

February 19, 2025

Jessica Perryman
NW Natural (on behalf of CSWA Chehalem Springs)
Sent via email: jperryman@nwnaturalwaterservices.com

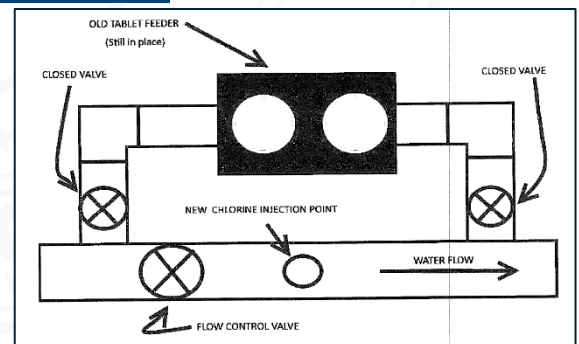
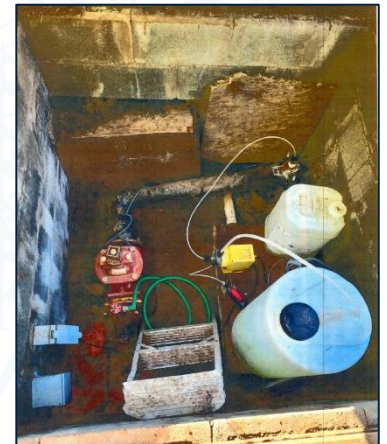
Re: Switch from Calcium Hypochlorite to Sodium Hypochlorite to Improve Disinfectant Dose Control for 4.0-log Disinfection at Skelton Spring (EP-A) CSWA Chehalem Springs (PWS ID # [01518](#)) Conditional Approval ([PR#20-2025](#))

Dear Jessica:

Thank you for your email dated February 3, 2025 containing plans and a plan review fee payment in the amount of \$248 dated 2/3/2025 on behalf of the Chehalem Springs Water District. A waiver from engineered plans was granted on February 14, 2024.

The project consists of replacing the existing calcium hypochlorite treatment system, which provides a [minimum of 0.2 mg/l for 4.0-log viral disinfection at the Skelton Spring \(EP-A\)](#), with NSF-60 HASA 12.5% liquid sodium hypochlorite injected with a new flow-paced LMI sodium hypochlorite pump as shown in the photo and schematic shown at right.

This change from calcium hypochlorite tablets to sodium hypochlorite injected in roughly the same location as the existing table chlorinator is being done to improve dose control. The minimum chlorine residual at EP-A remains unchanged at 0.2 mg/l (maximum of 4.0 mg/l) with 46 minutes of contact time achieved in 126-ft of 18" dia. pipe (1,666-gal) at 36 gpm for a CT_{actual} of 9.2 per the 2009 disinfection verification (enclosed).



New equipment includes:

- One NSF-61 50-gallon polyethylene chlorine tank (Furrow Pump Part #10350)
- One NSF-61 LMI P741-D50HI chlorine metering pump

Chlorine is constantly measured with a Rosemount Analytical model #1056 Dual Input Analyzer at the entry point with testing twice a week using a HACH DR300 Chlorine Colorimeter (Code #2063, 0-10 ppm) in the distribution system.

The project is granted Conditional Approval on the condition that new facilities are disinfected and tested at the entry point for bacteriological (coliform) contamination upon project completion. Upon completion of the project, please send a copy of the coliform sample result and a completed Project Final Approval Request form to me at evan.e.hofeld@oha.oregon.gov.

Project Final Approval Request Form

To close out a project and request final approval from DWS, fill out the  [request form](#)

Thank you for your patience in awaiting our response and if you have any questions, please feel free to call me at 971-200-0288 or e-mail me at evan.e.hofeld@oha.oregon.gov.

Sincerely,



Evan Hofeld, PE
Oregon Health Authority – Drinking Water Services
971-200-0288
[Evan.e.hofeld@oha.oregon.gov](mailto:evan.e.hofeld@oha.oregon.gov)

cc: Mellissa Wong, REHS, Yamhill County Public Health,
wongm@yamhillcounty.gov

Encl. 2009 Disinfection Verification (relevant excerpts)

2009 Disinfection Verification Excerpts

Page 1

**Oregon Department of Human Services – Drinking Water Program
Disinfection Verification Form – Groundwater Systems**

PWSID Number: 4101518 **County:** Yamhill

System Name: Newberg Springs System

Groundwater Source: Skelton Spring

Operator and Phone Number: Russ Reed / (503) 537-1289

If your system adds a chlorine compound, and requests to perform Compliance Monitoring, please submit a copy of this form to the Drinking Water Program (DWP) by October 9, 2009. Please provide a copy for each groundwater source that your system uses. Additional copies of this form are available at <http://oregon.gov/DHS/ph/dwp/docs/gwater/gwdisinfection.pdf>, under the Links to Other Groundwater Rule Information heading. Please retain a copy of the completed form for your records.

Mail the completed form to:

Oregon Department of Human Services
Drinking Water Program
P.O. Box 14450
Portland, OR 97232

For more information, contact the DWP at (971) 673-0405

Check the line below that applies to your groundwater system:

- Our groundwater system is documenting that we provide 4-log inactivation of viruses, pending DWP review.**
- Our groundwater system does not appear to provide 4-log inactivation of viruses.**
- We do not know if our groundwater system provides 4-log inactivation of viruses.**
- Our groundwater system has earlier been required by DWP to provide 4-log inactivation of viruses. Date of written notification (if known): _____**
- Other: _____**

B. If your system disinfects with chlorine and intends to claim contact time for viral inactivation using piped volume only, use the formulas below to determine the actual CT:

1. Average Free chlorine residual (C) measured at the first user	0.70	mg/L
2. Length of pipe (L) from point of disinfection to first user	126	feet
3. Diameter of pipe (D) between point of disinfection and first user	18	inches
4. Volume of pipe (V) = $(L \times D^2) \div 24.5$ or $(L \times D \times D) \div 24.5$ or $(\text{Line 2} \times \text{Line 3} \times \text{Line 3}) \div 24.5$	1666	gallons
5. Repeat calculations if additional lengths of pipe used for contact time Volume of pipe (V ₂) = $(L_2 \times D_2^2) \div 24.5$ or $(L_2 \times D_2 \times D_2) \div 24.5$:		gallons
6. Total Volume of pipe (V _{Total}) = V ₁ + V ₂ + . . .	1666	gallons
7. Peak flow (F) through total volume of pipe during busiest day of the year, used for contact time	36	gallons/minute
Note How Peak Flow Was Determined:		
<input type="checkbox"/> Flow equivalent based on a fixture count		
<input checked="" type="checkbox"/> Other: <u>Highest average daily flow recorded</u>		
8. Contact Time (T): V _{Total} ÷ Flow (F), or Line 6 ÷ Line 7	47	minutes
9. Actual CT: C x T = Line 1 x Line 8	33	mg-minutes/L

Note: 1667 gallons/36 gpm = 46.2 minutes of contact time
 0.2 mg/l x 46.2 minutes = 9.24 mg-min/l