PUBLIC HEALTH DIVISION
Drinking Water Services
Kate Brown, Governor

Oregon Health Authority

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12 April 2017

Todd Thompson
Board Chair
Shangri La Water District
88059 Keola Lane
Springfield, Oregon 97478

RE: Well #2 (PR #2016-167)
Shangri La Water District (PWS OR4100835)
Conditional Approval

Dear Mr. Thompson:

Thank you for submitting plans for *plan review* via Branch Engineering, Inc. (Branch) for a new water source, well #2 (aka capped well), at the Shangri La Water District (Shangri La) east of Walterville, Oregon. Oregon Health Authority Drinking Water Services (DWS) received a fee of $825, analytical results for well water analysis, along with plans and specifications for the project. DWS at this time grants the project *conditional approval*.

The project will be granted final approval subject to Shangri La (or its designated representative) providing written verification that the project was completed per plans and met OAR 333-061-0050 Construction Standards such as those described below.

1. Well #2 tests absent for total coliform bacteria and *E. coli*. I mention this because the only result I have on file for well #2 has total coliform bacteria present.
2. An easement is secured for the short length of water main east of the irrigation well house that is on private property. A copy of that easement is provided to DWS.
3. A perpetual restrictive easement shall be obtained by the water supplier for all land not owned by Shangri La Water District (with the exception of public rights-of-way) within 100 feet of the well. The easement shall be recorded with Lane County and with the recorded deed to the property. A certified true copy shall be filed with DWS.
4. A water right certificate, permit, or evidence of authorized water use from the local Watermaster for well #2 is on file with Oregon Water Resources Department.

5. All wetted components are certified to NSF/ANSI Standard 61, and where appropriate to the fixture per Standard 61 Annex G ('no lead'). I mention this because the notes on Sheet WF-5 addressing 'well riser pipe' and 'drop cable' do not call out this requirement when the notes addressing the 'well pumps' do. This could potentially cause misinterpretation by bidders that riser pipe and drop cable do not require certification.
6. Pump-to-waste piping exists, either at the wellhead or the upper pump house.

A DWS geologist wrote "*The well was drilled to a depth of 162 feet in March 1984. A 10 inch diameter casing was originally installed 7 feet above grade; the top of the casing was later terminated within approximately 1 foot of the surface. The casing penetrates to a depth of 107 feet and is perforated from 35-105 feet depth. The casing seal extends to a depth of 27 feet, 34 sacks of cement with 4% bentonite were used (OWRD consulted 4-11-17 regarding depth of casing seal). The well construction meets standards in terms of casing depth, casing seal depth, sealant volume, and annular spacing.*

Based on the proximity to surface water and the highly sensitive nature of the aquifer, monthly assessment monitoring is required for period of one year. The water system should be notified of the monitoring requirement via plan review letter.

Comments: The well appears to produce from the sand, gravel, and cobbles of the Qalc. The first water bearing zone is reported at a depth of 35 feet and is overlain by a thin layer of cemented sand and gravel with clay. The reported intermittent layers of clay appear to be semi-confining based on the rise and static water level compared to the reported water bearing zone depths. The lower portion of the borehole below the casing is considered to be utilized for storage."

<u>Monitoring and Reporting</u>

- *Lead and Copper*

Once well #2 is providing water to the distribution system, lead and copper sampling goes to the "initial schedule" which is two six-month rounds from 10 sample sites. The two rounds must occur between January 1 to June 30 and July 1 to December 31. I recommend conducting the first round about 1 to 2 months after well #2 goes on-line. For instance, if well #2 goes on-line July 20, the first round should between about August 20 and the end of September. The second round should be no more than 6 months later (which in this example is February 20 to the end of March). Depending on the results, monitoring may be reduced to once per year.

Well #2 (PR #2016-167)
Shangri La Water District (PWS OR4100835)
Conditional Approval

12 April 2017

- *Water Quality Parameters*

Water quality parameter monitoring at the **entry point** should occur with each sample event and every 2 weeks for the two consecutive 6-month rounds (1 year). Two water quality parameter (WQP) samples also should be collected from the distribution system when sampling lead and copper sites. Those two WQP samples may be either at a lead and copper sample site or other location distant from the treatment building. The water quality parameters to monitor are pH, alkalinity, and orthophosphate.

- *Source Coliform*

Untreated well #2 water should be monitored for coliform bacteria monthly for one year. This is also known as assessment monitoring. If the results are negative, the well remains classified as groundwater. If *E. coli* is detected, microscopic particulate analysis (MPA) testing will be required. If total coliform is detected multiple times, MPA testing may be required. MPA testing is used to evaluate if a source is groundwater under the influence of surface water (GWUDI).

- *Other Entry Point Monitoring*

Two sample schedules are required because wells #1 and #2 are intended to operate seasonally, wherein wells #1 and #2 operate during high demand (e.g. summer into early fall) and well #2, as ground water, operates alone during late fall through spring. This use constitutes two separately operating sources.

Once well #2 goes online, initiate quarterly monitoring at the outlet of the reservoir (entry point, at or before the first user) for the following:

- VOCs;
- SOCs;
- Uranium;
- Gross alpha; and
- Radium 226 & 228.

If the results are non-detect (ND) in the first quarter for VOCs and SOCs and for the first two quarters for radionuclides, monitoring reductions are possible upon Shangri La's written request to DWS. However, should well #1 go online shortly after these quarterly sampling events, a third quarter of sampling is required for the combined wells #1 and #2 flow. The relevant schedules for reduced monitoring depends on whether well #2

Well #2 (PR #2016-167)
Shangri La Water District (PWS OR4100835)
Conditional Approval

12 April 2017

remains ground water or is determined to be ground water under the influence of surface water as well as the timing of the initial monitoring for both well #2 and the combined wells #1 and #2. Therefore, details on reduced monitoring are not provided at this time. Additionally, with dedicated seasonal use of the sources, qualifying for a monitoring reduction will depend not only on sample results, but also on the duration of the seasonal use and timing of sampling. Until data are acquired, initial monitoring schedules will apply.

Quarterly nitrate monitoring would normally be required. However, the ND result for nitrate in well #2 and well #1's historically low nitrate concentrations provide acceptable historical data to start with annual nitrate monitoring.

If you have any questions, you are welcome to contact me at (541) 726-2587 extension 57 or via email at james.r.macpherson@state.or.us.

Sincerely,

James "Jay" MacPherson, Ph.D., P.E.
Region 2 Plan Review Coordinator
OHA Drinking Water Services

cc: Plan Review, DWS Portland
Ron Derrick, Branch Engineering