

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

In the Matter of Renewal of Aquifer Storage)
and Recovery (ASR) Limited License #001,)
Marion County

FINAL 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 March 6, 1997, the Department issued ASR Limited License #001 to the City of Salem. That license authorized ASR testing for five years at fifteen wells in a basalt aquifer. On March 5, 2002, the Department renewed ASR Limited License #001 to the City of Salem. That renewal authorized continued ASR testing for five years. Condition 1 of ASR Limited License #001 provides for renewal pursuant to OAR 690-350-0020(5)(c). Condition 1 of ASR Limited License #001 describes the following terms for 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.

FINDINGS OF FACT

1. On MARCH 5, 2007, the CITY OF SALEM submitted a request for a five-year time extension (renewal) for ASR Limited License #001.
2. The Department published notice of the renewal request in the Department's weekly public notice.
3. The Department did not receive adverse comments related to the renewal request.
4. The Department sought comments and recommendations from Oregon Department of Environmental Quality and Oregon Department of Human Services related to the possible renewal of the ASR limited license. Oregon Department of Environmental Quality supported the renewal based on compliance with the terms of the limited license. Oregon Department of Human Services did not provide comments.

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

DISCUSSION

The Department evaluated the renewal request and comments and determined that the proposed renewal request is consistent with Condition 1 of the ASR Limited 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 limited license. The request letter presented reasons for the extension (renewal) and also provided specific details that addressed compliance with the ASR limited license.

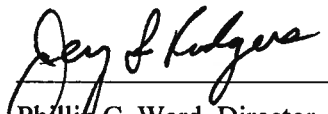
CONCLUSIONS OF LAW

The request to renew ASR Limited License #001 for five years is consistent with the requirements of OAR 690-350-0020(5)(c) and Condition 1 of ASR Limited License #001.

ORDER

Now, THEREFORE, IT is ordered, ASR Limited License #001 shall be valid through March 6, 2012 pursuant to ORS 537.534, OAR 690-350-0020(5)(c), and Condition 1 of the ASR limited license.

Dated at Salem, Oregon on 9/10 2007.

For 

Phillip C. Ward, Director
Water Resources Department

This order was produced by Donn Miller. If you have any questions about any of the statements contained in this document, I am probably the best person to answer your question. You may reach me at 503-986-0845 or Donn.W.Miller@ wrd.state.or.us

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.

CERTIFICATE OF SERVICE

I certify that on Sept 11, 2007, I mailed the attached final order approving renewed ASR testing and ASR Limited License #001 by certified mail and first class postage prepaid to:

City of Salem
c/o Jason Pulley
Public Works Dept.
555 Liberty St. SE
Salem, OR 97301-1266



Donn Miller
Oregon Water Resources Department

AQUIFER STORAGE and RECOVERY (ASR) LIMITED LICENSE #001
(This instrument renews a prior authorization)

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

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

Telephone: (503) 588-6063

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 ¼ NE ¼, 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 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 (gpm)</u>	<u>Well Location within T8S/R3W W.M.</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 ¼

This is a final order in other than contested case. Pursuant to ORS 536.075 and OAR 137-004-080 and OAR 690-01-005 you may either petition the Director for reconsideration of this order or petition for judicial review of this order. As provided in ORS 536.075, this order is subject to judicial review under ORS 183.484. Any petition for judicial review of the order must be filed within the 60 day time period specified by ORS 183.484(2).

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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

This limited license was originally issued on March 6, 1997 for five years. It was subsequently renewed until March 6, 2002 and later until March 6, 2007. It is again renewed pursuant to Condition 1 and now **expires on March 6, 2012**. The duration of this renewed limited license is five years from the time of previous expiration on March 6, 2007.

Although now mostly outdated, 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 original and subsequent ASR test plans. Details of the original 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.

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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 limited license for any of the following reasons:

(i) to reflect changes in Oregon Department of Human Services (HS) and Oregon Department of Environmental Quality (DEQ) water quality or treatment standards;

(ii) to address needed technological changes as requested by DEQ or HS 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 $\frac{1}{4}$, $\frac{1}{4}$ 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) Detailed Testing Plans. The licensee shall submit a detailed plan of testing for each injection well as the project develops. 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.

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8) 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 (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 HS the use of water from the infiltration gallery at the North Santiam River as a source of injection water.

9) Water Quality Sampling.

(A) ASR Activities **Outside** Woodmansee Park. The following provisions apply to ASR activities that are located outside Woodmansee Park.

(i) Injection Water. Each year, prior to initiating injection in any well or group of wells, the licensee shall analyze a single injection water sample for the constituents included in Appendix A. No more than one sample of injection water will be analyzed during a calendar year.

(ii) **New Wells.** As each new ASR well is brought on-line, the licensee shall sample the receiving aquifer water at the well prior to any storage at the well. The sample shall be analyzed for the compounds listed in Appendix A. For each new well, a single sample will be collected immediately after well construction and preferably at the time of pump testing.

(iii) **Background for Wells Prior to Injection.** Approximately one month prior to injection to a well, the licensee shall analyze a single sample from the well for the constituents included in Appendix A. [Note: The one month time period is needed in order to obtain laboratory results prior to initiating injection.] In the case of a new well which has not received injection water yet, this sample is required in addition to the sample described above for New Wells. Sampling will be conducted prior to the first scheduled withdrawal of the calendar year and no more than a single background sample prior to injection will be collected from a single well in the calendar year.

(iv) **Background for Wells Prior to Withdrawal.** Approximately one month prior to withdrawal from a well, the licensee shall analyze a single sample from the well for the constituents included in Appendix A. [Note: The one month period is needed in order to obtain laboratory results prior to initiating withdrawal.]

(v) **Withdrawal of Stored Water.** The licensee shall analyze water withdrawn from storage for the constituents included in Appendix A. The sample will be collected during the initial 48 hours of withdrawal from the well which is placed in service for withdrawal.

(vi) **Background for Wells in Service.** The licensee shall analyze wells which are operational but which are not being used for injection or withdrawal, annually for general physical parameters and inorganic constituents as identified in Appendix A. The objective of the sampling is to evaluate spatial and temporal variances in water quality in ASR wells which are not otherwise being sampled.

(B) **ASR Activities Inside Woodmansee Park.** The following provisions apply to ASR activities that are located inside Woodmansee Park as they are considered to be a single system.

(i) **New ASR Wells.** Prior to a new ASR well being brought on-line, the licensee shall sample the receiving aquifer water at the new ASR well prior to any storage at the well. The list of constituents to be tested for is presented in Appendix A. A single water sample will be collected from the new ASR well immediately after well construction (preferably at the time of aquifer testing).

(ii) Native Ground Water Conditions Prior to Injection. Each year, the licensee shall collect a single water sample from the receiving aquifer approximately one month prior to the anticipated start of injection. [Note: The one month time period is needed in order to obtain laboratory results prior to initiating injection.] The water sample will be analyzed for the geochemical constituents, as listed in Appendix A, and may include testing for other constituents deemed necessary to track the spatial and temporal variations in native groundwater geochemistry, such as disinfection by-products and radon. The sample shall be collected from an operational ASR well and not from a new ASR well, which has not yet received injection water.

(iii) Injection Water. Each year, approximately one month prior to the anticipated start of injection, the licensee shall collect a single sample of the injection source water and analyze the sample for the constituents listed in Appendix A. [Note: The one month time period is needed in order to obtain laboratory results prior to initiating injection.]

(iv) Withdrawal of Stored Water. Each year, approximately one month prior to the anticipated start of recovery, the licensee shall collect a single sample of the stored water from the receiving aquifer and analyze the sample for the constituents listed in Appendix A. The sample must be collected from an operational ASR well and not from a new ASR well, which has not yet received injection water. [Note: The one month time period is needed in order to obtain laboratory results prior to initiating injection.]

(v) Wells in Service. At the discretion of the licensee, periodic water samples will be collected from the ASR wells in service and analyzed for the general physical parameters and inorganic (geochemical) constituents as listed in Appendix A. The analytical results will be used to evaluate spatial and temporal variances in water quality.

10) Water Level Monitoring.

(A) The licensee shall provide water level data electronically for all wells that have been instrumented to collect data digitally. This includes all previous data that has been collected in association with the ASR project. The Department shall specify a format for data submittal.

(B) 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.

(C) The licensee shall attempt to 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:

Report ID	Well Log ID
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

11) 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.

12) 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 at that well by virtue of ASR storage. When 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 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.

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13) 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 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.

14) Protection for Existing Users. In the event of conflicts with existing appropriators, the licensee shall conduct all testing so as to mitigate 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;

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

16) 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.

17) 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.

18) 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.

19) 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.

20) 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 retained stored water.

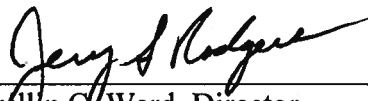
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This license is renewed with proper conditions upon finding that:

- i) Further testing is necessary;
- ii) The licensee complied with the conditions of the ASR limited license;
- iii) The proposed ASR testing will not impair or be detrimental to the public interest;
- iv) 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
- v) The proposed use will not expand use under an existing water right;

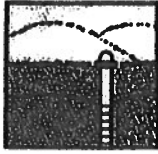
This license shall be in effect beginning MARCH 7, 2007, and shall expire March 6, 2012.

WITNESS my hand this 10TH day of September, 2007.

For. 

Phillip C. Ward, Director
Water Resources Department

Appendix A



Groundwater Solutions Inc.

3758 SE Milwaukie Ave. Portland, Oregon 97202
ph:503.239.8799 fx:503.239.8940 esgroundwatersolutions.com

December 17, 2003

Mr. Donn Miller
Oregon Department of Water Resources
725 Summer Street NE, Suite A
Salem, OR 97301-1271

Subject: Updated Water Quality Testing Requirements for ASR Projects

Dear Donn,

Over the past several years the federal and state Drinking Water Quality testing requirements have undergone several changes. These changes impact the required list of testing parameters for our ASR projects. This letter is intended to clarify the current list of the required water quality parameters that is based upon the current federal and state testing requirements. Table 1 includes current updated drinking water quality parameters as well as the typical additional ASR parameters. Prior to our adopting Table 1 for our ASR projects, we would appreciate input from OWRD, DHS, and DEQ. However in order to start this year's injection cycle for the Beaverton and Tigard ASR projects, we began using updated analyte list. If changes are needed we will collect these additional parameters at that time.

Table 1 is based on the most recent federal and state water quality testing requirements, which includes:

- **Oregon Department of Health –Drinking Water Program (OAR 333-061-0030, 0031 & 0036, Community & Non-Transient Water Systems Routine Chemical Monitoring)**
- **Environmental Protection Agency (EPA 816-F-03-016: National Primary Drinking Water Standards)**
- **Oregon Department of Environmental Quality (OAR 340-40-0090)**

Recent changes to the drinking water requirements include elimination and inclusion of the following water quality parameters:

Eliminated Parameters:

- Chloroform – May 2000
- Unregulated Synthetic Organic Compounds (SOC)
- Unregulated Volatile Organic Compounds (VOC)
- Unregulated Contaminant Monitoring Regulations (UCMRs) - Jan. 2001 through Dec 2003

Mr. Donn Miller
Updated Drinking Water Quality Testing Requirements
December 17, 2003

New Parameters:

- Uranium, Combined Radium 226/228 and Beta Photon Emitters (effective Dec. 8, 2003);
- Disinfectant By-Products (effective Jan. 2001 and Jan. 2004),

It is our intention to continue to monitor water quality standards and regulations and modify our drinking water quality testing parameter list to reflect the current rules and laws and update this table as necessary.

This updated analyte list (Table 1) will be used on the following ASR projects:

- Beaverton
- Tigard
- Tualatin
- Salem
- Baker City
- Madison Farms
- McCarty Ranch

Thank you for any insight you may be able to provide. If you have any comments, do not hesitate to contact us at 503-239-8799.

Sincerely,
Groundwater Solutions, Inc.

Bruce Brody-Heine : .
Senior Hydrogeologist

Enclosed: Table 1

Cc. Dennis Nelson (Oregon DHS)
Phil Richerson (DEQ – Eastern Region)
Rodney Wieck (DEQ – Northwest Region)

Table 1
Summary of Native Groundwater and ASR Source Water Quality Testing
ASR Limited License Permit

	Analyte	Lowest Regulatory Standard	Units	Regulatory Criteria	MDL	Date
Bacteriological	Fecal Coliforms/E.Coli					
	Total Coliform	<1/100 ML	CFU/100 ml	MML		
Disinfection By-Products						
THM	Chloroform (Trichloromethane)	None	mg/L	URC	0.0005	
THM	Bromochloromethane	None	mg/L	None	0.0005	
THM	Dibromochloromethane	None	mg/L	None	0.0005	
THM	Bromoform (Tribromomethane)	None	mg/L	URC	0.0005	
	Total Trihalomethanes	0.08	mg/L	MCL, MML	--	
HAA	Monochloroacetic Acid	None	mg/L	None	0.002	
HAA	Dichloroacetic Acid	None	mg/L	None	0.001	
HAA	Trichloroacetic Acid	None	mg/L	None	0.001	
HAA	Monobromoacetic Acid	None	mg/L	None	0.001	
HAA	Dibromoacetic Acid	None	mg/L	None	0.001	
	Total Haloacetic Acids	0.08	mg/L	MCL	--	
	Chlorite (only for plants using chlorine dioxide)	1	mg/L	MCL	--	
	Bromate (only for plants using ozone)	0.01	mg/L	MCL	NT	
Field Parameters	Temperature	None	Celsius	None	NA	
	Conductivity	None	ms/cm	None	NA	
	Dissolved Oxygen	None	mg/L	None	NA	
	pH	6 - 8.5	Units	SMCL	NA	
	Turbidity	1	NTU	MCL, MML	NA	
	ORP	None	mV	None	NA	
Geochemical	Bicarbonate	None	mg/L	None	2	
	Calcium	None	mg/L	None	0.1	
	Carbonate	None	mg/L	None	2	
	Chloride	250	mg/L	SMCL	1	
	Hardness (as CaCO3)	250	mg/L	URC	4	
	Magnesium	None	mg/L	None	0.05	
	Nitrate as N	10	mg/L	MML	0.5	
	Nitrite as N	1	mg/L	MCL	0.01	
	Total Nitrate-Nitrite	10	mg/L	MML	--	
	Potassium	None	mg/L	None	0.1	
	Silica	None	mg/L	None	0.2	
	Sodium	20	mg/L	URC (advisory)	0.05	
	Sulfate	250	mg/L	URC, SMCL	5	
	Total Alkalinity	250	mg/L	SMCL	2	
	Total Dissolved Solid	500	mg/L	SMCL	0.7	
	Total Organic Carbon	None	mg/L	None	0.5	
	Total Suspended Solids	None	mg/L	None	2	
Metals	Aluminum	0.05	mg/L	SMCL	0.05	
	Antimony	0.005	mg/L	MCL	0.001	
	Arsenic	0.05	mg/L	MCL, MML	0.002	
	Barium	1	mg/L	MCL, MML	0.05	
	Beryllium	0.004	mg/L	MCL, MML	0.0005	
	Cadmium	0.005	mg/L	MCL, MML	0.001	
	Chromium	0.05	mg/L	MCL, MML	0.002	
	Copper	1.3	mg/L	MCL, MML	0.005	
	Iron (Total)	None	mg/L	None	0.05	
	Iron (Dissolved)	0.3	mg/L	SMCL	0.05	
	Lead	0.015	mg/L	MCL, MML	0.001	
	Manganese (Total)	None	mg/L	None	0.002	
	Manganese (Dissolved)	0.05	mg/L	SMCL	0.002	
	Mercury	0.002	mg/L	MCL, MML	0.0004	
	Nickel	0.1	mg/L	MCL	0.004	
	Selenium	0.01	mg/L	MCL, MML	0.002	
	Silver	0.05	mg/L	MML, SMCL	0.005	
	Thallium	0.002	mg/L	MCL	0.0005	
	Zinc	5	mg/L	SMCL	0.01	
Miscellaneous	Odor	3	TON	SMCL	1 ton	
	Color	15	ACU	SMCL	5 color units	
	Methylene Blue Active Substance	0.5	mg/L	SMCL	0.05	
	Corrosivity (Langlier Saturation Index)	Non-Corrosive	mg/L	SMCL	--	
	Asbestos	7	MFL	MML	--	
	Cyanide (as free cyanide)	0.2	mg/L	MCL	--	
	Fluoride	2	mg/L	MCL, MML, SMCL	0.5	
Radionuclides	Combined Radium 226/228	5	pCi/L	MCL, MML	--	
	Uranium ¹	0.03	mg/L	MCL	--	
	Gross Alpha	15	pCi/L	MCL, MML	1.79	
	Beta/Photon emitters ²	4	mrem/yr	MCL	--	
	Gross Beta	50	pCi/L	MML	2.83	
	I - 131 ³	3	pCi/L	MML	--	
	Sr-90 ³	8	pCi/L	MML	--	
	Tritium 3	20000	pCi/L	MML	--	
	Radon		pCi/L	None	--	

	Analyte	Lowest Regulatory Standard	Units	Regulatory Criteria	MDL	Date
Synthetic Organic Compounds (SOCs)						
Regulated SOCs						
	2,4,6-TP (Silver)	0.01	mg/L	MCL, MML	0.0004	
	2,4-D	0.07	mg/L	MCL, MML	0.0002	
	Atrachlor (Lasso)	0.002	mg/L	MCL	0.0004	
	Atrazine	0.003	mg/L	MCL	0.0002	
	Benzo(a)Pyrene	0.0002	mg/L	MCL	0.00004	
	BHC gamma (Lindane)	0.0002	mg/L	MCL, MML	0.0002	
	Carbofuran	0.04	mg/L	MCL	0.001	
	Chlordane	0.002	mg/L	MCL	0.0004	
	Delepon	0.2	mg/L	MCL	0.002	
	Di(2-ethylhexyl)adipate (adipates)	0.4	mg/L	MCL	0.001	
	Di(2-ethylhexyl)phthalate (phthalates)	0.009	mg/L	MCL	0.001	
	Dibromochloropropane (DBCP)	0.0002	mg/L	MCL	0.00002	
	Dinoseb	0.007	mg/L	MCL	0.0004	
	Dioxin	2x10 ⁻⁶	mg/L	MCL		
	Diquat	0.02	mg/L	MCL	0.0004	
	Ethylene Dibromide (EDB)	0.00005	mg/L	MCL	0.00001	
	Endosulf	0.1	mg/L	MCL	0.01	
	Endrin	0.0002	mg/L	MCL, MML	0.00002	
	Glyphosate	0.7	mg/L	MCL	0.01	
	Heptachlor	0.0004	mg/L	MCL	0.00004	
	Heptachlor Epoxide	0.0002	mg/L	MCL	0.00002	
	Hexachlorobenzene (HCB)	0.001	mg/L	MCL	0.0001	
	Hexachlorocyclopentadiene	0.05	mg/L	MCL	0.0002	
	Methoxychlor	0.04	mg/L	MCL, MML	0.0002	
	Polychlorinated Biphenyls (PCBs)	0.0005	mg/L	MCL	0.0002	
	Pentachlorophenol	0.001	mg/L	MCL	0.00005	
	Picloram	0.5	mg/L	MCL	0.0002	
	Simazine	0.004	mg/L	MCL	0.0001	
	Toxaphene	0.003	mg/L	MCL, MML	0.001	
	Vidale (Oxamyl)	0.2	mg/L	MCL	0.002	
Volatile Organic Compounds (VOCs)						
Regulated VOCs						
	1,1,1-Trichloroethane	0.2	mg/L	MCL, MML	0.0005	
	1,1,2-Trichloroethane	0.005	mg/L	MCL	0.0005	
	1,1-Dichloroethylene	0.007	mg/L	MCL, MML	0.0005	
	1,2,4-Trichlorobenzene	0.07	mg/L	MCL	0.0005	
	1,2-Dichlorobenzene (o)	0.6	mg/L	MCL	0.0005	
	1,2-Dichloroethane (EDC)	0.005	mg/L	MCL, MML	0.0005	
	1,2-Dichloropropane	0.005	mg/L	MCL	0.0005	
	1,4-Dichlorobenzene (p)	0.075	mg/L	MCL, MML	0.0005	
	Benzene	0.005	mg/L	MCL, MML	0.0005	
	Carbon Tetrachloride	0.005	mg/L	MCL, MML	0.0005	
	Chlorobenzene (monochlorobenzene)	0.1	mg/L	MCL	0.0005	
	cis-1,2-Dichloroethylene	0.07	mg/L	MCL	0.0005	
	Ethylbenzene	0.7	mg/L	MCL	0.0005	
	Dichloromethane (methylene chloride)	0.005	mg/L	MCL	0.0005	
	Styrene	0.1	mg/L	MCL	0.0005	
	Tetrachloroethylene	0.005	mg/L	MCL	0.0005	
	Toluene	1	mg/L	MCL	0.0005	
	trans-1,2-Dichloroethylene	0.1	mg/L	MCL	0.0005	
	Trichloroethylene	0.005	mg/L	MCL, MML	0.0005	
	Vinyl chloride	0.002	mg/L	MCL, MML	0.0005	
	Total Xylenes	10	mg/L	MCL	0.0005	

NOTE

mg/L = milligram per liter

MDL = Method Detection Limit

ND = Not detected at concentrations greater than the MDL

NT = Analyte not tested

MCL = Federal maximum contaminant level for drinking water

MML = DEQ's maximum measurable levels for groundwater

URC = State unregulated contaminant

SMCL = Federal secondary maximum contaminant levels for drinking water

UCMR = EPA unregulated contaminant monitoring regulations for drinking water

Samples are unfiltered unless noted (i.e., dissolved)

1 = Combined Radium 226/228 and Uranium required after December 2003

2 = Only need to analyze if in a vulnerable area per OAR 833-61-0036, 6(b)(A) (i.e., near man-made radioactive sources, such as nuclear facilities - currently only selected systems along Columbia River classified as vulnerable)

3 = These compounds would be analyzed if Gross Alpha or Beta exceed an MCL

USER INFO_DELETE WHEN CREATING A NEW SHEET

Not required for ASR unless specifically requested (generally depends upon the location of project within state)

Mailing List for FO

Scheduled Mailing Date:

Application:

ASR Limited License #001 - RENEWAL

Original mailed to Applicant:

City of Salem
c/o Jason Pulley
Public Works Dept.
555 Liberty St. SE
Salem, OR 97301-1266

<p>Copies Mailed</p> <p>by: <u>Donna Miller</u></p> <p>(STAFF)</p> <p>on: <u>9/11/07</u></p> <p>(DATE)</p>

Copies of FO sent to WRD:

1. Watermaster District 16, Mike McCord
2. Region Manager: Bill Ferber
3. File

Copies of FO sent to other interested persons (CWRE, Agent, Commenter, etc.):

1. Dennis Nelson, Oregon Department of Human Services
2. Jack Arendt, Oregon Department of Environmental Quality
3. Barbara Priest, Oregon Department of Environmental Quality
4. Larry Eaton, GSI Water Solutions, Inc.