



GROUNDWATER RESOURCES ASSOCIATION
OF CALIFORNIA

Public Hearing (9/19/12)
General Waste Discharge Requirements for ASR Projects
Deadline: 9/13/12 by 12 noon

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September 13, 2012

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Subject: Comment Letter – General Waste Discharge Requirements for ASR Projects

Dear Ms. Townsend:

The Groundwater Resources Association of California (GRA) would like to thank the State Water Resources Control Board (State Board) for circulating the draft waste discharge requirements for aquifer storage and recovery (ASR) projects (draft General Order). The purpose of the General Order is to streamline the permitting process and to ensure consistent requirements for these projects. ASR projects use injection wells to recharge groundwater aquifers during times when water is available. This water is recovered from the aquifers when it is needed, usually through the same well. The General Order, if adopted, would be a significant advance in the effort to manage California's water resources and to meet the continually growing demands of our increasing population, while ensuring that groundwater recharge and recovery operations are protecting our vital groundwater resources. Enabling the local agencies ability to store water locally using ASR will help facilitate the diversion of water at times when demand is low, will allow for groundwater recharge and storage for future recovery, and will allow local management of dry-season diversions. These types of groundwater recharge and recovery operations are essential in California. GRA agrees it is important to create a policy and a regulatory environment where local agencies can build a flexible portfolio of water management options that allows them to become more independent as Californians struggle statewide to become less reliant on Delta diversions.

Please see GRA's general and specific comments below.

General Comments

- The draft General Order describes the regulatory requirements to inject good quality, high-value drinking water into an aquifer. The objective of every ASR project using high-value drinking water is to temporarily store water in an aquifer (for months or a few years), typically during wet seasons, and then **fully recover** the stored water during drier periods. The draft General Order describes the "waste discharge requirement" process to permit ASR projects long-term. Based on the draft General Order, the high-value 'fluid' is treated as a 'waste' and is subject to waste discharge requirements. We believe it is unfortunate to use this language to frame good quality, high-value drinking water in the context of a waste, and further believe this 'fluid' is not being discharged but is being temporarily stored underground. However, we understand that this process and terminology are based on requirement outlined in the Porter Cologne Act and the Safe Drinking Water Act, which were passed over 40 years ago to cleanup and protect waters of the state after many decades of industrial pollution. These laws did not anticipate ASR projects or other forms of groundwater recharge. GRA recommends the State Board update its laws and policies that were passed prior to the recognition of the state's need for greatly increasing and streamlining groundwater recharge projects. More specifically, GRA recommends language be added to the draft General Order that explains that this 'fluid' is not a waste, rather a good quality, high-value drinking water that will be recovered as drinking water for the public in the future.



- A common occurrence in ASR projects involving drinking water is that because the injection fluid is chlorinated, it contains residual chlorine and disinfection by-products (DBPs). When the fluid is injected into groundwater, it is common to have DBPs in-growth where DBPs will increase in concentrations and may be in excess of the maximum contaminant levels (MCLs) for these constituents for a short period of time. Subsequently, the DBPs may degrade to lower levels, typically below injection fluid concentrations. It should be noted in the draft General Order that short-term elevated concentrations of DBPs above their respective MCLs may result from ASR, and that these short-term elevated concentrations may be allowed if scientific data and anti-degradation analysis demonstrate the long-term benefit of the project and that future beneficial uses will be maintained.
- There is currently no centralized information repository on ASR projects in the state. As part of this initiative and draft General Order, the State Board should develop an information repository on ASR projects, including well locations, source water and receiving water quality and volumes, and project history. Consistent with other state projects and data, the state should make this information available to the public via the Internet.
- The draft General Order is silent on existing, unpermitted drinking water ASR projects in the state. GRA understands based on the draft General Order and communications with the State Board that the intent is that all drinking water ASR projects in the state should be under some form of permit. The draft General Order should address how existing, unpermitted drinking water ASR projects are to be addressed, including:
 - Will existing, unpermitted drinking water ASR projects be ignored or grandfathered-in?
 - Should existing drinking water ASR project proponents initiate ASR permitting?
 - Will the State Board or Water Boards contact project proponents and require permitting, or seek penalties?

Specific Comments

Page 3, No. 11 - The document requires that ASR project operators comply with current U.S. Environmental Protection Agency (USEPA) permit by rule requirements. GRA understands that under the Underground Injection Control Program (UIC), USEPA and the state have shared primacy and that permit by rule means that no UIC permit is required, and also that in California, USEPA has left permitting of the ASR well to the state agencies. USEPA is maintaining an inventory of ASR wells and requires that all injection wells for ASR be registered with USEPA. Considering the above, including the shared primacy by both USEPA and the state, the draft General Order should be specific as to what is required by USEPA and the state to help facilitate compliance with state and federal requirements.

Page 4, No. 15 – The State Board should consider using the same general definition of an ASR well as the one used by the USEPA: “ASR wells are used to achieve two objectives: (1) storing water in the ground; and (2) recovering the stored water either using the same well or pairing recharge wells with recovery wells located in the same wellfield.” (Class V Fact Sheet Aquifer Recharge and Aquifer Storage and Recovery Wells, US EPA, Office of Water and Drinking Water, September 2009.)

Page 5, No. 19 – The applicant needs to adequately characterize the aquifer matrix, surface water and groundwater quality for potential geochemical reactions and possible subsequent adverse groundwater quality impacts caused by recharging the aquifer with surface water. This may require bench scale, geochemical modeling and/or pilot scale testing to evaluate the risk of unwanted adverse impacts to groundwater resources. For example, at many Florida ASR projects, the concentration of arsenic increased after injection, a result of oxidation of arsenic in pyrite contained in the aquifer matrix. These increases in arsenic concentrations could have been predicted with aquifer matrix testing, geochemical modeling, bench scale testing and pilot scale testing, but these detailed analyses were not conducted in advance. These sorts of tests and analyses in advance help to address the technical challenges and ensure the success of ASR projects. Additionally, more recent pilot

scale (or 'cycle testing') testing in Florida suggests arsenic concentrations increase initially with short-term pilot testing, and decrease to near or below the MCL for arsenic during long-term pilot scale testing, and can in some cases can be treated prior to injection with either de-oxygenation, sulfide or both.

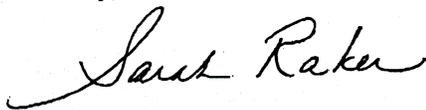
Page 6, No. 23 – GRA recommends the following revision to this statement:

“In ASR Projects, water from one source is discharged into another. Injected water may be of different quality than groundwater in the aquifer. In addition to the possibility of elevated concentrations of naturally occurring or anthropogenic constituents in the source water, mixing water from different sources may cause geochemical reactions in the aquifer that can **improve or** degrade groundwater quality.”

Page 7, No. 32 - Actually, the beneficial uses of 'water' are defined in each Water Board's basin plan. Groundwater recharge is considered a beneficial use of water in the San Francisco Bay Water Board and the San Diego Water Board basin plans; groundwater recharge should be considered a beneficial use of water in all the Water Boards' basin plans.

If you have questions or clarification requests, please contact Kathy Snelson at 916-446-3626.

Sincerely,

A handwritten signature in black ink that reads "Sarah Raker". The signature is written in a cursive, flowing style.

Sarah Raker, PG, CHG
President