

June 2, 2025

Brenda Vasquez
Rainbow Rock Village MHP
96465 Coverdell Road, Space #36
Brookings, OR 97415

**Re: Water Treatment Plant (PR#2025-12)
Rainbow Rock Village MHP (PWS ID#01062)
Conditional Approval**

Dear Brenda Vasquez:

Thank you for your submittal to the Oregon Health Authority's Drinking Water Services (DWS) of plan review information for the new water treatment facilities for Rainbow Rock Village MHP. On March 12, 2025, our office received a schematic and specifications and a plan review fee of \$825.

The project includes the installation of a Harmsco MUNI 40 MP cartridge filter, an ultraviolet light reactor Viqua Pro50, and four Turbidex multimedia pressure filters (used as pre-filters). The cartridge filter is restricted to flow rate of 30 gpm and the filter needs to be replaced when the pressure differential through the cartridge filter is 30 psi.

The plans are approved subject to the following conditions:

Cartridge Filter:

- Water systems using cartridge filtration must have pressure gauges installed before and after each cartridge filter (OAR 333-061-0050(4)(c)(K)). The plans did not show where any pressure gauges are located.
- A pilot study must be conducted when using cartridge filtration. The pilot study is required to identify any operational issues such as plugging of the prefilters. Pilot study protocol must be approved in advance. Parameters include (but are not limited to) raw turbidity, filtered turbidity and amount of filtration time for filter to reach maximum pressure drop of 30 psi. After the pilot study protocol is approved and prior to final approval of this project, results of a completed small scale, filter-to-waste pilot study must be submitted. If the system chooses, a full-scale study during the initial

operation period may be approved as an alternative to the small scale, filter-to-waste study. If the water system chooses the full-scale study during the initial operation period, note in the final approval letter that depending on the results of the pilot study, the final approval is subject to revocation.

UV Reactor:

- The UV reactor was validated using the setpoint dose at a lamp power of 70%, and a minimum UV transmittance (UVT) of 74%. Take UVT samples now to assure the UV reactor will be valid for your water system. (More about UVT below.)
- Assure ability to calculate and totalize off-specification water volume produced, particularly during power sags. (Record off-spec water volumes in monthly report enclosed.)
- Sample tap must be provided before the UV reactor for UVT sampling.
- Assure visual verification of the operation of the lamps (e.g., indicator light).
- Lamps and UV sensor must be accessible for replacement.
- UV reactors must withstand system pressures, and a simple mercury containment plan in the rare event of mercury amalgam lamp breakage must be developed.
- There is no bypass piping around the UV reactor.
- All wetted parts must conform to NSF standard 61, or equivalent certification.

REQUIREMENTS AFTER INSTALLATION:

Once the UV treatment system is operational, the following requirements must be met – See corresponding attached forms to use for UV monitoring:

- Sensor calibration must be checked monthly using a reference sensor. The sensor needs to be re-calibrated or replaced when the calibration is off by more than 20%.
- Monitor UVT of filtered water at least monthly for at least one year. We will reconsider the monitoring frequency after that time. Since the validation study for the UV system assumes at least a 74% UV transmittance, any water treated with a lower transmittance is considered off-spec.
- To avoid purchasing an inappropriate or ineffective reactor, it is strongly recommended to collect UVT data before purchasing a reactor.
- Monitor amount of off-spec water produced every month. Log that amount on back side of monthly SWTR reporting form.

PATHOGEN INACTIVATION CREDITS

The UV treatment will be granted the following log inactivation credits:

- According to the UV validation report, the Viqua Pro50 has been granted the following inactivation credit by OHA-DWS as long as the UV reactor is operated

within the operation boundaries:

<u>Pathogen</u>	<u>log-inactivation credit</u>
Giardia lamblia	3.0
Cryptosporidium parvum	3.0
Virus	0.0

- While your water system achieves Giardia and Cryptosporidium inactivation compliance with this UV reactor, another disinfectant must inactivate viruses. Rainbow Rock Village MHP is credited with 4.0-log viral inactivation as long as the daily calculated chlorine CTs at the entry point remain above 12. See viral CT tables for temperature-dependent information. Additionally, at least 0.2 mg/L chlorine is required at the entry point.

Until we receive verification that the conditions have been met and final approval has been issued, the new water treatment facility is not approved for use. Upon completion of the project, the engineer 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 #2025-12 and can be emailed to me at rebecca.a.templin@oha.oregon.gov.

In addition to the conditions above, I have the following comments/recommendations:

- DWS recommends updating the operations and maintenance manual to include replacement procedures the cartridge filter and UV unit, calibration procedures, etc.

If you have any questions, please feel free to email me rebecca.a.templin@oha.oregon.gov or call me at 541-650-4868.

Sincerely,



Rebecca Templin, PE
Regional Engineer
Drinking Water Services

cc: File, DWS
Kent Downs, OHA/DWS
Steve Reber, Project Engineer, Civil West Engineering Services, Inc.

Enclosures:

- Turbidity report form – UV (due monthly)
- Sensor Calibration Form (not required to submit to DWS)

