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www.healthoregon.org/DWP

December 8, 2022

Rob Henry, PE and Andrew Bates, EIT
HBH Consulting Engineers, Inc.
501 E First Street
Newberg, OR 97132

Re: **Beaver Water District (PWS #00199) – Well #3a2 (TILL822) Certification
Final Approval (PR #157-2019)**

Dear Mr. Bates and Mr. Henry:

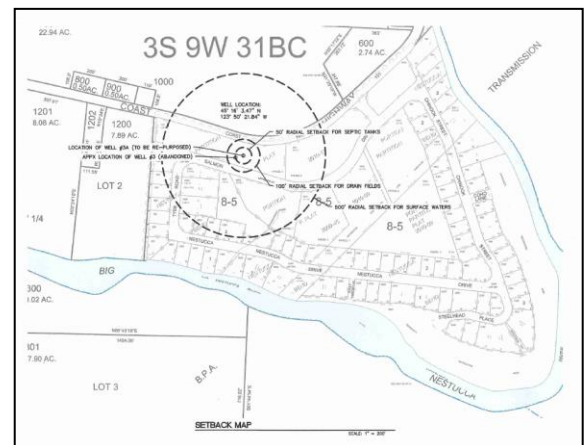
Thank you for your submittal to the Oregon Health Authority’s Drinking Water Services (DWS) of plan review information for the certification of Well #3a2 on behalf of the Beaver Water District. The plans and Land Use Compatibility statement were received on 10/18/19 and the \$825 review fee payment was received on 11/13/19. As-built plans and a Project Final Approval Request Form addressing the December 12, 2019, Conditional Approval letter was received on 12/6/2022. **This project is granted Final Approval.**

Please note that water rights application #G19008 is pending final steps to be taken by the Oregon Water Resources Department (OWRD). Please continue to work with OWRD to ensure water rights are acquired for this well. The current status of this application is shown at right and may be viewed online at:

https://apps.wrd.state.or.us/apps/wr/wrinfo/wr_details.aspx?snp_id=204560

The project included the development of an existing well (constructed 5/16/1979) in Beaver, OR as a supplemental source for the Beaver Water District. The new facilities include a new well house, sodium hypochlorite, soda ash, and greensand filtration system. **The new well is recognized as SRC-BA Well #3a2 – TILL822 under new entry point - (EP-B),** viewable online at:

<https://yourwater.oregon.gov/inventory.php?pwsno=00199>



Processing History (Click to Collapse...)		
▼ Application: G 19008		
▶ Staff Person Responsible: ADAM FREDERICK		
▶ Received: 7/27/2020		
Process Step	Date Completed	Result
Application Filed	7/27/2020	
GW Review Request	9/16/2020	
Initial Review	10/16/2020	Propose to Deny
IR Comment Period	11/19/2020	Propose to Deny
▶ WM Request		
DEQ Review Request	12/7/2020	
ODFW Review Request	12/15/2020	
Administrative Hold	10/22/2021	
Administrative Hold	4/20/2022	
Administrative Hold	10/20/2022	

Future initial monitoring requirements beginning 1/1/2023 are described below.

Monitoring Requirements:

Monthly Source Water Assessment (Coliform) Monitoring at SRC-BA:

Based on the well evaluation results from our geologist, Tom Pattee (enclosed with this letter) a raw water (pre-treatment) source assessment coliform sample is required to be taken from the well (SRC-BA) once each month for 12 consecutive months. Depending upon the results of this initial assessment sampling, source coliform monitoring at SRC-BA may be reduced to once per year. This requirement will be viewable online at: <https://yourwater.oregon.gov/schedulescoliform.php?pwsno=00199>

Chemical monitoring at EP-B:

As with any new source, monitoring for some chemicals is temporarily increased for the first few years. This increased monitoring is shown in Table 1. Subsequent sampling will depend upon initial results. These schedules will be viewable online at:

<https://yourwater.oregon.gov/scheduleschems.php?pwsno=00199>

Table 1 – Initial monitoring (subsequent sampling after year 3 will depending upon initial results)				To be Completed	
Previous SRC-BA Sampling	Year 1 EP-B Sampling			Year 2 (2024) At EP-B	Year 3 (2025) At EP-B
Already Completed - Sampling completed prior to Final Approval	To be completed - Sample by the end of the first quarter of operation after Final Approval (1/1/23 – 3/31/23)	To be completed – 2nd Quarter of Operation (4/1/23 – 6/30/23)	To be completed – 3rd Quarter of operation (7/1/23 – 9/30/23)		
Sample at the Source Prior to Treatment (SRC-BA)	Sample at the Entry Point (EP-B) to the distribution system served by the new source (post-treatment and prior to the first user)				
<ul style="list-style-type: none"> • Coliform (absent) • Nitrate (1.59 mg/l), Nitrite (non-detect) • IOC, VOC, SOC (all non-detect) • Arsenic (non-detect) • Radiological including uranium, gross alpha, and radium 226/228 (all non-detect) • SRC-BA lead (1 ppb) • EP-B lead and copper (non-detect) • SRC-BA TOC at 0.484 mg/l and DOC 	<ul style="list-style-type: none"> • Radiological including uranium, gross alpha, and radium 226/228 	<ul style="list-style-type: none"> • Radiological if initial sampling has radiological detections 	<ul style="list-style-type: none"> • Radiological if initial sampling has radiological detections 	Annual: <ul style="list-style-type: none"> • Nitrate • VOC • SOC 	

Note: Lead and Copper tap sampling is to remain at once every 3 years based on no prior lead or copper action level exceedances and the installation of soda ash for corrosion control for the new well to match water quality with existing system. Lead was detected initially in the source (SRC-BA) at 0.0001 mg/l (1 ppb), however follow-up sampling was non-detect for both lead and copper at the entry point (EP-B).

Although the well is to be treated with soda ash, changes in water quality due to the addition of a new source may impact the corrosivity of the water, therefore, monitoring of pH at EP-B every 2 weeks is recommended along with completing your routine lead and copper tap sampling at 10 sites between June 1 – Sept 30, 2023.

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Final Approval – PR# 157-2019

Beaver Water District (PWS #00199) – Well #3a2 (TILL822) Certification

December 8, 2022

Thank you for your cooperation during the plan review process and if you have any questions or concerns, please feel free to contact me at 971-200-0288 or via e-mail at evan.e.hofeld@oha.oregon.gov.

Sincerely,

A handwritten signature in blue ink that reads "Evan Hofeld". The signature is written in a cursive style.

Evan Hofeld, PE

Oregon Health Authority – Drinking Water Services

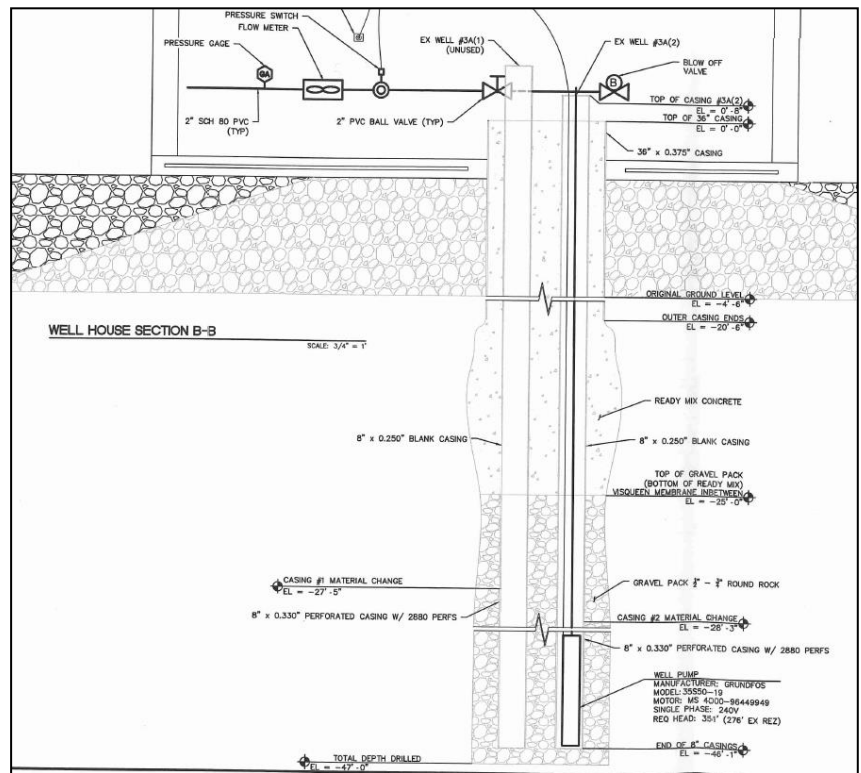
cc: Troy Trute, Beaver Water District (DRC for Beaver Water District)
Larry Chitwood (Lead Operator for Beaver Water District)
Jaime Craig, Environmental Health Program Manager,
Tillamook County Environmental Health
Sarah Absher, Tillamook County Dept of Community Development
Nikki Hendricks, Oregon Water Resources Department
Tim Ruby, Oregon Department of Environmental Quality

Project Description:

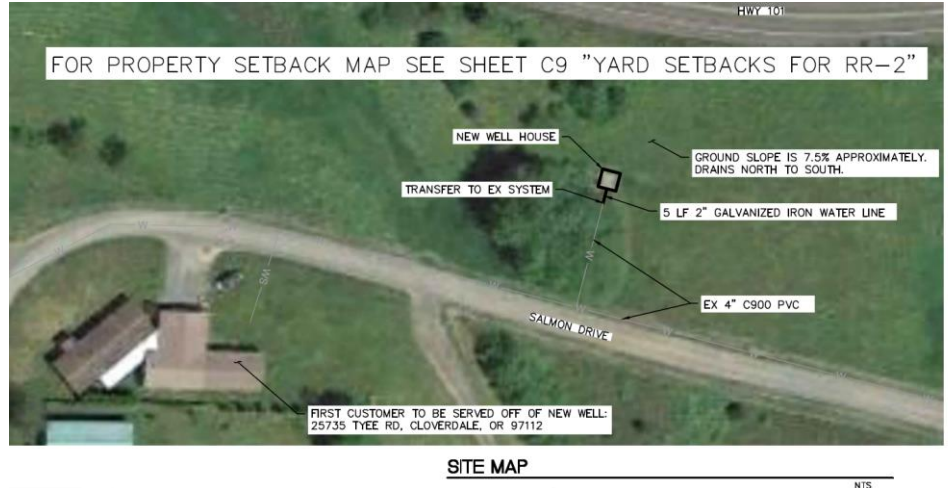
The project included the development of an existing well (constructed 5/16/79) in Beaver, OR as a supplemental source for the Beaver Water District. The project also included a new well house, sodium hypochlorite, soda ash, and greensand filtration system. The new well is recognized as SRC-BA Well #3a2 – TILL822 under a new entry point - Entry Point B (EP-B). The “2” after Well #3a accounts for only the second of two 8” steel casings situated within a 3-ft diameter concrete ring (two casings were originally approved by Oregon Water Resources Dept. under a Special Construction standard).



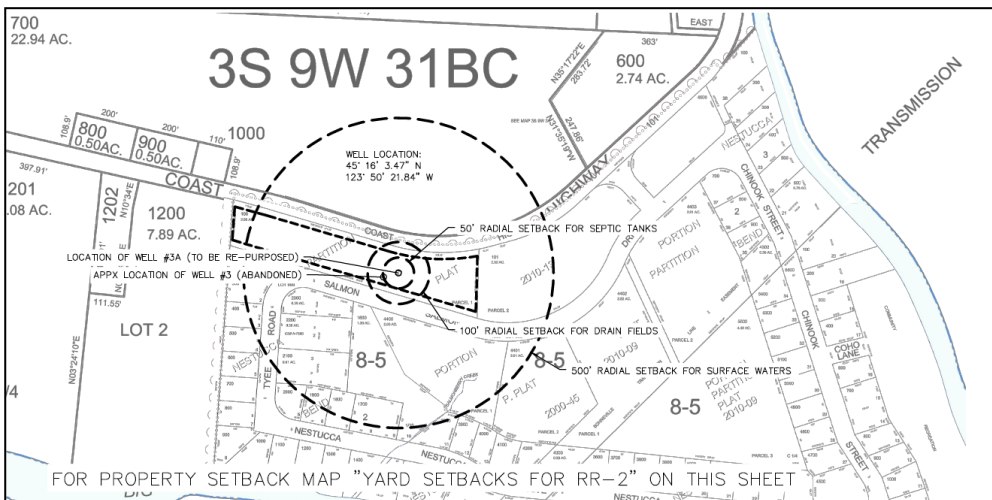
The two 8” casings are spaced about 9” apart placed from +6’ to 42’ all within a 36” concrete ring that has been filled with cement. The casings are denoted as Well #3a1 and Well #3a2, however, only well casing #3a2 was equipped with a Grundfos Model #35S50-19 VFD submersible pump and approved for use. The wellhouse contains the well, four 13” x 54” greensand filter tanks, a Stenner 30-gallon sodium hypochlorite tank for residual maintenance, a Stenner 30-gallon soda ash tank, two Stenner 45M1 chemical feed pumps, and related controls & appurtenances located at T3S, R9W, Sec 31 Tax Lot 100 (Tax Lot 100 is owned by the Beaver Water District).

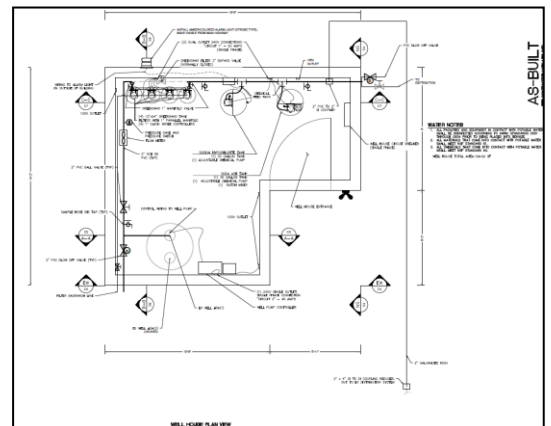
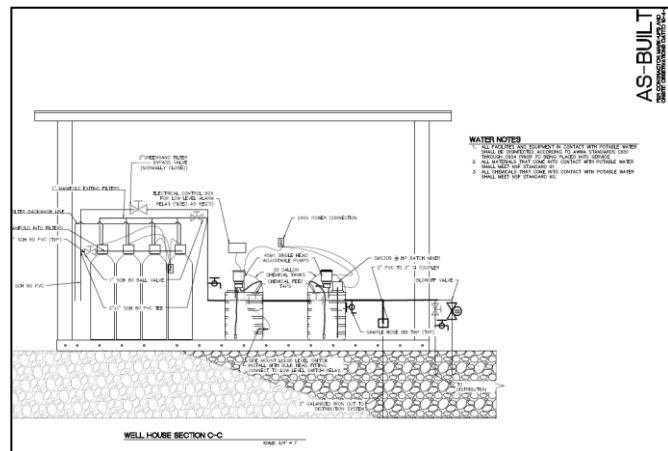
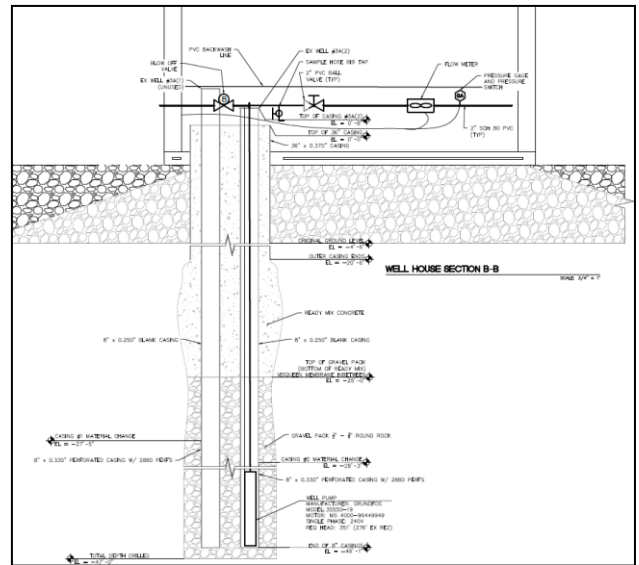
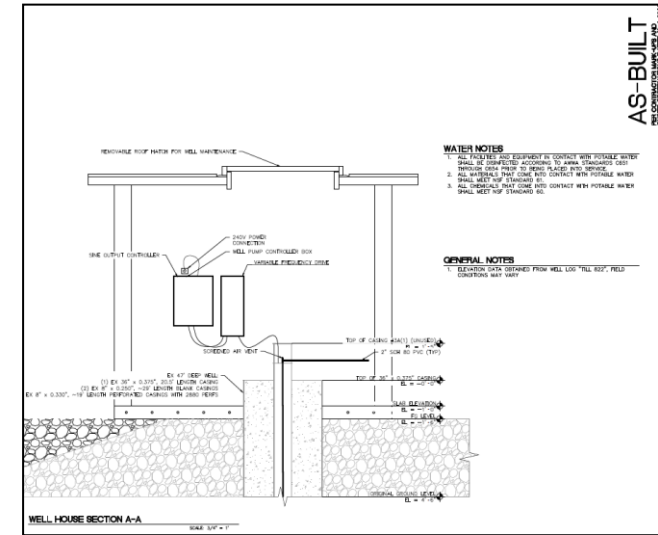
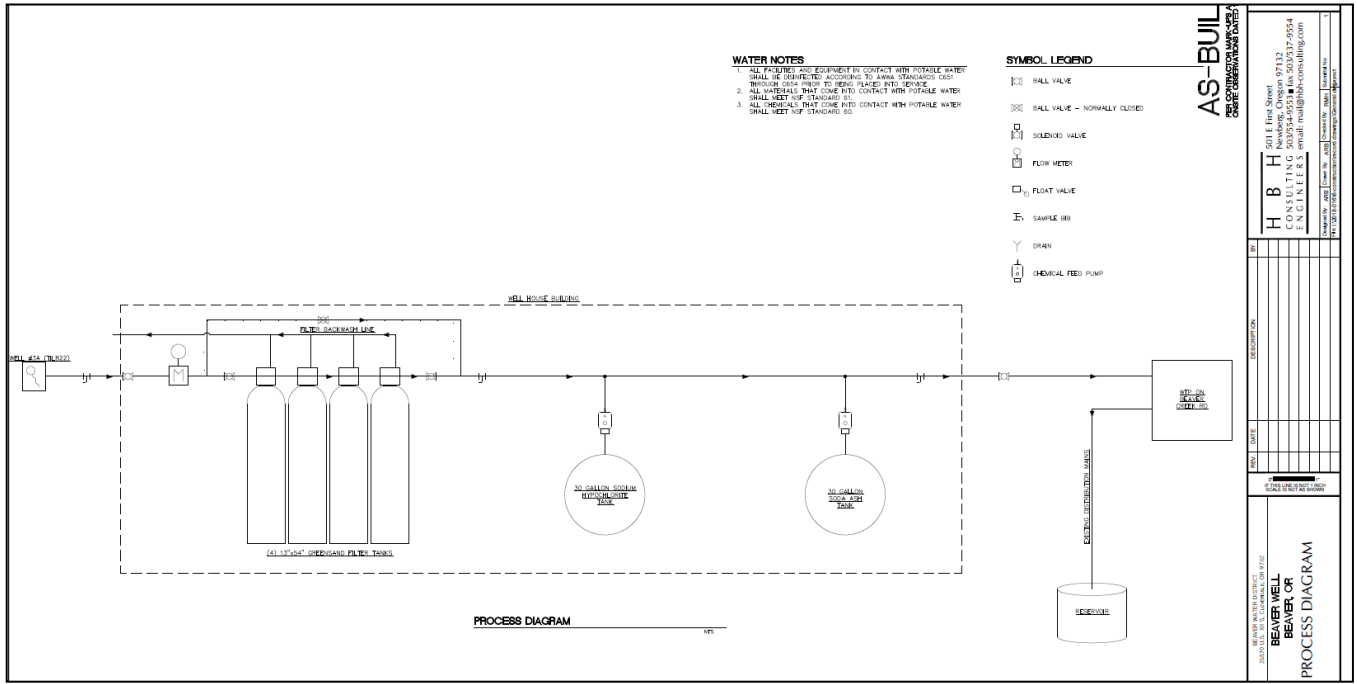


SRC-BA WELL #3A2 - [TILL822](#)



Location (Click to Collapse...)	
Latitude/Longitude	
Latitude: 45.26761947	Horiz. Error: 400.00 ft.
Longitude: -123.83941506	Datum: WGS1984
Lat/Long Source: WR APPL MAP EXISTING WELL	
Location	
TRSQQ: WM 3.00S9.00W31SWNW	
Tax Map: 3S0931BC00100	
Taxlot: 100	
24 Quad:	
Basin: 1 - North Coast	
County: Tillamook	
WM District: 1	
WM Region: NW	
LSD Elev: 88.84 Accy: 1.00 Datum: NAVD1988	
Elev Source: LIDAR	
Groundwater Mapping Tool	





Comments from OHA-DWS geologist Tom Pattee:

As Built Well Construction Evaluation for Plan Review and/or Setback Waiver:

- Well/Spring meets current construction standards.
 - WRD special construction standards, see well log or Comments.
- Well/Spring construction does not meet construction standards.
 - Not sealed to appropriate depth. Recommended depth: _____
 - Not appropriate seal materials
 - Open to more than one aquifer
 - Seal info missing or unknown
 - Seal not constructed properly (Insufficient sealant volume Insufficient annular space)
- Susceptible construction, but grandfathered source. Consider for reconstruction if nitrate \geq 5mg/L or confirmed *E. coli* at source.
- Susceptible well construction, **not approved for use.**

Comments: See WRD special construction standards for this well. As per the well log and special construction standard, this is a large diameter well (36-inch diameter) with a total depth of 42.5 ft that had two smaller diameter casings set within the well. The large diameter well was then backfilled with gravel around the smaller diameter casings from the bottom of the hole to a depth of 20.5 ft below ground level. A concrete casing seal extends from the surface to the top of the gravel pack at 20.5 ft below ground. The bottom 4.5 ft of the casing seal forms a seal with the silt that overlies the aquifer that the well draws water from. The issuance of a WRD special construction standard at the time of construction indicates that the well meets the intent of the construction standards. However, as a precaution, OHA Sensitivity Analysis results suggest that the construction of the well should be considered highly sensitive to local land use practices at this time.

Nature of Aquifer Evaluation:

- Aquifer Nature: Confined aquifer Semi-confined aquifer Unconfined aquifer

Comments: This well draws water from a shallow unconfined sand and gravel aquifer that is overlain by 20 ft of silt (clay). OHA Sensitivity Analysis results suggest that the aquifer is highly sensitive to local land use practices. Therefore, due to the presence of fecal contaminant sources near the well (septic systems), if water from this well is to be disinfected before entering the distribution system, the well should be placed on monthly source assessment monitoring for one year beginning in the month when the well starts delivering water into the distribution system.

Construction Setback Waiver Info:

- Hydrogeologist review for likely spills/releases with respect to identified potential setback violation:
 - Not applicable, spills/releases are not tracked for this type of contaminant source.
 - No spills/releases identified with respect to the sanitary setback violation.
 - Spill/release identified that is related to the sanitary setback violation.

Hydrogeologist Comments: US Hwy 101 and Salmon Dr appear to be within 100 ft of the well. OHA Sensitivity Analysis results suggest that the aquifer is highly sensitive to local land use practices. Heavy use roadways, such as Hwy 101 are considered to be a moderate risk to groundwater quality due to increased risk of large spills that may occur as the result of commercial transport vehicles and highway speed limits. Roadways that are not heavily used, such as Salmon Dr, represent a low risk to groundwater quality due to lower speed limits. OHA Susceptibility Analysis results suggest that water quality at the well is highly susceptible to contamination from large spills that may occur along Hwy 101 and has a low susceptibility to transportation along Salmon Dr. Given Hwy 101 is at or very near the 100-ft sanitary setback boundary, it may be reasonable to consider whether or not enforcement of the 100 ft setback, with respect to the highway, would result in reduced risk of contamination of the water supply and whether or not the intent of the setback has been met. With that in mind, water quality susceptibility to Hwy 101 is the same if located barely inside the setback or barely outside the setback. So, it appears that drinking water supply is not susceptible to Salmon Dr and that the intent of the setback requirement may have been met for Hwy 101.

Project Final Approval Request Form (Received 12/6/2022):



**Drinking Water Services
Project Final Approval Request Form**

[Print](#)

Project Name Well #3A (TILL822) Certification

PR# 157-2019

Public Water System ID# 41-00199

[Click to locate PWS ID#](#)

PWS Name Beaver Water District

- | | YES | NO | DATE |
|---|-------------------------------------|-------------------------------------|------------------|
| 1. Was the project undertaken? If so, what was the starting date? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>1/1/2021</u> |
| 2. If project was not undertaken, has the project been abandoned? | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. Was the project completed? If so, when?
If project not complete, estimated completion date: _____ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>7/30/2022</u> |
| 4. If completed, was the work accomplished in conformance with all conditions listed in the Conditional Approval letter and DWS Construction Standards, Oregon Administrative Rule (OAR) 61-0050? In the comments below or on a separate sheet please make clear how all conditions specified in the Conditional Approval letter were met. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5. If the project was completed, were there any differences between what is shown on the plans and what was actually installed? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 6. If the completed project is different from what is shown on the plans, were the plans modified to show as-built conditions? | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. Have as-builts been sent to Drinking Water Services? NOTE: As-builts are not required if there were no significant changes noted in 5. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 8. Are the facilities operating? If so, starting when? | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

Signature of Engineer

Date 10/17/2022

Name Robert Henry, PE

OR PE# 19191

Firm HBH Consulting Engrs

Phone 503-554-9653

Comments



501 E First Street
Newberg, Oregon 97132
phone 503-554-9553
fax 503-537-9554

October 17, 2022

Re: Explanation of How Conditions of Conditional Approval Letter were met

The work was accomplished in conformance with all conditions listed in the Conditional Approval Letter and DWS Construction Standards, Oregon Administrative Rule (OAR) 61-0050. The conditions specified in the Conditional Approval Letter were met as follows:

1. Tillamook County building requirements were satisfied, and no permit was required because the pump house building is a non-habitable, detached accessory structure less than 200 square feet in size. This was verified with the county. In addition, it was determined that the proposed use meets the definition of a public utility facility and is allowed in the Rural Residential 2-Acre (RR-2) zone.
2. The applicable water right permit request (G-19008) has been submitted to OWRD. It is being processed.
3. Raw, untreated, well test results for SOC, VOC, IOC, Uranium, Radium 226/228, Gross Alpha, and Coliform bacteria have been submitted.
4. The facilities were constructed in accordance with the submitted plan, these conditions, and construction and disinfection standards under OAR 333-061-0050 (see accompanying checklist completed by HBH Consulting Engineers, Inc.)