

OHA - Drinking Water Services - Surface Water Quality Data Form

County: Multnomah

Cartridge or Bag Filtration with UV *Giardia/Crypto/Viral* Disinfection

Month/Year: Feb-23

System Name: PAE Living Building Rain Harvest System WS ID#: 41- 95690 WTP ID: _____

Change Filter at max PSID = 35 PSID (see manufacturer's specification)

Day	Pressure Loss			Turbidity	
	PSI Before Filter	PSI After Filter	PSID	Compliance Turbidity [NTU]	Highest NTU of the day 1
1	OFF				
2	OFF				
3	OFF				
4	OFF				
5	OFF				
6	OFF				
7	OFF				
8	OFF				
9	OFF				
10	OFF				
11	OFF				
12	OFF				
13	OFF				
14	OFF				
15	OFF				
16	40.00	12.00	28.00	0.20	4.85
17	OFF				
18	OFF				
19	OFF				
20	OFF				
21	OFF				
22	OFF				
23	OFF				
24	OFF				
25	OFF				
26	OFF				
27	OFF				
28	OFF				

Cartridge & Bag Filtration (circle Yes or No)

95% of daily turbidity readings ≤ 1 NTU? Yes No

All daily turbidity readings ≤ 5 NTU? Yes No

Monthly UV Summary (circle Yes or No)

Was the volume of off-spec water produced less than 5% for the month? Yes No

Notes: PSI = pounds per square inch
PSID = pounds per square inch difference (before filter - after filter)

PRINTED NAME: Dustin T. Thorson

DATE: 3/9/2023

PHONE #: (503) 224-3454

CERT #: T-323544

SIGNATURE: *Dustin T. Thorson*

¹ If one NTU value per day measured, value same as Compliance Turbidity. Intended for multiple readings per day. Used for optimization efforts only. Highest NTU of the day is for optimization, not compliance. Highest is only for state-wide tracking of performance among all treatment systems.

OHA - Drinking Water Services - Surface Water Quality Data Form			County: Multnomah
Cartridge or Bag Filtration with UV <i>Giardia/Crypto/Viral</i> Disinfection			Month/Year: 23-Feb
System Name: <u>PAE Living Building Rain Harvest System</u>	ID# 41- <u>95690</u>	WTP ID: _____	

Minimum UVT during month: 100 % Duty sensor variation from reference sensor %: 0.011%
 Minimum Validated UVT: 77.50% Min. UV Dose achieved/intended this month: 7,680 186 ^{mJ}/_{cm²}

Date	Peak Hourly Demand Flow	Minimum Intensity	All Lamps On?	Daily Water Produced {A}	Water outside Validated Conditions {B}	Cumulative % Off-Spec Water Produced
	[gpm/unit]	[mW/cm ²]	[Y or N]	[gal]	[gal]	(Mo. Sum {B}) ÷ (Mo. Sum {A}) * 100
						[%]
1	OFF					
2	OFF					
3	OFF					
4	OFF					
5	OFF					
6	OFF					
7	OFF					
8	OFF					
9	OFF					
10	OFF					
11	OFF					
12	OFF					
13	OFF					
14	OFF					
15	11.1	192	Y	542	-	
16	OFF					
17	OFF					
18	OFF					
19	OFF					
20	OFF					
21	OFF					
22	OFF					
23	OFF					
24	OFF					
25	OFF					
26	OFF					
27	OFF					
28	OFF					
Monthly Cumulative % Off-Spec Water Produced ²						

² If ≥ 5% of total water produced is off-spec., notify DWS within 24 hours.

Return by 10th of following month by email, fax or mail to:
dwp.dmce@odhsoha.oregon.gov; 971-673-0694; or Drinking Water Services, PO Box 14350, Portland, OR 97293-0350

NOTE: The hyperlinked EPA reference documents below take a while to load.

1. Minimum UVT [%] – ONLY required for calculated dose validated reactors.

UV Transmittance (UVT) is the percent transmittance of a beam of UV light as it passes through a medium over a path length of 1 cm. UVT must be monitored at least monthly to verify operation within the validated range. For as long as the UVT measurement is below the Minimum Validated UVT value, the UV unit is producing off-spec water. That off-spec volume must be calculated to the best of the operator's ability and recorded. DWS

recommends UVT be checked daily or at least multiple times in a month. {UVDGM p. 3-14 and p. 3-28}

2. Sensor Calibration Variance from Reference Sensor [%] (< 20% req'd, <10% rec'd)

The duty sensor calibration must be checked monthly against a reference sensor. The duty sensor result must be within 20% of the reference sensor's intensity reading. Otherwise, the UV unit is producing off-spec water, and that volume must be calculated to the best of the operator's ability and recorded in the appropriate column above. If the calibration is checked daily or multiple times in a month, report the maximum variance in that blank.

use sensor calibration form. { calibration procedure: [UVDGM p. 6-25](#) }

3. Peak Hourly Demand Flow [gpm/unit]

Every UV unit has an operating diagram that balances flowrate against UV intensity and UVT. Peak hourly flowrate is defined in the plan review approval letter (and in the validation verification form for the unit). There must be a flow restrictor upstream of the UV unit or the peak flowrate must be monitored closely to assure it does not exceed the approved flowrate long enough to produce more than 5% off-spec water for the month. { OAR 333-061-0036(5)(c)(D)(iii)

4. Minimum Intensity [mW/cm^2]

UV intensity is a primary measurement by which proper operation is determined, and thereby the target pathogens' log-inactivation. DWS recommends recording UV intensity at least every 4 hours.

The day's lowest reading is required above. { monitoring: [UVDGM p. 6-33. low intensity decision tree: p. 6-49](#) }

5. Minimum Dose [mJ/cm^2]

The top of Page 2 should indicate the intended minimum dose to achieve desired log inactivation. Record the daily minimum dose in the column. This parameter, while not required, can simplify identifying potential off-spec operation.

6. Cumulative % Off-Spec Water Produced [%]

This important measurement defines compliance. PWS's must monitor each reactor to assure parameters are within validated conditions. Off-spec water produced must be calculated whenever the UV reactor operates outside its operating diagram defined in the plan review letter. In addition to water produced at too low an intensity, any water produced before the unit reaches steady-state intensity reading is considered off-spec and the

volume calculated. Cumulative % off-spec water produced is calculated: { [UVDGM p. 6-31](#) }

(monthly sum of off-spec water produced)

x 100 = Cum. % Off-Spec Water

(monthly sum of daily water produced)

7. Determine how 4-log virus inactivation is achieved (on page 1).

If using chemical disinfection – as opposed to UV – to achieve required 4-log viral inactivation, use the viral CT tables for your particular disinfectant. As a common, conservative example, the required viral CT for chlorine is 12 (in cold weather). Check with your regional engineer for specific cases.

If more than one UV unit/reactor is used, input the most conservative values in the form above. If you need other consultation with this form, please call Pete Farrelly, 971.673.0462.

This form is not available from the DWS website. Work with your DWS regional staff to help with your form.