

File
ASR-1

AQUIFER STORAGE and RECOVERY (ASR) LIMITED LICENSE #1

The Oregon Water Resources Commission issues this limited license for ASR TESTING to:

City of Salem, c/o Paul Eckley
Public Works Dept.
555 Liberty St. SE
Salem, OR 97301

Telephone: (503) 588-6211

The licensee may divert up to 26 CFS from the North Santiam River, a tributary of the Willamette River, using authorization of water right Certificate 12033.

The point of diversion is located in SW 1/4 NE 1/4, Section 13, T9S, R1W, W.M.

The licensee may store up to one billion gallons in a basalt aquifer using 15 injection wells. The licensee may recover for MUNICIPAL USE a combined withdrawal of up to 13,800 gallons per minute of stored water through the same 15 wells. The maximum storage duration is the duration of this limited license.

The ASR wells for injection and recovery are authorized as follows:

<u>Well No.</u>	<u>Capacity</u> (gpm)	<u>Well Location within T8S/R3W WM.</u>
ASR #1	1000	Section 10, NW 1/4 SE 1/4
ASR #2	1800	Section 10, NW 1/4 SE 1/4
ASR #3	2000	Section 9, NW 1/4 SE 1/4
ASR #4	2000	Section 9, NW 1/4 SE 1/4
ASR #5	2000	Section 10, NW 1/4 SE 1/4
ASR #6	2000	Section 10, NW 1/4 SE 1/4
ASR #7	2000	Section 10, NW 1/4 SE 1/4
ASR #8	2000	Section 10, NW 1/4 SE 1/4
ASR #9	2000	Section 9, NW 1/4 NE 1/4
ASR #10	2000	Section 10, NE 1/4 SW 1/4
ASR #11	2000	Section 10, NW 1/4 NW 1/4
ASR #12	2000	Section 10, NW 1/4 NW 1/4
ASR #13	2000	Section 10, SE 1/4 NW 1/4
ASR #14	2000	Section 10, SE 1/4 SW 1/4
ASR #15	2000	Section 10, SE 1/4 SW 1/4

In the event the wells listed above cannot produce the estimated quantities or cannot be built, the licensee may develop wells at the following optional locations to bring about the total authorized production rate:

Opt #1	2000	Section 9, NW 1/4 SE 1/4
Opt #2	2000	Section 9, NE 1/4 SE 1/4
Opt #3	2000	Section 9, SE 1/4 SE 1/4

The duration of this limited license is five years. This time was the requested limited license duration and is authorized notwithstanding the licensee's indication that the remainder of the ASR project could be completed by July 1999. This limited license expires on March 6, 2002.

Except as it conflicts with provisions of this limited license, the licensee is authorized to pursue the project schedule, monitoring, and other features noted in the ASR test plan. Details of that ASR testing plan are provided in Sections 3 and 4 of the application document entitled:

City of Salem
Department of Public Works
Aquifer Storage and Recovery
Draft Implementation Plan.
June 1996

This limited license is issued with the following conditions:

1) License Renewal. The limited 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 limited license.

2) Notice Prior to Injection and Recovery. The licensee shall give notice, in writing, to the watermaster annually not less than 15 days in advance of either initiating any injection under the limited license or recovering stored water. The licensee shall give verbal notice to the watermaster within 2 days of initiating recovery of stored water for emergency demand. The injection notice shall include the limited 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 limited 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 permittee 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 limited license for any of the following reasons:

(i) to reflect changes in Oregon Health Division (HD) and Oregon Department of Environmental Quality (DEQ) water quality or treatment standards;

(ii) to address needed technological changes as requested by DEQ or HD 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 limited license.

(For purposes of this license, a well location change to an adjacent 1/4 1/4 section is a minor adjustment.)

(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; or

(ii) to address any other unintended, injurious effects of the ASR activity.

(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 limited license.

5) Priority/Protection. This limited license does not receive a priority date and is not protected under ORS 540.045. The diversion of water for this ASR testing under the authority of Certificate 12033 retains the priority date and protection of that water right.

6) Compliance with Other Laws. The injection of acceptable water into the aquifer under this limited license shall comply with all applicable local, state or federal laws.

7) Water Quality Conditions:

(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 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) The licensee shall be in compliance with treatment requirements and performance standards for source waters identified in OAR 333-61-032;

(F) 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 (7)(B) or the 100% level prescribed in condition (7)(C), the licensee shall stop injection activities and notify the Department;

(G) The licensee shall minimize to the satisfaction of HD the use of water from the infiltration gallery at the North Santiam River as a source of injection water.

8) Water Quality Sampling.

(A) Injection Water. Each year prior to initiating injection, 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 those on Table 3-1 of the ASR testing plan dated June 1996.

(B) New Wells. As each new ASR well is brought on-line, the licensee shall sample receiving aquifer water at the well prior to any storage at the well. In addition to constituents on Table 3-1 of the ASR testing plan dated June 1996, 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).

(C) Background for Wells in Service. The licensee shall analyze these wells as described in the plan for constituents on Table 3-2 and the constituents on Table 3-1 of the ASR testing plan dated June 1996.

(D) 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) and the constituents on Table 3-1. Sampling points shall be in accordance with protocol established between the City of Salem and the HD.

9) Water Level Monitoring.

(A) The licensee shall monitor water levels in wells in a manner described on page 3-10 in the ASR testing plan dated June 1996. Monitoring shall occur at ASR wells, ASR monitoring wells and, to the extent possible, at the Tiedeman, Arlene, and Friendship wells.

(B) The licensee shall measure static water levels, if possible, in the following wells as referenced on Plate 1 of the application's September 1995 report entitled Technical Memorandum on Hydrogeology for Aquifer Storage and Recovery Pilot Project:

<u>Report ID</u>	<u>Well Log ID</u>
2da or 2dc	MARI 11348 or MARI 11349
3ad	MARI 11356
3da(cb)	MARI 11357

4cb	MARI 11360
11ac	MARI 11705/11697
11bd	MARI 11715
16a	MARI 11999
33ad	MARI 8155

10) Streamflow Monitoring. The licensee shall monitor streamflows biweekly in July, August, and September on Croissan, Clark, and Pringle Creeks. This monitoring shall seek to detect base flow which may be the result of leakage of stored water. Conditions may preclude some monitoring events since certain flows may be strongly influenced by recent rains.

11) Recovery. The availability of stored water for recovery is based on the following factors:

(A) Available stored water is determined on a well-field/aquifer basis. The licensee may recover up to 95% of the quantity injected under this limited license during the year that the water was injected. After that year, the availability of stored water shall be further diminished each year such that the licensee may only recover up to 95% of any year-to-year storage carryover. (Data collected by the licensee may be useful in consideration of modifications to this recovery provision under the limited license.)

(B) Any water withdrawn from an ASR well identified in this limited license shall first be debited against the quantity available in the aquifer by virtue of ASR storage. When the ASR storage is depleted in the aquifer, any water withdrawn from an ASR well shall be considered a draft of natural ground water.

(C) The licensee may not recover any stored water when static water levels at ASR wells become lower than the pre-injection baseline annual low static water level elevation. It is currently assumed that this elevation is 189 feet msl. However, the Department will approve a different value for the pre-injection baseline annual low static water level elevation if the licensee provides data and analysis during the license period which supports a different value than the currently assumed value.

(D) The availability of stored water is a running account which is subject to determination at any time.

12) Reporting. Except as otherwise noted, the licensee shall provide the Department a written report of the results of ASR testing for each year by February 15th of the following year. The first report shall be due in 1998 and include results from 1997. The report shall detail the several kinds of data collected during the year (including the water quality results in condition 8), analyze those data to show the ASR project impacts on the aquifer, indicate the testing/development progress made under the terms of the limited license, and account for the injection of stored water, withdrawals of stored and natural water, and the new-year carryover storage at each well.

13) 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;

14) Use of Recovered Water. The licensee shall use any recovered water for municipal purposes as described in water right certificate 12033;

15) Periodic Meetings. The licensee shall alert the Ground Water/Hydrology Section of the Department of the meetings of the city's technical advisory committee of the ASR project in order that Department staff may attend and track the periodic progress of the testing project.

16) 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.

17) 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 city.

18) Other Measures. The licensee shall take any additional measures appropriate to address the ASR-related issues of landslide activation, streamflow enhancements, aquifer boundary determination, aquifer storage efficiency, and water quality protection so that these issues can be addressed during review of the ASR permit application.

19) Carryover Storage. At the end of testing under this limited 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.

This license is issued with proper conditions upon finding that:

- i) The proposed ASR testing will not impair or be detrimental to the public interest;
- ii) The proposed ASR testing will produce information that will adequately describe the water quality and quantity response in the aquifer and at nearby wells and springs due to ASR activities; and
- iii) The proposed use will not expand and use under an existing water right.

This license shall be in effect beginning March 6, 1997, and shall expire March 6, 2002.

WITNESS my hand this 6 day of March, 1997.

for 
Martha O. Pagel, Director
Water Resources Department

