

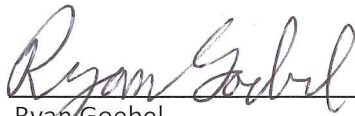
Bay Area WTP

Monthly Operations Report



November, 2022

Water Systems Serial Number: 0465


Ryan Goebel

Water Plant Superintendent
Title

F-1
Classification


Mike Wagar

Operations Supervisor
Title

F-2
Classification

Bay Area Water Treatment Plant

Monthly Operations Report

Supply Name: Bay Area Water System
 WSSN: 0465

November, 2022
 Month, Year

F-1
 Water Plant Classification

Bay
 County

Ryan Goebel
 Operator-in-charge

F-1
 Certification of Operator-in-charge

Treatment Rate and Membrane Data

Treatment Rate, Approved Rated Plant Capacity	17.4	Millions of Gallons per Day
Treatment Rate, Maximum	7.6	Millions of Gallons per Day
Maximum Approved Transmembrane Pressure	22	PSI
Maximum Operating Transmembrane Pressure	15.06	PSI
Maximum Approved Flux Rate	36.25	gpd/sq.ft.
Maximum Operating Flux Rate	27.29	gpd/sq.ft.

Chemical Data

Sodium Hypochlorite on hand:	5,720	Gallons	Estimated Supply:	57.7	days
Caustic Soda on hand:	3,695	Gallons	Estimated Supply:	253.1	days
Corrosion Inhibitor on hand:	727	Gallons	Estimated Supply:	34.2	days
Hydrofluosilicic Acid on hand:	1,086	Gallons	Estimated Supply:	61.4	days
Aluminum Chlorohydrate on hand:	753	Gallons	Estimated Supply:	84.1	days
Sulfuric Acid on hand:	680	Gallons	Estimated Supply:	340.0	days
Sodium Bisulfite on hand:	466	Gallons	Estimated Supply:	160.6	days
Citric Acid on hand:	1,053	Gallons	Estimated Supply:	84.2	days
Cost of All Chemicals per Million Gallons:	119.78	Dollars			
Estimated Electrical Cost per Million Gallons:	126.72	Dollars			
Estimated Natural Gas Cost per Million Gallons:	9.93	Dollars			

Remarks

Number of periods of filter confluence turbidity samples > 0.3 NTU	0
Percent of membrane period confluence samples > 0.3 NTU:	0.00%
Was continuous (every 15 minutes) filter monitoring equipment off-line during the month? If yes, indicate date(s), duration, and individual filter grab sampling frequency on a separate sheet.	No
Did POE disinfectant residual fall below 0.2 ppm during the month? If yes, indicate date(s) and duration on a separate sheet.	No
Was minimum C*T credit achieved for the entire month? If no, indicate on a separate sheet the date(s) not achieved.	Yes
Was continuous POE chlorine residual monitoring equipment off-line during the month? If yes, date(s) and duration will be indicated on the rule page.	No



Notes

- Odd filters out of service from Monday Nov 7 to Thursday Nov 10 for RW pipe improvements
- Even filters out of service from Monday Nov 14 to Wednesday Nov 16 for RW pipe improvements
- Clarified water sent to sewer from 10/24-11/3 in order to complete clarified pipe maintenance

Bay Area WTP Monthly Operating Report

Flows									
Date	Raw Water (MG)			Clarified (MG)	Sludge (MG)	Treated (MG)	Finished Water Pumped (MG)		
	North	South	Total	Total	Total	Total	N. Euclid	Lauria Road	Total
	FIT-1000-1	FIT-1000-2	Calculated	FIT-5520-1	FIT-5180	FIT-4000-1	FIT-4040-1	FIT-4040-2	Calculated
11/1/2022	0.00	6.92	6.92	0.00	0.25	6.74	3.32	3.15	6.47
11/2/2022	0.00	7.60	7.60	0.00	0.24	7.06	3.39	3.22	6.61
11/3/2022	0.00	8.06	8.06	0.15	0.18	7.06	3.45	3.28	6.73
11/4/2022	0.00	6.96	6.96	0.34	0.08	6.72	3.25	3.08	6.33
11/5/2022	0.00	5.94	5.94	0.32	0.08	6.55	3.26	3.07	6.33
11/6/2022	0.00	6.11	6.11	0.37	0.08	7.59	3.67	3.50	7.17
11/7/2022	0.00	7.63	7.63	0.29	0.08	6.80	3.36	3.19	6.55
11/8/2022	0.00	6.78	6.78	0.27	0.08	6.74	3.38	3.21	6.59
11/9/2022	0.00	7.40	7.40	0.24	0.08	6.88	3.32	3.15	6.47
11/10/2022	0.00	7.26	7.26	0.30	0.08	6.73	3.31	3.13	6.44
11/11/2022	0.00	6.67	6.67	0.33	0.10	6.85	3.39	3.22	6.61
11/12/2022	0.00	6.62	6.62	0.18	0.25	6.50	3.15	2.98	6.13
11/13/2022	0.00	6.76	6.76	0.17	0.25	6.79	3.35	3.18	6.53
11/14/2022	0.00	7.11	7.11	0.14	0.25	6.82	3.26	3.09	6.35
11/15/2022	0.00	6.46	6.46	0.12	0.25	6.30	3.14	2.97	6.11
11/16/2022	0.00	5.80	5.80	0.26	0.12	6.31	3.10	2.93	6.03
11/17/2022	0.00	7.11	7.11	0.30	0.08	6.51	3.18	3.01	6.19
11/18/2022	0.00	7.30	7.30	0.28	0.13	6.99	3.38	3.21	6.59
11/19/2022	0.00	6.45	6.45	0.34	0.08	6.54	3.19	3.02	6.21
11/20/2022	0.00	6.24	6.24	0.34	0.08	6.78	3.31	3.14	6.45
11/21/2022	0.00	6.89	6.89	0.34	0.08	6.65	3.26	3.09	6.35
11/22/2022	0.00	7.24	7.24	0.33	0.08	7.15	3.52	3.35	6.87
11/23/2022	0.00	7.41	7.41	0.38	0.08	7.53	3.67	3.50	7.17
11/24/2022	0.00	7.24	7.24	0.38	0.08	6.85	3.31	3.14	6.45
11/25/2022	0.00	6.48	6.48	0.32	0.08	6.58	3.19	3.02	6.21
11/26/2022	0.00	6.24	6.24	0.32	0.08	6.48	3.22	3.05	6.27
11/27/2022	0.00	6.62	6.62	0.32	0.08	6.55	3.24	3.07	6.31
11/28/2022	0.00	6.93	6.93	0.32	0.08	6.53	3.20	3.03	6.23
11/29/2022	0.00	6.61	6.61	0.33	0.08	6.29	3.04	2.87	5.91
11/30/2022	0.00	6.09	6.09	0.33	0.08	6.44	3.17	3.00	6.17
Total	0.00	204.93	204.93	8.12	3.60	202.29	98.98	93.85	192.83
Avg	0.00	6.83	6.83	0.27	0.12	6.74	3.30	3.13	6.43
Min	0.00	5.80	5.80	0.00	0.08	6.29	3.04	2.87	5.91
Max	0.00	8.06	8.06	0.38	0.25	7.59	3.67	3.50	7.17



Raw Water Analysis								
Date	Temp	pH	Turbidity		F ⁻	Free Cl	Bacti	
	Average	Average	Average	Maximum	Grab	Average	Positive/Negative	
	°C		NTU		mg/L	mg/L	Total Coliform	E. coli
	TIT-1000	AIT-1000-2	AIT-1000-1		Lab	AIT-1035-2	Lab	
11/1/2022	12.2	8.06	0.58	2.26	0.08	0.49	Negative	Negative
11/2/2022	12.1	8.07	0.48	0.71	0.08	0.41	Negative	Negative
11/3/2022	12.1	8.05	0.52	1.07	0.08	0.48	Negative	Negative
11/4/2022	12.2	8.03	0.46	0.61	0.07	0.53	Negative	Negative
11/5/2022	12.3	8.01	0.57	0.74	0.07	0.52	Negative	Negative
11/6/2022	12.1	8.00	0.53	2.83	0.07	0.51	Negative	Negative
11/7/2022	12.2	8.01	0.71	1.44	0.07	0.46	Negative	Negative
11/8/2022	12.0	8.03	0.48	1.36	0.07	0.46	Negative	Negative
11/9/2022	12.0	8.03	0.39	0.73	0.06	0.43	Negative	Negative
11/10/2022	12.0	8.03	0.99	3.54	0.09	0.37	Negative	Negative
11/11/2022	11.8	8.03	1.70	2.78	0.09	0.40	Negative	Negative
11/12/2022	11.6	8.06	0.94	1.49	0.09	0.42	Negative	Negative
11/13/2022	11.5	8.03	0.83	2.11	0.08	0.58	Negative	Negative
11/14/2022	11.1	8.05	0.58	1.31	0.09	0.56	Negative	Negative
11/15/2022	11.0	8.06	0.55	1.10	0.08	0.51	Negative	Negative
11/16/2022	10.8	8.08	0.42	0.75	0.09	0.44	Negative	Negative
11/17/2022	10.6	8.05	2.26	6.46	0.08	0.43	Negative	Negative
11/18/2022	10.1	8.06	3.82	8.20	0.07	0.38	Negative	Negative
11/19/2022	9.6	8.05	1.53	3.04	0.08	0.59	Negative	Negative
11/20/2022	9.3	8.05	0.90	1.70	0.07	0.64	Negative	Negative
11/21/2022	9.1	8.07	0.97	2.77	0.07	0.56	Negative	Negative
11/22/2022	9.1	8.08	0.60	1.88	0.06	0.52	Negative	Negative
11/23/2022	8.8	8.10	0.98	3.44	0.07	0.41	Negative	Negative
11/24/2022	8.6	8.10	0.40	0.61	0.08	0.48	Negative	Negative
11/25/2022	8.5	8.10	0.49	0.75	0.09	0.47	Negative	Negative
11/26/2022	8.4	8.10	0.52	2.07	0.08	0.48	Negative	Negative
11/27/2022	8.3	8.11	0.63	1.23	0.09	0.45	Negative	Negative
11/28/2022	8.2	8.12	0.48	0.79	0.09	0.42	Negative	Negative
11/29/2022	8.1	8.12	0.45	0.80	0.09	0.40	Negative	Negative
11/30/2022	8.0	8.13	0.62	0.89	0.09	0.36	Negative	Negative
Avg	10.4	8.06	0.85	1.98	0.08	0.47	NA	NA
Min	8.0	8.00	0.39	0.61	0.06	0.36	NA	NA
Max	12.3	8.13	3.82	8.20	0.09	0.64	NA	NA



Finished Water Analysis																		
Date	Temp	pH	Phosphate	Fluoride		Free Cl ₂	Alkalinity (as CaCO ₃)		Chloride	Sulfate	Calcium (as CaCO ₃)	Dissolved Oxygen	Conductivity	Langelier Saturation Index	Chloride: Sulfate Mass Ratio	Larson-Skold Index	Bacti	
	Average	Average	Average	Tap	Dist	Average	Carbonate	Bicarbonate	Grab	Grab	Grab	Grab	Grab				Positive/Negative	
	°C		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	uS/cm				Total Coliform	E. coli
	AIT-4040-1	AIT-4050-2	AIT-4040-5	Lab		AIT-4050-1	Lab		Lab	Lab	Lab	Lab	Lab				Calculated	
11/1/2022	12.1	7.71	3.37	0.75		1.30	0	75	10	9	74	10.7	211	-0.69	1.11	0.38	Negative	Negative
11/2/2022	12.1	7.71	3.36	0.77		1.30	0	77	9	10	74	10.9	211	-0.68	0.90	0.37	Negative	Negative
11/3/2022	12.1	7.71	3.36	0.75		1.29	0	74	11	11	70	10.0	212	-0.71	1.00	0.45	Negative	Negative
11/4/2022	12.1	7.70	3.36	0.76		1.32	0	72	11	11	72	9.9	212	-0.72	1.00	0.46	Negative	Negative
11/5/2022	12.2	7.70	3.36	0.74		1.31	0	73	11	10	74	9.7	213	-0.70	1.10	0.44	Negative	Negative
11/6/2022	12.1	7.72	3.35	0.75		1.30	0	74	11	11	74	10.3	213	-0.68	1.00	0.45	Negative	Negative
11/7/2022	12.1	7.71	3.35	0.74	0.75	1.32	0	73	11	10	71	10.2	212	-0.72	1.10	0.44	Negative	Negative
11/8/2022	11.9	7.73	3.41	0.74		1.31	0	73	11	11	74	10.4	211	-0.68	1.00	0.45	Negative	Negative
11/9/2022	11.9	7.72	3.36	0.77		1.31	0	80	10	10	72	9.8	212	-0.67	1.00	0.38	Negative	Negative
11/10/2022	12.0	7.70	3.31	0.77		1.30	0	75	10	9	74	10.7	213	-0.70	1.11	0.38	Negative	Negative
11/11/2022	11.9	7.73	3.37	0.77		1.29	0	81	12	11	78	10.5	227	-0.62	1.09	0.43	Negative	Negative
11/12/2022	11.6	7.77	3.35	0.76		1.30	0	81	13	10	74	10.5	229	-0.61	1.30	0.44	Negative	Negative
11/13/2022	11.4	7.78	3.36	0.76		1.30	0	81	12	9	78	10.8	227	-0.58	1.33	0.40	Negative	Negative
11/14/2022	11.2	7.77	3.36	0.76	0.76	1.30	0	79	12	9	78	10.6	223	-0.61	1.33	0.41	Negative	Negative
11/15/2022	10.9	7.77	3.36	0.79		1.29	0	78	11	9	76	10.0	221	-0.63	1.22	0.39	Negative	Negative
11/16/2022	10.8	7.78	3.36	0.76		1.22	0	80	10	11	76	10.5	222	-0.61	0.91	0.39	Negative	Negative
11/17/2022	10.6	7.79	3.36	0.76		1.17	0	75	10	12	78	10.3	221	-0.63	0.83	0.44	Negative	Negative
11/18/2022	10.2	7.80	3.36	0.75		1.18	0	74	11	12	74	10.4	223	-0.65	0.92	0.47	Negative	Negative
11/19/2022	9.8	7.83	3.35	0.77		1.21	0	73	11	11	72	10.7	224	-0.65	1.00	0.45	Negative	Negative
11/20/2022	9.4	7.84	3.34	0.77		1.22	0	74	11	12	70	10.8	221	-0.66	0.92	0.47	Negative	Negative
11/21/2022	9.1	7.83	3.35	0.76	0.76	1.21	0	75	11	10	76	10.6	216	-0.63	1.10	0.43	Negative	Negative
11/22/2022	9.0	7.78	3.35	0.73		1.22	0	75	11	10	72	10.6	214	-0.71	1.10	0.43	Negative	Negative
11/23/2022	8.8	7.65	3.35	0.73		1.21	0	78	10	10	70	10.2	211	-0.84	1.00	0.39	Negative	Negative
11/24/2022	8.5	7.65	3.37	0.75		1.21	0	75	9	9	74	11.6	212	-0.83	1.00	0.36	Negative	Negative
11/25/2022	8.5	7.66	3.38	0.75		1.22	0	76	9	9	74	11.8	213	-0.82	1.00	0.36	Negative	Negative
11/26/2022	8.3	7.67	3.37	0.75		1.22	0	75	10	7	76	11.7	210	-0.81	1.43	0.35	Negative	Negative
11/27/2022	8.2	7.67	3.38	0.75		1.20	0	76	10	9	74	11.8	210	-0.82	1.11	0.38	Negative	Negative
11/28/2022	8.0	7.67	3.36	0.77	0.79	1.19	0	75	10	10	72	11.6	213	-0.84	1.00	0.40	Negative	Negative
11/29/2022	7.9	7.68	3.37	0.75		1.20	0	74	10	9	74	11.5	210	-0.83	1.11	0.39	Negative	Negative
11/30/2022	7.9	7.70	3.37	0.75		1.19	0	75	10	10	74	11.9	213	-0.80	1.00	0.40	Negative	Negative
Avg	10.4	7.73	3.36	0.76	0.76	1.25	0	76	11	10	74	10.7	216	-0.70	1.07	0.41	NA	NA
Min	7.9	7.65	3.31	0.73	0.75	1.17	0	72	9	7	70	9.7	210	-0.84	0.83	0.35	NA	NA
Max	12.2	7.84	3.41	0.79	0.79	1.32	0	81	13	12	78	11.9	229	-0.58	1.43	0.47	NA	NA



Turbidity										
Date	Raw Water		Clarified Water	Membrane Feed Water	Combined Membrane Filtrate					Finished Water
	Avg	Max	Avg	Avg	Avg	Max	# Samples	# > 0.3	% Exceeded	Avg
	NTU									
	AIT-1000-1		AIT-5030-1	AIT-1035-3	AIT-4000-1					Calculated
11/1/2022	0.58	2.26	4.82	0.52	0.023	0.023	96	0	0.0	0.017
11/2/2022	0.48	0.71	3.94	0.47	0.023	0.023	96	0	0.0	0.017
11/3/2022	0.52	1.07	3.04	0.48	0.023	0.023	96	0	0.0	0.017
11/4/2022	0.46	0.61	1.06	0.47	0.023	0.023	96	0	0.0	0.017
11/5/2022	0.57	0.74	2.12	0.55	0.023	0.023	96	0	0.0	0.017
11/6/2022	0.53	2.83	3.61	0.59	0.023	0.023	96	0	0.0	0.017
11/7/2022	0.71	1.44	2.96	0.70	0.023	0.023	96	0	0.0	0.017
11/8/2022	0.48	1.36	3.72	0.62	0.023	0.023	96	0	0.0	0.017
11/9/2022	0.39	0.73	2.72	0.49	0.023	0.023	96	0	0.0	0.017
11/10/2022	0.99	3.54	2.79	0.61	0.023	0.023	96	0	0.0	0.017
11/11/2022	1.70	2.78	11.44	1.49	0.023	0.024	96	0	0.0	0.018
11/12/2022	0.94	1.49	8.64	1.53	0.024	0.024	96	0	0.0	0.018
11/13/2022	0.83	2.11	9.02	1.27	0.024	0.024	96	0	0.0	0.018
11/14/2022	0.58	1.31	5.20	0.81	0.023	0.024	96	0	0.0	0.019
11/15/2022	0.55	1.10	2.69	0.62	0.023	0.024	96	0	0.0	0.018
11/16/2022	0.42	0.75	3.63	0.62	0.024	0.024	96	0	0.0	0.018
11/17/2022	2.26	6.46	4.56	1.10	0.024	0.024	96	0	0.0	0.018
11/18/2022	3.82	8.20	7.39	2.61	0.024	0.024	96	0	0.0	0.018
11/19/2022	1.53	3.04	2.57	2.01	0.024	0.024	96	0	0.0	0.018
11/20/2022	0.90	1.70	1.63	1.51	0.024	0.024	96	0	0.0	0.018
11/21/2022	0.97	2.77	1.47	1.24	0.024	0.024	96	0	0.0	0.018
11/22/2022	0.60	1.88	1.19	0.88	0.024	0.024	96	0	0.0	0.018
11/23/2022	0.98	3.44	2.17	0.97	0.024	0.024	96	0	0.0	0.018
11/24/2022	0.40	0.61	3.05	0.69	0.024	0.024	96	0	0.0	0.018
11/25/2022	0.49	0.75	2.48	0.52	0.024	0.024	96	0	0.0	0.018
11/26/2022	0.52	2.07	3.19	0.48	0.024	0.024	96	0	0.0	0.018
11/27/2022	0.63	1.23	3.83	0.50	0.024	0.024	96	0	0.0	0.018
11/28/2022	0.48	0.79	2.96	0.47	0.024	0.024	96	0	0.0	0.018
11/29/2022	0.45	0.80	2.40	0.43	0.024	0.024	96	0	0.0	0.017
11/30/2022	0.62	0.89	2.84	0.47	0.024	0.024	96	0	0.0	0.017
Avg	0.85	1.98	3.77	0.86	0.023	0.024	96	0	0.0	0.018
Min	0.39	0.61	1.06	0.43	0.023	0.023	96	0	0.0	0.017
Max	3.82	8.20	11.44	2.61	0.024	0.024	96	0	0.0	0.019

Note: % Exceeded are 4 hr compliance periods where the average of samples are greater than 0.3 NTU



Date	Membrane LRV/Integrity/Max Turbidity																									
	Membrane 1			Membrane 2			Membrane 3			Membrane 4			Membrane 5			Membrane 6			Membrane 7			Membrane 8				
	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity	LRV	Integrity	Turbidity		
	Average	Max	Max	Average	Max	Max	Average	Max	Max	Average	Max	Max	Average	Max	Max	Average	Max	Max	Average	Max	Max	Average	Max	Max		
psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU	psi/min	Pass/Fail	NTU
11/1/2022	4.28	PASS	0.019	4.29	PASS	0.022	4.29	PASS	0.019	4.55	PASS	0.015	4.21	PASS	0.017	4.46	PASS	0.022	4.44	PASS	0.027	4.31	PASS	0.020		
11/2/2022	4.30	PASS	0.019	4.27	PASS	0.023	4.29	PASS	0.019	4.57	PASS	0.015	4.63	PASS	0.017	4.46	PASS	0.022	4.48	PASS	0.028	4.31	PASS	0.021		
11/3/2022	4.31	PASS	0.019	4.28	PASS	0.024	4.27	PASS	0.019	4.55	PASS	0.015	4.47	PASS	0.017	4.49	PASS	0.022	4.47	PASS	0.027	4.31	PASS	0.021		
11/4/2022	4.27	PASS	0.019	4.26	PASS	0.022	4.27	PASS	0.019	4.55	PASS	0.015	4.30	PASS	0.018	4.48	PASS	0.022	4.45	PASS	0.027	4.30	PASS	0.021		
11/5/2022	4.27	PASS	0.019	4.23	PASS	0.022	4.29	PASS	0.020	4.53	PASS	0.015	4.28	PASS	0.018	4.47	PASS	0.022	4.63	PASS	0.027	4.29	PASS	0.021		
11/6/2022	4.29	PASS	0.019	4.23	PASS	0.022	4.28	PASS	0.019	4.51	PASS	0.015	4.58	PASS	0.018	4.45	PASS	0.022	4.58	PASS	0.027	4.26	PASS	0.020		
11/7/2022	4.25	PASS	0.019	4.23	PASS	0.021	4.24	PASS	0.020	4.53	PASS	0.015	4.59	PASS	0.018	4.42	PASS	0.023	4.47	PASS	0.027	4.23	PASS	0.020		
11/8/2022	4.23	PASS	0.019	Out 11-7 to 11-10			4.21	PASS	0.019	Out 11-7 to 11-10			4.32	PASS	0.018	Out 11-7 to 11-10			4.38	PASS	0.027	Out 11-7 to 11-10				
11/9/2022	4.19	PASS	0.019				4.16	PASS	0.026				4.26	PASS	0.019				4.36	PASS	0.027					
11/10/2022	4.19	PASS	0.016	4.28	PASS	0.023	4.18	PASS	0.020	4.53	PASS	0.016	4.31	PASS	0.018	4.52	PASS	0.022	4.37	PASS	0.027	4.35	PASS	0.023		
11/11/2022	4.20	PASS	0.016	4.25	PASS	0.022	4.19	PASS	0.019	4.51	PASS	0.015	4.28	PASS	0.018	4.50	PASS	0.022	4.38	PASS	0.027	4.30	PASS	0.019		
11/12/2022	4.18	PASS	0.013	4.22	PASS	0.022	4.17	PASS	0.020	4.49	PASS	0.016	4.28	PASS	0.018	4.45	PASS	0.022	4.43	PASS	0.028	4.25	PASS	0.019		
11/13/2022	4.19	PASS	0.016	4.17	PASS	0.023	4.16	PASS	0.020	4.44	PASS	0.015	4.28	PASS	0.018	4.39	PASS	0.024	4.41	PASS	0.028	4.23	PASS	0.019		
11/14/2022	4.18	PASS	0.013	4.14	PASS	0.022	4.15	PASS	0.020	4.31	PASS	0.016	4.29	PASS	0.018	4.37	PASS	0.022	4.41	PASS	0.026	4.20	PASS	0.020		
11/15/2022	Out 11-14 to 11-16			4.09	PASS	0.022	Out 11-14 to 11-16			4.30	PASS	0.015	Out 11-14 to 11-16			4.32	PASS	0.022	Out 11-14 to 11-16			4.16	PASS	0.020		
11/16/2022	4.19	PASS	0.016	4.07	PASS	0.022	4.19	PASS	0.023	4.27	PASS	0.015	4.40	PASS	0.027	4.32	PASS	0.022	4.43	PASS	0.027	4.16	PASS	0.019		
11/17/2022	4.20	PASS	0.016	4.11	PASS	0.023	4.21	PASS	0.020	4.33	PASS	0.015	4.37	PASS	0.017	4.40	PASS	0.022	4.42	PASS	0.027	4.21	PASS	0.019		
11/18/2022	4.22	PASS	0.016	4.11	PASS	0.023	4.25	PASS	0.020	4.38	PASS	0.015	4.30	PASS	0.018	4.34	PASS	0.022	4.40	PASS	0.027	4.18	PASS	0.020		
11/19/2022	4.21	PASS	0.016	4.10	PASS	0.024	4.17	PASS	0.019	4.39	PASS	0.015	4.27	PASS	0.018	4.30	PASS	0.023	4.48	PASS	0.027	4.18	PASS	0.020		
11/20/2022	4.22	PASS	0.016	4.09	PASS	0.025	4.19	PASS	0.019	4.40	PASS	0.015	4.30	PASS	0.017	4.31	PASS	0.022	4.52	PASS	0.027	4.16	PASS	0.020		
11/21/2022	4.24	PASS	0.017	4.10	PASS	0.023	4.19	PASS	0.019	4.39	PASS	0.015	4.33	PASS	0.018	4.31	PASS	0.022	4.41	PASS	0.026	4.20	PASS	0.019		
11/22/2022	4.23	PASS	0.016	4.13	PASS	0.021	4.21	PASS	0.019	4.39	PASS	0.015	4.33	PASS	0.017	4.33	PASS	0.022	4.46	PASS	0.027	4.18	PASS	0.019		
11/23/2022	4.23	PASS	0.016	4.12	PASS	0.022	4.22	PASS	0.018	4.40	PASS	0.015	4.29	PASS	0.017	4.35	PASS	0.022	4.41	PASS	0.027	4.17	PASS	0.019		
11/24/2022	4.22	PASS	0.016	4.12	PASS	0.024	4.22	PASS	0.018	4.42	PASS	0.015	4.31	PASS	0.018	4.36	PASS	0.022	4.42	PASS	0.027	4.19	PASS	0.019		
11/25/2022	4.23	PASS	0.016	4.10	PASS	0.024	4.21	PASS	0.019	4.38	PASS	0.015	4.30	PASS	0.017	4.33	PASS	0.022	4.49	PASS	0.027	4.22	PASS	0.029		
11/26/2022	4.41	PASS	0.016	4.10	PASS	0.026	4.19	PASS	0.019	4.35	PASS	0.015	4.30	PASS	0.017	4.36	PASS	0.022	4.38	PASS	0.027	4.20	PASS	0.030		
11/27/2022	4.36	PASS	0.016	4.10	PASS	0.024	4.22	PASS	0.019	4.41	PASS	0.015	4.29	PASS	0.017	4.37	PASS	0.022	4.41	PASS	0.027	4.19	PASS	0.029		
11/28/2022	4.34	PASS	0.016	4.14	PASS	0.023	4.20	PASS	0.019	4.35	PASS	0.015	4.30	PASS	0.018	4.40	PASS	0.022	4.48	PASS	0.027	4.20	PASS	0.029		
11/29/2022	4.29	PASS	0.016	4.13	PASS	0.023	4.21	PASS	0.018	4.35	PASS	0.015	4.30	PASS	0.017	4.41	PASS	0.021	4.41	PASS	0.027	4.26	PASS	0.029		
11/30/2022	4.32	PASS	0.014	4.14	PASS	0.023	4.23	PASS	0.018	4.33	PASS	0.015	4.30	PASS	0.017	4.39	PASS	0.021	4.39	PASS	0.027	4.24	PASS	0.028		
Avg	4.25		0.017	4.16		0.023	4.22		0.020	4.43		0.015	4.34		0.018	4.40		0.022	4.44		0.027	4.23		0.022		
Min	4.18		0.013	4.07		0.021	4.15		0.018	4.27		0.015	4.21		0.017	4.30		0.021	4.36		0.026	4.16		0.019		
Max	4.41		0.019	4.29		0.026	4.29		0.026	4.57		0.016	4.63		0.027	4.52		0.024	4.63		0.028	4.35		0.030		

*LRV must remain above Upper Control Limit of 3.32 psi/min



Treatment Chemical Dosages											
Date	Treated Water	Sodium Hypochlorite					Phosphoric Acid		Hydroflourosilicic Acid		
		Raw Water	Membrane Feed Water	Dose pre-FW Tanks	Treated Water	Post FW Tanks	Dose pre-FW Tanks	Post FW Tanks	Raw Water	Dose pre-FW Tanks	Post FW Tanks
	Volume	Free Cl ₂					PO ₄		F		
	MG	mg/L					mg/L		mg/L		
	FIT-4000-1	AIT-1035-2	AIT-1035-4	Added	AIT-4030-1	AIT-4050-1	Added	AIT-4040-5	Lab	Added	Lab
11/1/2022	6.7	0.49	0.38	0.84	1.41	1.30	3.36	3.37	0.08	0.41	0.75
11/2/2022	7.1	0.41	0.35	0.84	1.38	1.30	3.36	3.36	0.08	0.41	0.77
11/3/2022	7.1	0.48	0.34	0.86	1.38	1.29	3.36	3.36	0.08	0.41	0.75
11/4/2022	6.7	0.53	0.38	0.84	1.40	1.32	3.36	3.36	0.07	0.41	0.76
11/5/2022	6.6	0.52	0.40	0.82	1.39	1.31	3.36	3.36	0.07	0.41	0.74
11/6/2022	7.6	0.51	0.39	0.84	1.39	1.30	3.36	3.35	0.07	0.41	0.75
11/7/2022	6.8	0.46	0.39	0.84	1.40	1.32	3.36	3.35	0.07	0.41	0.74
11/8/2022	6.7	0.46	0.37	0.87	1.41	1.31	3.34	3.41	0.07	0.41	0.74
11/9/2022	6.9	0.43	0.36	0.86	1.38	1.31	3.24	3.36	0.06	0.41	0.77
11/10/2022	6.7	0.37	0.34	0.90	1.39	1.30	3.20	3.31	0.09	0.41	0.77
11/11/2022	6.9	0.40	0.29	0.96	1.39	1.29	3.18	3.37	0.09	0.53	0.77
11/12/2022	6.5	0.42	0.29	0.96	1.41	1.30	3.18	3.35	0.09	0.60	0.76
11/13/2022	6.8	0.58	0.34	0.88	1.41	1.30	3.18	3.36	0.08	0.60	0.76
11/14/2022	6.8	0.56	0.40	0.85	1.39	1.30	3.18	3.36	0.09	0.60	0.76
11/15/2022	6.3	0.51	0.41	0.85	1.38	1.29	3.18	3.36	0.08	0.60	0.79
11/16/2022	6.3	0.44	0.37	0.80	1.26	1.22	3.18	3.36	0.09	0.60	0.76
11/17/2022	6.5	0.43	0.36	0.82	1.27	1.17	3.18	3.36	0.08	0.60	0.76
11/18/2022	7.0	0.38	0.29	0.90	1.28	1.18	3.18	3.36	0.07	0.60	0.75
11/19/2022	6.5	0.59	0.34	0.82	1.31	1.21	3.18	3.35	0.08	0.60	0.77
11/20/2022	6.8	0.64	0.42	0.75	1.31	1.22	3.18	3.34	0.07	0.60	0.77
11/21/2022	6.7	0.56	0.44	0.76	1.29	1.21	3.18	3.35	0.07	0.60	0.76
11/22/2022	7.2	0.52	0.44	0.76	1.29	1.22	3.18	3.35	0.06	0.60	0.73
11/23/2022	7.5	0.41	0.38	0.81	1.28	1.21	3.18	3.35	0.07	0.60	0.73
11/24/2022	6.8	0.48	0.38	0.81	1.28	1.21	3.18	3.37	0.08	0.60	0.75
11/25/2022	6.6	0.47	0.38	0.83	1.30	1.22	3.18	3.38	0.09	0.60	0.75
11/26/2022	6.5	0.48	0.39	0.80	1.30	1.22	3.18	3.37	0.08	0.60	0.75
11/27/2022	6.5	0.45	0.38	0.81	1.29	1.20	3.18	3.38	0.09	0.60	0.75
11/28/2022	6.5	0.42	0.36	0.85	1.28	1.19	3.18	3.36	0.09	0.60	0.77
11/29/2022	6.3	0.40	0.34	0.86	1.29	1.20	3.18	3.37	0.09	0.60	0.75
11/30/2022	6.4	0.36	0.32	0.85	1.28	1.19	3.18	3.37	0.09	0.60	0.75
Avg	6.7	0.47	0.37	0.84	1.34	1.25	3.23	3.36	0.08	0.53	0.76
Min	6.3	0.36	0.29	0.75	1.26	1.17	3.18	3.31	0.06	0.41	0.73
Max	7.6	0.64	0.44	0.96	1.41	1.32	3.36	3.41	0.09	0.60	0.79



Disinfection CT														
Date	Pipeline CT				FW Tank CT						Compliance			
	Whitestone	Travel Time	Residual	CT	FW Tank 1	FW Tank 2	Plant	Contact Time	Free Cl ₂	CT	Total CT	Temp	CT	CT
	Flow	Min	RW	Achieved	Min Level	Min Level	Flow	Min	Min	Achieved	Achieved	Avg	Required	Met
	MGD	Minutes	mg/L	mg-min/L	ft	ft	MGD	Minutes	mg/L	mg-min/L	mg-min/L	°C	mg-min/L	Y/N
	Entry	Calculated	AIT-1035-2	Calculated	LIT-4005-1	LIT-4005-2	Calculated	Calculated	Calculated	Calculated	Calculated	TIT-1000	Calculated	Calculated
11/1/2022	46.8	2,671	0.49	1313	28.7	23.2	6.5	550	1.25	689	2002	12.2	6.00	Y
11/2/2022	42.0	2,979	0.41	1234	28.7	23.0	6.6	535	1.27	682	1917	12.1	6.00	Y
11/3/2022	41.6	3,007	0.48	1453	28.3	23.2	6.7	524	1.27	664	2117	12.1	6.00	Y
11/4/2022	40.3	3,104	0.53	1644	28.7	25.7	6.3	588	1.29	758	2402	12.2	6.00	Y
11/5/2022	54.2	2,308	0.52	1201	28.6	24.8	6.3	579	1.29	746	1947	12.3	6.00	Y
11/6/2022	54.0	2,316	0.51	1176	28.6	25.2	7.2	514	1.26	649	1824	12.1	6.00	Y
11/7/2022	41.7	2,997	0.46	1384	28.6	25.2	6.6	563	1.29	725	2109	12.2	6.00	Y
11/8/2022	37.7	3,322	0.46	1523	28.7	23.5	6.6	543	1.28	696	2219	12.0	6.00	Y
11/9/2022	38.1	3,281	0.43	1411	28.6	21.2	6.5	528	1.26	665	2077	12.0	6.00	Y
11/10/2022	40.4	3,100	0.37	1132	28.6	22.7	6.4	546	1.26	689	1821	12.0	6.00	Y
11/11/2022	42.7	2,932	0.40	1173	28.7	23.7	6.6	543	1.20	651	1823	11.8	6.00	Y
11/12/2022	51.7	2,420	0.42	1014	28.7	23.7	6.1	586	1.27	743	1757	11.6	6.00	Y
11/13/2022	51.4	2,434	0.58	1413	28.7	22.6	6.5	538	1.27	686	2099	11.5	6.00	Y
11/14/2022	43.8	2,854	0.56	1600	28.7	24.2	6.3	571	1.25	712	2312	11.1	6.00	Y
11/15/2022	40.3	3,104	0.51	1592	28.6	25.3	6.1	605	1.25	758	2351	11.0	6.00	Y
11/16/2022	41.2	3,035	0.44	1335	28.7	24.8	6.0	608	1.16	708	2043	10.8	6.00	Y
11/17/2022	39.1	3,201	0.43	1372	28.7	24.1	6.2	585	1.15	673	2045	10.6	6.00	Y
11/18/2022	41.3	3,029	0.38	1147	28.8	24.2	6.6	551	1.14	626	1772	10.1	6.00	Y
11/19/2022	52.3	2,393	0.59	1409	28.7	25.2	6.2	595	1.18	705	2114	9.6	8.00	Y
11/20/2022	52.1	2,403	0.64	1545	28.7	24.7	6.5	567	1.18	672	2217	9.3	8.00	Y
11/21/2022	44.0	2,843	0.56	1578	28.7	24.7	6.4	576	1.19	687	2265	9.1	8.00	Y
11/22/2022	40.8	3,064	0.52	1589	28.4	23.0	6.9	513	1.20	615	2204	9.1	8.00	Y
11/23/2022	40.2	3,109	0.41	1282	28.8	24.2	7.2	506	1.10	554	1836	8.8	8.00	Y
11/24/2022	41.0	3,048	0.48	1459	28.6	24.4	6.5	563	1.19	670	2129	8.6	8.00	Y
11/25/2022	40.5	3,089	0.47	1459	28.7	23.9	6.2	580	1.21	700	2159	8.5	8.00	Y
11/26/2022	51.1	2,450	0.48	1176	28.6	24.6	6.3	581	1.18	685	1861	8.4	8.00	Y
11/27/2022	47.5	2,633	0.45	1188	28.6	24.0	6.3	571	1.17	668	1857	8.3	8.00	Y
11/28/2022	41.0	3,048	0.42	1271	28.7	23.9	6.2	578	1.14	661	1931	8.2	8.00	Y
11/29/2022	39.1	3,197	0.40	1286	28.7	24.4	5.9	616	1.18	726	2012	8.1	8.00	Y
11/30/2022	36.0	3,474	0.36	1261	28.7	24.9	6.2	596	1.18	702	1962	8.0	8.00	Y
Avg	43.8	2,895	0.47	1354	28.7	24.1	6.4	563	1.22	685	2039	10.4	6.80	NA
Min	36.0	2,308	0.36	1014	28.3	21.2	5.9	506	1.10	554	1757	8.0	6.00	NA
Max	54.2	3,474	0.64	1644	28.8	25.7	7.2	616	1.29	758	2402	12.3	8.00	NA



Notes:

Pipeline volume factor in SMMWSC to RW tank: 125,090 MG-min/day

Distribution System Monitoring																								
Chlorine Residual at Bacteriological Monitoring Stations (mg/L Free Cl2)																								
WSSN:	0072	0390				0400			0470					0485					0517	0518		2180		
	Akron	Bangor Twp.				Bangor Monitor Dist.			Bay City					Bay County					Beaver Rd	Beaver Twp		Essexville		
Date	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	23	24	26	29	30	32
11/1/2022									0.86	0.68	0.72	0.98	0.38	1.12	0.83									1.06
11/2/2022																								
11/3/2022				0.35	1.01	0.82	0.97		0.84	0.62	0.64	0.91	0.37	1.12	0.80									
11/4/2022																								
11/5/2022																								
11/6/2022																								
11/7/2022																								1.03
11/8/2022	0.05							0.98								0.91	0.88	0.95	0.87	0.67				
11/9/2022									0.93	0.60	0.64	0.96	0.40	1.06	0.80									
11/10/2022		0.52	0.47	0.45	1.01																	0.19		
11/11/2022																								
11/12/2022																								
11/13/2022																								
11/14/2022																								1.03
11/15/2022									0.84	0.68	0.54	0.84	0.48	1.07	0.72	0.87	0.84	0.83	0.84					
11/16/2022																								
11/17/2022		0.35	0.25	0.42	0.85				0.93	0.51	0.65	0.90	0.38	1.14	0.79						0.78			
11/18/2022																								
11/19/2022																								
11/20/2022																								
11/21/2022																								1.07
11/22/2022									0.89	0.56	0.67	0.92	0.41	1.13	0.81					0.64			0.34	
11/23/2022																								
11/24/2022																								
11/25/2022																								
11/26/2022																								
11/27/2022																								
11/28/2022																								1.01
11/29/2022									0.89	0.57	0.61	0.91	0.40	1.11	0.80									
11/30/2022																								
Average	0.05			0.57				0.92					0.76					0.83			0.78		0.27	1.04
Min	0.05			0.25				0.82					0.37					0.64			0.78		0.19	1.01
Max	0.05			1.01				0.98					1.14					0.95			0.78		0.34	1.07



MONITORING STATION ADDRESSES

- | | | |
|--|---|---|
| 1. Sample station at corner of 5758 M-25 & R | 11. Number 1 Fire Station, 1401 Center Ave | 19. Dore's M-84 Party Store, 6183 WS Saginaw Rd |
| 3. Bangor Fire Station, 3921 Wheeler | 12. Number 2 Fire Station, 1000 Fremont Ave | 20. Pump Station #13, 6000 WS Saginaw Rd |
| 4. BCDWS Admin. Bldg. 3933 Patterson Rd. | 13. Skizak's Sport Shop, 807 Salzburg Ave | 23. Rail Trail Pump Station, 366 N. Tuscola Rd. |
| 5. 7-11, 3543 S. Old Kawkawlin Rd. | 14. Number 4 Fire Station, 212 S. Dean St | 24. Little Learners Daycare, 1694 Cass Ave. |
| 6. Admiral Petroleum, 314 S Euclid Ave. | 15. Number 5 Fire Station, 1209 Smith St | 26. Wieland Contracting, 2443 S Mackinaw Rd |
| 7. Sequin Lumber, 3881 Euclid Ave | 16. Bay City Hall, 301 Washington Ave | 29. Sample Station, 2515 S. 11 Mile Rd |
| 9. B's Boutique, 2981 Midland Rd | 17. Skipper Buds Marina, 1809 S Water St | 30. Sample Station, 340 W. Beaver Rd |
| 10. Little Caesars, 3475 E North Union Rd | 18. Bay Valley Animal Hospital 6015 WS Saginaw Rd | 32. Essexville City Hall, 1107 Woodside Ave |

Distribution System Monitoring																								
Chlorine Residual at Bacteriological Monitoring Stations (mg/L Free Cl2)																								
WSSN:	2465		2960			3565			3570		4280		4440			5330		5335		5540	7125			7134
Date	Fraser Twp.		Hampton Twp.			Kawkawlin Twp.			Kawkawlin Met.		Merritt Twp.		Monitor Twp.			City Pinconning		Pinconning Twp.		Portsmouth	Williams Twp.			Wisner
	34	35	37	38	39	40	41	42	43	45	46	48	49	52	55	58	59	61	63	65	68	69	70	72
11/1/2022																								
11/2/2022																								
11/3/2022	0.51	0.91				1.14	0.88		0.85				1.01	0.53	0.77	0.44		0.91	0.66					
11/4/2022			0.57	0.64	0.52																			
11/5/2022																								
11/6/2022																								
11/7/2022																								
11/8/2022											0.56		0.94	0.67	0.77					0.17				0.31
11/9/2022																								
11/10/2022																					0.26	0.73	0.77	
11/11/2022			0.64	0.63	0.50																			
11/12/2022																								
11/13/2022																								
11/14/2022																								
11/15/2022												closed												
11/16/2022																								
11/17/2022			0.58	0.59	0.55			0.88	0.78							0.35								
11/18/2022																								
11/19/2022																								
11/20/2022																								
11/21/2022																								
11/22/2022												0.55									0.23	0.62	0.65	
11/23/2022			0.40																					
11/24/2022																								
11/25/2022																								
11/26/2022																								
11/27/2022																								
11/28/2022																								
11/29/2022																								
11/30/2022																								
Average	0.71		0.56			0.97			0.82		0.56		0.78			0.40		0.79		0.17			0.54	0.31
Min	0.51		0.40			0.88			0.78		0.55		0.53			0.35		0.66		0.17			0.23	0.31
Max	0.91		0.64			1.14			0.85		0.56		1.01			0.44		0.91		0.17			0.77	0.31

MONITORING STATION ADDRESSES

- 34. Fraser Elevated Tank, 2949 1/2 N. Huron Rd
- 35. Lloyd's Cabinet, 1947 N Huron Rd
- 37. Hampton DPW, 950 Wagner Rd.
- 38. Bay County Golf Course, 584 W Hampton Rd.
- 39. Sewer Lift Station, 902 Nebobish Rd.
- 40. Bay Co. Road Commisison, 2600 E Beaver Rd
- 41. Parish Rd. Elevated Tank, 1770 E. Parish Rd
- 42. Linwood Tile, 205 S Huron Rd

- 43. Kawkawlin Party Store, 105 Grove St
- 45. Kawkawlin Restaurant, 103 S Huron Rd
- 46. John's Bar, 1476 S Tuscola Rd
- 48. Tool Shed Bar, 12 W Munger Rd
- 49. Wilder Rd Party Store, 2951 E Wilder Rd
- 52. Monitor Twp. Elevated Tank, 1611 E. Midland Rd
- 55. Auburn Fertilizer, 4640 S 7 Mile Rd
- 58. Pinconning City Hall, 208 S Manitou St

- 59. Marathon Gas Station, 511 S Mabel St
- 61. Pinconning Meter Pit, 3005 N Huron Rd
- 63. Master Meter Pit, 2865 Pinconning Rd
- 65. Ike's Welding, 50 N Finn Rd
- 68. Williams Township Hall, 1080 W Midland Rd
- 69. Pump Station, 490 W. Salzburg & 9 Mile Rd
- 70. 11 Mile Elevated Tank, 5003 S. 11 Mile Rd
- 72. Lindy's Sales, 9051 M-25



Distribution System Bacteriological							
Water Supplier Bacteriological Analysis Report							
MICHIGAN DEPARTMENT OF PUBLIC HEALTH Bureau of Environmental Health Water Supplier Bacteriological Analysis Report				Name of Water Supply Bay Area Water Treatment Plant November, 2022			
COUNTY	COMMUNITY	WSSN NUMBER	DISTRIBUTION SYSTEM SAMPLES				
			avg free cl2 mg/L	NUMBER REQUIRED	NUMBER COLLECTED	NUMBER POSITIVE	NUMBER REPEAT SAMPLES
Tuscola	Akron	0072	0.05	1	1	0	0
BAY	Bangor Township	0390	0.57	10	10	0	0
BAY	Bangor-Monitor Dist.	0400	0.92	3	3	0	0
BAY	Bay City	0470	0.76	30	49	0	0
BAY	Bay County (Frankl./Monitor/Portsm.)	0485	0.83	9	10	0	0
BAY	Beaver Road Area	0517	0.78	1	1	0	0
BAY	Beaver Township	0518	0.27	2	2	0	0
BAY	Essexville	2180	1.04	4	5	0	0
BAY	Fraser Township	2465	0.71	2	2	0	0
BAY	Hampton Township	2960	0.56	10	10	0	0
BAY	Kawkawlin Township	3565	0.97	3	3	0	0
BAY	Kawkawlin Metro Dist.	3570	0.82	2	2	0	0
BAY	Merritt Township	4280	0.56	2	2	0	0
BAY	Monitor Township	4440	0.78	6	6	0	0
BAY	City of Pinconning	5330	0.40	2	2	0	0
BAY	Pinconning Township	5335	0.79	2	2	0	0
BAY	Portsmouth Township	5540	0.17	1	1	0	0
BAY	Williams Township	7125	0.54	6	6	0	0
Tuscola	Wisner	7134	0.31	1	1	0	0
Average Free Cl2 Residual of All Distribution Sites			0.62	mg/L			
1. Total distribution samples			118				
2. Total distribution samples with detectable free cl2 residual			118				
3. Total distribution samples with no detectable free cl2 residual			0				
4. Total distribution samples with no detectable free cl2 residual and HPC was <500			0				
5. Total distribution samples with no detectable free cl2 residual and HPC was >500			0				
6. Percent of distribution samples with no detectable free cl2 residual			0.00%				
7. Percent shown line #6 in previous monthly report			0.00%				

