United States
Environmental Protection Agency

Office of
Ground Water and
Drinking Water

CLASS V UIC STUDY FACT SHEET
AQUIFER RECHARGE WELLS AND AQUIFER STORAGE AND RECOVERY WELLS

What are aquifer recharge and aquifer storage and recovery (ASR) wells?	Aquifer recharge and ASR wells are used to replenish water in an aquifer for subsequent use. While an aquifer recharge well is used only to replenish the water in an aquifer, ASR wells are used to achieve two objectives: (1) storing water in the ground; and (2) recovering the stored water (from the same well) for a beneficial use. Both of these types of wells, however, may have secondary objectives, such as subsidence control and prevention of salt water intrusion into fresh water aquifers.
What types of fluids are injected into aquifer recharge and ASR wells?	Potable drinking water (from a drinking water plant), ground water (treated or untreated), and/or surface water (treated or untreated). Aquifer recharge and ASR wells injecting wastewaters are considered sewage treatment effluent wells.
Do injectate constituents exceed drinking water standards at the point of injection?	Water injected into aquifer recharge and ASR wells is typically treated to meet primary and secondary drinking water standards. However, it should be noted that, in some instances, constituents have been measured at concentrations slightly above drinking water standards.
What are the characteristics of the injection zone of an aquifer recharge and ASR wells?	Aquifer recharge and ASR wells are drilled to various depths depending on the depth of the receiving aquifer. They may inject into confined, semi-confined, or unconfined aquifers, although most of these wells inject into semi-confined aquifers that have been partially dewatered due to overpumping.
Are there any contamination incidents associated with aquifer recharge and ASR wells?	No contamination incidents associated with the operation of aquifer recharge or ASR wells have been reported.
Are aquifer recharge and ASR wells vulnerable to spills or illicit discharges?	Because the major goal of aquifer recharge and ASR wells is to replenish water in aquifers for subsequent use and its injectate typically meets drinking water standards, aquifer recharge and ASR wells are unlikely to receive spills or illicit discharges.
How many aquifer recharge and ASR wells exist in the United States?	There are 1,185 aquifer recharge and ASR wells documented in the United States. This documented number includes 807 aquifer recharge wells, 130 ASR wells, and 248 wells (in CA and ID) that cannot be distinguished as aquifer recharge or ASR wells in the available inventory. The estimated number of aquifer recharge and ASR wells is greater than 1,695, but unlikely to be higher than 2,000.
Where are aquifer recharge and ASR wells located within the United States?	Approximately 89 percent of the documented aquifer recharge and ASR wells are located in ten states: CA (200), CO (9), FL (<488), ID (48), NV (110), OK (44), OR (16), SC (55), TX (67), and WA (12). WI has conditionally approved one ASR well as part of a pilot study at a municipal water system and a second pilot project is under development.
How are aquifer recharge and ASR wells regulated in states with the largest number of this type of well?	*Permit by rule*: CA, CO, ID (<18 feet deep), OK, TX *Individual permit*: FL, ID (≥18 feet deep), NV, OR, SC, WA
Where can I obtain additional information on aquifer recharge and ASR wells?	For general information, contact the Safe Drinking Water Hotline, toll-free 800-426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Standard Time. For technical inquiries, contact Amber Moreen, Underground Injection Control Program, Office of Ground Water and Drinking Water (mail code 4606), EPA, 401 M Street, SW, Washington, D.C., 20460. Phone: 202-260-4891. E-mail: moreen.amber@epa.gov. The complete Class V UIC Study (EPA/816-R-99-014, September 1999), which includes a volume addressing aquifer recharge and ASR wells (Volume 21), can be found at http://www.epa.gov/OGWDW/uic/cl5study.html.