

**MONTHLY OPERATION REPORT OF
WATER TREATMENT PLANT**

SUPPLY NAME: CITY OF ADRIAN
WSSN: 0040

Tim Ritchie
Operator-in-Charge

March-20
Month/Year

F-1, S-3
Certification of Operator-in-Charge

F-1
Water Plant Classification

Electronically Submitted 4/6/20
Signature of Operator-in-Charge
EGLE-DWEH-JACKSON@MICHIGAN.GOV

LENAWEE
County

Treatment Rate and Filter Data

Maximum Treatment Rate:	<u>3.063</u>	Million Gallons per Day
Rated Plant Capacity:	<u>8.0</u>	Million Gallons per Day
Average Filter Run:	<u>142.04</u>	Hours
Average Head Loss:	<u>2.1</u>	Feet
Average Filtration Rate:	<u>1.05</u>	Gallons Per Square Feet per Minute
Maximum Filtration Rate:	<u>1.34</u>	Gallons Per Square Feet per Minute
Average Wash Water Use:	<u>2.1</u>	Percent of Treated Water

Chemical Data

Sodium Hypochlorite on hand	<u>60,258</u>	lb.	Est. supply:	<u>62.4</u>	days
Ferric Sulfate on hand	<u>65,484</u>	lb.	Est. supply:	<u>58.6</u>	days
Lime (CaO) on hand	<u>50.00</u>	Tons	Est. supply:	<u>21.6</u>	days
Cost of All Chemicals per Million Gallons:	<u>\$265.28</u>	dollars			
Total Power Cost per Million Gallons:	<u>\$158.31</u>	dollars			

Remarks

Number of filter confluence samples > 0.3 NTU:	<u>0</u>
Number of filter confluence compliance samples collected:	<u>186</u>
Percent of filter confluence samples > 0.3 NTU:	<u>0</u>

Did any individual filter exceed:

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

MICHIGAN EGLE

COAGULATION PARAMETERS

WSSN 0040

MONTH/YR.

Mar-20

Date	Surface Water Mil Gals Treated	Well Water Mil Gals Treated	Total Mil Gals Treated Raw	High Service Mil Gals Pumped	Ferric Sulfate mg/L	Powdered Activated Carbon mg/L	Turbidity, Units						No. of 4 Hr. Comp Periods	No. of 4 Hr Comp Periods >0.3 NTU	No. of Samples >0.3 NTU	Plant Tap NTU	MAX Plant Tap NTU
					As Fe ₂ SO ₄	NSF 60 Max: 250	Raw		Applied	Filter Confluence							
							NSF 60 Max: 600	Avg.	Max.	Avg.	No. of Samples	Comp. Period Avg.					
1	1.200	1.481	2.681	2.583	25.8	3.9	6.2	6.6	0.4	24	0.03	0.05	6	0	0	0.04	0.05
2	1.372	1.485	2.857	2.787	24.8	2.7	6.5	7.0	1.0	24	0.03	0.05	6	0	0	0.03	0.04
3	1.475	1.588	3.063	2.844	25.9	3.7	21.1	58.6	1.3	24	0.03	0.05	6	0	0	0.03	0.04
4	1.281	1.338	2.619	2.630	24.6	3.4	63.8	105.0	1.2	22	0.04	0.06	6	0	0	0.04	0.05
5	1.320	1.312	2.632	2.615	26.4	4.5	45.3	5.9	0.8	24	0.03	0.05	6	0	0	0.04	0.05
6	1.361	1.420	2.781	2.660	26.3	3.5	34.7	39.3	0.8	24	0.04	0.06	6	0	0	0.04	0.07
7	1.174	1.333	2.507	2.464	27.9	3.7	29.2	34.8	0.8	24	0.03	0.04	6	0	0	0.03	0.03
8	1.371	1.387	2.758	2.507	26.0	3.0	20.9	28.9	0.6	23	0.03	0.05	6	0	0	0.03	0.04
9	1.344	1.426	2.770	2.675	26.2	3.3	14.6	15.5	0.7	24	0.04	0.07	6	0	0	0.05	0.06
10	1.441	1.439	2.880	2.814	25.0	3.2	10.9	12.5	0.9	24	0.04	0.06	6	0	0	0.05	0.07
11	1.227	1.440	2.667	2.603	26.0	4.6	8.9	9.2	0.9	24	0.05	0.07	6	0	0	0.04	0.06
12	1.319	1.436	2.755	2.665	26.0	6.1	8.7	8.9	0.8	24	0.05	0.07	6	0	0	0.04	0.06
13	1.481	1.417	2.898	2.667	25.2	4.8	9.9	10.1	0.9	24	0.05	0.07	6	0	0	0.05	0.07
14	1.243	1.283	2.526	2.538	26.0	5.6	9.4	10.9	0.6	24	0.04	0.05	6	0	0	0.04	0.07
15	1.188	1.399	2.587	2.509	26.6	4.2	7.8	9.3	0.6	24	0.04	0.05	6	0	0	0.04	0.05
16	1.291	1.439	2.730	2.643	25.4	3.6	8.4	9.1	0.6	24	0.04	0.05	6	0	0	0.04	0.04
17	1.420	1.476	2.896	2.674	23.9	5.7	11.0	20.3	0.4	24	0.03	0.03	6	0	0	0.03	0.04
18	1.174	1.399	2.573	2.459	25.9	5.0	5.1	5.3	1.1	24	0.02	0.03	6	0	0	0.02	0.03
19	1.127	1.400	2.527	2.585	26.4	4.7	5.4	5.5	0.5	24	0.03	0.03	6	0	0	0.03	0.06
20	1.164	1.358	2.522	2.553	26.8	4.9	15.8	34.3	0.6	24	0.04	0.05	6	0	0	0.04	0.05
21	1.162	1.278	2.440	2.344	26.3	4.8	30.1	31.8	0.8	24	0.03	0.04	6	0	0	0.03	0.05
22	1.256	1.334	2.590	2.493	25.3	5.3	32.7	36.2	0.6	24	0.03	0.03	6	0	0	0.03	0.04
23	1.275	1.323	2.598	2.427	27.2	5.5	31.0	32.3	0.9	24	0.03	0.07	6	0	0	0.03	0.04
24	1.374	1.291	2.665	2.577	25.8	5.1	23.0	27.4	0.7	24	0.04	0.07	6	0	0	0.04	0.06
25	1.258	1.269	2.527	2.453	25.9	4.9	18.7	20.6	0.7	24	0.03	0.07	6	0	0	0.04	0.07
26	1.245	1.257	2.502	2.233	24.4	4.0	13.9	15.7	0.6	24	0.03	0.06	6	0	0	0.03	0.05
27	1.248	1.264	2.512	2.455	26.3	4.1	13.1	14.0	1.0	24	0.04	0.06	6	0	0	0.03	0.05
28	1.244	1.279	2.523	2.411	25.3	5.3	12.4	13.9	1.1	24	0.03	0.06	6	0	0	0.03	0.04
29	1.205	1.305	2.510	2.397	23.6	4.9	25.8	53.9	1.0	24	0.03	0.05	6	0	0	0.03	0.05
30	1.208	1.331	2.539	2.496	26.2	6.5	53.7	56.6	1.0	24	0.03	0.05	6	0	0	0.04	0.05
31	1.191	1.331	2.522	2.411	26.2	6.0	46.2	50.3	1.0	24	0.03	0.05	6	0	0	0.03	0.04
AVG	1.279	1.372	2.650	2.554	25.8	4.5	20.8		0.8	24	0.03	0.05	6	0	0	0.04	0.05
MAX	1.481	1.588	3.063	2.844	27.9	6.5	63.8	105.0	1.3	24	0.05	0.07	6	0	0	0.05	0.07
MIN	1.127	1.257	2.440	2.233	23.6	2.7	5.1		0.4	22		0.03	6	0	0	0.02	0.03
Total	39.639	42.518	82.157	79.172									186	0	0		

MICHIGAN EGLE

FLUORIDATION AND CHLORINATION

WSSN 0040

MONTH/YR. Mar-20

DATE	Fluoride Applied as F mg/L NSF 60 Max: 6mg/L	FLUORIDE ANALYSES mg/l				APPLIED NAOCL (15.5%)		CHLORINE RESIDUAL mg/L									
		SURF.	WELL	TAP	DIST.	FILTER INFLUENT	CLEARWELL INFLUENT	FILTER INFLUENT		FILTER EFFLUENT		CLEARWELL INFLUENT		PLANT TAP		CT	
								FREE	TOTAL	FREE	TOTAL	FREE	TOTAL	FREE	TOTAL		
		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	0.30		0.65	0.65			4.9					1.8	1.8	1.7	1.8	1.60	14.91
2	0.30		0.68	0.67	0.47		4.8					1.7	1.7	1.6	1.7	1.50	14.76
3	0.40		0.56	0.77	0.60		5.3					1.6	1.7	1.7	1.7	1.40	14.62
4	0.30		0.55	0.68	0.60		5.4					1.8	1.8	1.7	1.8	1.60	15.67
5	0.30	0.43	0.58	0.63	0.63		5.3					1.7	1.9	1.6	1.7	1.50	16.61
6	0.30		0.54	0.69			5.6					1.9	1.9	1.7	1.8	1.60	13.58
7	0.30		0.56	0.55			5.3					1.8	1.9	1.7	1.8	1.60	16.06
8	0.30		0.56	0.57			5.7					1.7	1.9	1.7	1.7	1.30	13.60
9	0.20		0.54	0.50	0.55		5.8					2.0	2.2	1.8	1.9	1.70	17.43
10	0.20		0.58	0.57	0.48		5.6					2.0	2.1	1.8	1.9	1.70	16.61
11	0.20		0.74	0.56	0.50		5.3					1.9	2.0	1.8	1.9	1.70	20.76
12	0.40	0.50	0.73	0.71	0.38		5.4					2.0	2.1	1.8	1.8	1.60	17.90
13	0.30		0.71	0.64			5.5					1.6	1.6	1.7	1.8	1.60	22.78
14	0.30		0.81	0.64			5.7					1.8	1.9	1.7	1.8	1.60	22.73
15	0.30		0.79	0.71			5.8					1.6	1.6	1.7	1.7	1.60	18.55
16	0.20		0.78	0.60	0.63		5.7					1.8	1.9	1.8	1.8	1.70	18.52
17	0.20		0.81	0.57	0.57		5.4					1.8	1.9	1.8	1.9	1.70	19.07
18	0.40		0.62	0.78	0.64		5.6					2.0	2.0	1.8	1.8	1.60	21.23
19	0.30	0.49	0.72	0.67	0.69		5.0					2.0	2.0	2.1	2.2	1.80	20.77
20	0.30		0.66	0.67			4.8					2.6	3.0	2.0	2.1	1.70	19.36
21	0.30		0.67	0.63			4.3					2.1	2.3	1.8	1.9	1.60	18.23
22	0.30		0.68	0.60			4.4					1.9	2.1	1.7	1.8	1.50	18.80
23	0.30		0.67	0.58	0.59		4.7					1.9	2.2	1.7	1.8	1.50	15.33
24	0.40		0.60	0.68			4.6					1.8	2.1	1.7	1.9	1.60	17.08
25	0.40		0.58	0.64	0.60		4.8					2.1	2.4	1.9	2.0	1.50	18.80
26	0.20	0.43	0.55	0.52	0.57		4.2					1.7	2.0	1.8	1.9	1.60	21.73
27	0.40		0.63	0.55			4.6					1.9	2.2	1.7	1.8	1.60	23.62
28	0.30		0.53	0.63			4.3					2.4	2.3	1.8	1.9	1.60	21.12
29	0.30		0.58	0.43			4.2					2.8	2.7	2.0	2.0	1.70	23.00
30	0.30		0.62	0.63			3.9					2.4	2.5	1.8	1.8	1.70	21.19
31	0.50		0.54	0.75			3.9					2.3	2.4	1.6	1.7	1.40	18.09
AVG	0.31	0.46	0.64	0.63	0.57	0.0	5.0	0.0	0.0	0.0	0.0	2.0	2.1	1.8	1.8	1.60	18.72
MAX	0.50	0.50	0.81	0.78	0.69	0.0	5.8	0.0	0.0	0.0	0.0	2.8	3.0	2.1	2.2	1.80	23.62
MIN	0.20	0.43	0.53	0.43	0.38	0.0	3.9	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.7	1.30	13.58

MICHIGAN EGLE

CHEMICAL ANALYSES

WSSN 0040

MONTH /YR.

Mar-20

DATE	pH		TOTAL HARDNESS as CaCO3 mg/l		TOTAL ALKALINITY as CaCO3 mg/l		NON-CARBONATE HARDNESS as CaCO3 mg/l		CALCIUM as Ca ⁺⁺ mg/l		MAGNESIUM as Mg ⁺⁺ mg/l		CHLORIDE as Cl ⁻ mg/l		SULFATE as SO ₄ ²⁻ mg/l		SULFATE RATIO	NITRATE as N	
	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	Tap	RAW	TAP
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	41	42	43	44	45
1	7.7	9.3	344	180	273	96	71	84	278	160	66	20							
2	7.6	9.1	350	156	273	74	77	82	304	98	46	58	32.5	41.0					
3	7.7	9.1	316	178	293	78	23	100	296	96	20	82						0.50	1.80
4	7.5	9.2	364	158	241	73	123	85	328	96	36	62						0.70	1.90
5	7.5	9.1	364	152	244	78	120	74	320	118	44	34							
6	7.5	9.2	311	144	255	78	56	66	228	110	83	34							
7	7.5	9.1	330	160	256	68	74	92	242	116	88	44							
8	7.5	9.2	354	152	268	68	86	84	322	136	32	16							
9	7.4	9.1	328	150	257	69	71	84	248	114	80	36							
10	7.4	9.1	350	158	253	69	97	89	250	114	100	44							
11	7.6	9.0	336	160	266	66	70	94	254	100	82	60							
12	7.5	9.1	334	156	266	71	68	85	254	106	80	50							
13	7.5	9.1	326	144	274	76	52	68	232	96	94	48							
14	7.6	9.1	346	150	271	66	75	84	322	114	24	36							
15	7.6	9.1	360	150	270	75	90	75	340	142	20	8							
16	7.6	9.3	366	146	275	68	91	78	360	132	6	14							
17	7.6	9.2	360	176	272	84	88	92	316	140	44	36							
18	7.6	9.1	352	152	275	79	77	73	318	112	34	40							
19	7.5	9.1	352	164	260	74	92	90	328	138	24	26							
20	7.5	9.0	332	148	263	75	69	73	240	116	92	32							
21	7.5	9.0	308	160	278	74	30	86	200	108	108	52							
22	7.5	9.1	310	154	270	70	40	84	250	116	60	38							
23	7.5	9.0	322	154	252	74	70	80	232	110	90	44	28.0	37.5					
24	7.5	9.0	334	156	252	72	82	84	292	132	42	24							
25	7.5	9.0	366	148	262	67	104	81	272	124	94	24							
26	7.5	9.1	338	146	254	67	84	79	252	112	86	34							
27	7.5	9.1	336	156	261	70	75	86	242	102	94	54							
28	7.8	9.0	358	158	273	72	85	86	268	94	90	64						1.60	0.90
29	7.8	9.0	372	154	270	66	102	88	298	100	74	54						1.90	0.90
30	7.5	9.1	320	164	252	70	68	94	254	126	66	38						1.90	1.60
31	7.4	9.0	338	156	249	70	89	86	248	126	90	30						1.67	1.32
AVG	7.5	9.1	341	156	264	73	77	83	277	116	64	40	30.3	39.3	0.0	0.0	####	1.38	1.40
MAX	7.8	9.3	372	180	293	96	123	100	360	160	108	82	32.5	41.0	0.0	0.0	0.00	1.90	1.90
MIN	7.4	9.0	308	144	241	66	23	66	200	94	6	8	28.0	37.5	0.0	0.0	0.00	0.50	0.90

MICHIGAN EGLE

SOFTENING PARAMETERS

WSSN 0040

MONTH/YR. Mar-20

DATE	CHEMICAL APPLICATION mg/l				ALKALINITY as CaCO3 mg/l									STABILITY	
	LIME as CaO NSF Max. 500 mg/L	Carbon Dioxide	PHOSPHATE as ORTHO NSF Max. 27 mg/L	POTASSIUM PERMANGANATE NSF Max 176 mg/L	#1 FLOC			#2 FLOC			TAP			FREE CO2 MG/L	LANGELIER INDEX
					BI-CARBONATE	CARBONATE	HYDROXIDE	BI-CARBONATE	CARBONATE	HYDROXIDE	BI-CARBONATE	CARBONATE	HYDROXIDE		
					45	46	47	48	49	50	51	52	53	54	55
58	59														
1	274	39.0	0.30		0	49	17				53	33	0		1.3
2	308	24.7	0.30		0	66	10				55	21	0		0.8
3	328	26.8	0.34		0	55	14				56	20	0		0.8
4	316	32.9	0.31		0	48	21				51	23	0		0.9
5	303	34.0	0.32		0	55	17				61	17	0		0.9
6	309	31.6	0.34		0	53	20				55	19	0		1.0
7	309	30.3	0.29		0	51	13				52	17	0		0.8
8	311	22.7	0.33		0	45	17				48	19	0		1.0
9	309	27.5	0.34		0	48	17				50	17	0		0.8
10	308	25.1	0.33		0	47	21				50	17	0		0.8
11	338	22.9	0.32		5	60	12				49	19	0		0.7
12	348	26.1	0.30		0	57	15				55	18	0		0.8
13	335	27.3	0.27		0	54	16				53	19	0		0.8
14	343	27.8	0.31		0	56	22				49	21	0		0.8
15	525	29.9	0.29		6	54	14				55	22	0		1.0
16	430	40.0	0.28		5	48	61				45	38	0		1.4
17	226	36.6	0.28		0	54	15				55	28	0		1.1
18	231	31.8	0.32		0	54	18				49	22	0		0.9
19	229	30.0	0.29		0	59	13				52	20	0		1.0
20	236	28.9	0.29		0	50	19				51	17	0		0.8
21	222	28.5	0.30		0	45	20				53	19	0		0.8
22	218	32.1	0.31		0	49	16				52	18	0		0.9
23	226	25.3	0.33		0	47	20				47	21	0		0.8
24	216	25.1	0.30		0	48	18				47	20	0		0.8
25	219	27.5	0.28		0	50	24				48	20	0		0.8
26	201	23.4	0.29		0	53	11				47	18	0		0.9
27	214	20.4	0.30		0	57	9				51	16	0		0.8
28	230	21.2	0.28		0	54	13				50	18	0		0.7
29	245	22.2	0.31		0	51	15				48	17	0		0.7
30	237	29.6	0.30		0	48	26				46	20	0		0.9
31	233	24.6	0.29		0	51	13				49	20	0		0.8
AVG	283	28.3	0.30	0.00	1	52	18	0	0	0	51	20	0		0.9
MAX	525	40.0	0.34	0.00	6	66	61	0	0	0	61	38	0		1.4
MIN	201	20.4	0.27	0.00	0	45	9	0	0	0	45	16	0		0.7

MICHIGAN EGLE

BACTERIOLOGICAL AND PHYSICAL PARAMETERS

WSSN 0040

MO/YR

Mar-20

DATE	TOTAL COLIFORM				E.COLI			TOTAL COLIFORM				E.COLI			74
	RAW QANTI-TRAY 2000							WELL QUANTI - TRAY 2000							
	DILUTION (ML)	# OF LARGE CELLS POS.	# OF SMALL CELLS POS.	MPN	# OF LARGE CELLS POS.	# OF SMALL CELLS POS.	MPN	DILUTION (ML)	# OF LARGE CELLS POS.	# OF SMALL CELLS POS.	MPN	# OF LARGE CELLS POS.	# OF SMALL CELLS POS.	MPN	
60	61	62	63	64	65	66	67	68	69	70	71	72	73		
1	0	48	14	209.8	2	0	2.0								
2	0	42	8	104.6	1	0	1.0								
3	0	28	6	48.8	0	0	0.0								
4	0	49	48	>2419.6	6	0	9.5								
5	10	49	27	5172.0	6	0	63.0								
6	10	49	43	14136.0	11	1	13.4								
7	10	49	25	4611.0	5	3	84.0	0	0	0	0	0.0	0.0	0	
8	0	49	35	816.4	14	1	17.3								
9	10	44	11	1296.0	0	0	0.0								
10	0	49	11	214.3	3	0	3.1								
11	0	49	11	214.3	3	2	5.1								
12	0	38	10	88.6	3	0	3.1								
13	0	44	7	115.3	4	1	5.2								
14	0	44	7	115.3	3	0	3.1	0	0	0	0	0.0	0.0	0	
15	0	36	5	69.7	2	0	2.0								
16	0	32	5	57.3	1	0	1.0								
17	0	40	7	95.9	1	0	1.0								
18	0	36	2	63.7	1	0	1.0								
19	0	35	3	62.4	0	1	1.0								
20	0	37	6	75.4	3	0	3.1								
21	0	49	44	1553.1	38	8	83.9	0	0	0	0	0.0	0.0	0	
22	0	49	46	1986.3	6	9	16.0								
23	10	49	14	2481.0	9	0	98.0								
24	10	48	15	2187.0	9	0	98.0								
25	10	47	10	1607.0	2	0	20.0								
26	10	40	4	833.0	5	0	52.0								
27	10	44	10	1259.0	0	1	10.0								
28	0	49	23	410.6	12	1	14.6	0	0	0	0	0.0	0.0	0	
29	0	49	33	727.0	17	1	21.6								
30	10	49	30	6131.0	10	0	110.0								
31	10	49	31	6488.0	14	1	173.0								
AVG		44	18	1774.3	6	1	29.5	0		0	0.0	0	0	0	0
MAX		49	48	14136.0	38	9	173.0	0	0	0	0.0	0	0	0	0
MIN		28	2	48.8	0	0	0.0	0	0	0	0.0	0	0	0	0

Failure to complete this form is a violation of Act 399, P.A. 1976 and is subject to penalties as outlined in the act.

MICHIGAN EGLE

BACTERIOLOGICAL AND PHYSICAL PARAMETERS

WSSN 0040

MO/YR

Mar-20

DATE	PLANT TAP		STANDARD PLATE COUNT MPN		TEMPERATURE-(C)		COLOR TRUE <input checked="" type="checkbox"/> APPARENT <input type="checkbox"/>									
	# OF SAMPLES	P/A														TAP
			75	76	77	78	79	80								81
	1	1	A	0	0	11.2	10.5									
2	1	A	0	0	11.6	10.5	0	0								
3	1	A	0	0	10.2	8.8										
4	1	A	0	0	10.5	8.8	451	0								
5	1	A	0	0	10.3	8.6										
6	1	A	0	0	10.5	9.0										
7	1	A	0	1	10.7	8.9										
8	1	A	0	0	10.5	9.0										
9	1	A	0	0	10.8	9.2	134	0								
10	1	A	0	0	11.0	9.3										
11	1	A	0	0	12.5	11.2										
12	1	A	0	0	12.6	11.8										
13	1	A	0	0	11.7	10.9										
14	1	A	0	0	12.1	11.1										
15	1	A	0	0	12.4	10.7										
16	1	A	0	0	12.0	10.8	73	0								
17	1	A	0	0	11.9	10.5										
18	1	A	0	0	12.0	11.0										
19	1	A	0	0	11.2	10.8										
20	1	A	0	0	11.8	11.0										
21	1	A	0	0	11.9	12.0										
22	1	A	0	0	11.9	11.2										
23	1	A	0	0	11.8	10.7	281	0								
24	1	A	0	0	13.0	10.8										
25	1	A	0	0	12.1	11.6										
26	1	A	0	0	12.5	11.8										
27	1	A	0	0	13.0	12.5										
28	1	A	0	0	13.0	12.4										
29	1	A	0	0	13.3	12.8										
30	1	A	0	0	14.1	12.4	440	0								
31	1	A	0	0	12.2	11.4										
AVG	1		0	0	11.8	10.7	229.8	0.0								
MAX	1	0	0	1	14.1	12.8	451.0	0.0								
MIN	1	0	0	0	10.2	8.6	0.0	0.0								

MICHIGAN EGLE

DISTRIBUTION SYSTEM MONITORING

WSSN 0040

MONTH/YR. Mar-20

DATE	CHLORINE RESIDUAL AT BACTERIOLOGICAL MONITORING STATIONS mg/l																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1		1.7																													
2			1.8						2.2							2.2										1.3					
3				1.6															2.1								1.5				
4			1.8						2.2								2.2										1.7				
5		2.1								1.2									2.1							1.7					
6		1.9																													
7											1.0																				
8				1.7												2.0															
9			1.9									2.0																			
10					1.3																										

DISTRIBUTION SAMPLE SUMMARY

Total number of routine distribution samples analyzed 25
 Total number of routine distribution samples required 25

DISTRIBUTION BACTERIOLOGICAL SUMMARY

Total number of positive routine distribution samples 0
 Total number of positive repeat distribution samples 0

DISTRIBUTION FREE CHLORINE RESIDUAL SUMMARY

Percent samples with a detectable free chlorine residual 100%
 Average free chlorine residual this month 1.8

Positive Routine Distribution Samples				Check Samples			
DATE	Total Col.	E. Coli	DATE	Total Col.	E. Coli	CL2	

BLUE GREEN ALGAE & PHYSICAL PARAMETERS

LAKE ADRIAN

WSSN 0040

DATE MO/YR

Mar-20

DATE	pH				TEMPERATURE				CONDUCTIVITY				CHLOROPHYLL-a				PHYCOCYANIN			
	MAX				MAX				MAX				MAX				MAX			
1	8.5				37.2				648.0				74.2				63.8			
2	8.4				37.2				653.0				106.0				72.2			
3	8.4				37.2				653.0				82.4				64.5			
4	8.1				50.3				869.0				28.7				111.0			
5	8.0				38.0				425.0				23.9				64.0			
6	7.9				38.1				456.0				14.3				64.5			
7	8.0				38.5				477.0				14.3				66.5			
8	8.1				39.7				512.0				17.5				72.1			
9	8.1				42.0				514.0				29.1				85.5			
10	8.2				44.4				550.0				20.1				82.6			
11	8.2				44.8				560.0				30.5				88.6			
12	8.2				44.5				566.0				24.6				81.3			
13	8.3				45.3				575.0				37.5				89.8			
14	8.3				44.9				574.0				24.1				82.0			
15	8.2				44.0				581.0				21.0				79.9			
16	8.3				43.3				605.0				17.3				76.9			
17	8.3				44.3				602.0				24.5				79.0			
18	8.3				43.6				603.8				21.2				78.5			
19	8.3				43.7				607.0				23.6				79.2			
20	8.2				44.9				537.2				20.2				81.0			
21	8.1				44.1				521.0				20.3				80.3			
22	8.1				42.9				509.0				19.5				78.5			
23	8.1				43.7				515.0				28.5				86.6			
24	8.2				42.7				546.0				19.4				77.6			
25	8.1				43.9				547.0				30.7				85.5			
26	8.3				45.7				557.0				21.7				86.8			
27	8.2				45.5				563.0				20.2				83.2			
28	8.3				46.2				570.0				20.8				84.1			
29	8.2				47.2				564.0				20.7				86.9			
30	8.0				47.1				447.0				17.4				85.8			
31	8.9				49.7				455.0				26.4				103.0			
AVG	8.2	0.0	0.0	0.0	43.4	0.0	0.0	0.0	560.1	0.0	0.0	0.0	29.1	0.0	0.0	0.0	80.7	0.0	0.0	0.0
MAX	8.9	0.0	0.0	0.0	50.3	0.0	0.0	0.0	869.0	0.0	0.0	0.0	106.0	0.0	0.0	0.0	111.0	0.0	0.0	0.0
MIN	7.9	0.0	0.0	0.0	37.2	0.0	0.0	0.0	425.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	63.8	0.0	0.0	0.0

ALGAL TOXIN & COMPOUNDS

WSSN 0040

MO/YR Mar-20

DATE	ADDA-ELISA MICROCYSTIN ug/L*		LC-MS TOTAL MICROCYSTIN ng/L		LC-MS NODULARIN ng/L		LC-MS ANATOXIN-a ng/L		GEOSMIN ng/L			MIB ng/L		
	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	RAW	BLENDED	TAP	RAW	BLENDED	TAP
1														
2									3.6	1.3	1.5	4.7	1.4	1.5
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
AVG	0.000	0.000	0.0	0.0	0.0	0.0	0.000	0.000	3.6	1.3	1.5	4.7	1.4	1.5
MAX	0.000	0.000	0.0	0.0	0.0	0.0	0.000	0.000	3.6	1.3	1.5	4.7	1.4	1.5
MIN	0.000	0.000	0.0	0.0	0.0	0.0	0.000	0.000	3.6	1.3	1.5	4.7	1.4	1.5

<0.3 = non-detect*

qPCR MONITORING

WSSN 0040

MO/YR Mar-20

qPCR GENE COPIES/uL RAW					qPCR COPIES/uL BLENDED					
DATE	CYANO-BACTERIA TOTAL	MICROCYSTIN /NODULARIN	CYLINDRO-SPERMOP-SIN	SAXITOXIN	CYANO-BACTERIA TOTAL	MICROCYSTIN /NODULARIN	CYLINDRO-SPERMOP-SIN	SAXITOXIN		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
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20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
AVG	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000		
MAX	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000		
MIN	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000		