How Much Groundwater Is Required for an In-Situ Uranium Mining Operation?

Groundwater is removed from the aquifer in two ways during in-situ leaching (ISL) and the amount depends on the size of the operation. 1), during ISL, more groundwater (about 1 percent more, usually referred to as "bleed water") is pumped from the aquifer than is injected. This is done to ensure that all injected fluids are recovered from the zone that is being mined. 2), during aquifer restoration, reverse osmosis treatment of the groundwater results in about 75 percent recovery of the total volume of groundwater treated. The remaining 25 percent is a reverse osmosis brine. Both the bleed water and the brine are disposed of in a Class I injection well.

The amount of groundwater removed from the aquifer and disposed of through injection depends on the size and duration of the ISL operation and can add up to several hundred acre-feet of water per year (note: 1 acre-foot = 325,851 gallons).

Resources and Useful Links

- Texas Commission on Environmental Quality (TCEQ) Source Material Recovery and By-Product Material Disposal, https://www.tceq.texas.gov/permitting/radmat/uranium/uranium.html
- TCEQ In Situ Leach and Conventional Uranium-Recovery Methods, https://www.tceq.texas.gov/permitting/radmat/uranium/process.html
- TCEQ Regulations for Class I Well Production Area Development, U.S. https://www.tceq.texas.gov/permitting/radmat/uic_permits/UIC_Guidance_Class_1.html
- U.S. Environmental Protection Agency Class III Injection Wells for Solution Mining, https://www.epa.gov/uic/class-iii-injection-wells-solution-mining
- U.S. Nuclear Regulatory Commission (NRC) *NUREG 1569: Standard Review Plan for In Situ Leach Uranium Extraction License Applications*, http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1569/sr1569.pdf
- U.S. NRC *NUREG 6870: Consideration of Geochemical Issues in Groundwater Restoration at Uranium In-Situ Leach Mining Facilities* https://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6870/index.html
- Texas A&M AgriLife Extension Service (TAES) *Drinking Water Problems: Radionuclides* (B-6192), https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/drinking-water-problems-radionuclides.pdf

Other Frequently Asked Questions (FAQs)

To find additional FAQs visit the Texas Groundwater Protection Committee's FAQ webpage at https://tgpc.texas.gov/frequently-asked-questions-faqs.