

**BEFORE THE WATER RESOURCES DEPARTMENT  
OF THE STATE OF OREGON**

In the Matter of Aquifer Storage and Recovery )  
(ASR) Limited License Application #005, )  
Washington County

SUMMARY ORDER  
APPROVING RENEWED ASR TESTING

**AUTHORITY**

Oregon Revised Statute (ORS) 537.534 and Oregon Administrative Rule (OAR) 690-350-0020 establish the process by which an application for ASR testing under an ASR limited license may be submitted and approved. Oregon Administrative Rule (OAR) 690-350-0010 describes general provisions for ASR under Oregon law.

**BACKGROUND**

On December 14, 2001 the Department issued ASR Limited License #005 to the City of Tigard. That license authorized ASR testing for five years at three wells in a Columbia River Basalt aquifer. That license was renewed on February 20, 2007, and again on December 14, 2011. Condition 1 of ASR Limited License #005 provides for renewal pursuant to OAR 690-350-0020(5)(c), and describes the following terms for renewal: The license may be renewed if the licensee demonstrates to the Director's satisfaction that further testing is necessary and that the licensee complied with the terms of the license.

**FINDINGS OF FACT**

1. On April 4, 2016, the City of Tigard submitted a request for a five-year time extension (renewal) for ASR Limited License #005.
2. The Department provided public notice of the application and modifications in the Department's weekly public notice on April 26, 2016. A 30-day comment period followed.
3. The Department received no adverse comments related to the possible renewal of an ASR license.
4. The Department sought comments and recommendations from Oregon Department of Environmental Quality and Oregon Health Authority Drinking Water Program related to the possible renewal. Comments were received from both agencies supporting renewal of ASR LL #005.
5. The Department evaluated the renewal request and comments, and determined the proposed renewal is consistent with Condition 1 of the ASR License and OAR 690-350-0020(5)(c). The licensee has demonstrated to the Director's satisfaction that further testing is necessary, and that the licensee complied with the terms of the license. The request letter presented reasons for the extension (renewal) and also provided specific details that addressed compliance with the ASR license.

**CONCLUSIONS OF LAW**

The request to renew ASR Limited License #005 for five years is consistent with the requirements of OAR 690-350-0020(5)(c) and Condition 1 of ASR Limited License #005.

## ORDER

Now, THEREFORE, it is ORDERED, the renewal of ASR Limited License #005 is approved and valid through the fifth anniversary of its issuance, pursuant to ORS 537.534, OAR 690-350-0020(5)(c), and Condition 1 of the original ASR license.

Except as modified by other provisions of this license, the licensee is authorized to pursue the project schedule, monitoring, and other features noted in the ASR pilot test work plans. Those plans may be amended and approved pursuant to condition (4)(A)(iii). The project schedule in the ASR test plan may be reasonably adjusted by the licensee to reflect the license issuance date or other delays. Features of that ASR testing plan are provided in the documents entitled:

Pilot Test Work Plan for City of Tigard ASR 1  
City of Tigard Aquifer Storage and Recovery Project, ASR Limited License #005  
Prepared by GSI Water Solutions, Inc.  
August 19, 2013

and

Pilot Test Work Plan for the City of Tigard ASR 2 and ASR 3 Wellfield  
City of Tigard Aquifer Storage and Recovery Project, ASR Limited License #005  
Prepared by GSI Water Solutions, Inc.  
November 14, 2012

The features of ASR testing must provide data that address the following: the appropriate target storage volume; loss of stored ASR water and natural water by virtue of ASR activities; water-quality changes due to ASR activities; well-construction sufficiency for ASR purposes; water-level response in the ASR well, aquifer, springs and nearby wells; accounting of ASR inputs, withdrawals, and storage; water-quality testing needs; and well hydraulics at the ASR well.

The licensee may divert up to 9 cfs from a combination of the Bull Run River, a tributary of the Sandy River, using authorization of ORS 538.420, and the Tualatin River, a tributary of the Willamette River, using authorization under Permit S-46423; and the Clackamas River, a tributary of the Willamette River, using authorization under Certificate 78332, Permit S-32410, and Permit S-37839.

The point of diversion on the Bull Run River is located at T1S/R5E, Section 25, SW  $\frac{1}{4}$  SW  $\frac{1}{4}$ . The point of diversion on the Tualatin River is located at T1S/R3W, Section 8, SW  $\frac{1}{4}$  SW  $\frac{1}{4}$ . The point of diversion for the Clackamas River is located at T2S/R2E, Section 20 SE  $\frac{1}{4}$  SW  $\frac{1}{4}$ .

The licensee may store up to 500 million gallons in a basalt aquifer using five injection wells. The licensee may inject up to 1,750 gpm per well and recover up to 1,750 gpm of stored water per well through the same five wells. The maximum storage duration is the five-year duration of this license.

With the authorization of individual ASR well test plans, up to FIVE ASR wells for injection and recovery are potentially allowed at a combined injection rate up to 9 cfs (4,040 gpm) and a combined recovery rate up to 8,750 gpm (1,750 gpm per well). These wells consist of the following:

<u>Well Name</u>	<u>Well Location within T2S/R1W WM.</u>
ASR 1 (WASH 58003)	1,550 feet South, 50 feet West from NW corner of Section 11
ASR 2 (WASH 61622)	1,725 feet South, 25 feet East from NW corner of Section 10
ASR 3 (WASH 66115)	1,770 feet South, 1,500 feet West from NE corner of Section 9
ASR 4 (proposed)	25 feet South, 500 feet East from NW corner of SW quarter of Section 10
ASR 5 (proposed)	770 feet North, 1,870 feet West from SE corner of Section 5

Other Conditions:

- 1) **License Renewal.** The license may be renewed if the licensee demonstrates to the Director's satisfaction that further testing is necessary and that the licensee complied with the terms of the license.
- 2) **Notice Prior to Injection and Recovery.** The licensee shall give notice, in writing, to the watermaster not less than 15 days in advance of either initiating any injection under the license or recovering stored water. The injection notice shall include the license number, the location of the injection source water diversion, the quantity of water to be diverted from that source, the time of injection, and the place of injection. The recovery notice shall include the license number, the location of the recovery well(s), the time of recovery, and the quantity of water to be recovered.
- 3) **Record of Use.** The licensee shall maintain a record of injection and recovery, including the total number of hours of injection and recovery and the total metered quantity injected and recovered. The record of use may be reviewed by Department staff upon request.
- 4) **Modification/Revocation.** The Department shall notify the licensee in writing and allow the licensee to respond when considering the following actions:
  - (A) The Director may modify the ASR license for any of the following reasons:
    - (i) to reflect changes in Oregon Health Authority Drinking Water Program (OHA) and Oregon Department of Environmental Quality (DEQ) water quality or treatment standards;
    - (ii) to address needed technological changes as requested by DEQ or OHA to minimize constituents regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40 (ORS 468B.165);
    - (iii) upon written request from the applicant for minor adjustments to the authorization in the license.
  - (B) The Director may revoke or modify the ASR limited license for any of the following reasons:
    - (i) to prevent or mitigate injury to other water rights, minimum perennial streamflows or aquifer water quality;
    - (ii) to address any other unintended, injurious effects of the ASR activity; or
    - (iii) failure to maintain compliance with all conditions of this license.
  - (C) The Department may offer an additional public comment opportunity consistent with the notice and comment provisions of OAR 690-350-020 prior to modifying the license.
- 5) **Priority/Protection.** This license does not receive a priority date, and is not protected under ORS 540.045.

- 6) **Compliance with Other Laws.** The injection of acceptable water into the aquifer as well as its storage and recovery under this license shall comply with all applicable local, state or federal laws. This shall include but not be limited to compliance with the Oregon Department of Environmental Quality's Underground Injection Control registration program as authorized under the Safe Drinking Water Act (40 CFR 144.26). Also, all pilot test discharges to waterways must be covered by a DEQ National Pollution Discharge Elimination System (NPDES) permit.
- 7) **Detailed Testing Plans.** The licensee shall submit a detailed testing plan for each injection well as the project develops. The plan shall include precise well location and construction data, in addition to other testing features. The licensee shall obtain Department approval of a detailed plan before injection testing at a well may begin. The Department may approve, condition, or reject a detailed plan.
- 8) **Water Quality Conditions and Limits:**
- (A) The licensee shall minimize, to the extent technically feasible, practical and cost-effective, the concentration of constituents in the injection source water that are not naturally present in the aquifer;
  - (B) Except as otherwise provided in (C) of this condition, if the injection source water contains constituents regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40 (ORS 468B.165) that are detected at greater than 50 percent of the established levels (MCLs or MMLs in the cited rules), the licensee shall employ technically feasible, practical and cost-effective methods to minimize concentrations of such constituents in the injection source water;
  - (C) Constituents that have a secondary contaminant level or constituents that are associated with disinfection of the injection source water may be injected into the aquifer up to the standards established under OAR 333-61-030 (ORS 448.131 and .273);
  - (D) The Department may, based upon valid scientific data, further limit certain constituents in the injection source water if the Department finds that those constituents will interfere with or pose a threat to the maintenance of the water resources of the state for present or future beneficial uses;
  - (E) If during the course of ASR testing, a constituent which is regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40 (ORS 468B.165) is detected above the 50% level prescribed in condition (8)(B) or the 100% level prescribed in condition (8)(C), the licensee shall stop injection activities immediately upon receipt of lab data and notify the Department within five days.
- 9) **Water Quality Sampling.**
- (A) **Injection Water.** The licensee shall sample and analyze injection water for the constituents regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40 (ORS 468B.165) as well as other constituents as described in the currently approved pilot test plans.
  - (B) **Receiving Aquifer Water.** The licensee shall sample receiving aquifer water at the well prior to any storage at the well. The licensee shall sample for the constituents regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40 (ORS 468B.165) as well as other constituents as described for wells in the currently approved pilot test plans.
  - (C) **Withdrawal of Stored Water.** The licensee shall analyze water withdrawn from storage for the constituents regulated under OAR 333-61-030 (ORS 448.131 and .273) or OAR 340-40

(ORS 468B.165) as well as other constituents as described in the currently approved pilot test work plans and OAR 690-350-020(3)(b)(F)(iv).

- 10) **Water-Level Monitoring.** The licensee shall monitor water levels in wells in the manner described in the currently approved pilot test work plans. The licensee shall submit a detailed water level monitoring plan for testing at each subsequent injection well. The licensee shall obtain Departmental approval of a detailed plan before injection testing at a well may begin. The Department may approve, condition, or reject a detailed plan.
- 11) **Well Construction.** Injection and recovery wells shall be open to a single aquifer in the Columbia River Basalt Group, and shall meet applicable well-construction standards (e.g., OAR 690-200 and OAR 690-210). Following well completion, wells drilled after the issuance of this renewed license shall be developed thoroughly to remove cuttings and drilling fluids. A video log of the wells shall be collected to demonstrate to the satisfaction of the Department that each well is open only to a single aquifer. Additional data that help characterize the water-bearing zone characteristics, including water quality and temperature, may also be provided to the Department. The wells shall be designed to limit the irretrievable loss of injected water to unsaturated zones.
- 12) **Cuttings.** During drilling of new project wells, the licensee shall collect cuttings at a minimum of 10-foot intervals and at major changes in lithology. The licensee shall describe and analyze them to the degree necessary to determine the formation, member and flow unit within the Columbia River Basalt of the water bearing zone, and provide a split of the washed cuttings to the Department.
- 13) **Recovery.** The availability of stored water for recovery is based on the following factors:
  - (A) Available stored water is determined on a well-by-well basis. The licensee may recover up to 100% of the quantity injected under this license for testing cycles 1, 2, and 3. Thereafter, the licensee may recover up to 95% of the quantity injected under this license during the water year that the water was injected. After that water year, the availability of stored water shall be further diminished each water year such that the licensee may only recover up to 95% of any water year-to-water year storage carryover. For example, water year 2016 lasts from October 1, 2015 through September 30, 2016. Data collected by the licensee may be useful in consideration of modifications to this recovery provision under the license.
  - (B) Any water withdrawn from an ASR well identified in this license shall be debited against the quantity available in the aquifer by virtue of ASR storage, or considered a draft on natural groundwater under existing groundwater rights. Simultaneous withdrawals of natural groundwater and stored water may occur, but at no time shall the total withdrawal rate exceed that which is authorized in this license. The licensee shall report monthly amounts debited against the ASR storage account, and the amount of natural groundwater withdrawn. This license does not authorize withdrawal of more water than was available from injection. In the event that static water levels at project wells drop below pre-ASR groundwater elevations or other unforeseen issues occur, the Department may review, modify or revoke this condition and re-evaluate the storage-account balance.
  - (C) The availability of stored water is a running account that is subject to determination at any time.
- 14) **Annual Reporting.**
  - (A) Except as otherwise noted, the licensee shall provide the Department a written report of the results of ASR testing for each water year by February 15th of the following water year. The

report shall detail the several kinds of data collected during the water year (including the water quality results in condition 9, in a DEQ-specified format), analyze those data to show the ASR project impacts on the aquifer, analyze for loss, indicate the testing/development progress made under the terms of the license, and account for the injection of stored water, withdrawals of stored and natural water, and the new-year carryover storage at each well. Annual reports shall be sealed and signed by a professional(s) registered or allowed, under Oregon law, to practice geology.

(B) As pertinent, annual reporting shall include the formatting and additional information cited in Condition 15 below.

15) **Special Reporting Condition.** The licensee shall provide the following information to the Department:

(A) Submission of any and all hydrogeologic data collected and reports developed for the project, including but not limited to cuttings analysis, video logs, geophysical logs, aquifer tests and step tests.

(B) Submission of digital water-level data for all ASR wells and any other wells measured in conjunction with the project (in a Department-specified format), including annual report data.

(C) Submission of annual reports with locations and elevations for all project wells (actual locations of built wells and proposed locations for proposed locations) and locations and elevations for all non-project wells that have been used for collecting water levels or other data pertinent to the project (in a Department-specified format).

(D) Notification in the annual report of any changes in well construction to the ASR license file.

(E) Associating all project well data with the Department Well Identification Number (Well ID Number), the Department Well Log ID, if available, and the project Well Name.

16) **Well Tag Condition for Licensee Wells.** The licensee shall ensure that their wells have been assigned a Department Well Identification Number (Well ID Number). A tag showing the Well ID Number shall be permanently attached to the well. If a well does not have a Well ID Number, the licensee shall apply for one from the Department and attach it to the well. The Well ID Number shall be used as a reference in any correspondence regarding the well, including any reports of water use, water level, or pump test data.

17) **Protection for Existing Users.** In the event of conflicts with existing appropriators, the licensee shall conduct all testing so as to mitigate the injurious effects. In addition, the licensee shall cooperate with the efforts of the Department to protect existing water rights and the water quality of existing users that rely upon the receiving aquifer and the injection source water.

18) **Use of Recovered Water.** The licensee shall use any recovered water for the use allowed in the diversion authorization. Specifically, the licensee shall use any recovered water for the purposes described in the appropriate diversion authorization.

19) **Additional Conditions on an Informal Basis.** The Department may suggest additional conditions to the licensee. Provided that those conditions are agreed to and undertaken by the licensee, the Department may forego formal changes to this license. This informal process does

not extend to condition reductions. These additional conditions may be part of any license renewal or permit.

- 20) **Publicity.** The licensee shall maintain a public information program about the ASR project, which may include press releases, neighborhood meetings, brochures, or other activities. This program shall include information on potential project impacts and how to report possible impacts to the licensee. The licensee shall share such reports with the Department within five days of receipt.
- 21) **Other Measures.** The licensee shall take any additional measures, as appropriate, to address ASR-related issues such as landslide activation, seepage, streamflow increases, interference with nearby wells, aquifer storage limitations, and water-quality protection. The licensee shall resolve these issues prior to submittal of an ASR permit application.
- 22) **Carryover Storage.** At the end of testing under this license, the licensee shall provide an accounting to the Department of the residual stored water based on the methods of determination given in this license. The Department shall consider this residual for carryover to a permanent ASR permit based on information which discloses the aquifer's ability to retain stored water.

Dated at Salem, Oregon on November 8, 2016.



E. Timothy Wallin, Water Rights Program Manager  
for Thomas M. Byler, Director

This order was produced by Jen Woody. If you have other questions about the Department or any of its programs please contact our Customer Service Group at 503-986-0801. Address all other correspondence to: Ground Water Section, Oregon Water Resources Department, 725 Summer St NE, Suite A, Salem OR 97301-1266, Fax: 503-986-0902.