

Assessing opportunities for aquifer storage and recovery (ASR) systems in B.C.

Amy Sloma, B.C. Ministry of Environment and Climate Change Strategy

Klaus Rathfelder, B.C. Ministry of Environment and Climate Change Strategy

Doug Geller, Western Water Associates

Walter Burt, GSI Solutions

Summary

Aquifer Storage and Recovery (ASR) and Managed Aquifer Recharge (MAR) are water resource management strategies to replenish groundwater stored in aquifers for beneficial purposes. ASR systems are used throughout the United States and Australia for augmenting and managing groundwater supplies, including applications for potable water supply, irrigation and industrial water supply, and environmental protection and enhancement. In the western United States, ASR systems are widely used to offset the seasonal imbalance in water supply and peak water demand. Despite similar potential uses in B.C., there are no operating ASR systems in B.C. One ASR project was proposed for potable water supply in Parksville B.C. in 2010 which proceeded to a pilot testing stage, but did not proceed further due to technical and cost constraints.

There are widespread seasonal shortages of surface water in B.C. and the province has also experienced limits on groundwater supply during critical periods due to increasing demand, extended drought, and groundwater licensing requirements to consider pumping impacts on aquatic ecosystems. Recognizing the potential for ASR systems to enhance groundwater supply during critical periods, a desktop study was conducted by Western Water Associates to assess the knowledge and policy gaps that could impede application of ASR systems in B.C. The study surveyed regional groundwater hydrogeologists, water managers, and natural resource experts throughout the province to identify and evaluate the regional water management priorities, priority areas, and hydrogeologic conditions, as well as the potential policy and regulatory constraints on the use of ASR systems. These surveys together with a review of the B.C. regulatory framework and professional expertise led to development of technical guidance and policy recommendations to support use of ASR systems in B.C. Conceptual designs of potential ASR pilot projects in a few regions were developed based on the evaluation of regional priorities and hydrogeologic settings. These projects are under consideration for feasibility assessments.