

OHA - Drinking Water Services - Turbidity Monitoring Report Form

County: Multnomah

Slow Sand, Membrane, Diatomaceous Earth Filtration, or Unfiltered Systems

Portland Water Bureau

ID #: OR 4100657


WTP-A

Month/Year: 02/2023

DAY	12 AM (NTU)	4 AM (NTU)	8 AM (NTU)	NOON (NTU)	4 PM (NTU)	8 PM (NTU)	Highest Reading (NTU)
1	0.43	0.42	0.44	0.43	0.43	0.43	0.44
2	0.45	0.42	0.42	0.42	0.42	0.43	0.45
3	0.42	0.43	0.42	0.42	0.40	0.40	0.43
4	0.39	0.40	0.39	0.39	0.40	0.39	0.40
5	0.39	0.40	0.40	0.39	0.37	0.39	0.40
6	0.39	0.38	0.38	0.38	0.35	0.36	0.39
7	0.37	0.38	0.37	0.36	0.36	0.35	0.38
8	0.36	0.34	0.35	0.35	0.60	0.34	0.60
9	0.33	0.35	0.33	0.34	0.32	0.32	0.35
10	0.32	0.32	0.32	0.32	0.32	0.33	0.33
11	0.33	0.32	0.30	0.33	0.32	0.32	0.33
12	0.30	0.30	0.30	0.30	0.33	0.31	0.33
13	0.33	0.30	0.30	0.31	0.32	0.32	0.33
14	0.32	0.30	0.30	0.30	0.30	0.29	0.32
15	0.30	0.30	0.29	0.29	0.29	0.30	0.30
16	0.29	0.30	0.30	0.30	0.33	0.30	0.33
17	0.31	0.29	0.30	0.29	0.29	0.30	0.31
18	0.30	0.29	0.29	0.29	0.29	0.28	0.30
19	0.29	0.28	0.28	0.28	0.28	0.28	0.29
20	0.28	0.27	0.27	0.27	0.27	0.27	0.28
21	0.27	0.27	0.29	0.28	0.28	0.28	0.29
22	0.29	0.29	0.29	0.29	0.29	0.28	0.29
23	0.29	0.27	0.28	0.28	0.29	0.29	0.29
24	0.35	0.29	0.30	0.29	0.30	0.29	0.35
25	0.30	0.30	0.30	0.30	0.30	0.29	0.30
26	0.30	0.29	0.29	0.29	0.29	0.29	0.30
27	0.33	0.32	0.30	0.31	0.30	0.30	0.33
28	0.30	0.30	0.30	0.30	0.28	0.28	0.30

Slow Sand/Membrane/DE Filtration/Unfiltered			Monthly summary	
95% of daily turbidity readings ≤ 1 NTU? ¹	N/A	CT's met everyday?	Chlorine residual at entry point always ≥ 0.2 mg/L?	Chlorine residual measured in 95% of distribution samples?
All daily turbidity readings ≤ 5 NTU?	Yes	Yes	Yes	Yes

¹Filtered systems only

Signature: 
 Anna Vosa, P.E.

Date: 3/6/23

OHA - Drinking Water Services

Surface Water Quality Data Conduit 2

Portland Water Bureau

ID#: OR 4100657

WTP-A

Month/Year: 02/2023

Date / Time	Peak Hourly Flow	Minimum Hourly Average Free Chlorine (C)	Contact Time (T)	Actual CT	Temp	pH	Req'd CT	CT Met?	Min. Hourly Average Total Chlorine at First User
	MGD	ppm or mg/L	min.	C x T	°C		Tables	Y/N	ppm or mg/L
1 / 13	20.77	2.23	272.1	607.0	4.3	6.57	153.7	Y	2.18
2 / 13	21.32	2.16	269.1	581.1	4.2	6.60	156.1	Y	2.12
3 / 13	21.35	2.22	269.6	597.4	4.3	6.59	155.3	Y	2.18
4 / 15	21.44	2.21	268.6	594.9	4.4	6.57	153.8	Y	2.15
5 / 18	22.57	2.21	255.8	564.3	4.3	6.56	154.0	Y	2.14
6 / 11	22.36	2.23	257.9	574.4	4.3	6.54	152.8	Y	2.17
7 / 21	22.89	2.26	252.1	570.9	4.3	6.58	156.3	Y	2.21
8 / 4	22.91	2.22	252.0	559.9	4.3	6.59	155.9	Y	2.13
9 / 2	22.08	2.22	260.0	577.9	4.4	6.59	154.5	Y	2.15
10 / 4	21.48	2.23	267.9	597.0	4.4	6.60	154.9	Y	2.16
11 / 16	21.84	2.22	263.7	586.1	4.5	6.62	154.3	Y	2.16
12 / 7	21.81	2.23	264.1	589.9	4.5	6.59	152.8	Y	2.17
13 / 21	21.85	2.23	263.7	588.2	4.5	6.63	155.1	Y	2.17
14 / 13	21.83	2.16	263.9	570.3	4.6	6.67	155.9	Y	2.09
15 / 14	21.59	2.14	265.3	567.1	4.6	6.69	156.9	Y	2.13
16 / 2	21.46	2.24	268.5	602.6	4.6	6.67	156.6	Y	2.18
17 / 13	21.40	2.24	269.0	603.4	4.6	6.67	156.0	Y	2.17
18 / 15	21.39	2.23	269.0	600.0	4.6	6.68	156.5	Y	2.15
19 / 6	21.42	2.23	268.9	598.9	4.6	6.69	156.9	Y	2.14
20 / 9	22.00	2.23	262.1	585.2	4.4	6.69	159.4	Y	2.16
21 / 11	22.55	2.17	255.8	554.0	4.7	6.71	156.7	Y	2.15
22 / 2	21.91	2.24	262.4	587.5	4.7	6.68	156.3	Y	2.19
23 / 21	21.49	2.21	267.7	592.4	4.2	6.69	163.1	Y	2.14
24 / 2	21.34	2.24	269.4	602.5	4.0	6.72	167.4	Y	2.19
25 / 23	22.65	2.25	250.0	561.7	3.8	6.71	170.1	Y	2.20
26 / 21	23.50	1.58	246.1	388.8	3.9	6.63	153.0	Y	1.58
27 / 12	23.54	2.18	245.8	535.8	3.7	6.63	165.7	Y	2.18
28 / 19	23.78	1.54	243.2	374.9	3.6	6.68	159.3	Y	2.21

Notes for Conduit 2 (C2):

February 1 to 28, 2023: Conduit 2 out of service from Headworks to Hudsons Intertie, Conduit 4 feeding Conduit 2 at Hudsons Intertie, Conduit 2 in service from Hudsons through Lusted and on to town.

Signature: Anna Vosa
 Anna Vosa, P.E., Water Quality Engineer

Date: 3/6/23

OHA - Drinking Water Services

Surface Water Quality Data Conduit 3

Portland Water Bureau

ID#: OR 4100657

WTP-A

Month/Year: 02/2023

Date / Time	Peak Hourly Flow	Minimum Hourly Average Free Chlorine (C)	Contact Time (T)	Actual CT	Temp	pH	Req'd CT	CT Met?	Min. Hourly Average Total Chlorine at First User
	MGD	ppm or mg/L	min.	C x T	°C		Tables	Y/N	ppm or mg/L
1 / 4	20.67	2.21	476.7	1052.7	4.3	6.50	149.4	Y	2.24
2 / 0	20.64	2.20	477.8	1051.7	4.2	6.52	151.7	Y	2.23
3 / 8	20.55	2.19	479.1	1049.9	4.3	6.54	151.8	Y	2.23
4 / 10	20.59	2.20	477.9	1050.0	4.4	6.54	151.1	Y	2.22
5 / 18	21.60	2.18	455.6	991.5	4.3	6.51	150.7	Y	2.20
6 / 9	21.05	2.22	468.0	1037.1	4.3	6.55	152.8	Y	2.24
7 / 22	21.48	2.22	459.2	1018.8	4.3	6.53	152.3	Y	2.25
8 / 2	21.49	2.20	458.8	1007.7	4.3	6.53	152.3	Y	2.22
9 / 0	20.93	2.18	470.9	1028.0	4.4	6.54	150.7	Y	2.22
10 / 4	20.34	2.20	483.8	1063.6	4.4	6.55	151.6	Y	2.22
11 / 13	21.20	2.17	464.8	1009.7	4.5	6.55	149.4	Y	2.20
12 / 2	21.16	2.21	465.6	1027.3	4.5	6.55	149.6	Y	2.24
13 / 18	21.18	2.21	465.1	1029.0	4.5	6.58	152.1	Y	2.25
14 / 20	21.19	2.18	465.4	1014.2	4.6	6.59	151.3	Y	2.20
15 / 0	21.13	2.13	466.4	995.4	4.6	6.58	149.9	Y	2.18
16 / 4	20.83	2.22	472.7	1050.8	4.6	6.61	152.8	Y	2.25
17 / 1	20.81	2.23	473.1	1053.0	4.6	6.60	151.7	Y	2.25
18 / 0	20.80	2.22	473.3	1050.7	4.6	6.61	151.7	Y	2.27
19 / 2	20.80	2.22	473.2	1048.6	4.6	6.61	151.6	Y	2.26
20 / 9	21.40	2.20	460.3	1014.8	4.4	6.61	154.6	Y	2.25
21 / 2	21.22	2.17	463.6	1006.3	4.7	6.61	150.8	Y	2.19
22 / 2	20.68	2.18	475.9	1038.5	4.7	6.60	150.7	Y	2.23
23 / 0	20.29	2.24	486.0	1086.7	4.2	6.61	158.7	Y	2.27
24 / 15	20.30	2.12	485.0	1026.3	4.0	6.62	159.2	Y	2.16
25 / 0	20.31	2.25	485.4	1090.1	3.8	6.63	165.5	Y	2.27
26 / 23	21.14	2.24	466.2	1045.4	3.9	6.64	164.7	Y	2.27
27 / 18	21.18	2.17	465.4	1010.6	3.7	6.64	166.8	Y	2.21
28 / 19	21.50	2.21	458.5	1012.9	3.6	6.66	169.1	Y	2.26

Notes for Conduit 3 (C3):

February 1 to 28, 2023: Conduit 3 in service from Headworks through Lusted and on to town.

Signature: Anna Vosa
 Anna Vosa, P.E., Water Quality Engineer

Date: 3/6/23

OHA - Drinking Water Services

Surface Water Quality Data Conduit 4

Portland Water Bureau

ID#: OR 4100657

WTP-A

Month/Year: 02/2023

Date / Time	Peak Hourly Flow	Minimum Hourly Average Free Chlorine (C)	Contact Time (T)	Actual CT	Temp	pH	Req'd CT	CT Met?	Min. Hourly Average Total Chlorine at First User
	MGD	ppm or mg/L	min.	C x T	°C		Tables	Y/N	ppm or mg/L
1 / 8	32.03	2.22	278.8	617.9	4.3	6.59	154.9	Y	2.13
2 / 8	32.88	2.14	275.7	590.3	4.2	6.60	155.5	Y	2.07
3 / 4	32.87	2.20	276.4	608.3	4.3	6.62	156.7	Y	2.14
4 / 19	32.92	2.20	275.6	606.1	4.4	6.62	156.1	Y	2.12
5 / 18	34.46	2.19	263.0	576.8	4.3	6.59	155.7	Y	2.11
6 / 20	34.26	2.22	264.8	586.7	4.3	6.61	156.6	Y	2.11
7 / 21	34.89	2.25	259.3	583.5	4.3	6.60	157.2	Y	2.13
8 / 5	35.00	2.21	259.0	571.7	4.3	6.62	157.5	Y	2.06
9 / 2	33.72	2.23	267.3	595.3	4.4	6.61	155.6	Y	2.12
10 / 23	33.06	2.21	274.6	607.6	4.4	6.61	155.5	Y	2.18
11 / 20	33.45	2.21	270.8	597.4	4.5	6.63	154.6	Y	2.12
12 / 2	33.46	2.22	271.1	601.3	4.5	6.62	153.9	Y	2.13
13 / 15	33.52	2.22	270.6	599.6	4.5	6.62	154.1	Y	2.14
14 / 4	33.51	2.15	270.8	582.0	4.6	6.62	152.8	Y	2.06
15 / 2	33.24	2.14	272.0	581.1	4.6	6.63	153.0	Y	2.14
16 / 6	32.93	2.23	275.5	613.5	4.6	6.63	153.7	Y	2.19
17 / 4	32.91	2.23	275.8	614.5	4.6	6.61	152.3	Y	2.18
18 / 7	32.90	2.22	275.9	611.9	4.6	6.60	151.3	Y	2.18
19 / 3	32.95	2.21	275.7	608.8	4.6	6.61	152.0	Y	2.16
20 / 9	33.67	2.22	269.3	599.0	4.4	6.62	155.5	Y	2.18
21 / 6	34.52	2.13	262.8	559.1	4.7	6.63	151.0	Y	2.08
22 / 2	33.77	2.21	268.9	595.3	4.7	6.62	152.3	Y	2.15
23 / 15	33.10	2.16	274.4	592.0	4.2	6.62	158.0	Y	2.02
24 / 19	32.72	2.21	276.7	612.5	4.0	6.64	162.3	Y	2.10
25 / 23	34.76	2.22	256.7	570.6	3.8	6.64	165.5	Y	2.10
26 / 21	35.71	2.21	253.4	559.8	3.9	6.65	164.9	Y	2.09
27 / 6	35.78	2.16	253.2	546.1	3.7	6.69	169.8	Y	2.05
28 / 19	36.16	2.22	250.4	555.0	3.6	6.67	170.0	Y	2.09

Notes for Conduit 4 (C4):

February 1 to 28, 2023: Conduit 4 in service from Headworks through Lusted and on to town. Conduit 4 feeding Conduit 2 at Hudsons Interite.

Signature: Anna Vosa
 Anna Vosa, P.E., Water Quality Engineer

Date: 3/6/23



Mingus Mapps, Commissioner
Gabriel Solmer, Administrator



1120 SW 5th Avenue, Room 600
Portland, Oregon 97204-1926
Information: 503-823-7404
www.portlandoregon.gov/water

WQ 0.10.1.1

DATE: March 9, 2023
TO: Oregon Health Authority
Drinking Water Services
FROM: Anna Vosa, P.E.
Water Quality Engineer

**SUBJECT: Monthly Report for February 2023
Surface Water Treatment Rule
PWS # OR 4100657**

This monthly report includes the following information:

Description	Number of Pages
Transmittal Memorandum	1 page
Raw water turbidity data (OHA form)	1 page
Raw water coliform data (OHA form)	1 page
CT reports for conduits 2, 3, and 4 (OHA form)	3 pages
Transmitted	Total of 6 pages, including this transmittal memo

Remarks:

Portland Water Bureau (PWB) initially disinfects using free chlorine added to three individual conduits. There are two active conduit interties (Larsons and Hudsons) between chlorination at Headworks and the secondary treatment plant (chloramination, pH and alkalinity adjustment) at Lusted Hill. This potentially divides the conduits into three segments since water can be diverted between conduits at the interties.

Per OHA request, to calculate CT for each of the three individual conduits PWB uses the daily maximum hourly average individual conduit flow rates for each conduit segment and the daily minimum hourly average free chlorine concentrations from the Lusted Inlet free chlorine analyzers.

As a result of a leak in the sample line feeding the in-line Conduit 2 inlet free chlorine analyzer at the Lusted Hill Treatment Facility, free chlorine measurements from 9 AM on February 26 through 11 AM on February 27 were not representative of the free chlorine residual in water in this conduit. As a result, February 2023 Conduit 2 CT calculations were performed using Lusted Outlet total chlorine data rather than the Lusted inlet free chlorine data during the time the Conduit 2 free chlorine analyzer data was not representative. Data review indicates that the Lusted outlet total chlorine was substantially the same as Lusted inlet free chlorine before and after this time period. Data from additional upstream and downstream Conduit 2 in-line chlorine analyzers all confirm that chlorine residual in Conduit 2 was normal during this time period.

Please contact me at 503-823-7598 if additional information is required.

OHA Drinking Water Services - Raw Coliform Data (Unfiltered)

Portland Water Bureau

ID#: OR 4100657

Month/Year: 2/2023

Date	Fecal Coliform (CFU/100mL)	Comments
2/1/2023	1	
2/2/2023	1	
2/3/2023	1	
2/4/2023	1	
2/5/2023	2	
2/6/2023	1	
2/7/2023	1	
2/8/2023	<1	
2/9/2023	<1	
2/10/2023	<1	
2/11/2023	<1	
2/12/2023	<1	
2/13/2023	1	
2/14/2023	1	
2/15/2023	1	
2/16/2023	1	
2/17/2023	<1	
2/18/2023	1	
2/19/2023	<1	
2/20/2023	1	
2/21/2023	<1	
2/22/2023	1	
2/23/2023		No sample due to snowstorm
2/24/2023	1	
2/25/2023	<1	
2/26/2023	<1	
2/27/2023	<1	
2/28/2023	<1	

Note: Fecal Coliform sampled at active Headworks Raw Water Intake (either 2P or 2PIS)

Six Month Summary:

# of Samples For Fecal Coliform:	164
# of Samples > 20 CFU/100mL:	1 (11/5/22)
Percent:	0.6%