

REDACTED

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**From:** THOMAS Wesley \* DEQ <Wesley.THOMAS@deq.oregon.gov>  
**Sent:** Thursday, February 9, 2023 1:58 PM  
**To:** John Renda <jrenda@anchorqea.com>  
**Cc:** Bob Wyatt <rjw@nwnatural.com>; Patricia Dost <pdost@pearllegalgroup.com>; Rob Ede <robe@hahnav.com>; Halah Voges <hvoges@anchorqea.com>; Ryan Barth <rbarth@anchorqea.com>; Tim Stone <tstone@anchorqea.com>; Jen Mott <jmott@anchorqea.com>; LARSEN Henning \* DEQ <Henning.LARSEN@deq.oregon.gov>; NELSON Heidi \* DEQ <Heidi.NELSON@deq.oregon.gov>; HAFLEY Dan \* DEQ <Dan.HAFLEY@deq.oregon.gov>  
**Subject:** RE: PW-10U Replacement Well

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John,

The replacement of PW-10U with PW-10Ub is approved. Thank you for providing the backup information. Out of curiosity, I know the main groundwater conveyance lines are HDPE, but have you observed any corrosion of the galvanized pipe and connections at the well heads at the PW-10U/L locations?

Wes

**Wesley Thomas, P.E.**  
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**From:** John Renda <jrenda@anchorqea.com>  
**Sent:** Monday, February 6, 2023 4:09 PM

**To:** THOMAS Wesley \* DEQ <Wesley.THOMAS@deq.oregon.gov>

**Cc:** Bob Wyatt <rjw@nwnatural.com>; Patricia Dost <pdost@pearllegalgroup.com>; Rob Ede <robe@hahnenv.com>; Halah Voges <hvoges@anchorqea.com>; Ryan Barth <rbarth@anchorqea.com>; Tim Stone <tstone@anchorqea.com>; Jen Mott <jmott@anchorqea.com>

**Subject:** PW-10U Replacement Well

Hi Wes!

Similar to the corrosion issues we have had at PW-10L and 10Lb, we have experienced corrosion of the well casing for PW-10U. PW-10U was installed in April 2017, before we knew of the corrosion issue specific to this location, using mild steel well casing with stainless steel screen. The pump failed at the end of November 2022, and it was discovered that the well had filled with sand. While attempting to clear out the sand and rehabilitate the well, sand continued to flow in and some larger chunks of material were recovered, indicating corrosion of the well casing.

The proposed replacement well (PW-10Ub) for PW-10U will be of similar design and installation procedure as the most recently installed extraction wells (PW-8Ub, PW-11Ub, and PW-1Uc), using stainless-steel for both the screen and riser pipe. The well screen depths, screen slot size, and filter pack will be consistent with PW-10U. As with the recently installed extraction wells, we propose to use a stainless steel well screen prepacked with a glass bead filter pack. The estimated installation depths of the well design are provided below.

After PW-10Ub is installed, extraction well PW-10U will be decommissioned following the same procedures as previous Gasco OU extraction well decommissionings approved by DEQ.

Extraction well PW-10U will be decommissioned according to the requirements within Oregon Administrative Rule (OAR) 690-240-0510 by overdrilling with a roto sonic drill rig with a minimum casing diameter of 12 inches to a depth of 26 feet and a minimum casing diameter of 10 inches from 26 to 60 feet which matches the diameter of the casing used to install PW-10U (see attached boring log for PW-10U).

Once the well is overdrilled to 60 feet below ground surface, a winch line will be attached to the well casing in an attempt to recover the well casing and screen. Following removal of the well casing and screen to the extent practicable, the borehole will be sealed with bentonite grout slurry placed from the bottom up using a tremie pipe to avoid segregation or dilution of the sealant. The drill casing will be loaded with bentonite grout while the casing is pulled upward. The grout level will be maintained within the casing during removal.

#### **PW-10Ub Installation**

- **0 to 30 feet:** 16-inch borehole with temporary casing to base of the Fill WBZ (set bentonite seal)
- **30 to 60 feet:** 12-inch borehole with temporary casing
- **+2.5 to 40 feet:** 8-inch-diameter, stainless-steel blank riser pipe
- **40 to 55 feet:** Muni-Pak™ 8x10-inch diameter, 0.01-inch-slot continuous, wire-wrapped, stainless-steel screens prepacked with 30x40 Shur-Pak™ glass bead filter pack
- **55 to 60 feet:** 8-inch-diameter stainless steel sump (w/bentonite grout around the sump)
- **0 to 5 feet:** concrete surface seal
- **5 to 38 feet:** bentonite grout
- **38 to 55 feet:** 20x40 silica sand
- **55 to 60 feet:** bentonite grout

Attached for reference are the following documents:

- Figure 1 – Proposed PW-10Ub location
- Figure 2 – Proposed PW-10Ub design drawing

- Boring log for PW-10U
- Muni-Pak and Shur-Pak Specification sheets

The lead time for the well screen and casing is estimated at 10-12 weeks and will be ordered once we have DEQ approval of this design. Please let me know if you have any questions or need any additional information to approve this design. Thanks.

**John J. Renda, RG**

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