

# GWPC ASR-MAR WORKGROUP

STATE WATER REUSE SUMMIT | May 25, 2022



# NATIONAL WATER REUSE ACTION PLAN

- Developed with federal, state, tribal, local, and private sector partners
- Addresses challenges to advance water reuse
- Builds state and local capacity
- Encourages integrated solutions to water resources management
- Fosters collaboration



## WRAP ACTION 3.1 - REUSExplorer

- **There are no federal level water reuse regulations.**  
States have primacy to develop reuse regulations to supplement Clean Water Act and Safe Drinking Water Act
- Objective: assemble existing fit-for-purpose specifications for water reuse and information based on their underlying scientific and technical basis
- Foundation for other tools that may be developed for permitting or legislating various reuse applications
- Plan to expand to select international regulations

**REUSExplorer is available at [epa.gov/reuseexplorer](https://epa.gov/reuseexplorer)**



# COMMON VOCABULARY TO DESCRIBE WATER SOURCES AND END-USES ACROSS ALL STATES

A **source of water** for reuse purposes is any alternative water source that can help offset the demand for traditional freshwater supplies.

- 3 sources of water identified in state policies

<i>Source of water</i>
Treated municipal wastewater
Onsite collected waters
Industry process water
Stormwater

A **reuse application**, or **end-use**, is the recycling of an alternative source of water that is adequately treated for its intended use.

- 9 end-uses identified in state policies

<i>Reuse application or end-use</i>
Potable
Onsite non-potable
Other centralized non-potable
Agricultural-related
Landscape-related
Livestock watering
Environmental restoration
Impoundments
Industrial

# JOIN THE EFFORT!

- **Stay in the loop.** Email us to provide information or request to join the WRAP listserv for periodic updates at [waterreuse@epa.gov](mailto:waterreuse@epa.gov).
- **Learn about and support active actions.** Find details and contact information for each action in the [Online Platform](#).
- **Propose or lead a new action.** For information about how to propose or provide input on an action, visit our [website](#).



Together,  
we can  
help ensure  
the security,  
sustainability, and  
resilience of our most  
precious resource:  
**WATER.**

# GWPC & ASR-MAR Workgroup

- About GWPC
- About the ASR-MAR Workgroup
  - Est. September 2019 - formed to examine, discuss, and make recommendations on ASR & MAR issues/topics
  - Serves a forum for all stakeholders to exchange information and to collaborate on efforts concerning ASR and MAR issues or topics.
  - Not limited in scope to UIC.





# WELCOME



## DAN YATES

Executive Director

Ground Water Protection Council



# WORK GROUP CO-CHAIRS: OVERVIEW



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## LORRIE COUNCIL

UIC Program Liaison

Texas Commission on Environmental Quality

Co-Chair, ASR – MAR Workgroup





# WORK GROUP CO-CHAIRS: OVERVIEW



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## CHI HO SHAM, PH.D.

VP and Chief Scientist, Eastern Research Group

Co-Chair, ASR – MAR Workgroup



# WORK GROUP CO-CHAIRS: OVERVIEW



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## KAREN FERET

Associate Branch Chief – Prevention Branch

Office of Ground Water and Drinking Water,  
U.S. EPA

# WORKGROUP LEADERSHIP TEAM

## Federal Government

- **Doug Beak**, US EPA, Robert S. Kerr Environmental Research Center
- **Andrew O'Reilly**, USDA — Agricultural Research Service

## Tribal, State, Territory and/or Local Government Agencies

- **Andrea Croskrey**, Texas Water Development Board

## Interested Organizations and/or Water Professionals

- **Tim Parker**, Parker Groundwater
- **Frederick Bloetscher**, Florida Atlantic University

# ASR – MAR: OPPORTUNITIES & CHALLENGES

- Opportunity:
  - Increasing demands for water supply solutions urgent in many regions of the country
  - Declining groundwater levels in aquifers
  - Storing excess water resources underground to use at a later date OR to manage water quality of aquifer can be solution
- Challenges:
  - Water quality (example: stormwater – variable quality)
  - Regulatory framework may be complicated by some states' water rights requirements
  - Financial and scientific challenges

# ABOUT THE WORKGROUP

- Formed in 2019
- Serves as a forum for Federal, State, Tribal, and local government, organizations and public interest, and professional organizations to exchange information, views, and ideas, and to communicate and collaborate on efforts concerning ASR and MAR issues or topics. Its efforts are not limited in scope to just UIC issues.
- Identified by US EPA National Water Reuse Action Plan as a leader (Action 7.4) to increase understanding of current aquifer storage & recovery practices.



# WATER REUSE ACTION PLAN

- WRAP:
  - Recognizes that there are differences in how aquifer recharge is described, implemented and managed.
  - Seeks to better understand the range of aquifer storage and recovery practices and corresponding efforts to ensure the protection and sustainability of groundwater resources.
- The GWPC Workgroup will facilitate meetings to study and find solutions to the challenges currently limiting the use of Enhanced Aquifer Recharge (EAR) and ASR-MAR.



# ASR - MAR WORK GROUP

[Home](#) / [About GWPC](#) / [Work Groups](#) / [ASR - MAR Work Group](#)

[Overview](#) [GWPC Board](#) [GWPC Staff](#) [Work Groups](#) [Resolutions](#) [Comments](#) [Partners](#)

## Current Work & Goals

Water reuse represents a major opportunity to supplement existing water supplies. Many potential water sources such as industrial process water, agricultural return flows, municipal wastewater, oil and gas produced water, and stormwater can be captured and used for enhanced aquifer recharge.

Established in September 2019, the Aquifer Storage and Recovery - Managed Aquifer Recharge (ASR-MAR) Workgroup was formed to examine, discuss, and make recommendations to the GWPC Board of Directors regarding Aquifer Storage and Recovery (ASR) and Managed Aquifer Recharge (MAR) issues or topics.

The Workgroup serves as a forum for Federal, State, Tribal, and local government, organizations and public interest, and professional organizations to exchange information, views, and ideas, and to communicate and collaborate on efforts concerning ASR and MAR issues or topics. Its efforts are not limited in scope to just UIC issues. The issues that may be examined are broad and may include enhanced or managed aquifer recharge practices that are not regulated by the SDWA UIC program.

[READ THE WORKGROUP CHARTER](#)

[ASR MAR WORK PLAN](#)

[ACCOMPLISHMENTS](#)

[Co-Chairs](#) [Leadership Team](#) [National Water Reuse Action Plan](#) [Webinars / Recordings](#)

### *ASR in Oklahoma: From No to Go*

Featuring: Hillary Young, OK DEQ; Chris Neel, OK Water Resources Board; Doug Beak, Robert S. Kerr

Environmental Research Center

Tuesday, April 19 | 1 p.m. - 2:30 p.m. (Central)

[WATCH RECORDING](#)

### *Virtual Field Trip: Provo, Utah ASR Projects*

Featuring: Jeff Davis, Barr Engineering

September 2021

[WATCH VIRTUAL FIELD TRIP](#)

QUARTERLY  
WEBINARS

# QUARTERLY WEBINARS

## *“Aquifer Storage & Recovery & Aquifer Recharge Wells in Florida”*

Joe Haberfeld, PG, Florida DEP (August 6, 2020)

- Florida – growing population – using ASR wells to augment and preserve water for public supply
- Success of projects dependent on many factors:
  - Hydrogeology, economics, need for water stored, reliability and consistency of project operated
- Highlighted several facilities as examples of types of projects located in Florida
- Evaluation methods used by DEP for success of projects presented

# QUARTERLY WEBINARS

## *“Managed Aquifer Recharge in California – Long-Term Projects and New Emphasis Under the New Groundwater Law”*

Timothy Parker, Parker Groundwater (Nov. 12, 2020)

- Covered California Sustainable Groundwater Management Act (SGMA)
  - Groundwater Sustainability Plans (Requirements and Measurements)
- MAR critical element to achieve sustainability & California has a long history of successful MAR
- Increased state & local technical ability => high probability of success
- Many challenges, but California has demonstrated will, investment and record of success



# QUARTERLY WEBINARS

## *“What's New with EPA? Reuse, UIC, Stormwater”*

Justin Mattingly, Julie Blue, Kara Goodwin, US EPA (Feb. 9, 2021)

- The role of ASR in the National Water Reuse Action Plan
- EAR of stormwater in the US – State of the Science review
- EPA’s report on Aquifer Recharge and Aquifer Storage and Recovery in the UIC program

# QUARTERLY WEBINARS

## *“Tools for Planning, Development, & Improvement of Aquifer Storage and Recovery Projects: Siting & Recovery Efficiency Assessment”*

Texas Water Development Board / Texas Commission on Environmental Quality (July 27, 2021)

- Determining ASR project recoverability – Texas regulatory perspective
- Supporting ASR projects in Texas – TWDB science, planning and funding

# QUARTERLY WEBINARS

*“Guidance for Understanding & Minimizing Arsenic Mobilization in Aquifer Storage & Recovery” and “Treatment and Management of Inject Water During ASR to Minimize the Potential Release of Arsenic”*

Sarah Fakhreddine, PhD & Charles Werth, PhD, University of Texas at Austin (Dec. 2, 2021)

- Provided a comprehensive presentation on increasing our knowledge on the understanding and mitigating arsenic mobilization during ASR
  - Mechanism of arsenic mobilization
  - Site-specific biogeochemical conditions
  - Site-specific operational and biogeochemical compatibility
  - Guidance – modeling, lab experiments, and monitoring
- Treatment strategies (associated with different risks and costs)





# QUARTERLY WEBINARS

## *“ASR in Oklahoma: From No to Go”*

Hillary Young, OK DEQ; Chris Neel, OK Water Resources Board; Doug Beak, Robert S. Kerr Environmental Research Center (April 19, 2022)

- Explored how Oklahoma agencies worked together to create regulatory scheme for ASR, ASR research in Oklahoma and projects

# ANNUAL FORUM SESSIONS

- *Topics including:*
  - *Mapping*
  - *EAR – Stormwater*
  - *Water Rights Permitting*
  - *Regulation Under UIC Program*
  - *More...*
- *Virtual Field Trip:*
  - *Provo Utah*



# FUTURE PLANS – HOW TO GET ENGAGED

- Upcoming meeting/field trip at GWPC Annual & UIC Conference – SLC
- Attend quarterly webinars
- Questions? Reach out to GWPC



# 2022 ANNUAL CONFERENCE

 **June 21 - 23, 2022**  
Salt Lake City, Utah

**REGISTER TODAY!**  
Early Bird Registration Ends May 11

## Join Us in Salt Lake City!

- ASR-MAR Field Trip to Provo  
(*space limited*)
- Over 25 Hours of Content
  - (*Miss something? Can be viewed for 3 months in our meeting app*)
- Networking Events
- In-Person & Virtual Attendance Options

Register: [www.gwpc.org](http://www.gwpc.org)