

MONTHLY OPERATION REPORT OF THE CITY OF BENTON HARBER WATER FILTRATION PLANT
SUPPLY NAME: CITY OF BENTON HARBOR | WSSN: 0600

For the month/year of
April-22

County:
Berrien

Abul D. Ahmed
 Certified Operator

F-1
 Water Plant Classification


 Signature

Operator-in-Charge
 Title

Treatment Rate and Filter Data

1. Maximum Treatment Rate	<u>4.107</u>	million gallons per day
2. Approved Rated Plant Capacity	<u>8</u>	million gallons per day
3. Average Filter Run	<u>110.3</u>	hours
4. Average Filtration Rate	<u>0.46</u>	gallons per square ft. per minute
5. Maximum Filtration Rate	<u>2.04</u>	gallons per square ft. per minute
6. Average Wash Water Use	<u>0.01</u>	percent of treated water

Chemical Data

7. Chlorine on hand	<u>62820</u> lbs.	Est. Supply	<u>278</u> days
8. Alum (Al ³⁺) on hand	<u>69104</u> lbs.	Est. Supply	<u>253</u> days
9. Cost of All Chemicals	<u>164.08</u> dollars per million gallons		
10. Total Power Cost	<u>0.00</u> dollars per million gallons		

Remarks

	North Filter	South Filter
Number of filter confluence samples >0.3 NTU	<u>0</u>	<u>0</u>
Number of filter confluence samples collected	<u>75</u>	<u>90</u>
Percent of filter confluence samples >0.3 NTU	<u>0%</u>	<u>0%</u>
Number of filter confluence samples >1 NTU	<u>0</u>	<u>0</u>

Did any individual filter exceed:

- 1.0 NTU in two consecutive measurements taken 15 minutes apart? No
If yes, attach specific filter(s) information and indicate required follow up status.
- 0.5 NTU in two consecutive measurements taken 15 minutes apart after 4 hours of operation? No
If yes, attach specific filter(s) information and indicate required follow up status.
- 1.0 NTU in two consecutive measurements taken 15 minutes apart for 3 consecutive months? No
If yes, attach specific filter(s) information and indicate required follow up status.
- 2.0 NTU in two consecutive measurements taken 15 minutes apart for 2 consecutive months? No
If yes, attach specific filter(s) information and indicate required follow up status.
- Did plant tap disinfectant residual fall below 0.2 ppm during the month? No
If yes, indicate date(s) and duration on a separate sheet
- Was minimum C*T credit achieved for the entire month? Yes
If no, indicate on a separate sheet the date(s) not achieved
- Was continuous POE chlorine residual monitoring equipment off-line during the month? No
If yes, indicate date(s) and duration on a separate sheet
- Was continuous (every 15 minutes) filter monitoring equipment off-line during the month? No
If yes, indicate date(s) and duration on a separate sheet.

Distribution MGD

Total 28.395 **Average** 0.947 **Max** 1.255 **Min** 0.629

Comments

No fluoride was applied during the month of April 2022 due to chemical feed system issues.

DATE	Million Gallons Treated	Alum Added lbs	Alum Applied as Product mg/L <i>NSF Max 400 mg/L</i>	Alum as Al ⁺³ mg/L	Turbidity Units														
					Raw			Applied	North Filter			South Filter			No. of 2 hr Compliance periods	No. of 4 hr Compliance periods >0.3 NTU	No. of samples >0.3 NTU	Plant Tap	
					Number of Samples	Avg.	Max.	Avg.	Number of Samples	Avg.	Max.	Number of Samples	Avg.	Max.				Avg.	Max.
1	0.980	268	32.8	1.44	3	3.90	4.20	0.85	3	0.11	0.11	3	0.11	0.12	6	0	0	0.11	0.11
2	0.979	269	32.9	1.45	3	5.50	5.90	0.93	3	0.10	0.10	3	0.09	0.10	6	0	0	0.12	0.12
3	0.909	251	33.1	1.45	3	4.60	6.10	1.10	3	0.10	0.12	3	0.10	0.11	6	0	0	0.10	0.10
4	0.949	254	32.1	1.41	3	3.20	4.00	0.77	3	0.11	0.12	3	0.10	0.12	6	0	0	0.10	0.11
5	0.927	254	32.8	1.44	3	4.30	5.20	0.64	3	0.10	0.12	3	0.09	0.11	6	0	0	0.09	0.10
6	0.948	239	30.2	1.33	3	3.20	3.80	0.81	3	0.11	0.11	3	0.10	0.12	6	0	0	0.10	0.12
7	1.110	292	31.5	1.38	3	6.50	7.50	0.79	3	0.10	0.10	3	0.09	0.09	6	0	0	0.12	0.13
8	0.946	231	29.3	1.29	3	4.60	4.90	0.75	3	0.10	0.12	3	0.14	0.19	6	0	0	0.12	0.13
9	0.929	273	35.2	1.55	3	5.00	5.70	1.00	3	0.13	0.14	3	0.13	0.14	6	0	0	0.12	0.14
10	0.823	249	36.3	1.59	3	3.10	3.40	0.74	3	0.11	0.12	3	0.11	0.12	6	0	0	0.12	0.12
11	0.974	294	36.2	1.59	3	4.10	4.50	0.68	3	0.12	0.12	3	0.13	0.14	6	0	0	0.12	0.14
12	0.850	253	35.7	1.57	3	2.70	3.10	0.80	3	0.10	0.10	3	0.11	0.12	6	0	0	0.11	0.12
13	1.080	267	29.6	1.30	3	3.40	4.10	0.55	3	0.10	0.11	3	0.10	0.11	6	0	0	0.12	0.13
14	1.183	304	30.8	1.35	3	5.90	7.50	0.82	3	0.08	0.09	3	0.09	0.10	6	0	0	0.12	0.14
15	0.985	247	30.0	1.32	3	4.40	5.30	0.47	3	0.08	0.08	3	0.09	0.10	6	0	0	0.10	0.11
16	0.920	292	38.0	1.67	3	3.80	7.50	0.50	3	0.08	0.09	3	0.09	0.11	6	0	0	0.09	0.10
17	1.029	260	30.3	1.33	3	3.10	5.50	0.36	3	0.09	0.11	3	0.10	0.11	6	0	0	0.09	0.10
18	1.011	318	37.7	1.66	3	2.60	4.80	0.39	3	0.11	0.12	3	0.12	0.13	6	0	0	0.09	0.10
19	1.090	319	35.1	1.54	3	4.80	5.60	0.49	3	0.09	0.10	3	0.11	0.12	6	0	0	0.08	0.10
20	1.012	262	31.0	1.36	3	3.20	4.70	0.45	3	0.08	0.09	3	0.10	0.12	6	0	0	0.08	0.09
21	1.075	331	36.9	1.62	3	4.70	7.40	0.64	3	0.11	0.12	3	0.10	0.12	6	0	0	0.09	0.09
22	0.906	274	36.2	1.59	3	2.20	3.00	0.64				3	0.11	0.12	3	0	0	0.11	0.11
23	1.113	282	30.4	1.33	3	4.80	10.30	0.36				3	0.10	0.11	3	0	0	0.12	0.13
24	1.070	251	28.1	1.23	3	3.00	3.30	0.45				3	0.08	0.09	3	0	0	0.10	0.10
25	1.261	277	26.3	1.16	3	2.50	4.30	0.41				3	0.08	0.09	3	0	0	0.11	0.13
26	1.052	268	30.5	1.34	3	5.00	3.20	0.33				3	0.08	0.10	3	0	0	0.11	0.12
27	1.031	309	35.9	1.58	3	7.20	5.20	0.56	3	0.11	0.12	3	0.12	0.13	3	0	0	0.09	0.10
28	0.921	270	35.1	1.54	3	2.61	3.40	0.57	3	0.10	0.12	3	0.10	0.11	3	0	0	0.08	0.09
29	0.932	273	35.1	1.54	3	2.40	3.20	0.41	3	0.10	0.11	3	0.11	0.11	6	0	0	0.10	0.10
30	0.881	250	34.0	1.49	3	2.20	3.00	0.51	3	0.11	0.12	3	0.11	0.12	6	0	0	0.10	0.11
AVG	0.996			1.45	3	3.95		0.63		0.10			0.10					0.10	0.11
MAX	1.261			1.67	3	7.20	10.30	1.10		0.13	0.14		0.14	0.19				0.12	0.14
MIN	0.823			1.16	3	2.20		0.33		0.08			0.08					0.08	0.09
TOTAL	29.874	8181			90										0	0			

Date	pH		Total Hardness as CaCO ₃ mg/L		Total Alkalinity as CaCO ₃ mg/L		Non-Carb. Hardness as CaCO ₃ mg/L		Calcium as Ca ⁺⁺ mg/L		Magnesium as Mg ⁺⁺ mg/L		Chloride as Cl ⁻ mg/L		Conductivity umhos	Sulfate mg/L	CSMR
	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Tap	Tap	Tap
1	8.1	7.9	170	168	124	121	46	47	51	5	11	11		28	354	40	0.70
2	7.9	7.9	156	164	118	117	38	47	43	47	9	11		29	356	41	0.71
3	8.0	7.9	174	166	129	116	45	50	51	51	11	12		29	342	43	0.66
4	7.6	7.7	186	190	123	125	63	65	46	46	15	16		28	401	38	0.72
5	8.0	7.5	226	196	141	124	85	72	60	50	21	17		26	386	37	0.69
6	7.8	7.5	214	206	142	121	72	85	54	51	17	21	21	28	387	41	0.67
7	8.0	7.7	210	196	148	130	62	66	51	51	15	16		22	414	52	0.42
8	8.0	7.6	214	190	124	128	90	62	59	56	22	15		20	418	40	0.50
9	8.1	8.0	218	182	162	129	56	53	67	61	14	13	26	26	403	41	0.63
10	8.0	7.9	178	188	124	137	54	51	49	59	13	12		26	411	41	0.63
11	8.0	7.9	168	184	139	134	29	50	43	52	7	12	26	28	414	42	0.67
12	8.1	8.0	174	174	132	135	42	39	51	59	10	9		26	374	47	0.55
13	8.1	7.7	204	196	143	139	61	57	50	47	15	14		25	426	43	0.58
14	8.1	7.8	196	184	147	135	49	49	47	46	12	12		26	406	47	0.54
15	8.1	7.7	188	192	130	132	58	60	45	46	14	15		26	400	43	0.59
16	7.8	7.7	192	188	125	125	67	63	46	47	16	15		24	388	43	0.56
17	7.8	7.7	192	196	120	123	73	73	46	47	17	18		20	393	41	0.49
18	8.1	8.0	164	176	115	117	49	59	52	59	12	14	28	29	370	46	0.62
19	8.1	7.9	164	168	115	113	49	55	46	46	12	13		27	372	46	0.58
20	7.9	7.5	196	176	129	113	67	63	54	47	16	15		24	355	36	0.67
21	8.2	8.0	188	176	149	118	39	58	53	52	9	14		27	349	37	0.72
22	8.1	8.0	210	186	141	128	69	58	60	59	17	14		30	372	46	0.64
23	8.1	7.9	216	222	132	134	84	88	59	61	20	21		26	396	36	0.71
24	8.1	7.7	198	188	135	127	63	61	50	49	15	15		25	397	39	0.63
25	7.9	7.8	172	180	120	127	52	53	42	46	13	13		27	388	39	0.68
26	7.9	7.7	192	184	128	126	64	58	49	46	16	14		26	389	39	0.67
27	8.0	7.7	178	172	133	120	45	52	49	58	11	13	26	29	351	45	0.64
28	7.8	7.3	176	174	115	114	61	60	45.7	46.5	15	15	15	20	375	46	0.43
29	8.1	7.8	168	178	117	116	51	62	51	55	12	15		26	370	45	0.58
30	8.2	7.8	170	174	116	113	54	61	58	63	13	15		27	351	36	0.74

AVG	8.0	7.8	188	184	131	125	58	59	51	50	14	14	23	26	384	41.8667	0.62
MAX	8.2	8	226	222	162	139	90	88	67	63	22	21	28	30	426	52	0.74
MIN	7.6	7.34	156	164	115	113	29	39	42	5	7	9	15	20	342	36	0.42

Date	Number of Samples	Colilert P/A	Heterotrophic Plate Count - CFU/mL		Temperature °C	
	Tap	Tap	Raw	Tap	Raw	Tap
1	1	A	65	0	5.0	6.0
2	1	A	75	0	6.0	6.0
3	1	A	86	0	6.0	6.0
4	1	A	63	0	5.2	6.0
5	1	A	90	0	5.8	6.0
6	1	A	52	0	6.5	6.0
7	1	A	83	0	7.5	6.5
8	1	A	89	0	8.0	6.5
9	1	A	91	0	7.5	7.0
10	1	A	41	0	7.5	8.0
11	1	A	76	0	8.5	8.5
12	1	A	50	0	8.0	8.5
13	1	A	75	0	8.5	8.5
14	1	A	44	0	8.5	8.0
15	1	A	73	0	9.2	8.5
16	1	A	72	0	8.3	8.5
17	1	A	58	0	7.7	9.0
18	1	A	76	0	9.0	10.0
19	1	A	42	0	8.0	9.0
20	1	A	77	0	8.2	8.5
21	1	A	38	0	9.0	9.0
22	1	A	31	0	7.7	7.9
23	1	A	35	0	7.9	8.3
24	1	A	54	0	9.2	8.4
25	1	A	47	0	8.6	8.5
26	1	A	44	0	9.4	9.1
27	1	A	51	0	9.5	9.6
28	1	A	60	0	8.9	10.1
29	1	A	41	0	9.0	9.5
30	1	A	19	1	8.5	9.1

AVG	1		60	0	7.9	8.0
MAX	1		91	1	9.5	10.1
MIN	1		19	0	5.0	6.0

Date	Free Chlorine Residual mg/L															
	City Hall	Wolf Marine	Bait Shed	Sunny Spot	B&Z											
1																
2																
3																
4																
5																
6	1.36	1.44	0.76	0.31	0.67											
7																
8																
9																
10																
11																
12																
13	0.71	1.17	0.86	0.67	0.53											
14																
15																
16																
17																
18																
19																
20	1.32	1.40	1.43	0.63	1.13											
21																
22																
23																
24																
25																
26																
27	1.44	1.39	1.59	0.20	0.81											
28																
29																
30																

DISTRIBUTION SAMPLES BACTERIOLOGICAL SUMMARY	AVG	MAX	MIN
Chlorine Residuals, mg/L	0.99	1.59	0.20
Total Number of routine distribution samples analyzed	20		
Total number of positive routine distribution samples	0		
Total number of routine distribution samples required	10		
Total number of check samples	0		
Total number of positive check samples			

Date	Peak	Segment 2 - Flocculation (2)				Segment 3 - Sedimentation (2)			
	Low Service Flow	In Use	Residual	pH	Temp.	In Use	Residual	pH	Temp.
	gpm	%	mg/L		C	%	mg/L		C
4/1/2022	2393	100	1.87	8.0	5.0	100	1.41	8.0	5.0
4/2/2022	2368	100	1.62	7.9	6.0	100	1.14	7.9	6.0
4/3/2022	2460	100	1.86	8.0	6.0	100	0.99	8.0	6.0
4/4/2022	2377	100	2.22	7.6	5.2	100	1.58	7.6	5.2
4/5/2022	2350	100	2.03	7.7	5.8	100	1.92	7.7	5.8
4/6/2022	2519	100	1.87	7.8	6.7	100	1.33	7.8	6.7
4/7/2022	2489	100	1.86	7.7	7.3	100	1.52	7.7	7.3
4/8/2022	2350	100	1.68	7.6	8.2	100	1.39	7.6	8.2
4/9/2022	2582	100	1.70	8.0	8.6	100	0.72	8.0	8.6
4/10/2022	2508	100	1.76	7.9	8.0	100	1.15	7.9	8.0
4/11/2022	2661	100	2.11	8.0	7.5	100	1.54	8.0	7.5
4/12/2022	2524	100	2.24	8.0	8.5	100	0.99	8.0	8.5
4/13/2022	2501	100	2.72	7.7	8.5	100	1.48	7.7	8.5
4/14/2022	2426	100	2.42	7.7	8.9	100	2.15	7.7	8.9
4/15/2022	2391	100	2.48	7.9	9.2	100	2.25	7.9	9.2
4/16/2022	2470	100	1.71	7.6	9.9	100	1.57	7.6	9.9
4/17/2022	2336	100	1.59	7.7	9.0	100	1.29	7.7	9.0
4/18/2022	2852	100	1.29	8.0	8.6	100	1.15	8.0	8.6
4/19/2022	2720	100	1.61	8.0	7.9	100	1.28	8.0	7.9
4/20/2022	2648	100	1.53	7.6	8.7	100	1.13	7.6	8.7
4/21/2022	2578	100	1.19	8.0	8.5	100	0.78	8.0	8.5
4/22/2022	2373	100	1.68	8.0	8.8	100	0.57	8.0	8.8
4/23/2022	2542	100	2.02	7.9	7.9	100	1.65	7.9	7.9
4/24/2022	2437	100	2.08	7.8	9.2	100	1.65	7.8	9.2
4/25/2022	2554	100	2.06	7.9	9.6	100	1.70	7.9	9.6
4/26/2022	2344	100	1.97	7.8	9.7	100	1.93	7.8	9.7
4/27/2022	2467	100	1.90	7.9	10.5	100	1.27	7.9	10.5
4/28/2022	2433	100	1.68	7.5	8.9	100	1.42	7.5	8.9
4/29/2022	2561	100	1.99	7.9	9.6	100	1.67	7.5	9.6
4/30/2022	2744	100	1.90	7.8	9.8	100	1.76	7.8	9.8

Date	Seg2 CT-M	Seg2 CT-R	Seg2 Ratio	Seg3 CT-M	Seg3 CT-R	Seg3 Ratio	Total Ratio	Total Inact.
	mg/L-min	mg/L-min	M/R	mg/L-min	mg/L-min	M/R	M/R	Log
4/1/2022	184	42	4.4	48	40	1.2	5.6	2.8
4/2/2022	161	37	4.4	39	35	1.1	5.5	2.7
4/3/2022	178	39	4.6	33	35	0.9	5.5	2.7
4/4/2022	220	37	6.0	54	35	1.5	7.5	3.8
4/5/2022	204	36	5.6	66	36	1.8	7.5	3.7
4/6/2022	175	35	5.0	43	33	1.3	6.3	3.2
4/7/2022	176	32	5.5	49	31	1.6	7.1	3.5
4/8/2022	168	29	5.9	48	28	1.7	7.6	3.8
4/9/2022	155	32	4.8	23	28	0.8	5.6	2.8
4/10/2022	165	32	5.1	37	30	1.2	6.3	3.2
4/11/2022	187	36	5.2	47	34	1.4	6.6	3.3
4/12/2022	209	34	6.2	32	30	1.1	7.3	3.6
4/13/2022	256	31	8.2	48	29	1.7	9.9	4.9
4/14/2022	235	30	7.9	72	29	2.4	10.3	5.2
4/15/2022	244	31	7.8	76	31	2.5	10.2	5.1
4/16/2022	163	26	6.4	51	25	2.0	8.4	4.2
4/17/2022	160	28	5.8	45	27	1.7	7.4	3.7
4/18/2022	107	31	3.5	33	30	1.1	4.5	2.3
4/19/2022	139	33	4.2	38	32	1.2	5.4	2.7
4/20/2022	136	27	5.0	34	26	1.3	6.3	3.2
4/21/2022	109	31	3.6	24	29	0.9	4.4	2.2
4/22/2022	167	32	5.3	19	27	0.7	6.0	3.0
4/23/2022	187	33	5.6	52	32	1.6	7.2	3.6
4/24/2022	201	30	6.8	55	29	1.9	8.7	4.4
4/25/2022	190	30	6.4	54	29	1.9	8.2	4.1
4/26/2022	198	28	7.0	67	28	2.4	9.3	4.7
4/27/2022	181	28	6.6	42	26	1.6	8.2	4.1
4/28/2022	163	26	6.3	47	25	1.9	8.2	4.1
4/29/2022	183	30	6.2	53	25	2.1	8.3	4.1
4/30/2022	163	28	5.8	52	28	1.9	7.7	3.8

Date	Filter Number											
	1	2	3	4	5	6	7	8	9	10	11	12
1					0.03	0.04					0.03	0.03
2					0.03	0.03	0.12	0.10			0.03	0.03
3					0.09	0.12					0.03	0.03
4					0.04	0.05					0.03	0.04
5					0.03	0.03					0.03	0.03
6					0.04	0.05					0.04	0.03
7					0.04	0.04	0.08	0.07			0.03	0.03
8					0.03	0.04	0.07	0.08				
9					0.05	0.05	0.08	0.08				
10					0.05	0.04	0.06	0.05				
11					0.04	0.04	0.06	0.05				
12					0.04	0.04	0.06	0.05				
13					0.04	0.05	0.06	0.05				
14					0.03	0.04	0.04	0.03				
15					0.02	0.03	0.05	0.03				
16					0.04	0.03	0.04	0.03				
17					0.03	0.03	0.04	0.03				
18					0.03	0.03	0.04	0.03				
19					0.03	0.03	0.04	0.03				
20					0.03	0.03	0.04	0.03				
21					0.03	0.03	0.04	0.03				
22							0.04	0.03			0.06	0.07
23							0.04	0.03			0.04	0.03
24							0.04	0.03			0.04	0.04
25							0.04	0.03			0.03	0.02
26					0.04	0.05	0.10	0.02			0.03	0.02
27					0.03	0.04					0.05	0.02
28					0.03	0.04					0.04	0.02
29					0.03	0.03					0.04	0.05
30					0.03	0.03					0.03	0.02
MAX					0.09	0.12	0.12	0.10	0	0	0.06	0.07

ENTRY POINT TO THE DISTRIBUTION SYSTEM WQP

Daily Excursions	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
pH	0	1	0	0			1							0
Ortho-phosphate	0	0	0	0			0							0
# Days with Excursions (9 days allowed per 6 months)		1					1							0

EPTDS WQP Range

pH minimum of 7.2 s.u.
Ortho-phosphate minimum of 3.0 mg/L as PO₄

DISTRIBUTION WQP 10 Samples Quarterly

Daily excursions	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
pH	0	0	0	0			0							0
Ortho-phosphate	1	0	0	0			1							0
# Days with Excursions (9 days allowed per 6 months)	1						1							0

Distribution WQP Range

pH minimum of 7.2 s.u.
Ortho-phosphate minimum of 3.0 mg/L as PO₄