South Florida Water Management District
Lake Okeechobee Watershed Restoration Project

The Lake Okeechobee Watershed Restoration Project is a part of the Comprehensive Everglades Restoration Plan.

The South Florida Water Management District and the U.S. Army Corps of Engineers developed an ASR Well Science Plan to support a phased, science-based implementation of ASR wells as part of the Lake Okeechobee Watershed Restoration Project. The Science Plan reflects the latest science and best available information on the use of ASR wells in Everglades projects.

Through the Science Plan and an Underground Injection Control (UIC) permit, SFWMD is implementing ASR well technology. In addition, SFWMD is working with landowners to acquire land necessary for the wetland restoration portion of the project.

Goals and Objectives:

- Increasing water storage capacity in the watershed north of Lake Okeechobee, resulting in improved Lake Okeechobee water levels.
- Improving quantity, timing, and distribution of water to the Northern Estuaries.
- Restoring wetlands within the project area.
- Improving water supply for existing legal users.

Project Features:

- Approximately 10 clusters of ASR wells (55 total ASR wells).
- 5,900 acres of wetland restoration.

Next Steps:

- Chief's Report
- Congressional Authorization
- Project Partnership Agreement

ASR Phased Implementation as Recommended by the National Research Council

Continuous Cores (2021-2023)

- APPZ attributes (local scale)
- Injection pressures for fracture potential
- P removal mechanisms
- Pathogen inactivation

Reactivation of Existing ASR Systems (2021-2023)

- APPZ attributes (local scale)
- P removal mechanisms
- Chronic toxicity testing
- Arsenic transport within aquifer
- Buffer zone to reduce sulfate concentrations
- Fate of sulfate in recovered water to form methylmercury
- Pathogen inactivation
- Groundwater travel times

Test/Exploratory Multi-Wells (2021-2023)

- APPZ attributes (local scale)
- Local scale model for heterogeneity, anisotropy, fracturing, and travel times
- Anisotropy analysis for orienting wells
- Tracer studies for flow directions
- Cross-well tomography and geophysics
- Well spacing and optimal recovery efficiency
- Injection pressures for fracture potential
- Pretreatment technologies to remove arsenic
- Pathogen inactivation

Wellfield Design, Permitting, and Construction (2021-2026)

- Local scale model for heterogeneity, anisotropy, fracturing, and travel times
- Anisotropy analysis for orienting wells
- Tracer studies for flow directions
- Well spacing and optimal recovery efficiency
- Injection pressures for fracture potential
- Technologies to meet regulatory requirements
- Pretreatment technologies to remove arsenic
- Pathogen inactivation
- Groundwater travel times
- Locate clusters near large water bodies
- Long-term bioaccumulation and community dynamic studies

Initial Cycle Testing (2025-2027)

- Well spacing and optimal recovery efficiency
- Injection pressures for fracture potential
- P removal mechanisms
- Improve/extend cycle tests
- Establish buffer zone
- Operate multi-well pairs and clusters
- Locate clusters near large water bodies
- Pretreatment technologies to remove arsenic
- Acute and chronic toxicity and bioaccumulation tests
- Multi-cluster chronic toxicity testing
- Community-level effects and bioaccumulation
- Long-term bioaccumulation & community dynamic studies
- Probabilistic, quantitative risk assessment
- Source water effects on redox evolution of aquifer
- Arsenic transport within aquifer using buffer zone
- Buffer zone usage to reduce sulfate concentrations
- Fate of sulfate in recovered water to form methylmercury
- Variability of gross alpha and radium in recovered water

Extended Testing & Wellfield Expansion (2026-2030)

- Improve/extend cycle tests
- Establish buffer zone
- Operate multi-well pairs and clusters
- Multi-cluster chronic toxicity testing
- Community-level effects and bioaccumulation
- Prolonged bioconcentration studies
- Probabilistic, quantitative risk assessment
- Source water effects on redox evolution of aquifer
- Arsenic transport within aquifer using buffer zone
- Buffer zone usage to reduce sulfate concentrations
- Fate of sulfate in recovered water to form methylmercury
- Variability of grossalpha and radium in recovered water

REVISED RECOMMENDED PLAN