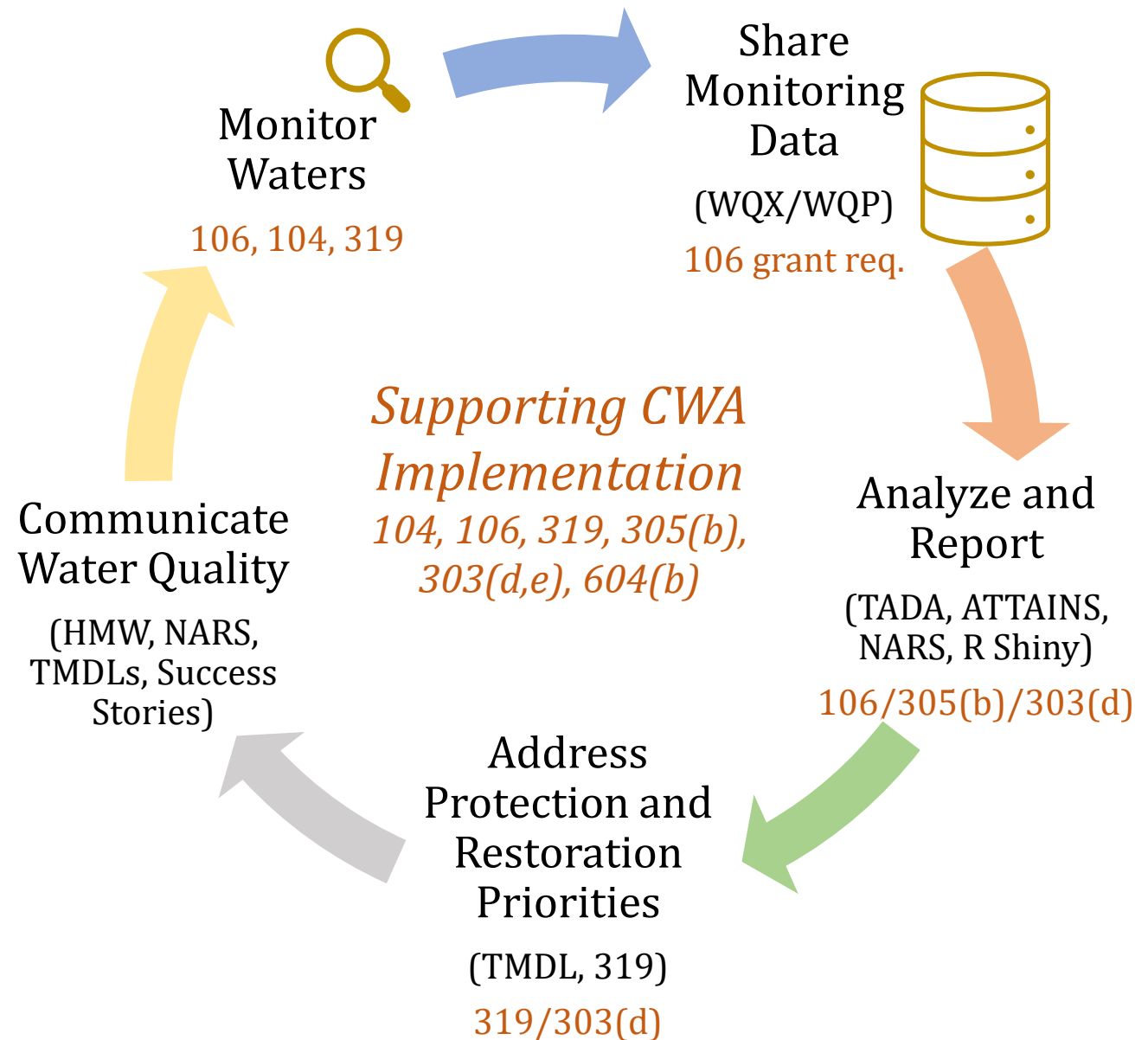
- assess, monitor, and communicate the quality of our nation's waters;
- reduce and prevent water pollution; and,
- design and fund the restoration of impaired waters.

Informing Clean Water Act (CWA) Progress

- Is my water safe for swimming, fishing, drinking?

- Does it support healthy biology?

- What are the leading problems or stressors?

- Where should I focus protection and restoration actions?

- Are actions effective individually and across the board?

- Is chemical, physical, and biological integrity improving?

Monitor Waters

106, 104, 319

Share Monitoring Data

(WQX/WQP)

106 grant req.

Supporting CWA Implementation
104, 106, 319, 305(b), 303(d,e), 604(b)

Analyze and Report

(TADA, ATTAINS, NARS, R Shiny)

106/305(b)/303(d)

Address Protection and Restoration Priorities

(TMDL, 319)

319/303(d)

Communicate Water Quality

(HMW, NARS, TMDLs, Success Stories)

Partnerships

- National Estuary Programs
- Urban Waters Federal Partnership locations
- Trash Free Waters
- Geographic Programs
- Hypoxia Task Force
- EPA, State and Tribal Monitoring and Assessment Partnership (MAP)
- National Water Quality Monitoring Council
- National Aquatic Resource Surveys Steering Committees
- 303(d) Vision Collaboration

Place-based Partnership Programs Supporting Wetlands and Watershed Protection and Restoration

- EPA supports multiple place-based partnership programs that advance wetlands and watershed protection and restoration

    - National Estuary Program supporting restoration in 28 estuaries.

    - Urban Waters Federal Partnership Program reconnecting communities to their waterways at 21 locations.

    - Trash Free Waters Program reducing trash from entering our waters through collaborative solutions and partnerships.

    - Geographic Programs helping protect local ecosystems and communities in 12 geographic areas.

- EPA and its partners leverage resources to support these voluntary programs—partnering with other federal agencies, Tribes, states, local governments, non-governmental organizations, private sector and academia.

Anacostia River Clean-up Event

Hypoxia Task Force

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

5 Federal Agencies and Tribes

US Environmental Protection Agency
National Oceanic and Atmospheric Administration
US Army Corps of Engineers
US Department of Agriculture
US Department of Interior
National Tribal Water Council

12 States

Arkansas	Ohio
Missouri	Louisiana
Iowa	Illinois
Tennessee	Mississippi
Minnesota	Kentucky
Indiana	Wisconsin

Mississippi River Basin

HTF States
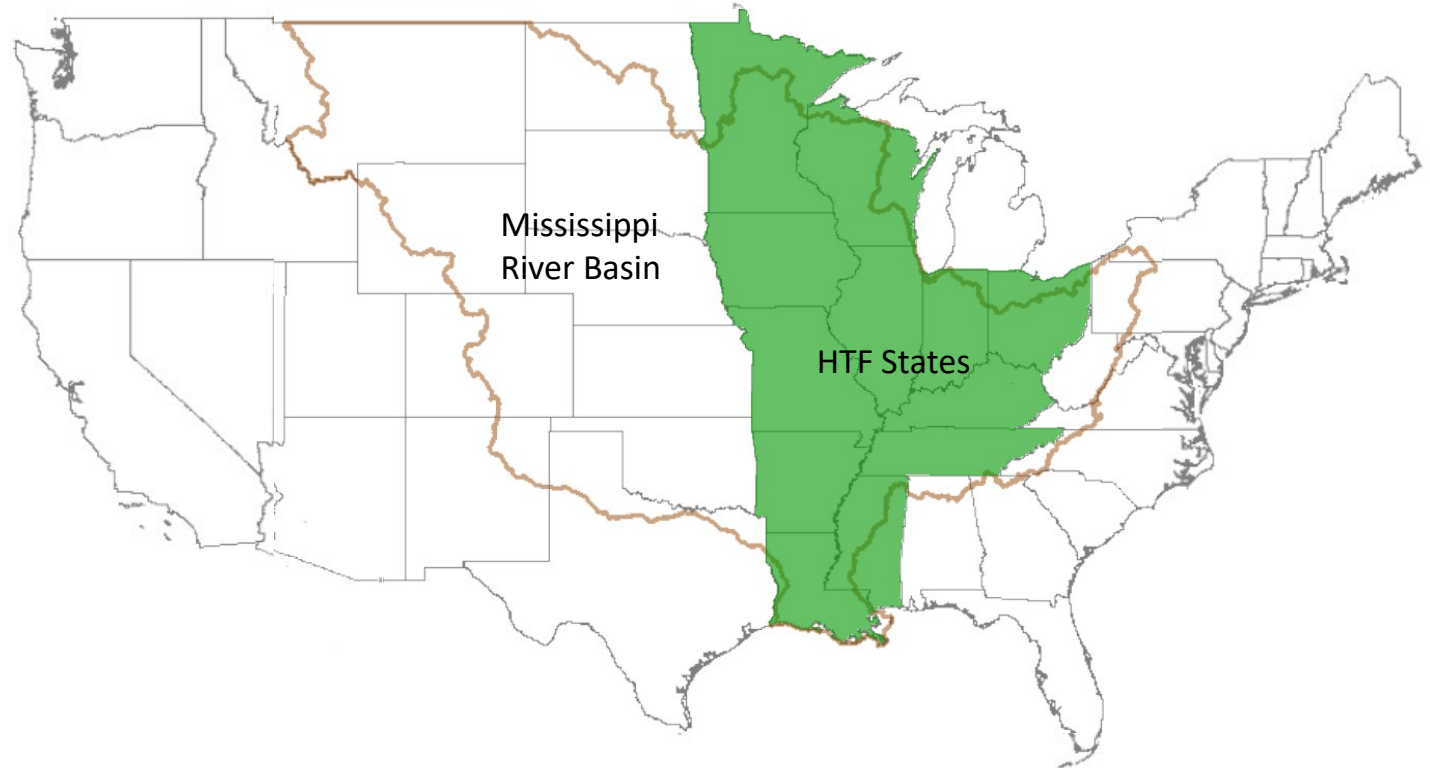
Each state member represents one of the following state agencies, with multiple agencies engaged with the Coordinating Committee:

Agriculture, Environmental Quality, and/or Natural Resources agencies

Monitoring Partnerships

- National Water Quality Monitoring Council
  - Fosters dialogue among members from federal agencies, 1 state from each region, tribal, volunteer monitoring and other organizations
  - Supports workgroups on volunteer monitoring and justice, equity, diversity and inclusion
  - Sponsors the National Monitoring Conference
- EPA, State and Tribal Monitoring and Assessment Partnership
  - Steering committee comprised of state reps on NWQMC
  - Fosters tech transfer across states and tribes through webinars and other dialogue
- Steering Committees for National Aquatic Resource Surveys
  - Dialogue on design, indicators and methods, analysis and reporting

303(d) Vision Collaboration

- EPA and States have developed a cooperative long-term Vision for the CWA 303(d) Program that was released in 2022.

- The Vision has five goals: Prioritization and Planning; Restoration; Protection; Partnerships, and Data and Analysis. It also includes four focus areas: EJ, Climate Change, Tribal, and Capacity Building.

- State Long-term program prioritization frameworks articulate water quality planning priorities and strategies for implementing the Vision goals.

- About half the states have completed or are close to completing their prioritization frameworks.

- EPA and states use the Vision to help guide our collaborative efforts.

2022-2032 CWA 303(d) Program Vision

The CWA Section 303(d) Program strives to strategically plan and prioritize activities, engage partners, and analyze and utilize data to develop water quality assessments, plans, and implementation approaches to restore and protect the Nation's aquatic resources

Goals

Planning and Prioritization

Data and Analysis

Protection

Restoration

Partnerships: Integration and Engagement

Focus Areas

Environmental Justice

Climate Change

Tribal Water Quality and Program Development

Program Capacity Building

Funding

- Nonpoint Source Grants
- Natural Resource Damage Assessment
- BIL/IIJA Gulf Hypoxia Program
- National Estuary Programs
- Geographic Programs
- Wetlands Program Development Grants
- Monitoring Initiative
- TMDL dedicated funds
- Support for state travel to annual 303(d) meeting in Shepherdstown
- Nutrient projects
- Healthy Watersheds

National Nonpoint Source (NPS) Grants

- Established in 1987 under CWA §319. Annual Avg $172M, FY2015-2024

- EPA promotes the *watershed approach* for targeting work and engaging stakeholders and partners at the local scale. (min. of 50% of grant to support "on the ground" work)

- **Guidelines updated in 2024** drawing from state feedback, including equity work group and climate change discussions include:
  - **Flexibilities** – supporting **watershed planning and implementation** in disadvantaged communities, expansion protecting **healthy waters** and protection measures and **Watershed Financing partnerships**
  - **Expectations** - Include plans for ensuring **equitable access to program benefits** and **climate resilient** watershed projects
  - **Clarifications - appropriate geographic scale** and **level of detail,** Examples for leveraging existing plans like **NRCS watershed assessments** and **Hazard Mitigation Plans**

BIL/IIJA Gulf Hypoxia Program

$60M over 5-years as a first-time dedicated investment in the Hypoxia Task Force's Action Plan to reduce nutrients delivered to the Gulf of Mexico hypoxic zone via the Mississippi River

$4.2M to each of the 12 states in two grants
- First grants underway: BMPs, sub-grants, planning, outreach, practice and soil sampling education, stakeholder engagement, WWTP optimization
- Second grants in planning stage

$5.4M total to 15 Tribes
- Support staff; demo projects; implement, augment, advance NPS programs; capacity building; 7 to apply for Treatment as State for CWA programs

$400K to each of 3 Sub-basin committees and $600K to Land Grant Univ. support
- Comms strategies, cross-border convenings, research needs assessment, Water Quality monitoring on Mississippi, Ohio and large tributaries

NEPs and Geographic Programs

National Estuary Program

- In FY24, the EPA received $850,000 per individual NEP ($23.8M in total) under CWA Section 320 appropriations.

- In addition, the Bipartisan Infrastructure Law provided ~900,000/per NEP each year for FY22-FY26 ($132M in total).
  - Individual NEPs on average leverage $16 for every $1 provided by the EPA funds through partnerships, fundraising and capacity-building. In FY23, NEPs leveraged over $400M to invested in projects focused on restoration, land acquisition and stormwater management.

Geographic Programs

- In FY24, the EPA's 12 geographic programs received $681.M.

- In addition, the Bipartisan Infrastructure Law provided $1.717B to the EPA's 12 Geographic Programs for FY22-26 (~343M annually).
  - Bipartisan Infrastructure Law funds are to be distributed through competitive and noncompetitive grants, direct implementation projects, and interagency agreements.

Wetland Program Development Grants (WPDGs)

EPA awards multiple WPDGs that promote wetlands protection and restoration, including:

- State and Tribal Competition ($26M)
- Tribal Set-aside Competition ($3.8M)
- 5-Star and Urban Waters Restoration Competition for NGOs and local governments for restoration training ($1M)
- National Competition for nonprofits, interstate agencies, and intratribal consortia ($660K)

In 2025, EPA will be looking to update our website and enhance access to grant information. We are interested in feedback to improve information on NOFOs, potential case studies of funded projects and more.

Monitoring Initiative

- Enhance state monitoring programs
  - $10 million allocated evenly among states with funds also available for tribes, territories and interstates
  - Address priorities described in _water quality monitoring strategies_
- Collaborate on national statistical surveys (NARS)
  - $8.5 million for state/tribal/EPA partnership
  - Implement nationally consistent, statistically-valid assessment of extent of waters supporting CWA goals

Other OWOW funding support

- TMDL dedicated funds – Approximate $1.2 Million per year for Regions to provide technical assistance for states on litigation related and other priority TMDL and listing activities.

- Cooperate agreement to support state travel to the National 303(d) meeting in Shepherdstown (>$100,000 per year).

- Nutrient projects – Approximately $200,000 per year for Regions to provide technical assistance for states on priority nutrients projects.

- Healthy Watersheds – Healthy Watersheds Consortium Grant (previous); Technical assistance for Recovery Potential Screening (RPS) activities.

Telling the Water Quality Story

Monitoring – NARS, state scale surveys, HABs, 319 effectiveness

Data – WQX/WQP, TADA, pollutant loading estimation tool

Reporting – ATTAINS, ATTAINS survey module, HMW

Priority setting – Vision, RPT, Healthy Watersheds Screening, Nutrient Inventory, Freshwater Explorer

Actions – NPS, Lists of Impaired Waters, TMDL, NRDA

Evaluation – GRTS, Success Stories
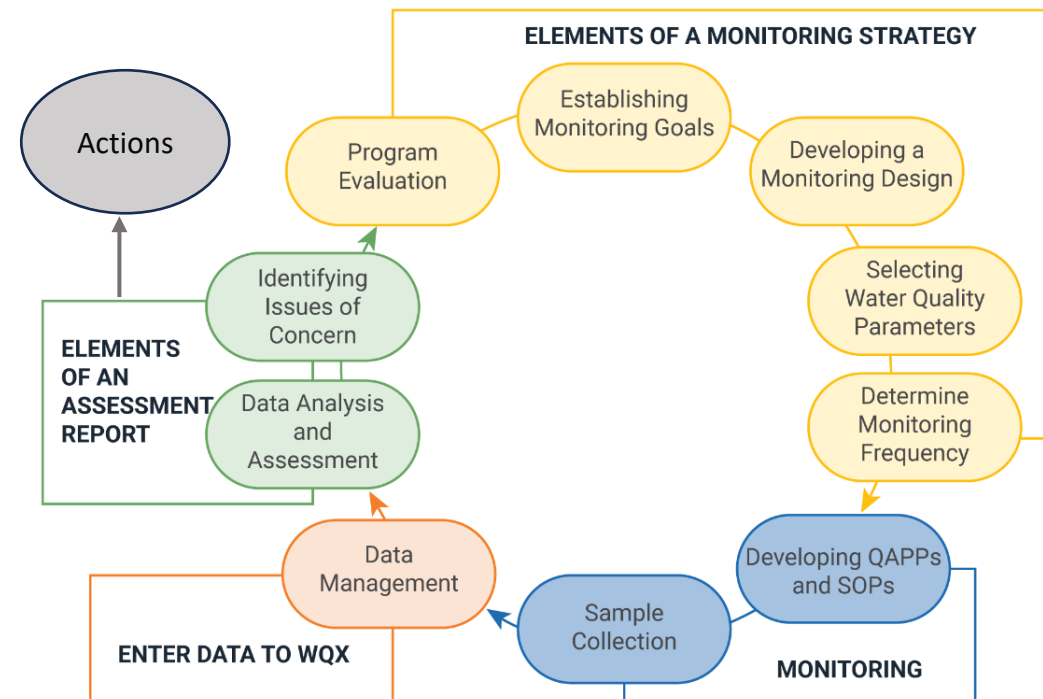
Volunteer Monitoring for HABs

- Members of the public can use their smartphones to photograph, geolocate, and submit general information on suspected HABs.

- Participating state and Tribal partners receive real-time notifications of reported suspected HABs to help guide their monitoring efforts.

- Originally a product of the Cyanobacteria Monitoring Collaborative, led by EPA Region 1, UNH and states, now expanding nationwide.

- Eyes on the water help document suspected cyanobacteria blooms and provide data to help us better understand where and when blooms occur.
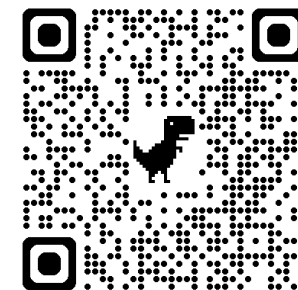
HAB Forecasting

- CyAN forecast model developed by ORD and operationalized by OWOW within one year

- Like weather forecasts, the model predicts the probabililty of a HAB occurring in the coming week (overall accuracy 90% for 2021 calendar year)

Journal of Environmental Management
Volume 349, 1 January 2024, 119518

Research article

Forecasting freshwater cyanobacterial harmful algal blooms for Sentinel-3 satellite resolved U.S. lakes and reservoirs

Blake A. Schaeffer [a], Natalie Reynolds [b], Hannah Ferriby [c], Wilson Salls [a], Deron Smith [d], John M. Johnston [d], Mark Myer [e]
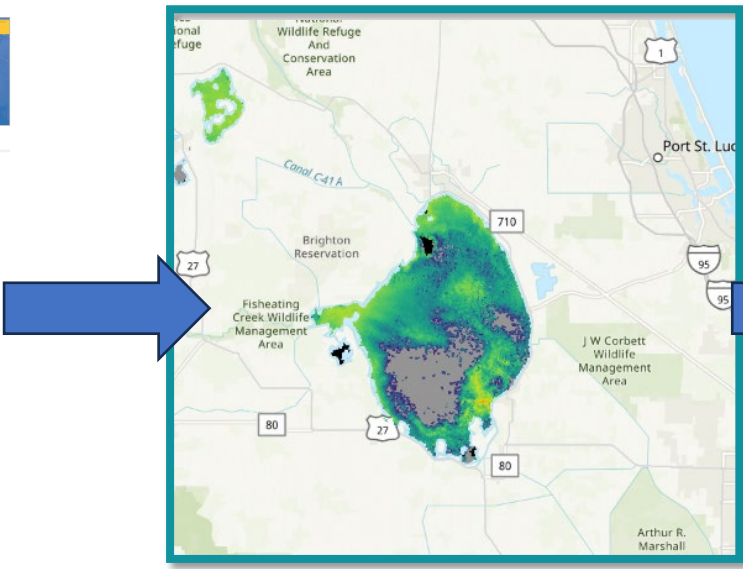
Forecast Data

CyanoHAB Forecasts July 21-27, 2024 (xlsx) (141.8 KB)

Show 10 entries   Search: NJ

Prediction table for 2,192 lakes and the probability of a cyanobacterial HAB.

Date	State	Lake Name	% Chance of CyanoHAB	Latitude of Centroid	Longitude of Centroid	COMID
Jul-21-2024 to Jul-27-2024	NJ	Lake Hopatcong	3.12	40.9439	-74.6422	2585287
Jul-21-2024 to Jul-27-2024	NJ	Wanaque Reservoir	7.81	41.07097	-74.2924	6244860
Jul-21-2024 to Jul-27-2024	NJ	Boonton Reservoir	12.06	40.88257	-74.4082	6248826

Monitoring
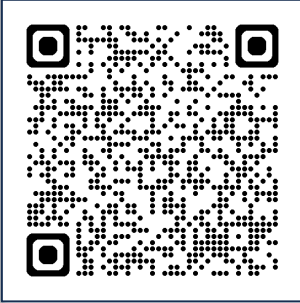
Tools for State Statistical Surveys
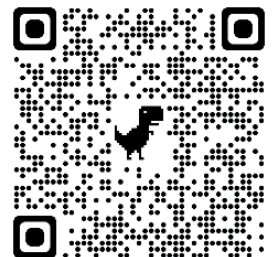
- Design
- Analyze
- Report
- Communicate

Monitoring Assessment

States leverage NARS for state-specific priorities

- Conducting state-scale statistical surveys or other intensifications
  - At least 18 states have leveraged NARS survey sites for state scale surveys, with enhancements including increased sample frequency
  - Other states employ custom survey designs
  - Estuary programs, Upper Midwest Forest Service, territories
- State policy and programmatic applications leveraging NARS
  - Water Quality Criteria development in New Mexico, California, Virginia, Washington and others
  - Lake Shore restoration and protection efforts in Vermont and Wisconsin
  - Lake monitoring program development in Ohio (especially harmful algal blooms) and Idaho
  - Expansion of monitoring in Minnesota lakes for pesticides, mercury, and algal toxins
  - Development of stressor thresholds linked to probable stress to aquatic life based on benthic macroinvertebrate community responses in Virginia
 - Assess coastal sediment contamination in Alaska

Sediment in New Mexico Streams:
Existing Conditions and Potential Benchmarks

New Mexico Environment Department
United States Protection Agency
Tetra Tech, Inc.

Final Report
August, 2010

| Monitoring | Assessment | Program Evaluation |

Integrated Water Data Systems Supporting the Clean Water Act

- Data Standards and Interoperability
  - Water Quality Data
  - Standardized Hydrography
  - Designated Uses
  - Assessment Decisions
  - Public Information
- Support to numerous other Water Programs
- User Support – Lowering the barrier to entry

Data Management

ATTAINS

TADA

HMW

Water Data Integration Branch

NHDPlus

Others

WQX / WQP
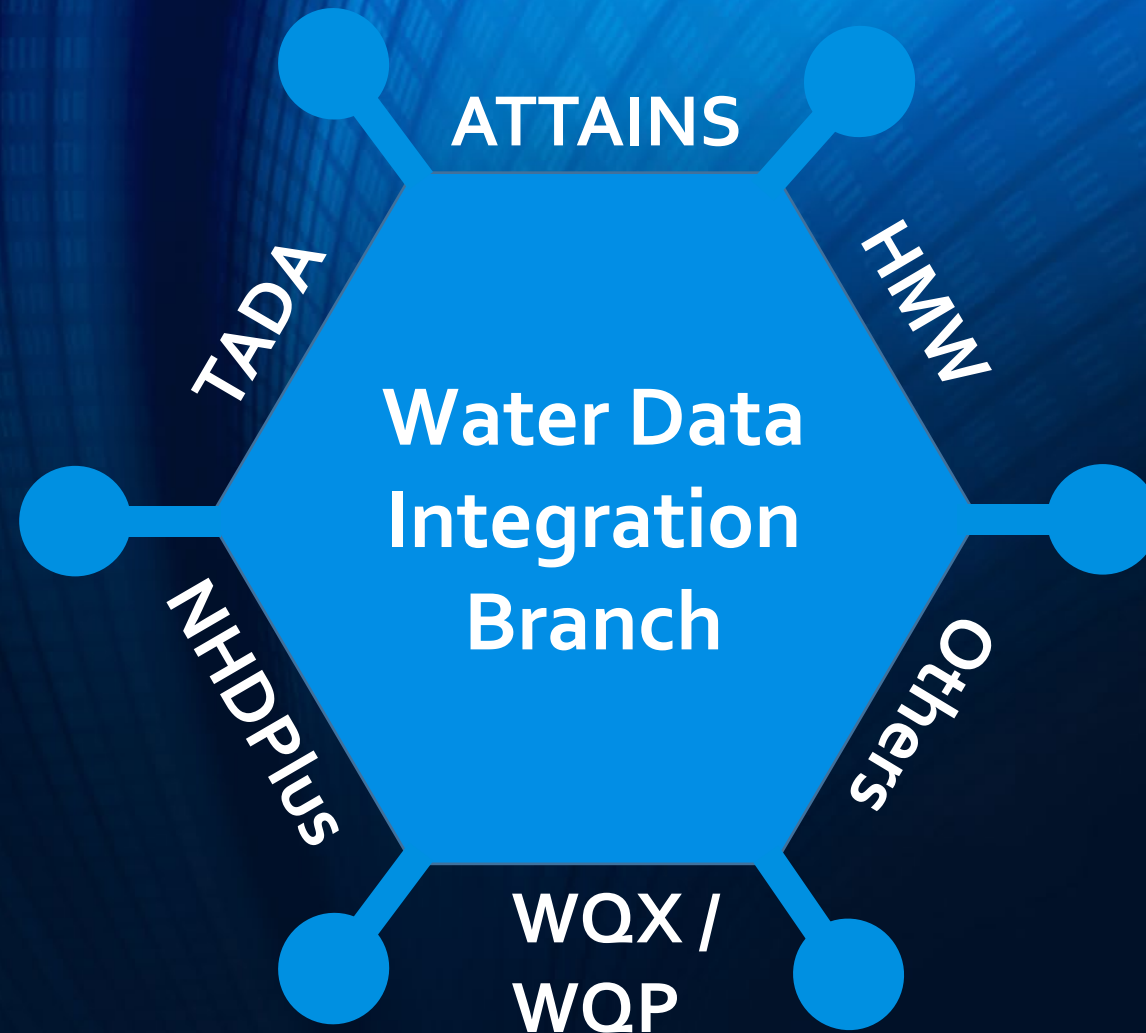
The **Water Quality Exchange** is a standardized data format and submission database delivering data to the **Water Quality Portal** for public access.

WQX is a 'standardized' approach for <u>sharing</u> water quality monitoring sample data of documented quality

WQX defines a common data model for communicating water quality data of different types (chem, phys, bio, etc.)

Tools and technical support are available to help automate flows from existing datasets and formats, QA

The structure of datasets and data systems don't matter, as long as existing data can be mapped to WQX standards

Many ways to prepare and submit data to WQX: including direct XML submissions, WQXWeb, and 3rd party apps

Water Quality Portal

Operated under An Interagency Cooperative agreement (USGS & EPA)

- Serves data from USGS, EPA, USDA, NPS in a standard WQX format

- # WQP: Data from >1,600 organizations

- # WQP: >425m records from >1m sites

- Serves data of All Water Types

- Includes a Graphical User Interface (GUI) & Web Services

- One of Our Integrated Systems (IOW HUB)

- DATA ServiceS can directly power analytics like those in HMW

- Growing Number of internal/external Tools built on top of this Primary data source

Data Management

Dashboard on Monitoring for HABs

Powered by the Portal

- Uses automated data services to retrieve algal toxin data from many organizations
  - EPA National Aquatic Resource Survey (NARS)
  - USGS studies
  - State and Tribal agencies
  - other sources
- Visualizes existing algal toxin data shared through the Water Quality Portal
  - Shows how much HAB monitoring is happening across the country
  - Users can see where data exceeds EPA recommended recreational water quality criteria for algal toxins
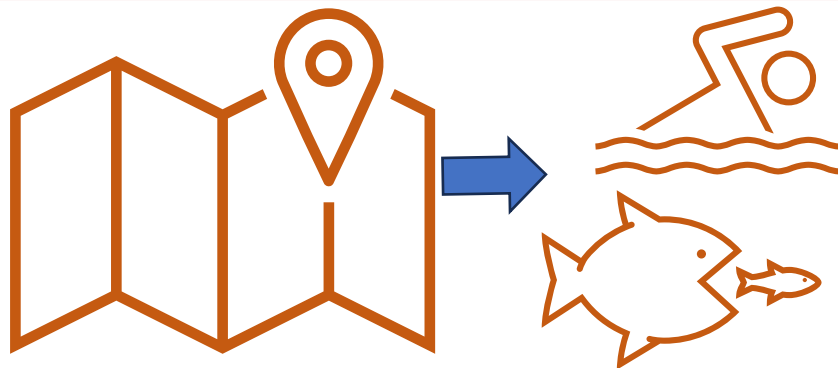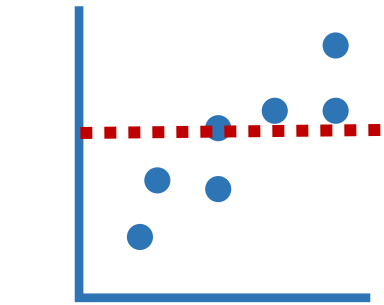

Data Management
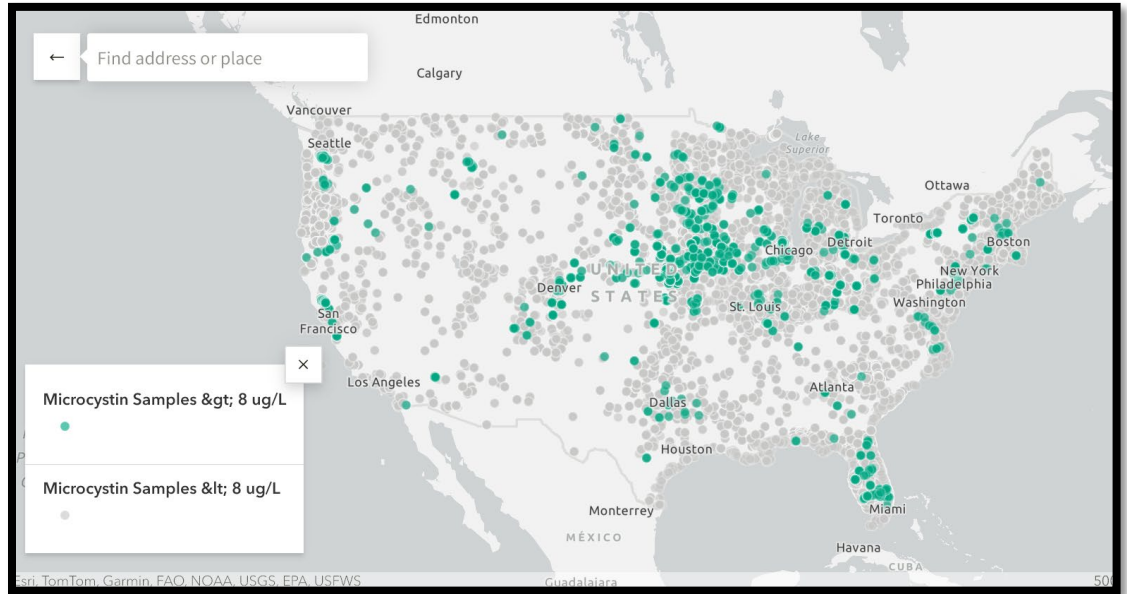
TADA Vision

Discover, wrangle, and QC data from the WQP
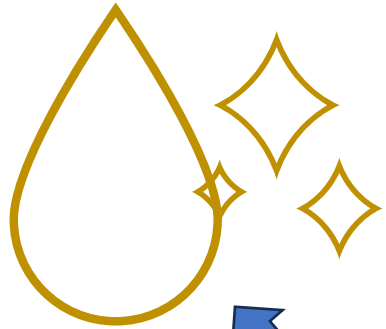
Assign beneficial uses

Assessment unit overlay with monitoring locations

Beneficial uses determine numeric criteria used

Assessment methods guide impairment decisions based on:
- Period of record
- Aggregated measurements
- Frequency
- Duration
- Magnitude
- Season
- Correction factors
- Covariates
- Site-specific criteria

Welcome to ATTAINS

ATTAINS = **A**ssessment **T**MDL **T**racking **A**nd **I**mplementatio**N** **S**ystem

- Contents
  - Assessment Units – names, water types, sizes, geospatial locations
  - Assessment decisions – CWA Sections 303(d)/305(b)
  - Actions or Plans towards restoration or protection of waters (e.g., TMDL, Alternatives, Protection Approaches)
  - State statistical survey results

- Features
  - Developed with input from states
  - Multiple data entry options
    - Web User Interface forms
    - Allows batch upload from spreadsheets
    - Exchange Network/Central Data Exchange (CDX) connection to state database

Data Management

Section 319 Grants Reporting and Tracking System (GRTS)

GRTS is the center of gravity for nonpoint source project data

- Documents water quality achievements
- Helps provide critical oversight on grants and environmental progress
- Tracks benefits to disadvantaged communities

GRTS data is integrated and discoverable

- Integrated in other EPA systems and available to those users (e.g., NPS Data Explorer, How's My Waterway, DWMAPS)
- Utilized by GAO, OMB, and other federal agencies (e.g., USDA, USFS Wild & Scenic Rivers)
- Requested by university researchers and students

GRTS quantifies success

- Nonpoint source pollutant loads removed from the nations waterbodies last year:
  - 7.3 Million Pounds of Nitrogen
  - 2.2 Million Pounds of Phosphorus
  - 1.3 Million Tons of Sediment

Data Management

Impaired Waters Listing and TMDLs
Programmatic Support Areas

Training	Collaboration	Consistency
TMDL Foundations	State, Territories and Tribes (ELI)	Guidance (e.g., IR Memos, Climate Paper)
Webinar Resource Library (NEIWPCC)	Cross Program (ACWA)	Initiatives (e.g.,Vision, timeliness on lists)
Clean Water Pod (NEIWPCC)		Tech Support Compendia (ELI)

Assessment   Actions

Priority Setting Tools

- The EPA Section 303(d) Program and the Healthy Watersheds Program developed and provide technical support for free, publicly available data and tools to support states, territories, tribes and other partners in their efforts to identify, restore, protect, and maintain healthy watersheds across the United States.

  - **Preliminary Healthy Watersheds Assessment** PHWA
    - Set of statewide and ecoregional-scale assessments that score watershed health and vulnerability across the conterminous United States
    - Can be accessed through standalone data downloads, the RPS Tool, in the "Protect" tab of How's My Waterway
    - Anticipate an update to watershed health scores this next year

  - **Recovery Potential Screening** RPS Tool
    - Allows users to compare a group of watersheds using indicators that describe watershed conditions and characteristics
    - Used by over 30 states as well as EPA Programs
    - Look out for upcoming release of a web-based RPS tool
    - Expect website relaunch and rebranding soon – changing name to Restoration and Protection Screening
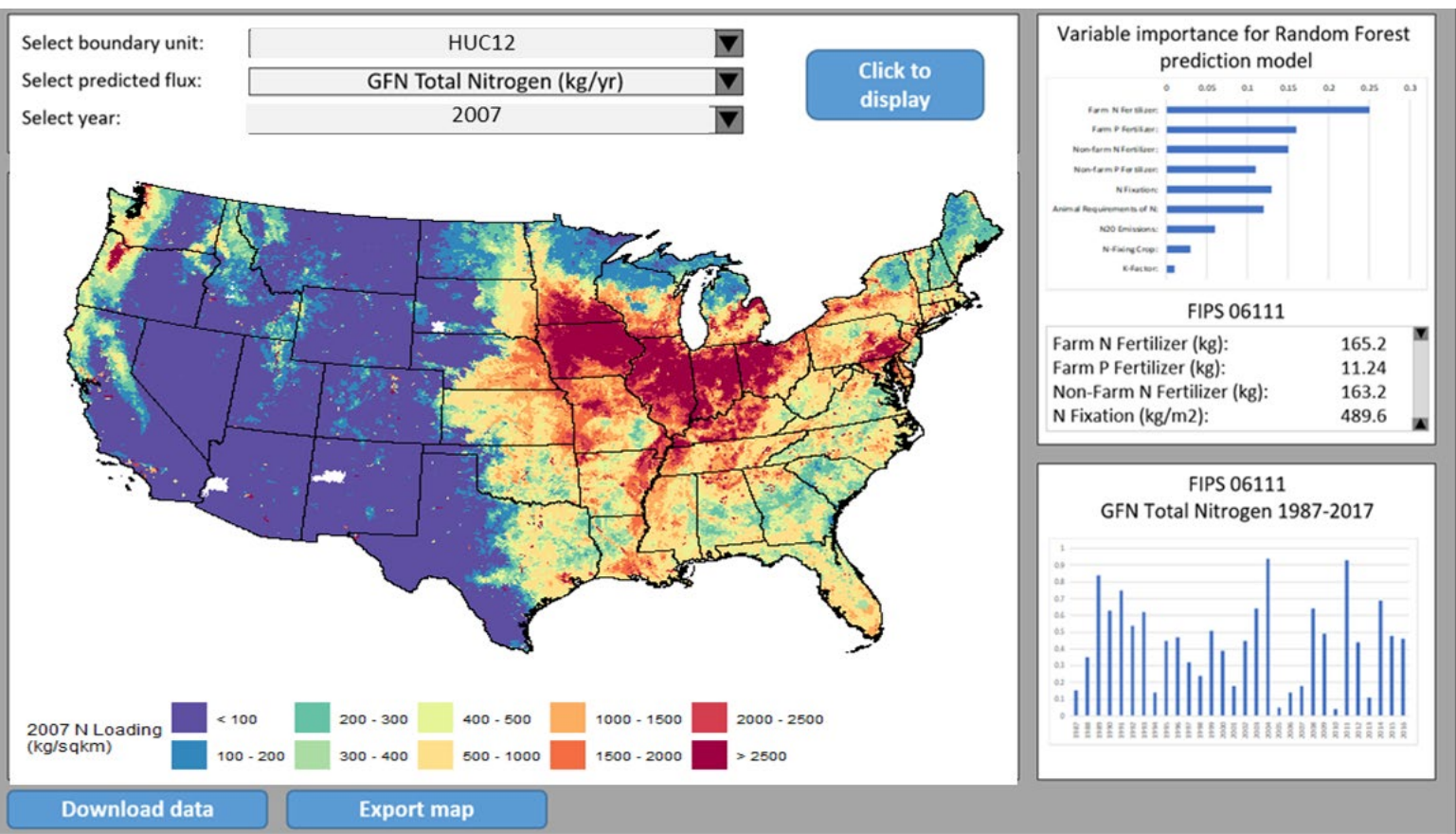
Assessment | Program Evaluation | Actions

National Nutrient Inventory Explorer (NNIE)

Explore major nutrient pollution sources and extent of water quality degradation

The NNIE is a flagship product that will integrate and visualize research within the National Nutrient Inventory research portfolio. This multi-agency project provides tools and datasets to help decision makers identify point and non-point source nitrogen and phosphorus pollution hotspots and link them to water quality conditions across the U.S.

- NNIE will consist of three modules:
  - National Nutrient Inventory
  - Water Quality Predictions
  - Scenarios

- Users can assess the magnitude/trajectory of various nutrient pollution sources and their impacts on lakes, rivers, and streams (e.g., nutrient concentrations and loads, HABS, drinking water nitrate violations).

- Users can use this information to rank/prioritize states, counties, and subbasins for restoration based on inventory and water quality prediction information, subbasin responsiveness to management actions, and other environmental changes.

Pollutant Load Estimation Tool (PLET)

WHAT

Web-based tool that ***estimates*** annual, long-term ***nutrient and sediment loads*** from *surface runoff* over different land uses and load reductions resulting from BMP implementation

WHO?

Section 319 subgrantees, watershed planners, academics, conservation districts and others

WHY?

38% of Section 319 Grantees use PLET to ***report annual load reductions***. It's also used for planning purposes (i.e. watershed-based plans)

Updates coming soon include:

- A **protected Lands calculator** to estimate prevented loads and prevented runoff from protection efforts.

- Updated precipitation data using PRISM data processed from HAWQS model.

> **What other improvements would users like to see?**

Assessment

Program Evaluation

NPS Success Stories

- Written by state and local NPS staff and showcase national, state and local success

- 774 published stories

- **13,000 miles** of rivers and streams and **340,000 acres** of lakes, ponds, and reservoirs restored or improved since 2005

- New Success Story layout available now

- https://www.epa.gov/nps/success-stories-about-restoring-water-bodies-impaired-nonpoint-source-pollution

NONPOINT SOURCE SUCCESS STORY — SOUTH CAROLINA

Ecological Restoration by Daylighting a Smith Branch Tributary

| Abstract | Water Quality | Highlights | Results | Partners & Funding |

Water Body Improved

For over a century, a tributary that once ran through Hyatt Park in downtown Columbia had been piped, and the natural ecosystem that was once an enjoyable part of the park had been lost. The Hyatt Park Revitalization project began in 2018 to restore and celebrate the stream and its natural habitat by daylighting a piped Smith Branch tributary and implementing vegetated buffers and bioretention areas. The project also included a constructed beaver dam and native plantings to further reconnect the park to a natural ecosystem. This stream daylighting and restoration is the centerpiece of the community-driven overall revitalization of Hyatt Park and serves as an educational opportunity for the highly popular park. For more information, see https://www.youtube.com/watch?v=0M88iODlDtM.

Contact
Shea McCarthy (mccartsm@dhec.sc.gov)
Nonpoint Source Coordinator
SC DHEC

Figure 7. Daylighted stream in Hyatt Park after construction.

| Assessment | Program Evaluation | Actions |

Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY

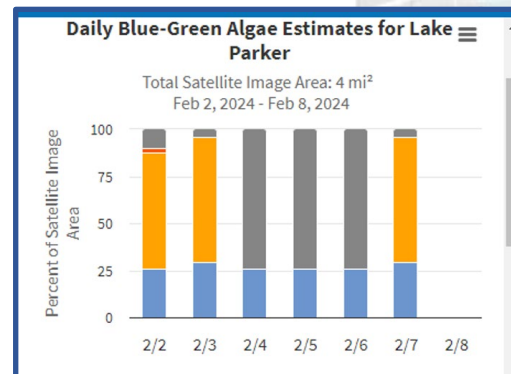**Pollutants Addressed in Ag Success Stories**
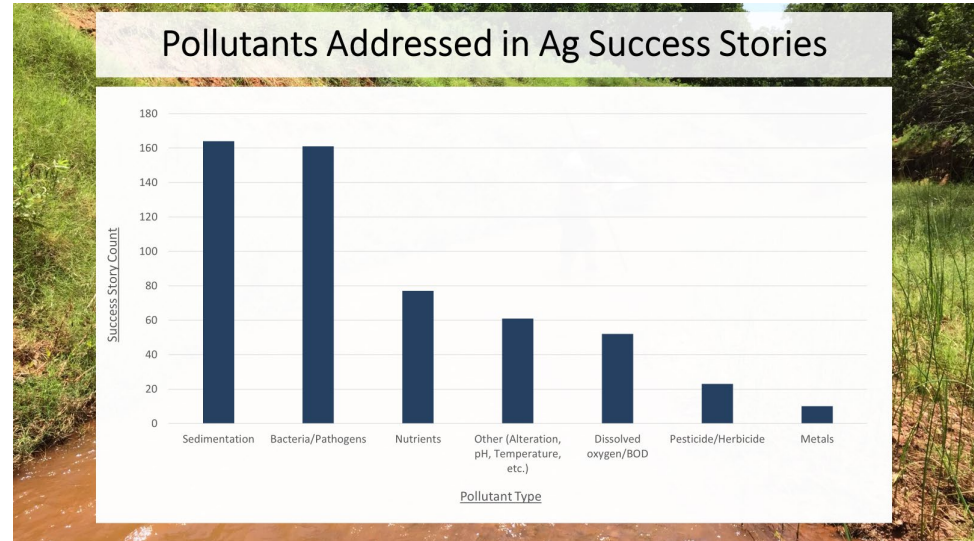
Listing/Delisting Timeframe Varies by Pollutant

Pollutant	Average Listing/ Delisting Timeframe (Years)	Geomean Listing/ Delisting Timeframe (Years)	Listing/Delisting Timeframe Range (Years)
Sedimentation	10	7.9	2 - 24
Bacteria/ Pathogens	10	8.4	4 - 24
Nutrients	13	11.2	4 - 38
Other	10	8.3	2 - 30
DO/BOD	10	8.8	4 - 30
Pesticide/Herbicide	11	9.7	4 - 22
Metals	12	10.1	4 - 22

How's My Waterway is…

- A map-centric tool that allows anyone to learn about water quality
  - Community
  - State
  - National

- Delivers water data from over 12 different databases pulled in through APIs.

- Communicates progress the states, territories, tribes and EPA are making towards restoring and protecting water quality.

Data Management	Actions
Assessment	Program Evaluation

Protecting and Restoring Our Waters: The Clean Water Act Through an Environmental Justice Lens

- ***New*** [EPA Watershed Academy](#) training module on the CWA and EJ coming soon!
- Provides a summary of each of the cornerstone CWA programs that drive surface water quality protection in the U.S.
  - Water Quality Standards
  - Water Quality Monitoring
  - 303(d) listing and TMDLs
  - 319/Nonpoint Source Management
  - 401 Certifications
  - 402/National Pollutant Discharge Elimination System
  - 404 Permitting
  - Urban Waters Federal Partnerships
  - National Estuary Program
  - Clean Water State Revolving Fund
- Provides clear opportunities, tools and resources for the public to engage in the CWA process and to advance EJ in water management.
- ***Bonus*** Second module expected this calendar year and focuses on identifying questions and existing approaches for water practitioners to integrate EJ into their work.

| Assessment | Program Evaluation | Actions |

Participation and Engagement Opportunities

Submit Data & Information

Submit Public Comment

Attend Public Meetings & Hearings

As a concerned member of the public, there are many tools for engaging in water resource management to advance environmental justice or address environmental injustice.

Click on each icon to learn more about opportunities in each Clean Water Act program.

Volunteer

Other

Learn More

Discussion