

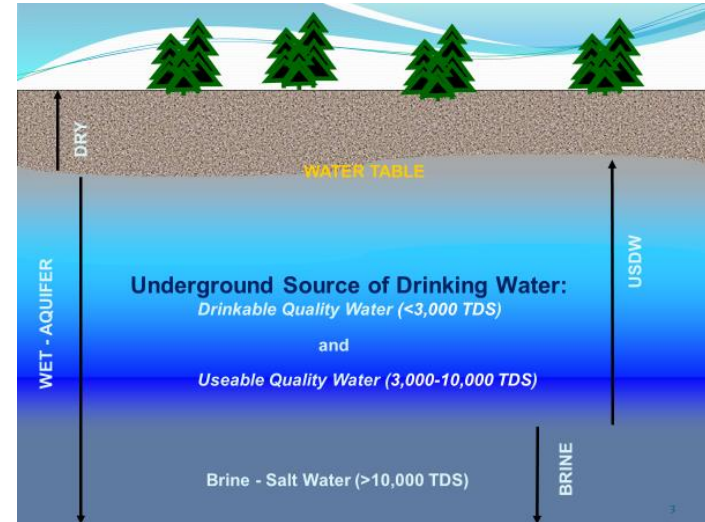
EPA's Report on Aquifer Recharge and Aquifer Storage and Recovery in the UIC Program

Kara Goodwin
February 9, 2021
GWPC UIC Conference



The Safe Drinking Water Act

- Authorizes EPA to develop minimum federal regulations for state, territory, and tribal Underground Injection Control (UIC) programs to protect underground sources of drinking water (USDWs)
- Mandates EPA to regulate underground injection of most fluids – liquid, gas, or slurry
- Prohibits injection that endangers a USDW
- Establishes a process for approving primary enforcement responsibility to states, territories, and tribes (Primacy)
- Authorizes EPA to provide assistance grants to states, territories and tribes in support of essential UIC program functions



UIC Program Mission: Protect public health by preventing contamination of USDWs



United States
Environmental Protection
Agency

Office of Water
(4606)
Washington, DC 20460

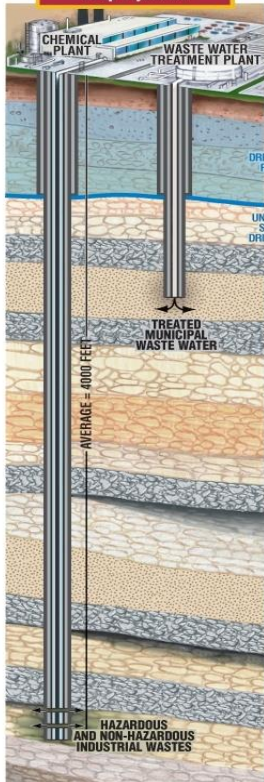
EPA 816-H-01-004
Draft May, 2010
www.epa.gov/safewater

Safe Drinking Water Act

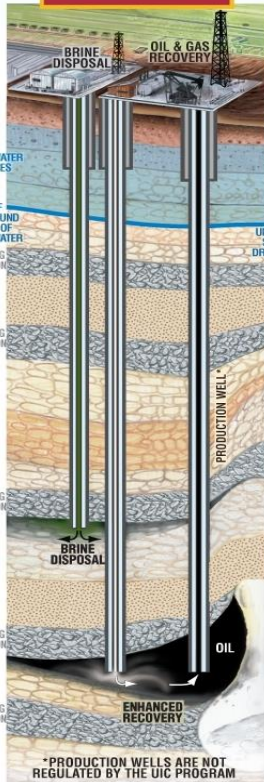
Underground Injection Control (UIC) Program

Protecting Public Health and Drinking Water Resources

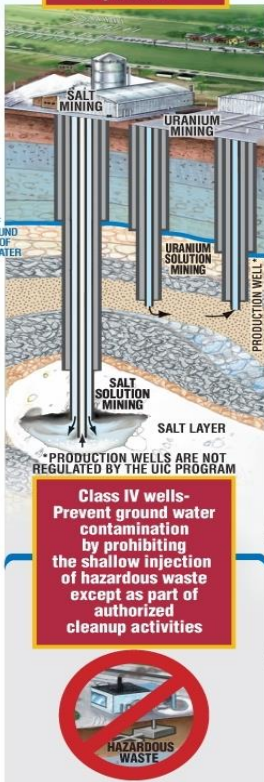
Class I wells-
isolate hazardous,
industrial and municipal
wastes through
deep injection



Class II wells-
Inject oil and gas
production wastes



Class III wells-
Minimize
environmental impacts
from solution mining
operations

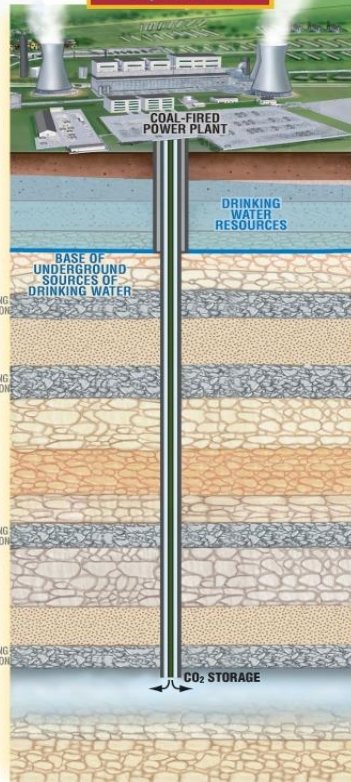


Class IV wells-
Prevent ground water
contamination by
prohibiting the shallow
injection of hazardous
waste except as part of
authorized
cleanup activities

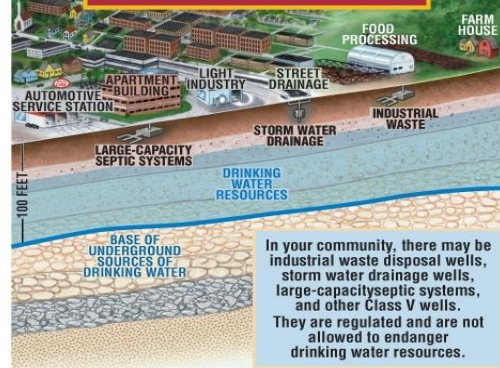


Class VI wells-
Minimize
environmental impacts
from geologic
sequestration

NEW

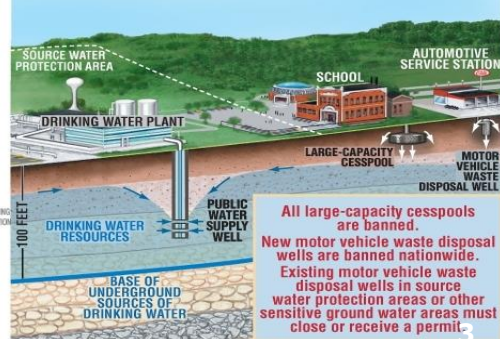


Class V wells-
Manage the shallow injection
of all other fluids to prevent
contamination of drinking water resources



In your community, there may be industrial waste disposal wells, storm water drainage wells, large-capacity septic systems, and other Class V wells. They are regulated and are not allowed to endanger drinking water resources.

Class V wells continued



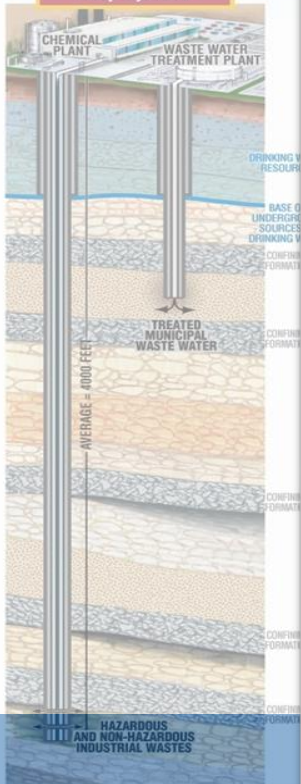
All large-capacity cesspools are banned. New motor vehicle waste disposal wells are banned nationwide. Existing motor vehicle waste disposal wells in source water protection areas or other sensitive ground water areas must close or receive a permit.

Not drawn to scale

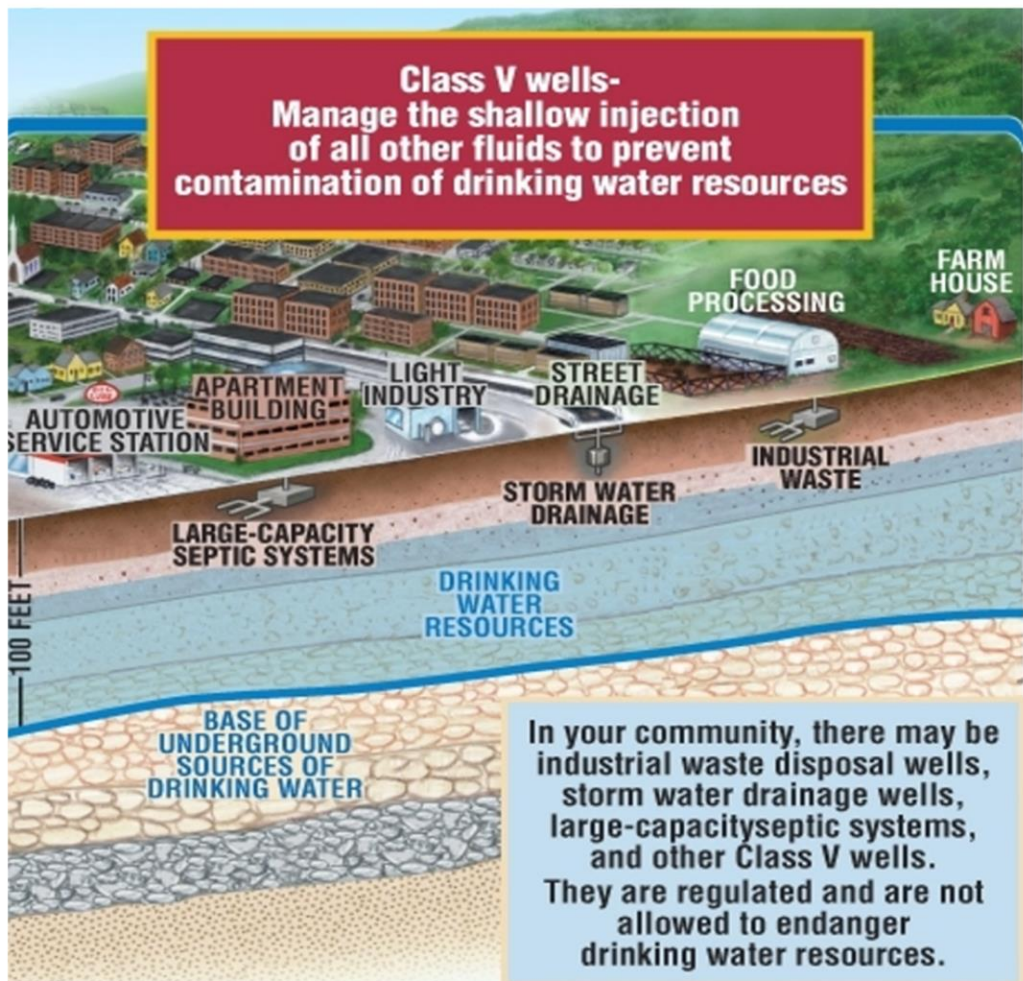


United States Environmental Protection Agency
Office of Water (4606) Washington, DC 20460

Class I wells-
Isolate hazardous, industrial and municipal wastes through deep injection

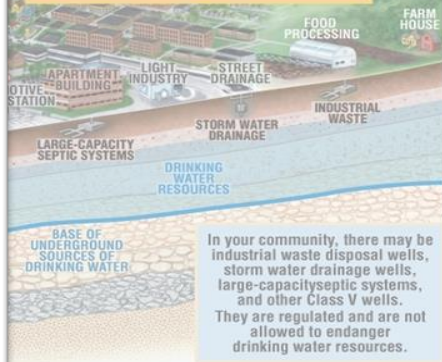


Class V wells- Manage the shallow injection of all other fluids to prevent contamination of drinking water resources

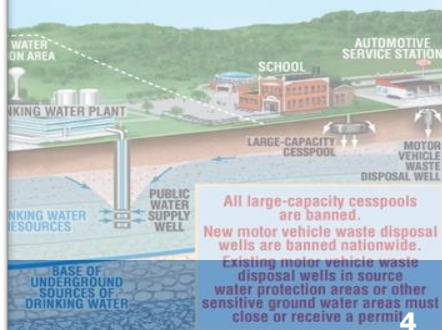


OFFICE OF GROUND WATER AND DRINKING WATER

Class V wells
Manage the shallow injection
of all other fluids to prevent
contamination of drinking water resources

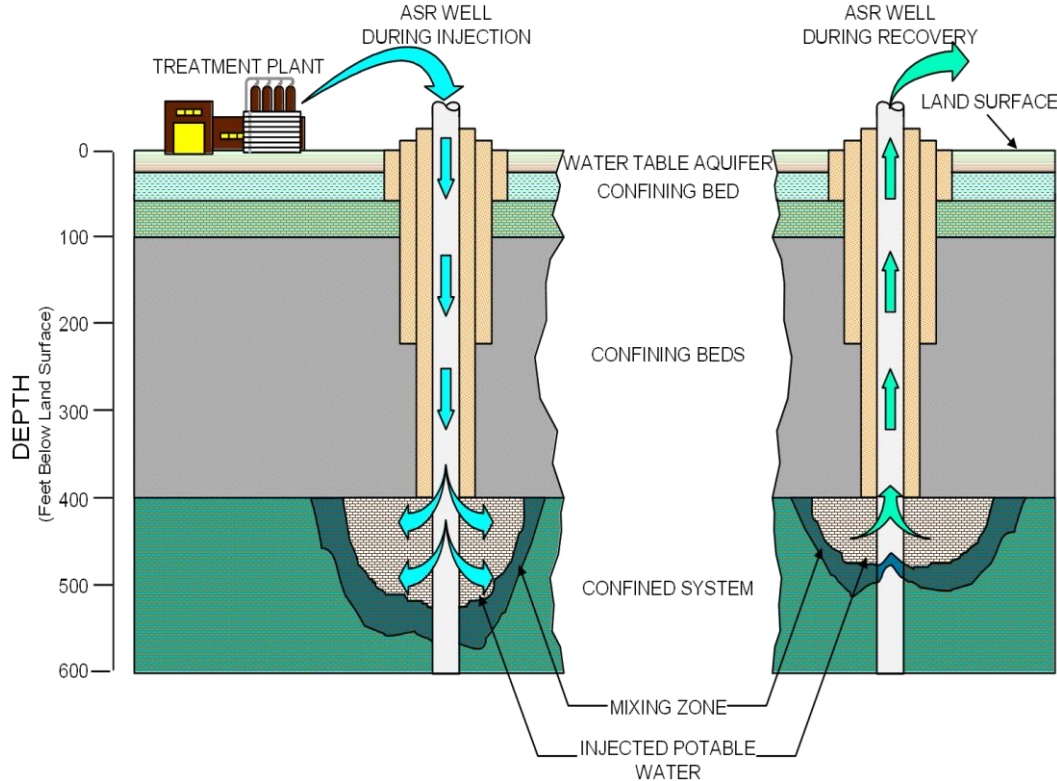


Class V wells continued



In your community, there may be industrial waste disposal wells, storm water drainage wells, large-capacity septic systems, and other Class V wells. They are regulated and are not allowed to endanger drinking water resources.

MAR/ASR & the UIC Program



Purpose of UIC requirements:

- Injected fluids stay within the well and the intended injection zone
- Fluids that are directly or indirectly injected into a USDW do not cause a public water system to violate drinking water standards or otherwise adversely affect public health.

UIC & Stormwater



What is a UIC well?

“A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.”

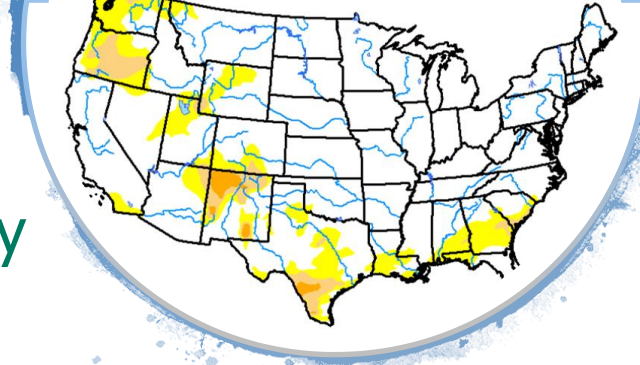
40 CFR 144.3

Answer the following questions to determine if you have a Class V storm water drainage well.		
Questions:	If Your Answer Is Yes...	If Your Answer Is No...
1. Do you operate a stormwater collection system that relies on infiltration to collect and dispose of storm water runoff?	Go to question 2.	You do not have a Class V stormwater drainage well. Stop here.
2. Does your infiltration system discharge to the subsurface?	Go to question 3.	You do not have a Class V stormwater drainage well. Stop here.
3. Does your stormwater infiltration system consist of a drilled or driven shaft, or dug hole that is deeper than it is wide? Does it rely on a naturally occurring sinkhole? Does it include any subsurface piping?	You have a Class V stormwater drainage well and are subject to Class V requirements.	You do not have a Class V stormwater drainage well. Stop here.

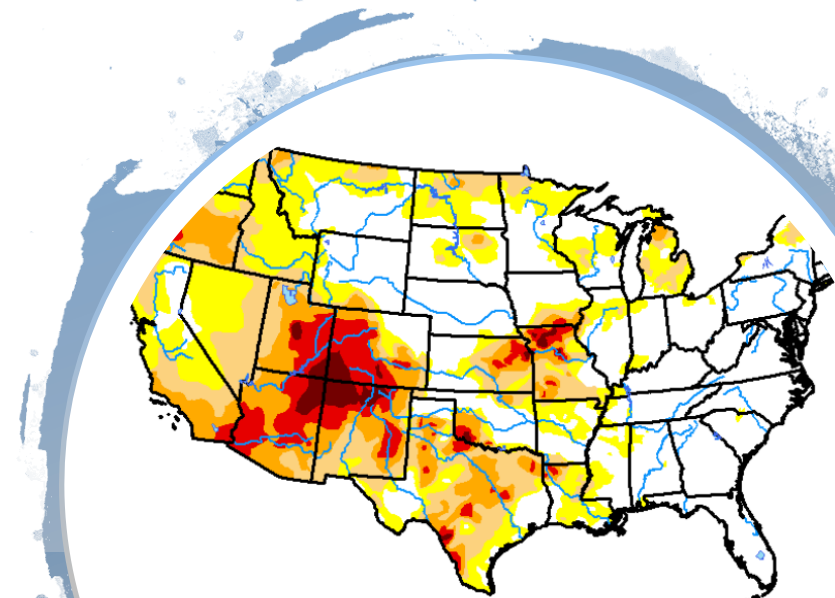
<https://www.epa.gov/uic/stormwater-drainage-wells>

MAR/ASR & Water Sustainability

- Forty out of 50 state water managers expect to face freshwater shortages in their states in the next 10 years, according to a Government Accountability Office report (2014)
- EPA recognizes the potential value of ASR as a tool to help balance the need for smart water management while protecting water quality



Top map reflects data from the week of March 26, 2019; bottom is week of August 21, 2018

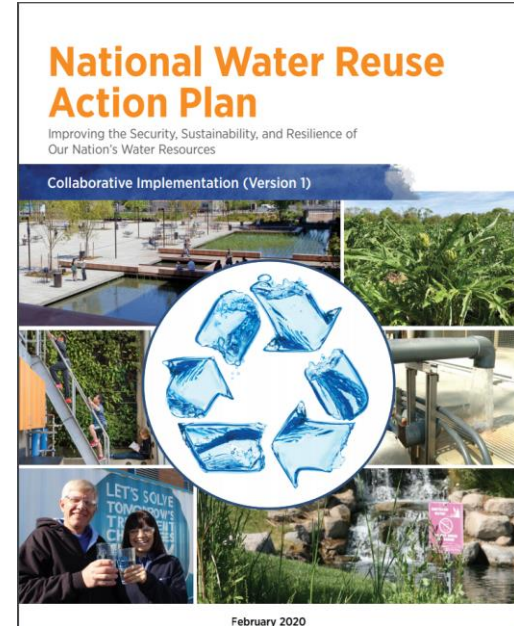


Drought Classification

None D0 (Abnormally Dry) D1 (Moderate Drought) D2 (Severe Drought) D3 (Extreme Drought) D4 (Exceptional Drought)

MAR/ASR & Water Reuse

- Water Reuse Action Plan kickoff February 2019
- National Water Reuse Action Plan: Collaboration Implementation (Version 1) February 2020
 - Action 2.7.4: Increase Understanding of Current Aquifer Storage and Recovery Practices



EPA Report on State of AR & ASR in the U.S. (UIC)

Overview of the AR/ASR Practice

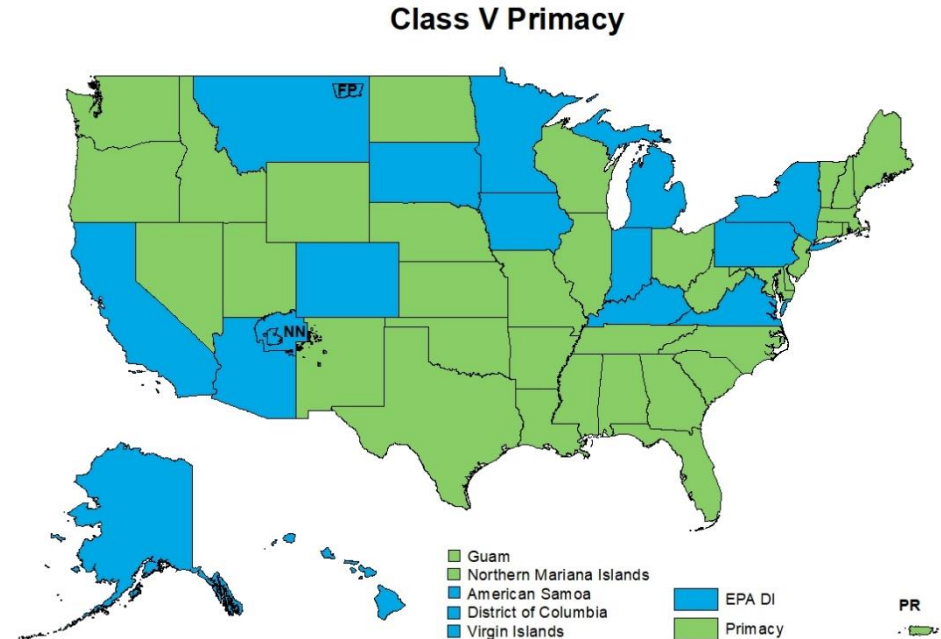
- Technical overview
- Considerations for implementation
 - Site selection
 - Water sources
 - Monitoring
- Challenges and strategies for success
 - Water quality
 - Operational
 - Economic



EPA Report on State of AR & ASR in the U.S. (UIC)

Regulatory Landscape

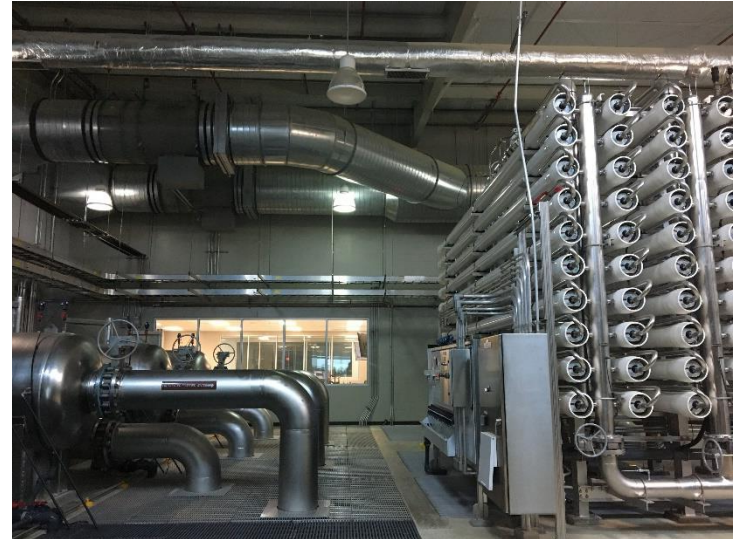
- UIC primacy
 - 38 Class V primacy programs
 - EPA DI in 20 states/territories
- Rule authorized vs permitted
- Summary of state regulations
 - UIC regulations
 - Other state regulations



EPA Report on State of AR & ASR in the U.S. (UIC)

AR/ASR Well Inventory

- The U.S. EPA's UIC Injection Well Inventory (data extracted from the deactivated National UIC Database in May 2020, last updated in 2018)
- An updated version of the inventory database that was originally used for AWWA's M63 Aquifer Storage and Recovery Manual (AWWA, 2015)
- The International Groundwater Resources Assessment Centre's (IGRAC) MAR Portal – www.marportal.un-igrac.org (Stefan and Ansems, 2018)



San Antonio Water System

Photo credit: Kara Goodwin

Next Steps

- Finalizing Report, Reg Summary & Well Inventory
 - Input from EPA Regions
- Continuing collaboration with GWPC MAR/ASR group and EPA Water Reuse Team



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Questions? Feedback?

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