



May 22, 2018

Steve Aldrich
 Hopewell Water Company
 10700 Jerusalem Hill Rd NW
 Salem, OR 97304

**Re: 2008 Well (L97853, YAMH55321) – PR #66-2018
 Hopewell Water Company (PWS #00251)
 Conditional Approval**

Dear Mr. Aldrich:

Thank you for your submittal to the Oregon Health Authority’s Drinking Water Services (DWS) of plan review information for the 2008 Well (L97853) for the Hopewell Water Company. On 5/9/18 our office received a well log for the well #L97853 (constructed in 2008) and photos of the wellhead (shown below), and a check for \$825 for the review fee from Chris Janigo with Civil West Engineering Services.



The well construction is not approved unless the following conditions can be met:

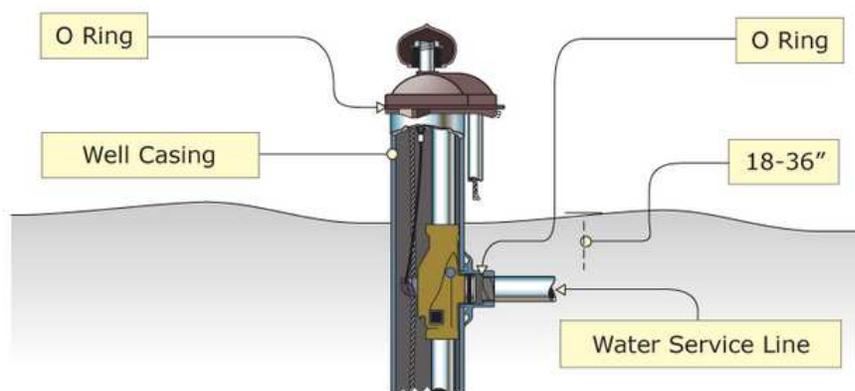
1. The well cement seal is installed in conformance with OAR 333-061-0050 and OAR Chapter 690, Divisions 200 - 220. Upon review of the well drillers report, our Geologist, Tom Pattee, found the well to be inadequately constructed and provided the following comments:

| (5) BORE HOLE CONSTRUCTION | | | | | | | | Special Standard | <input type="checkbox"/> Attach copy) | |
|---|------|-----|-----------|----------------------------|----------------------------|---------------------------------------|----------------------------|----------------------------|---------------------------------------|--|
| Depth of Completed Well 281 ft. | | | | | | | | | | |
| BORE HOLE | | | | SEAL | | | | sacks/ | | |
| Dia | From | To | Material | From | To | Amt | lbs | | | |
| 10 | 0 | 96 | Bentonite | 0 | 5 | 2.5 | S | | | |
| 6 | 96 | 281 | Cement | 5 | 96 | 16 | S | | | |
| | | | | | | | | | | |
| How was seal placed: Method | | | | <input type="checkbox"/> A | <input type="checkbox"/> B | <input checked="" type="checkbox"/> C | <input type="checkbox"/> D | <input type="checkbox"/> E | | |
| <input checked="" type="checkbox"/> Other Bentonite dry | | | | | | | | | | |

Comments: This well was drilled to a depth of 281 ft. The well is cased and sealed to a depth of 96 ft. The casing seal extends 31 ft into a competent sandstone of low permeability that directly overlies the aquifer. However, only 16 sacks of cement were used in constructing the seal. Volume calculations indicate that a minimum of 21 sacks of cement are needed to adequately construct a seal to this depth. The difference in the minimum number of sacks needed and the number of sacks used suggests that either part of the formation sloughed into the borehole or the cement bridged during placement. In either case, without further information, we have to assume that the casing seal is not continuous from the surface to 96 ft below ground and that its usefulness in keeping surface water and shallow groundwater out of the well has been compromised. Sensitivity Analysis results suggest that the construction of this well is highly sensitive to nearby contaminant sources.

For assistance with construction in accordance with OAR 690, you may contact Joel Jeffries at the Oregon Water Resources Department at 503-986-0852.

2. Once properly constructed in accordance with OAR 690, construction must conform to OAR 333-061-0050(2) including, but not limited to, a concrete slab poured around the wellhead, protective wellhouse, raw water sample tap, screened vent, with the appropriate 100-ft hazard setbacks and land ownership/control, etc. OAR 333-061-0050(2) is provided at the end of this letter for reference. Given the location of the well and additional requirements for a standard wellhead, you may want to consider a pitless adapter. Contact your water well constructor for more information on pitless adapters. A simple diagram of a pitless adapter is shown below:



3. Water rights are obtained as required by the Oregon Water Resources Department. The existing water rights for the Zimmerman Spring may not apply to the well. Please contact Joel Plahn with the Water Resources Department at 503-986-0889 or via e-mail at joel.m.plahn@oregon.gov.
4. A Land Use Compatibility Statement form (included at the end of this letter), must be submitted to the local land use planning authority (Yamhill County or local city planning office) for approval and copy of the completed form returned to our office.
5. An initial round of water quality tests (sampled from the well) including IOC, arsenic, nitrate, SOC, VOC, radionuclides, and a coliform bacteria sampling shall be submitted. More monitoring, including two 6-month rounds of lead and copper tap sample monitoring at 5 sites, will be needed and will depend upon the results of the initial round of sampling.

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Until we receive verification that the conditions have been met and final approval has been issued, the well is not approved for use. Upon completion of the project, you must verify in writing that construction was completed according to the submitted plans. If substantial changes are made, a set of as-built drawings must be submitted. Documentation demonstrating how the above conditions were met should reference Plan Review #66-2018 and can be emailed to me at evan.e.hofeld@state.or.us or mailed to:

Attn: Evan Hofeld
OHA-Oregon Drinking Water Services
800 NE Oregon St., Ste 640
Portland, OR 97232-2162

If you have any questions, please feel free to email me at evan.e.hofeld@state.or.us or call me at 971-673-0419.

Sincerely,



Evan Hofeld, PE
Regional Engineer
Drinking Water Services

cc: Chris Janigo, Civil West Engineering Services, Inc.
Gary Van Der Veen, Yamhill County Public Health
Joel Jeffries, Oregon Water Resources Department

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**STATE OF OREGON
DEPARTMENT OF HUMAN SERVICES
DRINKING WATER PROGRAM
LAND USE COMPATIBILITY STATEMENT**

Certain plan review approvals for drinking water projects have been identified by the Department of Land Conservation and Development as Class B permits affecting land use. The Department of Human Services is therefore required by ORS 197-180, OAR 660-30-065 to - 070, OAR 660-31-010-040, the Department of Human Service=s state agency coordination program and OAR 333-61-062 to ensure that projects defined in OAR 333-61-062(1) are compatible with city and county comprehensive plans and land use regulations. This form or other acceptable documentation and necessary attachments must accompany each set of project plans to ensure that compatibility.

1. GENERAL INFORMATION

a. Project Title _____

b. Applicant _____
Name of Water System

c. Type of project _____
Treatment, Transmission, Storage, Distribution, Etc.

d. Project contact person _____
Engineer, owners, etc., including title

_____ Street Address

_____ City, State, Zip Code Phone

e. The local government entity* having comprehensive planning authority over the site of the proposed project is:

Agency Name _____ Phone _____

Address _____ Zip _____

(*If the proposed project is located within the jurisdiction of more than one planning authority, all entities must certify compatibility.)

f. If a statement of compatibility previously has been submitted to the Department to cover a master water system plan, of which this project is a segment, no further information is required. If such a statement has been filed, the date of the submittal was _____.

(Continued on the back)

LAND USE COMPATIBILITY DETERMINATION (Complete either 2 or 3)

2. PLANNING AUTHORITY STATEMENT: (To be completed by local planning authority)

a. I certify that this project has been reviewed for compatibility with:

- 1. ~ The acknowledged comprehensive plan and land use regulations.
- 2. ~ Statewide planning goals. The goals apply because:
 - ~ There is no acknowledged plan, or
 - ~ Conditions described in OAR 660-31-025(3) apply.

b. I find that this project (**circle one**) IS or IS NOT, compatible.

Attach appropriate land use decision(s) written findings as required in ORS 215.416 (8) or (9) or 227.173 (1) OR (2), or OAR 660-31-025 (2) or (3).

Signed _____ Title _____
Date _____

3. APPLICANT REQUEST FOR PLAN REVIEW APPROVAL

I hereby certify that I have applied to the local governments cited in 1.e above for a determination of compatibility with the local acknowledged plan or the statewide planning goals as applicable. I hereby request that the Department issue the plan review approval with the understanding that issuance of said approval is not a finding of compliance with the statewide planning goals or compatibility with the applicable, acknowledged comprehensive plan and land use regulations, but will be conditional, pending the applicant receiving a land use approval from each unit of local government. When signed, such approval shall be forwarded to the Department. I understand that plan review approval for this project will not be effective until and unless the Department of Human Services has received a copy of the land use approval and determined it to be complete and adequate.

Signed _____ Title _____ Date _____

Construction standards under Oregon Administrative Rule OAR 333-061-0050, which includes information on wells, is available on-line at the following link:

<http://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/RULES/Documents/61-0050.pdf>

Construction standards under -0050(2) regarding wells is reproduced as follows:

- (2) Groundwater:
 - (a) Wells:
 - (A) For the purpose of this rule, wells are defined as holes or other excavations that are drilled, dug or otherwise constructed for the purpose of capturing groundwater or groundwater in hydraulic connection where part of the water supplied by the collection system is derived, either naturally or induced, from a surface water source as a source of public drinking water.
 - (B) The area within 100 feet of the well shall be owned by the water supplier, or a perpetual restrictive easement shall be obtained by the water supplier for all land (with the exception of public rights-of-way) within 100 feet of the well. The easement shall be recorded with the county in which the well is located and with the recorded deed to the property. A certified true copy shall be filed with the Authority.
 - (C) For wells located on land owned by a public entity, (Federal, State, County, Municipality) where the entity is not the water supplier, a permit may be issued by the public entity to the water supplier in lieu of an easement. Said permit shall state that no existing or potential public

health hazard shall be permitted within a minimum of 100 feet of a well site;

- (D) Public or private roadways may be allowed within 100 feet of a confined well, provided the well is protected against contamination from surface runoff or hazardous liquids which may be spilled on the roadway and is protected from unauthorized access;
- (E) The following sanitary hazards are not allowed within 100 feet of a well which serves a public water system unless waived by the Authority: any existing or proposed pit privy, subsurface sewage disposal drain field; cesspool; solid waste disposal site; pressure sewer line; buried fuel storage tank; animal yard, feedlot or animal waste storage; untreated storm water or gray water disposal; chemical (including solvents, pesticides and fertilizers) storage, usage or application; fuel transfer or storage; mineral resource extraction, vehicle or machinery maintenance or long term storage; junk/auto/scrap yard; cemetery; unapproved well; well that has not been properly abandoned or of unknown or suspect construction; source of pathogenic organisms or any other similar public health hazards. No gravity sewer line or septic tank shall be permitted within 50 feet of a well which serves a public water system. Clearances greater than indicated above shall be provided when it is determined by the Authority that the aquifer sensitivity and degree of hazard require a greater degree of protection. Above-ground fuel storage tanks provided for emergency water pumping equipment may be exempted from this requirement by the Authority provided that a secondary containment system is in place that will accommodate 110 percent of the fuel tank storage.
- (F) Wells shall not be located at sites which are prone to flooding. In cases where the site is subject to flooding, the area around the well shall be mounded, and the top of the well casing shall be extended at least two feet above the anticipated 100-year (1 percent) flood level;
- (G) Except as otherwise provided herein, wells shall be constructed in accordance with the general standards for the construction and maintenance of water wells in Oregon as prescribed in OAR chapter 690, divisions 200 through 220;
- (H) Wells as defined in paragraph (2)(a)(A) of this rule that are less than 12 feet in depth must be constructed so as to be cased and sealed from the surface to a minimum of three feet above the bottom of the well. The casing may consist of concrete or metal culvert pipe or other pre-approved materials. The seal shall be watertight, be a minimum of four inches in thickness and may consist of cement, bentonite or concrete (see concrete requirements prescribed in OAR 690-210-315). The construction and placement of these wells must comply with all requirements of this rule.

- (I) Before a well is placed into operation as the source of supply at a public water system, laboratory reports as required by OAR 333-061-0036 shall be submitted by the water supplier;
- (J) Water obtained from wells which exceed the MCLs shall be treated as outlined in section (4) of this rule;
- (K) The pump installation, piping arrangements, other appurtenances, and well house details at wells which serve as the source of supply for a public water system, shall meet the following requirements:
 - (i) The line shaft bearings of turbine pumps shall be water-lubricated, except that bearings lubricated with non-toxic approved food-grade lubricants may be permitted in wells where water-lubricated bearings are not feasible due to depth to the water;
 - (ii) Where turbine pumps are installed, the top of the casing shall be sealed into the pump motor. Where submersible pumps are installed, the top of the casing shall be provided with a watertight sanitary seal;
 - (iii) A casing vent shall be provided and shall be fitted with a screened return bend;
 - (iv) Provisions shall be made for determining the depth to water surface in the well under pumping and static conditions;
 - (v) A sampling tap shall be provided on the pump discharge line;
 - (vi) Piping arrangements shall include provisions for pumping the total flow from the well to waste;
 - (vii) A method of determining the total output of each well shall be provided. This requirement may be waived by the Authority at confined wells which serve as the source of supply for TNCs;
 - (viii) A reinforced concrete slab shall be poured around the well casing at ground surface. The slab shall be sloped to drain away from the casing;
 - (ix) The ground surface around the well slab shall be graded so that drainage is away from the well;
 - (x) The top of the well casing shall extend at least 12 inches above the concrete slab;
 - (xi) Provisions shall be made for protecting pump controls and other above-ground appurtenances at the well head. Where a wellhouse is installed for this purpose, it shall meet applicable building codes and shall be insulated, heated and provided with lights, except that where the wellhouse consists of a small removable box-like structure the requirement for lights may be waived by the Authority;
 - (xii) The wellhouse shall be constructed so that the well pump can be removed.

- (xiii) Wells equipped with pitless adaptors or units are not required to meet the requirements of subparagraphs (2)(a)(L)(iii) and (viii) of this rule.
- (L) The area in the vicinity of a well, particularly the area uphill or upstream, shall be surveyed by the water supplier to determine the location and nature of any existing or potential public health hazards;
- (M) The requirements with respect to land ownership, clearances from public health hazards, and protection against flooding for wells in an unconfined aquifer shall be the same or more restrictive than those prescribed for wells in confined aquifers, as determined by the Authority.
- (N) Before a well is placed into operation as the source of supply for a public water system, the following documents shall be submitted by the water supplier:
 - (i) Reports on pumping tests for yield and drawdown for unconfined wells;
 - (ii) Reports of laboratory analyses on contaminants in the water as required by OAR 333-061-0036;
 - (iii) Performance data on the pumps and other equipment;
 - (iv) Proposals for disinfection as required by section (5) of this rule, if applicable.
 - (v) Reports on determination of potential direct influence by surface water into groundwater source as prescribed in section (3) of this rule.