



March 9, 2018

Doug Buxton
McMinnville Water and Light
PO Box 638
McMinnville, OR 97128

Re: **November 2017 Scott Water Treatment Plant Tracer Study (PR#139-2015)
McMinnville Water & Light (PWS ID#00497)
Conditional Approval**

Dear Mr. Buxton:

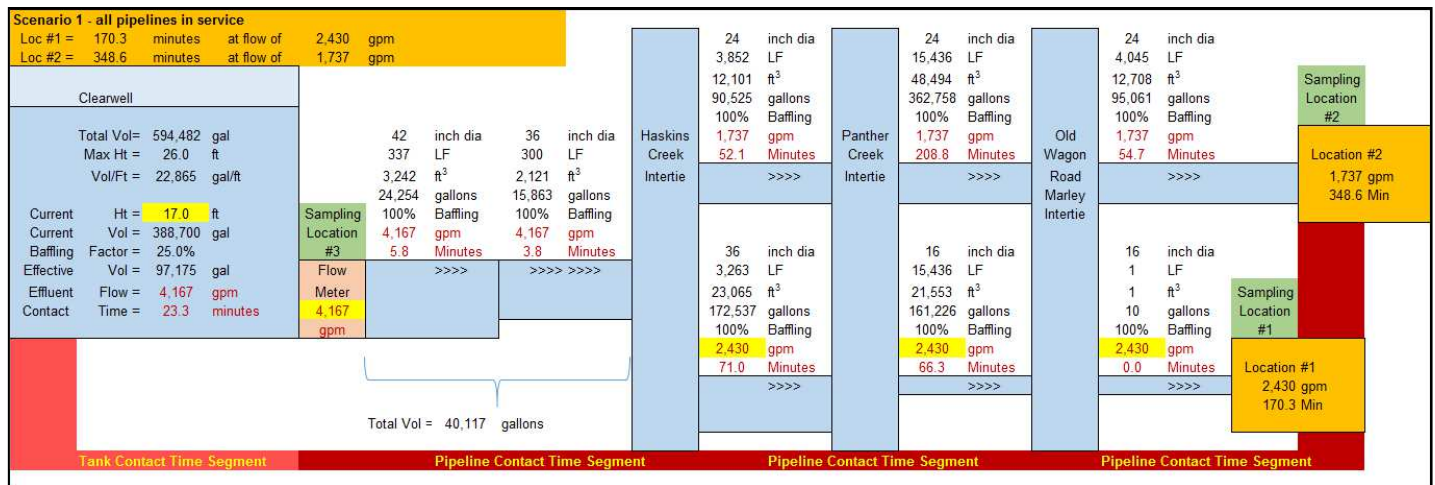
Thank you for your submittal to the Oregon Health Authority's Drinking Water Services (DWS) of the McMinnville Scott Water Treatment Plant Tracer Study dated November, 2017. **The tracer study plan has gone through several revisions and is now considered in its final form. You may proceed with the tracer study. Please note that although this will provide a baffling factor for the tank and contact time at a flow of 4,167 gpm (6 MGD), the tracer study will need to be repeated at a higher flow rate should peak hour demands exceed 4,585 gpm (6.6 MGD).**

The system is relatively complex which allows for greater operational flexibility in that water can flow from the point of chlorine injection to the first customer in any one of 7 different operating scenarios (described on page 3). For the purpose of this tracer study, scenario 1 representing normal operations at a yearly daily average flow of 4,167 gpm (6 MGD) will be replicated. The tracer study is described as follows:

System Description:

- McMinnville Water & Light's Scott Water Treatment Plant treats raw water from two raw water reservoirs located high in the Coast Mountain range.
- The Scott WTP is a 22 MGD conventional treatment facility with enhanced coagulation, flocculation, sedimentation and dual media filtration.
- The finished water exits the WTP from a 594,482 gallon clearwell and flows via gravity 637' through a single water main of 42" and 36" pipe to the Haskins Creek Intertie.
- At the Haskins Creek Intertie, flow is split into two separate water mains running to the Panther Creek Intertie. The first main is 3,263' of 36" pipe and the second main is 3,852' of 24" pipe. At the Panther Creek Intertie, the 36" main reduces in size to 16".

- From the Panther Creek Intertie, both the 16” and 24” mains travel in parallel 15,436’ to the Old Wagon Rd. Morley Intertie where the first customer on the 16” main is located.
- The first customer on the 24” main is located an additional 4,045’ downstream of the Old Wagon Rd. Morley Intertie.
- Due to the age and condition of the 16” main, McMinnville Water & Light staff restricts the flow rate to a maximum of 2,430 gpm (3.5mgd).
- The 24” main is used for all additional flow up to 12,847 gpm (18.5 MGD).
- **This disinfection segment from the clearwell to the locations of the two first users is represented by the graphic below:**



Test Procedure

WTP staff will perform the following procedures:

- 1) Operate the WTP using conventional treatment plant process under study conditions, normal filtration, with no backwash during the test.
- 2) 24 hours before starting tracer WTP operator will turn off fluoride pump.
- 3) Set plant flow rate to 4,167 gpm (6 MGD) flow.
- 4) Lower clearwell level to 17’
- 5) After flow rates are stable, take 3 grab samples to confirm initial fluoride concentration.
- 6) After grab samples are collected and confirm initial fluoride concentration, Start fluoride Pump, Maintain clearwell level and effluent flow for the duration of the test.

Type of Tracer Test and Duration

1. Testing to be performed in this study will document the effective post chlorine contact time through the clearwell based on residual sampling at location #3 in the schematic as well as contact time provided by pipeline based on residual sampling at each of the two "first user" locations (sampling locations #1 and #2 in the schematic).
2. Fluoride will be added using the existing plant fluoride system as the tracer for plug flow testing.
3. Initial grab samples using the SPADNS method are required to confirm the initial fluoride concentration. Once this is confirmed, the fluoride feed is started and the test begins.
4. The elapsed time from when the tracer feed is started until the fluoride concentration increases by 10% is the target value.
5. Grab samples will be taken 2 to 3 min apart and the test will be conducted for a period of time equal to twice the theoretical detention time of the unit process based on the volume and flow rate.
6. Total time testing is expected to last approximately 3 hours.

Once completed, please e-mail the tracer study findings and data files to me at evan.e.hofeld@state.or.us or mail to:

Attn: Evan Hofeld
OHA-Oregon Drinking Water Services
PO Box 14450
Portland, OR 97293-0450

If you have any questions, please feel free to call me at (971) 673-0419.

Sincerely,



Evan Hofeld, PE
Regional Engineer
Drinking Water Services