

August 19, 2013

Martin Van Dyken
Berndt Creek Water Corporation
15160 Creek View Lane
Vernonia, OR 97064

**Re: Tracer Study, Plan Review # 56-2013
Berndt Creek Water Corporation, PWS ID # 41 05737
Final Approval**

Dear Mr. Van Dyken:

Drinking Water Services (DWS) has reviewed the August 2013 Disinfection Contact Time Tracer Study Report for the Berndt Creek Water Corporation, conducted by Rob Henry of HBH Consulting Engineers, who is copied on this correspondence. **The tracer study is approved.** The test was conducted on May 6, 2013 and the report is summarized below (**Please begin using a contact time of 126 minutes immediately to determine the appropriate level of disinfection in the monthly surface water treatment reports submitted to DWS) to meet the 1-log *giardia* inactivation requirement:**

Peak Demand Flow = 13.8 gallons per minute (gpm)

Volume in the contact chamber (five cisterns) at the beginning of the test = 2,500 gallons

Volume in the contact chamber at the end of test = 1,600 gallons

Contact Time = 126 minutes


I do have the following comments:

1. The contact time of 126 minutes is to be used as long as the peak hour demand flow does not exceed 10% of the demand simulated during the study, or 15.2 gpm. As you can tell, it is very difficult to determine peak hour demand flow, to compare to the peak demand flow simulated during the study, using a totalizing volumetric flow meter. In addition to continuing to record the total volume on the flow meter every day, measure and record volumetric flow meter readings every hour during

- peak demand periods to better determine appropriate peak hourly demand flows, with which to also compare to the 13.8 gpm determined during the study.
2. The contact time of 126 minutes is to be used as long as the minimum total volume in the cisterns does not drop significantly below the volume simulated at the beginning of the study.
 3. Use the 1-log *giardia* inactivation column on the table of CT (Chlorine Residual multiplied by Contact Time) Required values, to determine the appropriate level of disinfection required for your system, instead of the 3-log column. The total inactivation requirement for your system is 3-log. Since the filter plant has been granted a 2.0 log *giardia* inactivation credit, the remaining 1.0 log *giardia* removal must be achieved through disinfection.

If you have any questions, or would like this letter in an alternate format, please contact me at either (971) 673-0459 or james.b.nusrala@state.or.us. Thank you for your cooperation in completing the study.

Sincerely,



James Nusrala, P.E.

Regional Engineer

cc: Rob Henry, P.E., HBH Consulting Engineers, 2316 Portland Road, Suite H,
Newberg, OR 97132