

State of Oregon

Department of Environmental Quality

Memorandum

**Date:** March 27, 2015

**To:** Environmental Quality Commission

**From:** Dick Pedersen, Director

**Subject:** Agenda item D, Action item: Authorization to allow human consumption of recycled water  
April 15-16, 2015, EQC meeting

**Purpose of item** Clean Water Services has requested authorization to use high-purity recycled water for human consumption as an ingredient in production of an alcoholic beverage. Oregon has administrative rules that govern the use of recycled water. While the rules encourage the use of recycled water, they also set a high threshold for approving use of recycled water for human consumption. Oregon Administrative Rule 340-055-0017(5) specifically prohibits the use of recycled water for human consumption unless the use is approved by the Oregon Health Authority, a public hearing on the use has been held and the Environmental Quality Commission has approved the use.

**DEQ recommendation and EQC motion** DEQ recommends that the commission approve Clean Water Services' request to use high-purity recycled water for human consumption as an ingredient in production of an alcoholic beverage, provided the recycled water quality meets all regulated drinking water criteria in Oregon Administrative Rule 333-061-0030, as well as the additional drinking water criteria recommended by the National Water Research Institute included as attachment B for this report.

**Background** In recent decades, water has been treated to very high standards, used for a primary purpose, treated as appropriate and then discharged to a river or stream as "wastewater." Although this water is typically of lower quality following a primary use, used water has resource value and can often be safely reused for additional purposes without adverse effects to public health or the environment. Reusing appropriately treated wastewater for irrigation, industrial, commercial and construction applications helps conserve drinking water supplies and improve water quality of surface waters.

The Oregon Administrative Rule which governs the use of recycled water, includes the following policy statement (OAR-340-055-0007):

*It is the policy of the Environmental Quality Commission to encourage the use of recycled water for domestic, agricultural, industrial, recreational and other beneficial purposes in a manner which protects public health and the environment of the state. The use of recycled water for beneficial purposes will improve water quality by reducing discharge of treated*

*effluent to surface waters, reduce the demand on drinking water sources for uses not requiring potable water, and may conserve stream flows by reducing withdrawal for out-of-stream use.*

Oregon's recycled water regulations permit municipal wastewater treatment plants to reuse water subject to obtaining a water quality permit from DEQ. The regulations require the development of a comprehensive Recycled Water Use Plan that details site- and facility- specific requirements. These regulations are designed to be fully protective of human health and the environment and are the primary regulations governing water reuse. In addition, to address public health protection, the Oregon Health Authority reviews reuse proposals for specific water treatment classes. Prior to re-using water, the approved Recycled Water Use Plan must be adopted into a treatment plant's National Pollution Discharge Elimination System or Water Pollution Control Facility permit. The Recycled Water Use plan is then enforced through the permit.

The Oregon recycled water regulations also define end uses and water quality standards for those uses. To protect public health, the administrative rules specifically prohibit the potable reuse of water regardless of the treatment class, *'unless approved in writing by the Oregon Department of Human Services [now referred to as the Oregon Health Authority], and after a public hearing, and it is so authorized by the Environmental Quality Commission.'*

If this limited use of recycled water for human consumption is approved by the Environmental Quality Commission, Clean Water Services must revise its Recycled Water Use Plan, and request a revision of their wastewater discharge permit, before distributing recycled water for use in brewing beer. The permit, in combination with the recycled water use plan, will provide detailed descriptions of the water treatment system, the production, monitoring and notification or otherwise informing consumers of potable reuse origin.

**Findings related  
to the request**

Clean Water Services proposes to produce limited batches of beer as a way of promoting its ability to produce very high quality water from wastewater. Clean Water Services has drafted a detailed proposal for potable water reuse, included as attachment A. The document identifies examples of both direct and indirect potable reuse in other states, and presents and discusses the treatment scenarios and water quality requirements utilized by those states. In addition, Clean Water Services has obtained a small-scale treatment system that includes microfiltration, reverse osmosis, and ozone-enhanced ultraviolet oxidation. It has used this system in a pilot project, and demonstrated that the treatment resulted in water that met or exceeded water quality with respect to all regulated drinking water contaminants and pathogens, and was below the proposed criteria for additional analytes, as seen in the table in attachment B. The additional criteria were proposed for the assessment of potable reuse in

addition to drinking water standards because these analytes might occur at greater concentrations in reuse water than in water from traditional drinking water sources, and the criteria indicate the efficacy of treatment.

**Oregon Health  
Authority  
approval**

The Oregon Health Authority approved the proposed use for recycled water to produce an alcohol in 2014. OHA evaluated the water treatment train and the pilot study results on treatment effectiveness described by Clean Water Services, and used this information to complete a public health risk analysis for the limited consumption of beer made from this highly treated wastewater. Based on the limited availability of the highly treated water, OHA assumed a consumption rate of one liter of beer made from reuse water per adult per year. The EPA drinking water guidelines are based on a consumption rate of two liters of water per day. Thus applying the drinking water criteria for limited beverage consumption should involve no more risk than drinking water on a daily basis.

OHA concluded:

*“Due to the high water quality of the treated water, the additional microbial reduction in the brewing process, and a low health risk overall, the OHA Public Health Division approves the proposed use of recycled water in the limited case as described in this proposal [referring to CWS proposal, June, 2014]. The water from the proposed treatment system must achieve equal or higher quality to those presented at the demonstration-scale (i.e. below MCLs for regulated contaminants and below proposed criteria for additional analytes).”*

**Outreach and  
public comment**

DEQ requested public comment on this proposed use of recycled water between January 16 and Feb. 20, 2015, and held a public hearing Feb. 12, 2015. DEQ received comments from 15 commenters on the proposal, which are included in attachment B. Nine commenters were generally supportive of the project, with one of these requesting a robust monitoring program for contaminants that are likely to be found in sewage.

Four commenters requested that DEQ recommend denial of this proposal. The major concerns of these commenters included:

- A need for monitoring of additional parameters,
- Whether DEQ has a sufficient enforcement program,
- Whether DEQ provided sufficient notification to craft brewers regarding the public comment period, and
- Whether the water is sufficiently safe for human consumption.

DEQ also received comments from two brewer organizations that provided clarification on their water sources, and on their neutrality over the potable reuse proposal.

**DEQ  
conclusions**

DEQ determined that the limited use of recycled water for human consumption as proposed by Clean Water Services is reasonable at this time for several reasons, including:

- The Oregon Health Authority determined that beer made from recycled water as described in the proposal poses a very low human health risk;
- The proposed use limits recycled water use to an alcoholic beverage. This use limits exposure of the product to adults, and will provide additional treatment of potential pathogens through elevated temperatures and alcohol content;
- Using recycled water will become increasingly important in the region as demands on our water resources increase in the future. The population of the northwest is expected to increase, not only as the population in the U.S. increases, but growth in the northwest is projected to occur at a higher rate over the next several decades as impacts from global climate change are predicted to be more severe in other regions, boosting immigration to the northwest;
- The approval of this limited production and human consumption of high-purity recycled water will increase public understanding of potential water sources and treatment, leading to a public that is more informed about this topic;
- The approval supports the stated policy of the EQC "...to encourage the use of recycled water for domestic, agricultural, industrial, recreational and other beneficial purposes in a manner which protects public health and the environment of the state."

**Attachments**

- A. Clean Water Services request letter and supporting materials: "Clean Water Services High Purity Water Project: Direct Potable Water Reuse Demonstration"
- B. Table 1: Recommended Regulatory Criteria for Maximum Concentration Levels of Chemicals in Effluent from Potable Reuse Treatment Trains (NWRI 2013).
- C. Public comments and DEQ responses
- D. DEQ request to Oregon Health Authority for potable reuse approval
- E. Oregon Health Authority approval letter

Action Item: Authorization to allow human consumption of recycled water  
April 15-16, 2015, EQC meeting  
Page 5 of 5

Approved:

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