PUBLIC HEALTH DIVISION
Drinking Water Services
Kate Brown, Governor

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3 May 2016

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

**RE: Water System Reconstruction (PR #2015-191)**
**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 surface water treatment, new distribution lines, and a reservoir at the Shangri La Water District (Shangri La) east of Walterville, Oregon. Oregon Health Authority Drinking Water Services (DWS) received a fee of $750 along with plans and specifications for the project. DWS at this time grants the project *conditional approval*.

This letter addresses a significant proposed change made after submission of the initial plan set, the conditions of approval, monitoring and reporting requirements associated with the proposed project changes, and a few comments.

Significant Change

The proposed addition of the "capped well" as a second source was introduced to DWS after the plan review submission and requires separate plan review. The fee is $825. Since the proposed addition of well #2 creates a number of issues with the rest of the project, it is discussed herein. Under Conditions of Approval, some relate to both well #2 and the referenced project. This is not intended to imply well #2 is approved for use.

Conditions of 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 provided 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.
3. 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.
4. All wetted components are certified to NSF/ANSI Standard 61, and where appropriate to the fixture, 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.
5. AquaPure 3672 (contains 30% ortho-phosphate) dosing continues uninterrupted.
6. Plumbing exists to send all flow through the filters. Any plumbing that allows water from either well to bypass the filters will have a spool (ability to create an air gap). A spool is needed to isolate the two wells' waterlines when well #2 discharges directly to the reservoir without filtration. Should the capped well prove to be surface water, the spool allowing direct discharge to the reservoir will need to be removed to create an air gap and that water will require filtration. This requires correction to the drawing on Sheet PH-1 and the text on PH-5
7. The reservoir dome hatch (Sheet RE-1) has curbing around the opening and a lockable watertight cover that overlaps the curbing.
8. The outlet end of the drain/overflow is fitted with an angle-flap valve or equivalent protection and discharges with an air-gap to a watercourse or storm drain capable of accommodating the flow.
9. The distance between tracer wire access locations is not be more than 1,000 feet.

Additionally, I have the following recommendations and observations:

- The filter housing is called out on Sheet PH-5 for the Filtration Systems 500-P000-P2-DP pre-filter and 700-P001-P2-IP primary filter. DWS recommends calling out "Filtration Systems NS-122" on Sheet PH-1.
- The floor drain in the chemical storage and injection room passes immediately beside the waterlines from well #2. DWS recommends routing subsurface waterlines so that they are not within 5 feet of floor drains in the chemical

storage/injection and filter rooms, and are at elevation more than 1.5 feet above the associated horizontal runs of those drain pipes. Alternatively the waterlines could be run above grade (e.g., along ceiling).

- Sheet PH-3 lists the pumps as 5 hp, whereas Sheet WF-5 appears to list those pumps as 3 hp.
- DWS recommends listing the NSF/ANSI Standard 61 Annex G requirement for plumbing fixtures on Sheets PH-4 and PH-5.
- The contact time in reservoir can be increased by adding a diffuser to the riser discharge. If the tracer study results in a marginal contact time, a diffuser may provide a substantial increase.
- DWS recommends displaying the tracer wire in the detail on Sheet C001, section 1/D1.

Monitoring and Reporting

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 August 20, the first round should between about September 20 and the end of October. The second round should be no more than 6 months later (which in this example is March 20 to the end of April). Depending on the results, monitoring may be reduced to once per year.

Additionally, water quality parameter monitoring should occur with each sample event and every 2 weeks for the two consecutive 6-month rounds (1 year). Water quality parameter samples are collected at the entry point and from representative locations in the distribution system (these need not be lead and copper sampling sites). Shangri La will need to work with DWS to select the number and location of those distribution sites. The water quality parameters to monitor are pH, alkalinity, and orthophosphate.

Since the wells 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, two sample schedules are required.

Once well #2 goes online, initiate quarterly monitoring at the outlet of the reservoir (entry point, at or before the first user) for 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. The relevant schedules for reduced monitoring depends on whether well #2 is determined to be ground water or surface water, so details on reduced monitoring are not provided at this time. Additionally, with dedicated seasonal uses 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.

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

Comments

I have the following comments:

- I recommend Shangri La consistently use the sequential names for the two wells as introduced in the plans (i.e. well #1 and well #2).
- While the rules allow use of well #2 unfiltered until determined to be ground water under the direct influence of surface water, I strongly recommend filtering the water from well #2 until it is determined to be ground water.
- Sheet WF-4 shows a piano hinge that does not appear to occur in the drawings.
- Drawings should show injection points identifying the specific chemicals applied.

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