2022 Hypoxia Task Force Public Meeting
December 14, 2022

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

December 14, 2022

In-person and Virtual Public Hypoxia Task Force Public Meeting

1:30 – 5:00 pm ET

EPA Ruckelshaus HQ Conference Center, 1201 Constitution Ave, NW, Washington DC

1:30 pm ET	**Opening Introductions** Objective: Hear Co-Chair opening remarks and short self-introductions by all HTF members, including a brief description of agency HTF engagement. Facilitator Welcome (3 min) *Barry Tonning, Tetra Tech* • Provide brief agenda overview and meeting objectives. • Review ground rules and provide instructions on how to use the Zoom platform. ○ Remind participants about raise hand function and chat box and identify contact information for any technical difficulties. Opening Remarks (10 min) *Radhika Fox, HTF Federal Co-Chair, Assistant Administrator for the Office of Water, United States Environmental Protection Agency (5 min)* *Mike Naig, HTF State Co-Chair, Secretary, Iowa Department of Agriculture and Land Stewardship (5 min)* Federal Agency Member Introductions (5 min) • *Jaime Pinkham, Acting Assistant Secretary of the Army, Civil Works (1 min)* • *Bidisha Bhattacharyya, Senior Advisor for Climate and Conservation, U.S. Department of Agriculture, Farm Production and Conservation (USDA FPAC) (1 min)* • *Paul Zankowski, Office of the Chief Scientist Senior Advisor, U.S. Department of Agriculture, Research, Education, and Economics (USDA REE) (1 min)* • *Margo Schulze-Haugen, Deputy Director, National Centers for Coastal Ocean Science, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) (1 min)* • *Gary Gold, Deputy Assistant Secretary for Water and Science, U.S. Department of the Interior (DOI) (1 min)* Tribal Introductions (2 min) • *Heather Bartlett, Cow Creek Band of Umpqua Tribe of Indians, National Tribal Water Council*

	State Member Introductions (10 min) • *J. Ryan Benefield, Arkansas Natural Resources Commission* • *Michael Woods, Illinois Department of Agriculture* • *Trevor Sample, Illinois Environmental Protection Agency* • *Trevor Laureys, Indiana State Department of Agriculture* • *John Lyons, Kentucky Energy and Environment Cabinet* • *Angelina Freeman, Coastal Protection and Restoration Authority of Louisiana* • *Katrina Kessler, Minnesota Pollution Control Agency* • *Mike Freiman, Mississippi Department of Environmental Quality* • *Chris Wieberg, Missouri Department of Natural Resources* • *Greg Nageotte, Ohio Department of Agriculture* • *Sam Marshall, Tennessee Department of Agriculture* • *Adrian Stocks, Wisconsin Department of Natural Resources*

2:00 pm ET	**Federal Hypoxia Task Force Support**
	Objective: Provide a brief overview of current federal activities that support the goals of the HTF, focusing on current policies, programs, and actions; discuss potential future activities and support.
	
	Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) Funding and Opportunities to Leverage/Support State Nutrient Reduction Strategies (20 min)
	Objective: Overview the BIL Gulf Hypoxia Program and IRA funding opportunities; provide examples of how states have successfully used funds to support nutrient reduction strategies.
	• BIL Gulf Hypoxia Program Support: *Bruno Pigott, Deputy Assistant Administrator for the Office of Water, EPA*
	  ○ BIL GHP Priorities
	  ○ Tribal Grant Implementation Memo
	• IRA Increased Funding for Conservation: *Bidisha Bhattacharyya, USDA*
	
	America the Beautiful Initiative (5 min)
	Objective: Hear an update about the America the Beautiful Initiative and federal commitment to preserve at least 30% of land, freshwater, and ocean resources by 2030 and develop an American Conservation and Stewardship Atlas.
	• *Kate Kelly, DOI*

2:25 pm ET	**State Gulf Hypoxia Program Overview** Objective: Each HTF Member State will provide a brief overview of their BIL GHP workplans.
3:05 pm ET	**Break**
3:20 pm ET	**State Gulf Hypoxia Program Overview, Continued**

4:30 pm ET	**Public Comment Session** Objective: Hear comments from interested members of the public. Facilitator Overview *Barry Tonning, Tetra Tech* • Provide overview of public comment process. • Call on speakers who signed up in advance to make public comments. *Three speakers registered to address the members with four-minute comments.* • Lauren Lurkins, Agricultural Nutrients Policy Council/Illinois Farm Bureau, President/Director of Environmental Policy • Harry Huntley, Environmental Policy Innovation Center, Senior Agriculture Policy Analyst • Maisah Khan, Mississippi River Network, Policy Director
4:45pm ET	**Wrap-up and Next Steps** Objective: Summarize meeting outcomes; explore opportunities and challenges for implementing state nutrient strategies and other key actions needed to improve water quality in the Mississippi River Basin and reduce Gulf Hypoxia. Facilitator Closing *Barry Tonning, Tetra Tech* • Review key action items and any discussion themes. Co-Chair Closing Remarks *Radhika Fox, HTF Federal Co-Chair, Assistant Administrator for the Office of Water, United States Environmental Protection Agency* *Mike Naig, HTF State Co-Chair, Secretary, Iowa Department of Agriculture and Land Stewardship*
5:00 pm ET	**Adjourn**

Conserving and Restoring America the Beautiful

A ten-year, locally led campaign to conserve and restore the lands and waters upon which we all depend, and that bind us together as Americans.

December 14, 2022

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8 Core Principles

- **Collaborative** and inclusive
- Conserve for the **benefit of all people**
- Support **locally led** efforts
- **Honor private property rights** and voluntary stewardship efforts
- Honor **Tribal sovereignty**
- Pursue approaches that **create jobs**
- Use **science** as a guide
- **Build on existing tools** and strategies

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6 Areas of Focus

- Create more **parks and safe outdoor opportunities** in nature-deprived communities
- Support **Tribally led conservation** and restoration priorities
- Expand collaborative conservation of **fish and wildlife habitat** and corridors
- Increase access for **outdoor recreation**
- Incentivize and reward the **voluntary conservation efforts** of fishermen, ranchers, farmers, and forest owners
- Create jobs by investing in **restoration and resilience**

Additional AtB Components

America the Beautiful
May 2021 inaugural report

Implementation
State, Tribal, and local leadership
Interagency Working Group
Bipartisan Infrastructure Law investments
America the Beautiful Challenge

Annual Report
December 2021 first **annual progress report**

Atlas
60-day comment period from January-March 2022 with public listening sessions and roundtable conversations

America the Beautiful Challenge

The $1 billion America the Beautiful Challenge:

- **leveraged Federal conservation and restoration investments** with private and philanthropic contributions;
- was anchored by **an initial commitment of $440 million of Federal resources** over the next five years to a new public-private grant program, administered by the National Fish and Wildlife Foundation;
- is funding **55 new grants to support landscape-scale conservation projects** in 42 states, three U.S. territories, and for 14 Tribal nations; and
- **received an unprecedented response**—527 proposals requesting a total of $1.1 billion—illustrating how much impactful conservation work is ready and waiting for investments like these

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Example: America the Beautiful Challenge Project

Enhancing Fire-Dependent Plant Communities in the East Gulf Coastal Plain Habitats (AL, LA, MS)

- Grantee: Mississippi Department of Wildlife, Fisheries, and Parks
- Grant Amount:$ 4,330,100
- Matching Funds: $1,185,400
- **Total Project Amount: $5,515,500**

- Project description: **Improve resilience of 90,000 acres of fire-dependent habitats** including piney woods, blackland prairie and loess bluffs ecosystems through restoration, habitat management, invasive plant species control, revegetation, cost-sharing, outreach and training. **Project will restore ecosystem services and increase capacity in the East Gulf Coastal Plains while strengthening partnerships with stakeholders, private industry and the public.**

Other project descriptions available online with the National Fish and Wildlife Foundation.

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Recent Examples of AtB

- Expand collaborative conservation of **fish and wildlife habitat** and corridors
  - April 2022: The Bayou Sauvage Refuge in Louisiana acquired the Little Pine Island tract, a 2,500-acre addition of tidal marshes and hardwood forests.
- Increase access for **outdoor recreation**
  - June 2022: BLM announced increased outdoor recreational opportunities by acquiring 5.1 acres to open access to more than 40 acres of public land and 300 river miles along the Fowl River in Alabama.
- Create more parks and safe outdoor opportunities
  - November 2021: Federal family celebrated the 10th anniversary of the **Urban Waters Federal Partnership**, which includes Lake Pontchartrain, an estuary that connects to the Gulf of Mexico, along with 19 other partner locations.

American Conservation and Stewardship Atlas Overview

- The Atlas will be a tool to help provide a **more accessible and comprehensive picture** of conservation and restoration work in America.
- Intended to **reflect conservation as a continuum** and the goals and guiding principles of the initiative.
- Will be informed by:
  - Written comments via *Federal Register* and public listening sessions
  - Conversations with States, Tribes, scientists, and other stakeholders
  - Interagency collaboration (working group co-led by USGS, USDA, NOAA, CEQ)
  - Best available science.

Arkansas's Nutrient Reduction Strategy

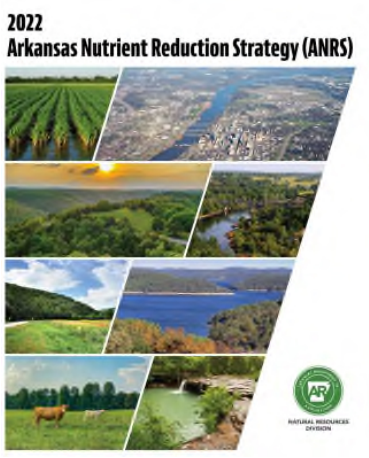
NATURAL RESOURCES DIVISION

Tate Wentz
Water Quality Section Manager

1

Arkansas

New Targeting Strategy for Advancing of the Arkansas Nutrient Reduction Strategy



HUC-8 Categories

- Data analyses will inform final priority categorizations:
  1. ***Focus***, with robust data
  2. ***Possible focus***, but more data needed
  3. ***Not a Focus***, with robust data
  4. ***Likely Not a Focus***, but more data needed

- Categories 1 and 2 represent priority status for nutrient reduction activities and for data collection to support future assessment, respectively

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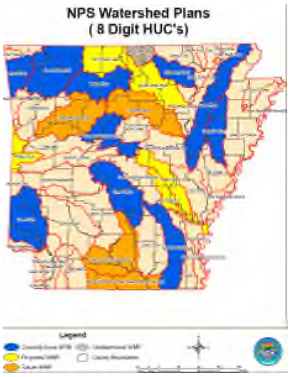
Priority Categorization Synthesis

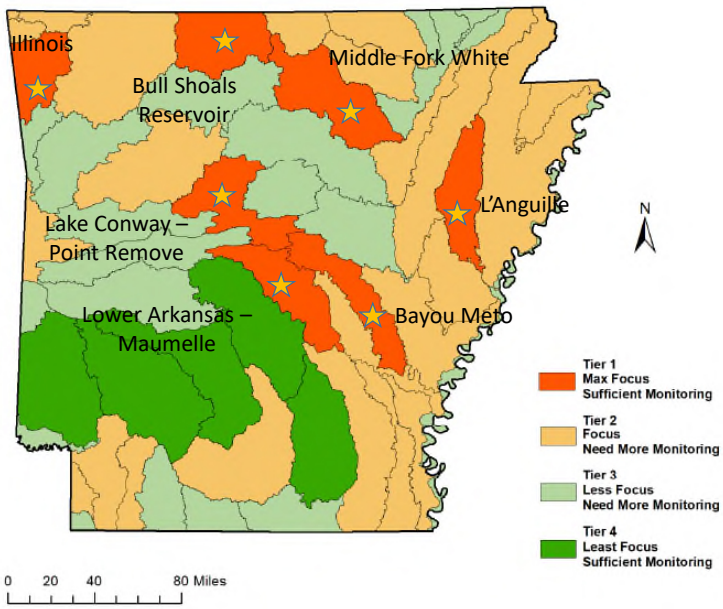
Category	Prioritization criteria	Data sufficiency criteria
1 – Focus, Sufficient Data	• Analysis shows nutrient reduction need in both TN and TP	• Min 4 sites for ≥ 50% of years • Qualified for both analyses
2 – Possible Focus, Limited Data	• Analysis shows nutrient reduction need in TN and/or TP (one must be flagged by Scenario 1) • MRBI priority or Nutrient Surplus Area (if no data)	• < 4 sites for ≥ 50% of years • Did not qualify for one or both analyses
3 – Not a Focus, Sufficient Data	• Nutrient reduction need not indicated, or indicated for only one nutrient	• Min 4 sites for ≥ 50% of years • Qualified for both analyses
4 – Likely Not a Focus, Limited Data	• Nutrient reduction need not indicated, or indicated for TN and/or TP by Scenario 2 only • NOT an MRBI priority or Nutrient Surplus Area (if no data)	• < 4 sites for ≥ 50% of years • Did not qualify for one or both analyses

2018-2023 NPS Priority Watersheds

NPS Watershed Plans (8 Digit HUC's)



Prioritization Map



Arkansas

New Targeting Strategy for Advancing of the Arkansas Nutrient Reduction Strategy

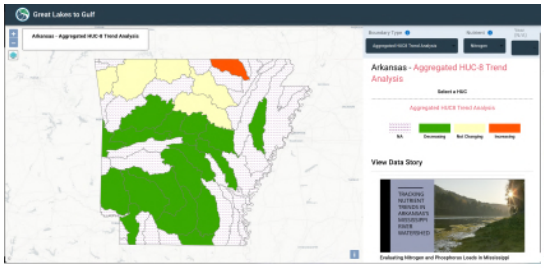
ANRS Update Goals and Strategies

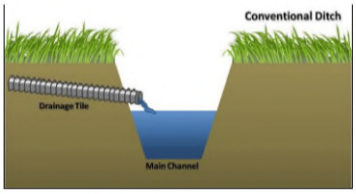
The three main goals of ANRS are:

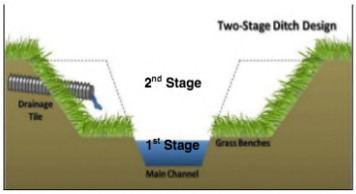
1. Increase or maintain downward nutrient trends in Tier I watersheds
2. Enhance water quality monitoring stations and increase or maintain downward nutrient trends in Tier 2 watersheds
3. Continue efforts to reduce nutrients in all watersheds

ANRS: Next Steps

- Implementation – Gulf Hypoxia Program funding $4.7 million FY22-26
- ANRS workgroup development
- Best Management Practice Tracker Dashboard
- Great Lakes to Gulf Interactive Viewer



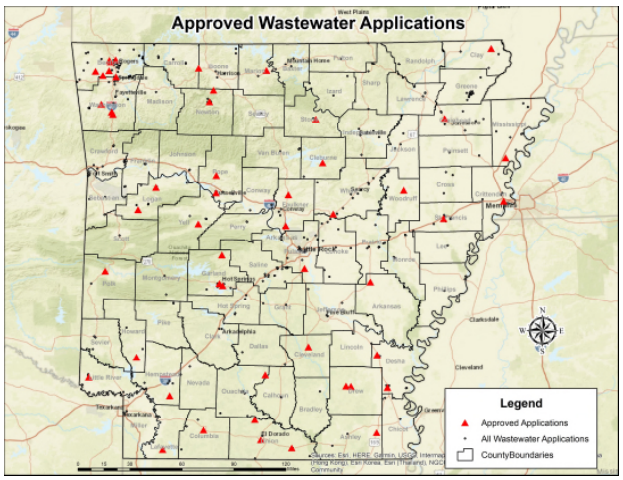




American Recovery Plan Act

$135 Million For Wastewater Projects

- Based on the scoring criteria **52** wastewater projects with a total possible award of **$135,326,287** are recommended for approval.
- The average proposed award is **$2,602,428** per application and no entity can receive more than **$5,000,000**.
- The average Median Household income for the awarded projects is **$42,533/year**
- Statistics for the 52 projects are provided below:
  - 162 million Gallons per Day of Wastewater effluent will be improved,
  - 18 projects will improve water quality by reducing infiltration and inflow of wastewater,
  - 10 projects will result in partial or complete consolidation/regionalization of wastewater systems,
  - 6 projects will result in the extension of wastewater service to unserved portions of the state,
  - 21 projects will improve water quality in a waterbody currently impaired,
  - 42 projects will improve water quality in a watershed used for drinking water,
  - **44 projects will reduce nutrients with 22 projects directly treating for nutrients,**
  - 36 projects will be addressing regulatory consent orders or other compliance issues, and
  - 27 projects are in counties with >5% population decline during the previous decade.



Thank You

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Illinois Gulf Hypoxia Program

Workplan Years 1-2

Illinois' two-year workplan includes seven projects that will advance the implementation of the Illinois Nutrient Loss Reduction Strategy by creating new initiatives and scaling up existing programs.

Projects include:

- water quality monitoring in surface and groundwater
- agriculture conservation practice implementation
- watershed education and outreach
- data metrics collection
- nutrient strategy update and reporting

Year 1 Projects

- Priority Watershed Outreach and Watershed Planning
  - University of Illinois Watershed Outreach Associates working in priority watersheds
- Continuous Nutrient Monitoring Network
  - USGS water quality data collection and analysis; nutrient load calculations
- Fall Covers for Spring Savings Program
  - Illinois Department of Agriculture cover crop insurance premium discount program. Will provide up to an additional 40,000 acres of enrollment to the current 100,000 acres.
- Nitrate Groundwater Monitoring
  - Illinois Department of Agriculture laboratory nitrate analyzer to resume nitrate concentration analysis in groundwater monitoring network
- 2023 Biennial Report
  - University of Illinois Extension staff will develop the NLRS 2023 Biennial Report

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Year 2 Projects

- Continuous Nutrient Monitoring Network
- Fall Covers for Spring Savings Program
- 4R Fertilizer Retailer Survey
  - Adopt survey methodology currently used in Iowa to collect fertilizer application data and best practices from fertilizer retailers throughout the state
- Implementation of Watershed-Based Plans, Total Maximum Daily Loads in NLRS Priority watersheds
  - Provide grants to implement WBPs or TMDLs with an emphasis on source water protection benefiting disadvantaged communities.

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Indiana update

Hypoxia Task Force Meeting

Washington D.C.

December 14, 2022

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

INDIANA STATE DEPARTMENT OF AGRICULTURE

1

$200,000 Assistance Agreements Update

INDIANA SCIENCE ASSESSMENT for the State Nutrient Reduction Strategy

- Indiana Science Assessment
  - Component 1: Determining nutrient load trends using available WQ data
    - Report has been completed showing trend results for loads and concentrations at 20 different locations in Indiana, including pour points and within the basins.
    - Next step is to do a comparison of the basins to determine the watersheds with the highest loads and concentrations, and to show the results online.
  - Component 2: Improving method for determining nutrient load reductions from conservation practices and determining efficiency of conservation practices on reducing nutrient loads.
    - Work on first set of 10 practices is almost complete, and work on the next 15 selected practices has begun.

The Science Assessment will determine the effectiveness of specific BMPs based on available research, and if we know which practices are the most effective, and know which watersheds have the highest sediment and nutrient load trends based on the work of Component 1, then we can better target where more conservation work is needed and with what practices.

https://www.in.gov/isda/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy/indiana-science-assessment/

INDIANA STATE DEPARTMENT OF AGRICULTURE

2

BIL Dollars Update

- Funds are administered by ISDA but will be used for partnership efforts in the state.
- We surveyed ICP members, as well as other partner organizations such as NGOs, Universities, commodity groups, and other partnering organizations to seek input and ideas on how the dollars should be used.
- Focusing 1st and 2nd year dollars in three areas…
  1) Expand Staff Capacity
  2) Develop Soil Sampling Program
  3) Create Indiana Nutrient Research & Education Program (INREP)
     - to continue work of the Indiana Science Assessment

INDIANA STATE DEPARTMENT OF AGRICULTURE

Staff Capacity

- Nutrient Stewardship Program Manager
  - Will be supervised by WQ Initiatives Program Manager
- Expand staff capacity to:
  - manage the BIL-GHP funds,
  - manage and administer the soil sampling program,
  - support efforts of the Indiana SNRS,
  - support Indiana Conservation Partnership efforts, and
  - work with the on-farm trial programs.

INDIANA STATE DEPARTMENT OF AGRICULTURE

Soil Sampling Program

- Focus is to increase the collection and use of soil sampling and analysis to provide the necessary information in the development of a nutrient management plan and improve nutrient use efficiency.

- Proposal includes partnering with Certified Crop Advisors
- Public meetings and Educational Workshops:
  - Kick-off meeting for CCA engagement
  - Soil fertility and nutrient management workshops for participants
- Anticipated Outcomes include:
  a) working toward achievement of IANA goal of 100% of farmers in Indiana regularly performing soil sampling,
  b) consistent soil testing and 4R Stewardship,
  c) nutrient plan development with improved nutrient use efficiency aimed at positive impacts for water quality

- Program will be available statewide but will have targeted priority watersheds.

INDIANA STATE DEPARTMENT OF AGRICULTURE

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Indiana Nutrient Research and Education Program (INREP)

INDIANA SCIENCE ASSESSMENT for the State Nutrient Reduction Strategy

- Purpose: Continue and Expand the work of the Indiana Science Assessment
- Goals and Activities
  1) Sustain and strengthen the network of scientists and agencies collaborating to provide the scientific foundation for the Indiana State Nutrient Reduction Strategy and related conservation efforts.
  2) Lead a continual process of refining and improving the Science Assessment.
  3) Increase the availability of data from Indiana research on nutrient loss reduction.
  4) Synthesize and deliver the knowledge to conservation partners and the agricultural community.
- Partners
  - Science Assessment Core Team members (ISDA, Purdue, NRCS, IDEM, IANA, TNC)
  - Science Committee (Academic Institutions, USDA-ARS, USGS, etc.)

INDIANA STATE DEPARTMENT OF AGRICULTURE

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Other Indiana Highlights

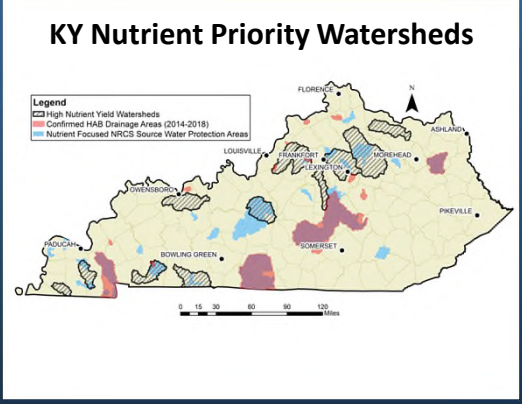
- In August 2022, ISDA was awarded nearly $8 million for ongoing efforts to protect and improve water quality in the Kankakee River Basin. This project brings together Indiana, Illinois and 43 partners.
- Indiana's Cover Crop Premium Discount Program enters it's third year with a goal of 35,000 cover crop acres across the 35 county project area.
- The Indiana Conservation Partnership and private landowners implemented over 31,000 conservation practices in 2021, reducing 900,000 tons of sediment, 2 million lbs. of Nitrogen, and 1 million lbs. of Phosphorus from entering Indiana's waterways.

2022 Hypoxia Task Force Update
Kentucky

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

1

Gulf Hypoxia Program Grant



<u>Focus Areas from KY NRS Update:</u>

- Nutrient Priority Watersheds
- POTW Optimization Program
  - Water-Energy Nexus
- MS4 Program
  - Nutrient-focused Training – Stormwater Quality Management Plans

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

2

KY's Ag Water Quality Act

- Over 2,500 plans to date!

TEAM KENTUCKY ENERGY AND ENVIRONMENT CABINET

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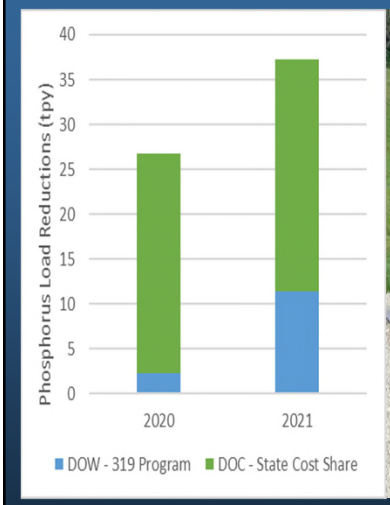
Agriculture Partnerships



- DOW/DOC Partnership
  - Nutrient Tracking
  - Ag BMP Program
  - Nutrient Management Planning
- DOW & NRCS planning impacted ~432,000 acres in source water watersheds (2020 & 2021)

TEAM KENTUCKY ENERGY AND ENVIRONMENT CABINET

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POTW Optimization Program - Results

12 communities voluntarily participating since 2015

Partners:

- KY Office of Energy Policy and Development
- KY Division of Compliance Assistance
- KY Division of Water
- KY Division of Enforcement
- KY Rural Water Association
- KY Infrastructure Authority
- University of KY
- University of Memphis
- EPA Region 4

	Lawrenceburg
Energy Cost Savings	$25,000/yr
	16%
Energy Reduction	410,000 kWh/yr
	22%
TN Reduction	18,600 lbs/yr
	63%
TP Reduction	1,000 lbs/yr
	39%
Chemical Cost Savings	$4,500/yr
Chemical Usage	-30%

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Links:

- Nutrient Reduction Strategy
  eec.ky.gov/nutrientreduction
- Ag. Water Quality Act
  eec.ky.gov/agwater

Kentucky HTF Team

HTF Member – John Lyons, EEC Deputy Secretary

HTF Coordinating Committee

- John Webb, DOW Assistant Director
- Paulette Akers, DOC Director
- Josiah Frey, Nutrient Reduction Coordinator

SERA-46 – Amanda Gumbert

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Louisiana Gulf Hypoxia Program Update

Amanda Marshall, PhD
Environmental Scientist 4,
Louisiana Dept. of Environmental Quality,
Water Planning and Assessment Division

Dec 14, 2022

1

Louisiana Nutrient Reduction & Management Strategy Implementation

- The Louisiana Department of Environmental Quality (LDEQ) is lead agency for the cooperative agreement
- Project 1 implemented by Louisiana Dept. of Agriculture and Forestry (LDAF)
- Project 2 implemented by the Louisiana Coastal Protection and Restoration Authority (CPRA)

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2

Milestone Schedule for Years 1 – 3 (FY22-24)

Project 1: Nutrient Loading Reduction in Lake St. Joseph

- **Year 1**: Subawardee agreement and QAPP approval
- **Year 2**:
  - Purchase of equipment
  - Best Management Practice (BMP) Outreach and enrollment of producer landowners
  - BMP Implementation
  - Lab and data analysis
- **Year 3**:
  - BMP Implementation
  - Edge of field sampling
  - Lab and data analysis

Project 2: Coastal Transect Monitoring

- **Year 1**: Subawardee agreement and QAPP approval
- **Year 2**:
  - Boat-based monitoring and data collection of coastal transect sites
  - Development and testing of autonomous vehicle
  - Plan for transition to autonomous vehicle data collection Fall 2023
- **Year 3**:
  - Autonomous vehicle data collection
  - Data Processing, analysis, and outreach

Project 1: Lake St. Joseph, Louisiana, Nutrient Loading Reduction

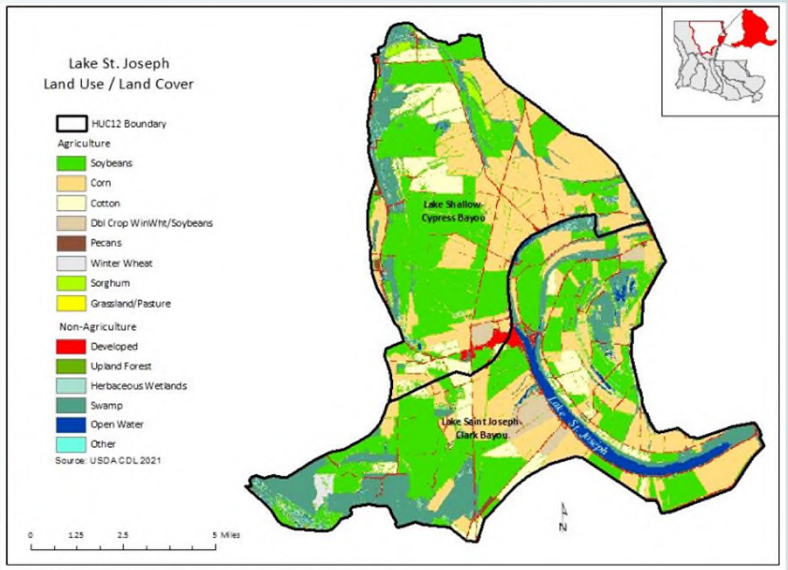


Figure 2. Lake St. Joseph watershed land use and land cover map. (from QAPP 3101)

Objective

- Partners:
  - LDEQ
  - LDAF Office of Soil and Water Conservation Service (OSWC)
  - USDA Natural Resource Conservation Service (NRCS)
    - LDAF OSWC and USDA NRCS are managing BMP enrollment and implementation
  - Louisiana State University Ag Center (LSU Ag Center)
    - LSU Ag Center is managing edge of field sample collection
- Measure impacts of implemented targeted BMPs on nitrogen and phosphorous concentrations in edge of field runoff within the Lake St. Joseph-Clark Bayou and Cypress Bayou Watersheds in Tensas Parish, LA, with a goal of improved water quality and clarity compared to control monitoring site(s).

Instrumentation

A no-till grain drill will be purchased by NRCS and available for landowners to rent

Image: https://www.kuhn-usa.com/crop/seeders/mechanical-seed-drills/9400

An Isco 6700 or 6712 automated sampler will be installed at each of five sample site locations

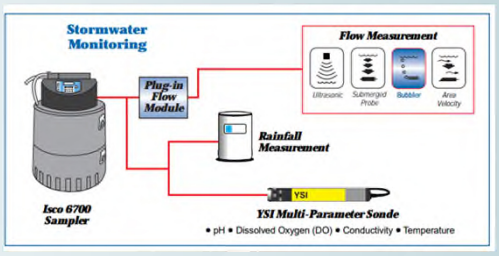


Image: http://www.equipcoservices.com/pdf/datasheets/isco_6700.pdf

Method

- Producer landowners in study area enrolled in BMPs
- 5 sample locations selected – 4 experimental and 1 control
  - Experimental sites chosen by NRCS based on ranked maximum potential water quality improvement through BMP implementation
- Composite samples collected with an Isco 6700 or 6712 automated sampler via approved methods
- At least 1x/month samples collected and hand delivered or overnighted to LSU Ag Laboratory for analysis
- Parameters analyzed include:
  - Nitrogen (TKN, NO3NO2, NH3)
  - Phosphorous (PO4, TP)

Project 2: Pilot Transition to Autonomous Monitoring from Inshore to Offshore in Coastal Louisiana

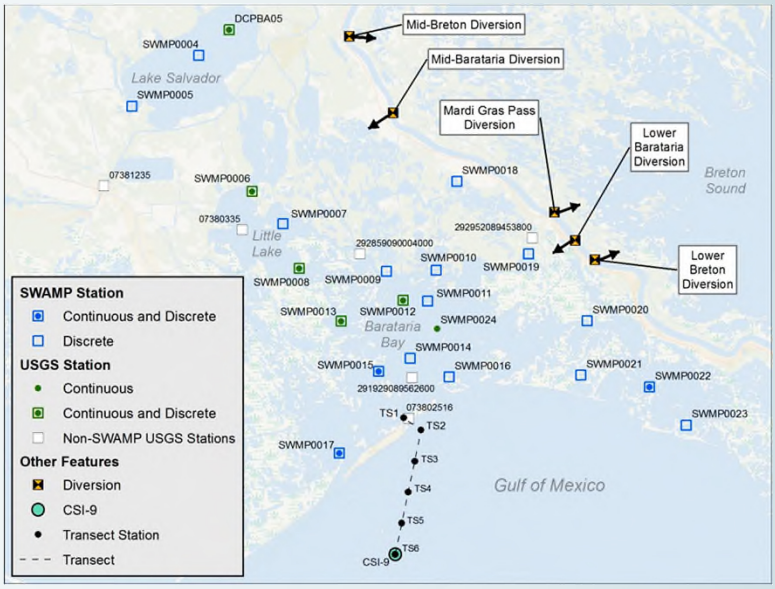


Figure 1. Water quality monitoring transect from Barataria Pass to WAVCIS CSI-9 (from QAPP 3069)

Objective

- Partners:
  - LDEQ
  - CPRA
- Provide characteristic water quality data from inshore to offshore
- Coastal transect monitoring began in 2018 with Gulf of Mexico Alliance (GOMA) funding and has continued under EPA funding sources since 2019
- Monitoring has been conducted ~3x/year with boat-based surveys
- Goal is to transition from a boat-based survey in Spring 2023 to autonomous vehicle data collection by Fall 2023

Parameters for Analysis

- **In situ measurements**
  - Sample Depth (m)
  - Water Body Depth (m)
  - Specific Conductivity (µmhos/cm)
  - pH (standard units)
  - Temperature
  - Dissolved Oxygen (mg/L)
  - Dissolved Oxygen Saturation (%)
  - Salinity (parts per thousand)
- **Laboratory samples**
  - Total Kjeldahl Nitrogen (TKN) (mg/L)
  - Nitrate-Nitrite Nitrogen (NO3NO2) (mg/L)
  - Ammonia (NH3N) (mg/L)
  - Total Phosphorus (TP) (mg/L)
  - Orthophosphate (PO4) (mg/L)
  - Turbidity (NTU) (mg/L)
  - Total Suspended Solids (TSS) (mg/L)
  - Silica (SiO2) (mg/L)
  - Chlorophyll a (ug/L)

Method

- Measurements and samples will be collected via boat-based survey in March, May, July, August, and September 2023 at surface, middle, and bottom depths using approved methods
  - Surface readings at depth of 0.5 m
  - Middle depth readings at one-half total depth
  - Bottom depth readings within one meter above bottom
- Autonomous Vehicle currently in development and testing in partnership* through the project *Unmanned Surface Vehicle for Autonomous Hypoxia Monitoring*
  - 0.91 m draft, can operate in <5 m to 50 m depths
  - Diesel powered, range ~68 nautical miles, 8.5 hours at 8 knots plus three hours max at stations
- Transition plans will be implemented in 2023

L3Harris | ASV (Photo by Stephan Howden)

* https://ioos.noaa.gov/project/ott-asv-hypoxia/ https://www.l3harris.com/ https://www.integral-corp.com/ https://www.tamu.edu/ https://gcoos.org/

Summary

Project 1 Recap

- Implement agricultural BMPs within priority tracts in northeast Louisiana with a goal of reducing N and P runoff from edge of field.

Project 2 Recap

- Continue to conduct coastal transect water quality monitoring surveys while shifting from boat-based to autonomous survey methods.

- Both projects enable the state of Louisiana to implement key strategic actions using innovative technologies to address nonpoint source water quality management.

Thank you

Questions?

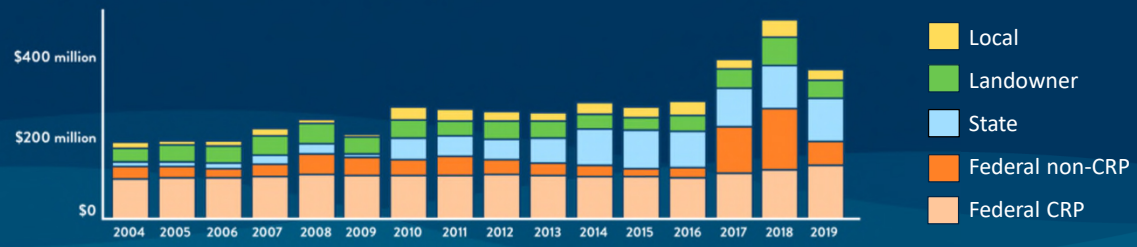
13

1

State funding for implementation has increased

Implementation funding, by year

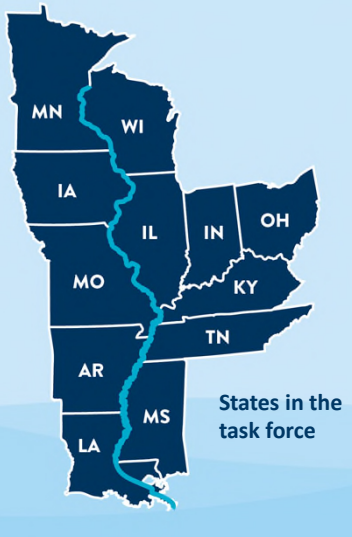
- Now at $130 million per year
- Much of this affects nutrients
- Over 90% for nonpoint sources



2

First two-years of EPA funding will address 7 needs

1. Update agricultural best management practices (BMP) science
2. Improve approaches to scale-up BMP adoption
3. Reduce city wastewater nitrogen
4. Update river nutrient load reduction goals
5. Improve local watershed-scale tools & guidance
6. Develop progress tracking metrics/system
7. Revise nutrient reduction strategy for 2025-35



3

1. Update agricultural best management practice (BMP) science

- Identify best practices based on up-to-date science.
- Quantify additional BMP needs.
- Develop BMP scenarios for nutrient goals with climate benefits using the 2022 MN Climate Action Framework.

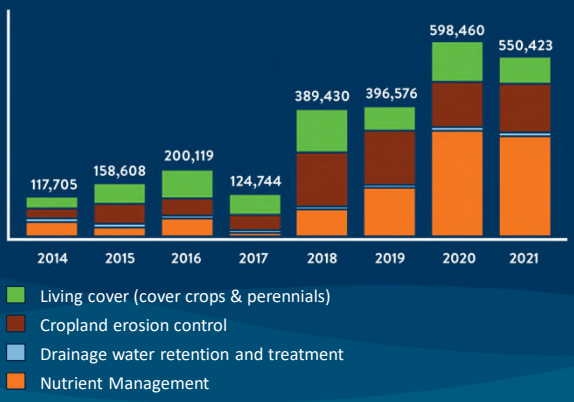
UNIVERSITY OF MINNESOTA

4

2. Improve approaches to scale-up BMP adoption

- Evaluate social/human dimensions.
- Assess existing programs.
- Consider alternative approaches.
- Seek stakeholder input.

Newly-added BMP acres
Annually completed through government programs

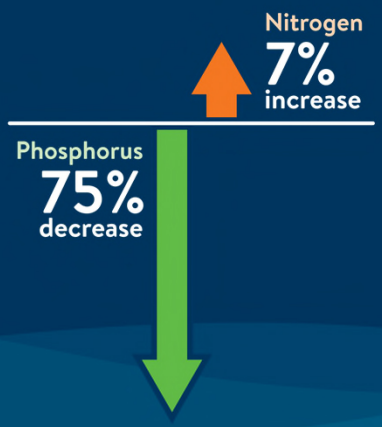


5

3. Reduce city wastewater nitrogen

- Identify highest priority facilities for nitrogen reduction.
- Examine successful case studies.
- Pilot efforts to optimize nitrogen (N) & phosphorus (P).

2000-21 wastewater



6

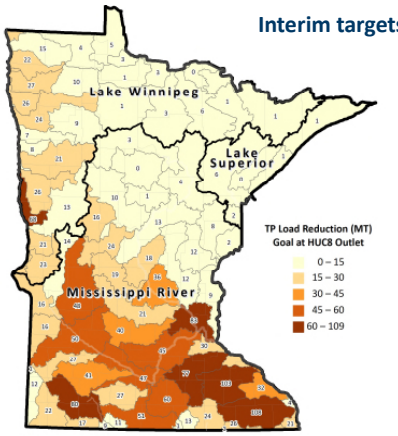
4. Update river nutrient load reduction goals

- At the state line
- At watershed outlets
- For each source sector
- Adjusting for climate change

7

5. Improve local watershed-scale tools & guidance

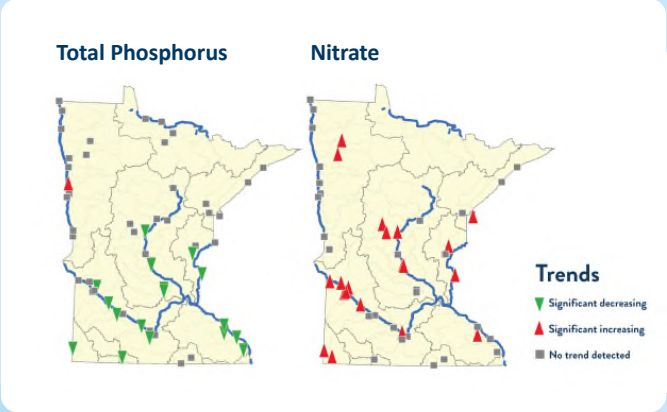
- Improve tools for local nutrient planning.
- Guidance to watersheds for meeting downstream targets.



8

6. Develop progress tracking metrics & system

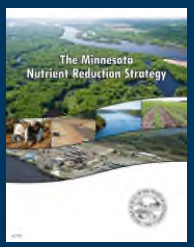
- Track program advancements.
- Show trends in water.
- Quantify BMP adoption levels.
- Show remaining load reduction needs.

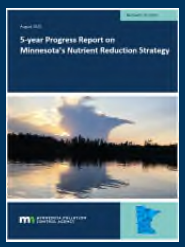


9

7. Revising Nutrient Reduction Strategy for 2025-35

- Improved and streamlined strategy for 2025-35.





Strategy in process

2014 2020 2025

10

Thank you!

Katrina Kessler | Commissioner
Katrina.Kessler@state.mn.us

MINNESOTA POLLUTION CONTROL AGENCY

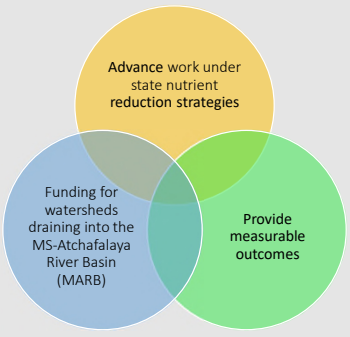
Hypoxia Task Force Mississippi's Plan: GHP Funding December 14, 2022

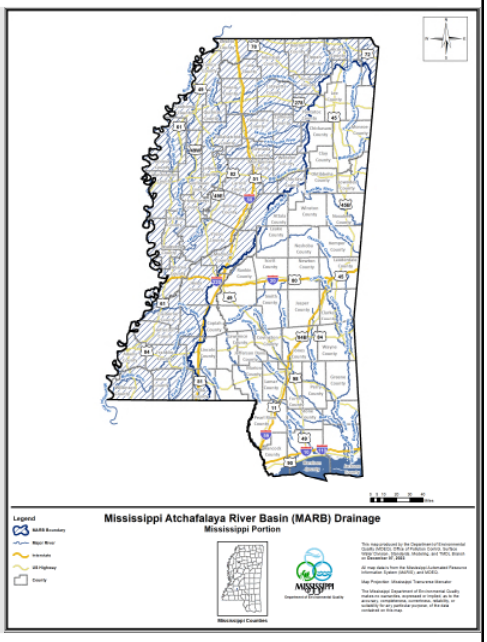
Natalie Segrest
Chief, Basin Management and NPS Branch
Mississippi Department of Environmental Quality

1

Gulf Hypoxia Program Grant (GHP): Requirements

- MS-Atchafalayla River Basin
- Yazoo R., Tennessee R., North Independent, Big Black, and South Independent Streams Basins





2

Phase 1 Gulf Hypoxia Program Projects in Mississippi

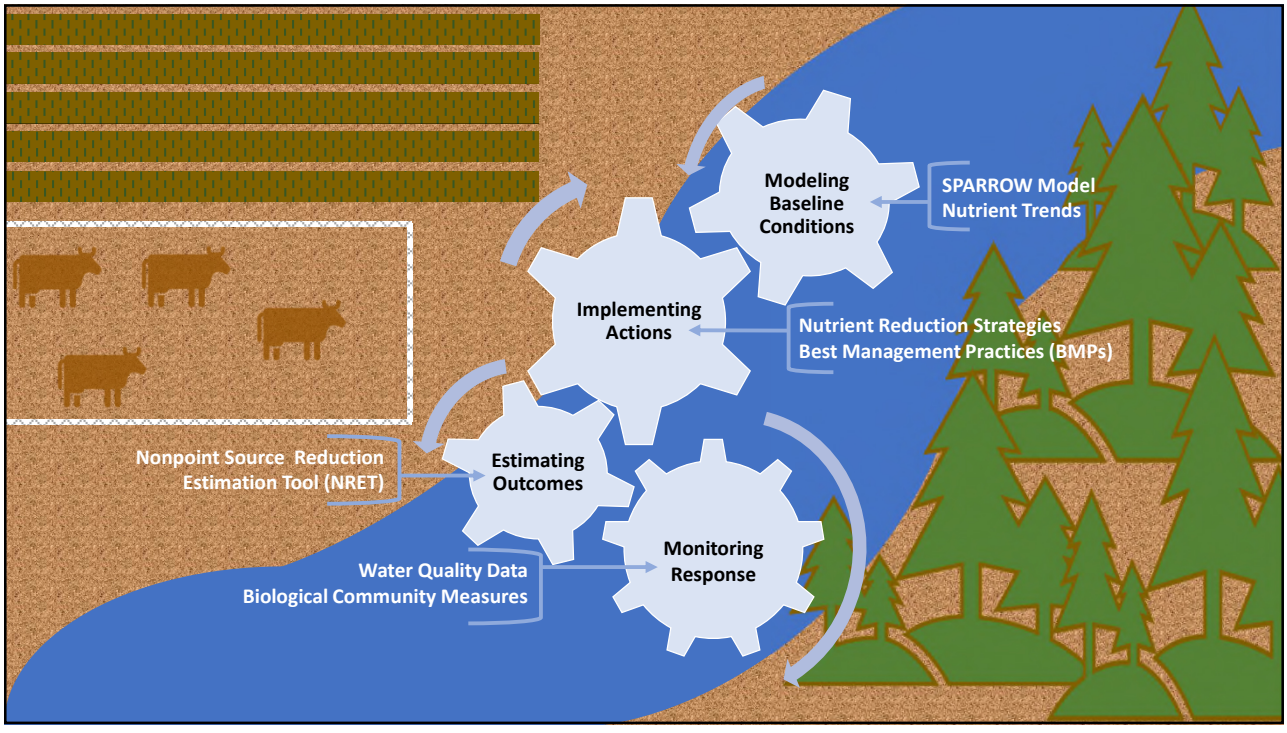
The first work plan combines grant funding years FY22 and FY23 and for a total of $1.7M.

Funding will focus on filling data gaps to refine load calculations, estimate reductions achieved, and develop a nutrient response measure

Projects funded in Phase 1:

Continuous NO3 Monitoring Sensors	NPS Reduction Estimation Tool	Diatom Index	Nutrient Reduction Strategy Update

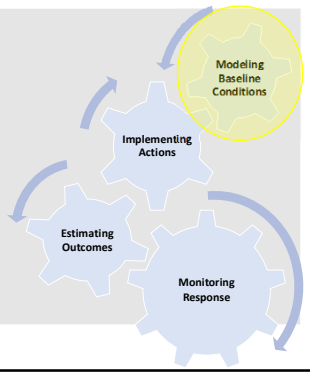
3



4

Continuous Nitrate Monitoring

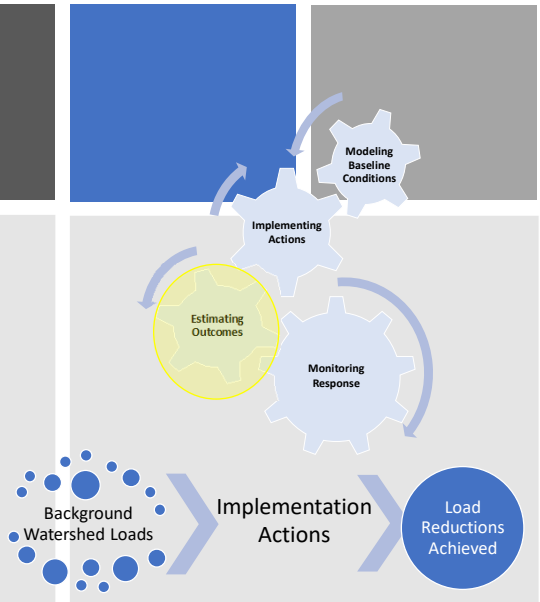
- Continuous Nitrate sensors on major tributaries to the MS River (6 sites)
- Refine load estimates from state waters into the MS River
- Track changes in conditions over time



5

Nonpoint Source (NPS) Reduction Estimation Tool

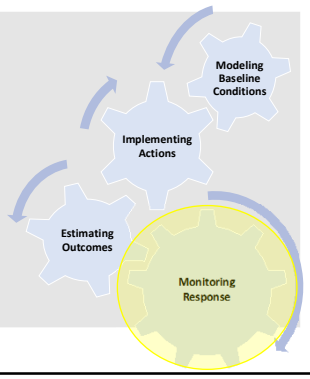
- Establish background loads
- Model best management practices (BMPs) to estimate load reductions achieved.
- Reductions reported at multiple scales: sub-watersheds, watersheds, HUC 8s, basins and regions
- Results used to track progress and report outcomes.



6

Response Measure: Diatom Index

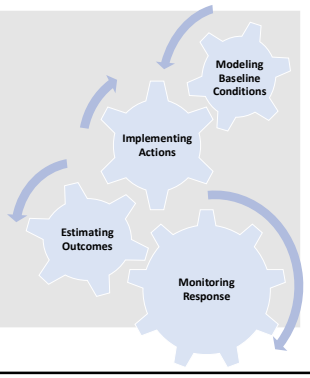
- Biological community measure
- Sensitive to nutrient loading in water
- Augment traditional water quality monitoring
- Measure response from nutrient reduction activities in watersheds



7

Nutrient Reduction Strategy Update

- Mississippi's Nutrient Reduction Strategies were developed 2008-2012.
- Re-engage stakeholders and provide updates on lessons learned, findings, and new approaches.
- Highlight project outcomes since 2008
- Opportunity to discuss and report on MS progress



8

Expected Outcomes

- Fill data gaps and refine loading estimates
- Calculate load reductions achieved through implementation actions
- Develop monitoring tools to measure environmental response to reduction actions
- Report findings, update strategies, and strengthen foundation to support scientifically defensible management decisions.

9

Contact Information

For more information on Mississippi's nutrient reduction efforts contact:

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Christy Prouty
cprouty@mdeq.ms.gov

10

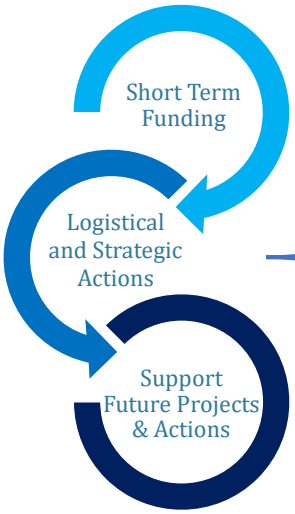
MISSOURI DEPARTMENT OF NATURAL RESOURCES

Missouri's Gulf Hypoxia Program Workplan

Chris Wieberg, Director
Water Protection Program

1

Approach to Missouri's Workplan



1. Progress Tracking
2. Nutrient Monitoring Expansions
3. Point Source Optimization Strategies
4. Public Outreach & Education
5. BMP Effectiveness

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Photo 1 Courtesy of St. Louis Science Center

2

Project 1: NLRS Progress Dashboard

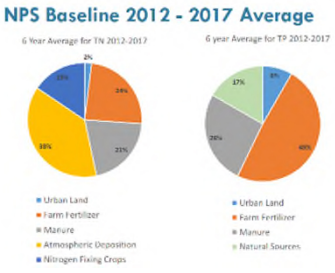
Project Budget:	$299,997

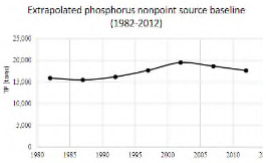
Summary:

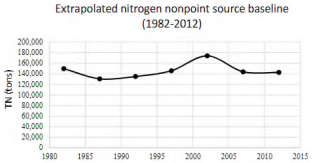
Develop a public, web-based, interactive progress tracking dashboard for the purpose of measuring success and publicizing data and performance indicators relevant to various Nutrient Loss Reduction Strategy goals and initiatives.

Anticipated Completion Date:

Before January 1, 2025







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3

Project 2: Continuous Nutrient Monitoring Expansions

Project Budget:	$1,386,186

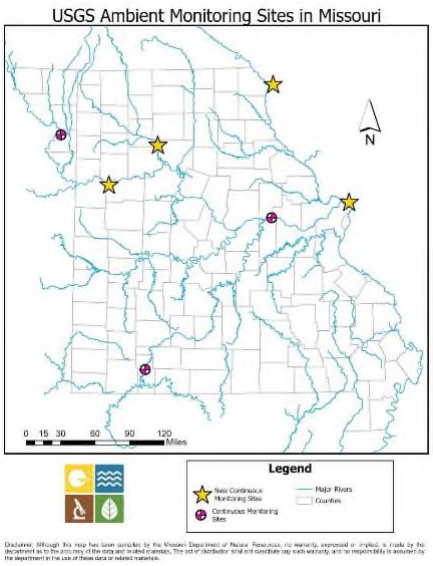
Summary:

Install and maintain continuous nitrate monitors at four key monitoring locations:

- Missouri River @ Napoleon
- Grand River near Sumner
- Mississippi River @ Keokuk
- Mississippi River @ Alton

Anticipated Dates:

Installation in CY2023.
Monitoring through 2027
(*and beyond?*).



4

Project 3: Municipal Nutrient Removal Optimization Pilot

Project Budget:	$175,489

Summary:

Evaluate strategies at six pilot municipal wastewater facilities to optimize operation and maintenance practices to reduce nutrient loads without incurring large capital expenses.

Strategies learned or confirmed through this pilot will then be communicated across the broader municipal wastewater community.

Anticipated Completion Date:

Before January 1, 2026

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Photo Courtesy of City of Springfield, MO

5

Project 4: Public Outreach & Education Exhibit & Program

Project Budget:	$299,997

Summary:

A partnership with St. Louis Science Center (a Smithsonian Institution Affiliate) to leverage their expertise in science communication, outreach, and marketing to design, develop, and implement a public awareness exhibit and outreach program to raise awareness of Gulf Hypoxia, prime causes, and collective solutions.

Anticipated Dates:

Planning and Development through 2023.
Program/Exhibit Launch 2024/2025.
Maintenance and Implementation through 2027 (*beyond?*).

SAINT LOUIS SCIENCE CENTER
Connect with curiosity.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Photos Courtesy of St. Louis Science Center. Learn more at www.slsc.org/exhibits-attractions/grow/

6

Project 5: SWCP's BMP Effectiveness Monitoring

Project Budget:	$299,997

Summary:

A partnership with Lincoln University Cooperative Extension to perform a study aimed at further refining nutrient loss reduction estimates for common agricultural best management practices, with an emphasis on grazing/livestock management practices.

Anticipated Completion Date:

By January 1, 2026

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Photo Courtesy of Missouri Soil & Water Conservation Program.

7

Supporting Links & Documents

You can view Missouri's Nutrient Loss Reduction Strategy here: https://dnr.mo.gov/water/what-were-doing/water-planning/nutrient-loss-reduction-strategy

Thanks!

Chris Wieberg, Water Protection Program
chris.wieberg@dnr.mo.gov

MISSOURI DEPARTMENT OF NATURAL RESOURCES

8

Nutrient Reduction Strategy Implementation in Tennessee

Hypoxia Task Force Meeting

December 14, 2022

1

Tennessee Nutrient Strategy Taskforce
Organization and Initial Steps

- In 2019, TDA and the Tennessee Department of Environment and Conservation (TDEC) jointly convened the Tennessee Nutrient Strategy Taskforce
- The Taskforce has met regularly from 2019 through 2022
- Composition of the Taskforce represents intentional collaboration between state agencies, conservation districts, industry, private landowners, agriculture, utility districts, universities, and other groups

2

Organizations Represented on the Taskforce:

Clean Water Professionals of Kentucky and Tennessee	Tennessee Chamber of Commerce and Industry	Tennessee Municipal League	United States Department of Agriculture - NRCS
Middle Tennessee State University	Tennessee Department of Agriculture	Tennessee Stormwater Association	United States Geological Survey
Municipal Technical Advisory Service	Tennessee Department of Environment and Conservation	Tennessee Technological University	University of Tennessee Knoxville
Tennessee Department of Transportation	Tennessee Valley Authority	University of Tennessee Extension Services	Tennessee Association of Utility Districts
Tennessee Farm Bureau	The Nature Conservancy	Oak Ridge National Laboratory	Representatives from private engineering firms

TN Department of Agriculture

3

Tennessee Nutrient Strategy Taskforce
Organization and Initial Steps

- In 2019, TDA and the Tennessee Department of Environment and Conservation (TDEC) jointly convened the Tennessee Nutrient Strategy Taskforce
- The Taskforce has met regularly from 2019 through 2022
- Composition of the Taskforce represents intentional collaboration between state agencies, conservation districts, industry, private landowners, agriculture, utility districts, and others
- Four primary workgroups were formed
  1. Goals and Metrics
  2. Communication, Education, and Outreach
  3. Monitoring and Data Analysis
  4. BMPs – Municipal, urban, Agricultural, and Industrial Sectors

TN Department of Agriculture

4

Tennessee Nutrient Strategy Taskforce
Accomplishments in FY 2022

- Riparian corridors are the focus of two new programs in Tennessee:
  - TDA has entered a partnership with the Tennessee Valley Authority (TVA) to establish the ***Tennessee Riparian Incentive Program*** which will provide financial incentives aimed at encouraging landowners to healthy riparian buffers. To this point, TVA has invested $350,000 towards this effort
  - In 2021 the Tennessee River Basin Network launched its Tennessee ***Shade Your Stream Program***. The Shade Your Stream Program empowers nonagricultural landowners to conserve their watershed. Funding has been provided by the TVA, Tennessee Wildlife Resources Agency, and Defenders of Wildlife.

TN Department of Agriculture

5

Tennessee Nutrient Strategy Taskforce
Accomplishments in FY 2022

- TDEC's Division of Water Resources continued promoting its voluntary Tennessee Plant Optimization Program (TNPOP), that provides resources to water and wastewater operators to achieve optimization in energy use and nutrient removal from their facilities through low-and-no-cost measures. This program is a critical part of the TDEC's integrated approach to nutrient management.
- The Tennessee 319 grant program has recently published two ***Success Stories***, including one in 2022, on once nutrient-impaired stream segments that have now been found clean enough to meet all intended uses and be removed from the *List of Impaired Waters.*

TN Department of Agriculture

6

Tennessee Nutrient Strategy Taskforce
Opportunities and Plans – FY 2023 and Beyond

- EPA is awarding Tennessee approximately $5 million over the next 5 years through Bipartisan Infrastructure Law - Gulf Hypoxia Program funding.
- Tennessee is requesting $1.7 million for the first 2 years.
- Funding to be jointly administered by TDA and TDEC

TN Department of Agriculture

7

Tennessee Nutrient Strategy Taskforce
Opportunities and Plans – FY 2023 and Beyond

- The USGS Tennessee SPARROW Model will be used to prioritize nutrient-impaired watersheds to increase odds of successfully “delisting” many of these stream segments.
- The USDA Natural Resources Conservation Service and The Nature Conservancy have funded Tennessee Technological University to conduct a 5-year study (2019-2023) assessing nutrient retention dynamics in 35 USDA NRCS Wetlands Reserve Program (WRP) easements along major rivers in western Tennessee and Kentucky.
- TDEC will procure additional water quality monitoring equipment and initiate strategically located monitoring activities to address known data gaps and watersheds suspected of high nutrient loadings.

TN Department of Agriculture

8

Tennessee Nutrient Strategy Taskforce

Opportunities and Plans – FY 2023 and Beyond

- TDA is funding and coordinating with University of Tennessee Extension to conduct a statewide survey of farmers regarding fertilizer usage, soil testing, cover crops, no-till cropping, etc.
- TDEC will scale up their Tennessee Plant Optimization Program and optimize up to 40 plants per year for the next 5 years which will result in all mechanical plants in Tennessee attempting optimization.
- TDA will partner with USDA-NRCS and conservation districts to provide additional incentives for applying cover crops on farmland in targeted watersheds selected from the recent SPARROW runs.

TN Department of Agriculture

9

Thank you…

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615-308-6592…mobile

John McClurkan
john.mcclurkan@tn.gov
615-837-5305…office
615-207-0955…mobile

TN Department of Agriculture

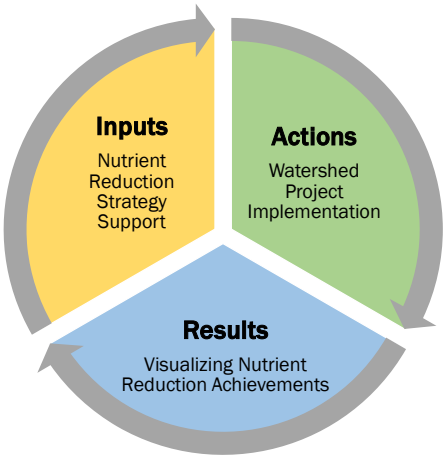
10

Wisconsin

Gulf Hypoxia Program
2022-2023 Workplan

Purpose: Implement Wisconsin's Nutrient Reduction Strategy.

Approach: Support enabling conditions to make and demonstrate progress.

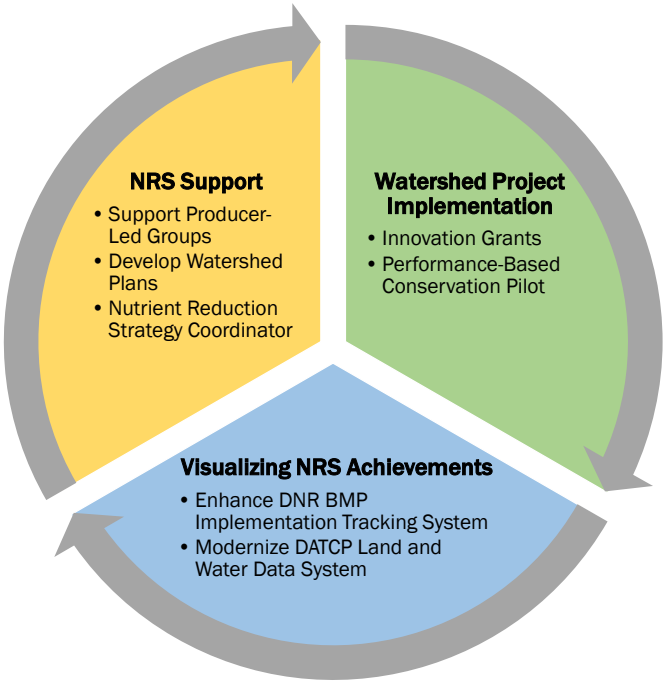


WISCONSIN DEPT. OF NATURAL RESOURCES

1

Wisconsin

Gulf Hypoxia Program
2022-2023 Workplan



WISCONSIN DEPT. OF NATURAL RESOURCES

2