Texas Commission on Environmental Quality

General Information on Aquifer Storage and Recovery

Background

Aquifer Storage and Recovery, or ASR, is the storage of water in an underground aquifer, with the intent of later recovering that water for beneficial use. ASR is accomplished through a system of injection and recovery wells. Water is injected into a suitable underground aquifer, where it is stored until needed. ASR can provide additional water to Texas communities to meet needs of a growing population, and to lessen the effect of periodic drought conditions.

ASR projects are regulated under the Texas Commission on Environmental Quality's (TCEQ's) Class V Injection Well Program[1]. Statutory requirements for ASR projects are in the Texas Water Code, Chapter 27 and Chapter 36. During the 84th Regular Session of the Texas Legislature, House Bill (HB) 655 amended Chapter 27 and Chapter 36 of the Texas Water Code to revise existing ASR requirements[2]. TCEQ regulations that apply to ASR are in Title 30 of the Texas Administrative Code, Chapter 331, Subchapters A, H and K[3].

ASR Authorization Process

The TCEQ can authorize an ASR project through issuance of a permit, a general permit, or an authorization letter (known as an authorization-by-rule). An applicant for an ASR project by permit or general permit is required to publish notice of the application in a public newspaper. This notice will announce a period over which the public may submit comments to the TCEQ on the application. There is no public notice requirement for an authorization letter. However, for an application for an ASR project that is proposed to be located in the jurisdiction of a groundwater conservation district (GCD), the TCEQ will notify the district by letter that an application has been received. TCEQ anticipates that most applications for ASR will request an authorization by rule rather than an individual permit or general permit.

When the TCEQ receives an ASR application[4], it is reviewed for completeness. If additional information is needed, the TCEQ will issue a letter to the applicant, requesting the needed information. In the case of an application for a permit or general permit, TCEQ will verify that the applicant provided the required notice. The TCEQ will prepare written responses to any relevant public comments received regarding the application. Once TCEQ determines the application is complete and meets all applicable requirements, TCEQ staff may issue the permit, general permit, or authorization letter.

Frequently Asked Questions

Who can apply for an ASR project?

Any person or organization can apply for an ASR project.

What is the fee for submission of an application for an ASR project?

There is no fee for an ASR application.

Is there any restriction on the volume of water that can be managed in an ASR Project?

No. There is no limit on the size of an ASR project. However, the amount of available water a permittee has for storage in an ASR and the proposed project hydrogeology may have practical limitations.

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[1] Classification of injection wells regulated by TCEQ is at 30 TAC Chapter 331, Subchapters H and K.

[2] Copy of HB 655 is available at: https://capitol.texas.gov/tlodocs/84R/billtext/pdf/HB00655F.pdf#navpanes=0

[3] Available at: http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=331

[4] Application form is available at: https://www.tceq.texas.gov/downloads/permitting/radioactive-materials/uic/asr-application-form.docx

Are ASR projects limited to storage of surface water (appropriated water)?

No. Both surface water and groundwater may be managed in an ASR project.

What types of water are allowed for management in an ASR project?

There are no restrictions on the type of water that may be managed in an ASR project. For example, river water, lake water, treated wastewater, stormwater, and groundwater all may be managed in an ASR Project. TCEQ does note that for any type of state-appropriated water, the ASR project manager must either have an existing water right for that water, or must have a contract for that water from the water right holder. Additionally, the ASR operator must abide by the terms of that water right.

Are there any restrictions on the quality of water that is managed in an ASR project?

Yes. All Class V aquifer storage and recovery injection wells must be operated in such a manner that injection will not endanger drinking water sources. The quality of the water injected at the ASR project must meet requirements to comply with the standards set forth under the federal Safe Drinking Water Act. Generally, the water injected must be of the same or better quality than the water in the receiving aquifer. Alternatively, if the water injected is of lesser quality than the water in the receiving aquifer, conditions must exist in the aquifer that will affect the injected water in a manner that improves its quality (e.g., removal of microbes in the injection zone prior to recovery, subject to successful demonstration).

Does a Groundwater Conservation District have any jurisdiction over an ASR project that is located within the district's jurisdiction?

Yes and No. The TCEQ has exclusive jurisdiction over the injection wells used for an ASR project. For an ASR project proposed to be located within the jurisdiction of a GCD, the TCEQ, based on information provided in an ASR application, will determine what percentage of the injected water the ASR operator will be able to recover (i.e., recoverable water). The GCD has no jurisdiction over the recoverable water. However, for any volume of water the ASR project recovers in excess of that percentage, GCD rules may apply. An ASR project may also be subject to reporting requirements of the GCD. TCEQ encourages applicants for a ASR project within a GCD to coordinate and communicate with the GCD throughout the application process.

What if a project applicant doesn't have enough information to complete an ASR application (e.g., because no information about recoverability is readily available)?

To conduct injection testing to determine how much injected water can practically be recovered by an ASR, an applicant can obtain a Class V experimental well authorization. Once the experimental well authorization is approved, the applicant can conduct injection or cycle testing and evaluate recoverability. An applicant can also use an experimental well authorization to evaluate geochemical reactions and obtain other project information that might affect well design and operation. Potential ASR applicants should contact the TCEQ UIC Permits Section to discuss details related to experimental wells used for proposed ASR project and to obtain guidance or to schedule a pre-application meeting for the project. Contact UIC Permits Section via telephone at (512) 239-6466 or via email at uic@tceq.texas.gov.

Useful Information

The following links provide information the TCEQ UIC Program, statutes, regulations, and permitting.

UIC General:
https://www.tceq.texas.gov/permitting/radmat/uic_permits
UIC Regulations:
https://www.tceq.texas.gov/permitting/radmat/uic_permits/UIC_Am_I_Regulated.html
UIC Class V Authorizations:
https://www.tceq.texas.gov/permitting/radmat/uic_permits/UIC_Guidance_Class_5.html