



WATER OPERATING SERVICES
 WATER QUALITY
 10100 EAST JEFFERSON AVENUE
 DETROIT, MICHIGAN 48214
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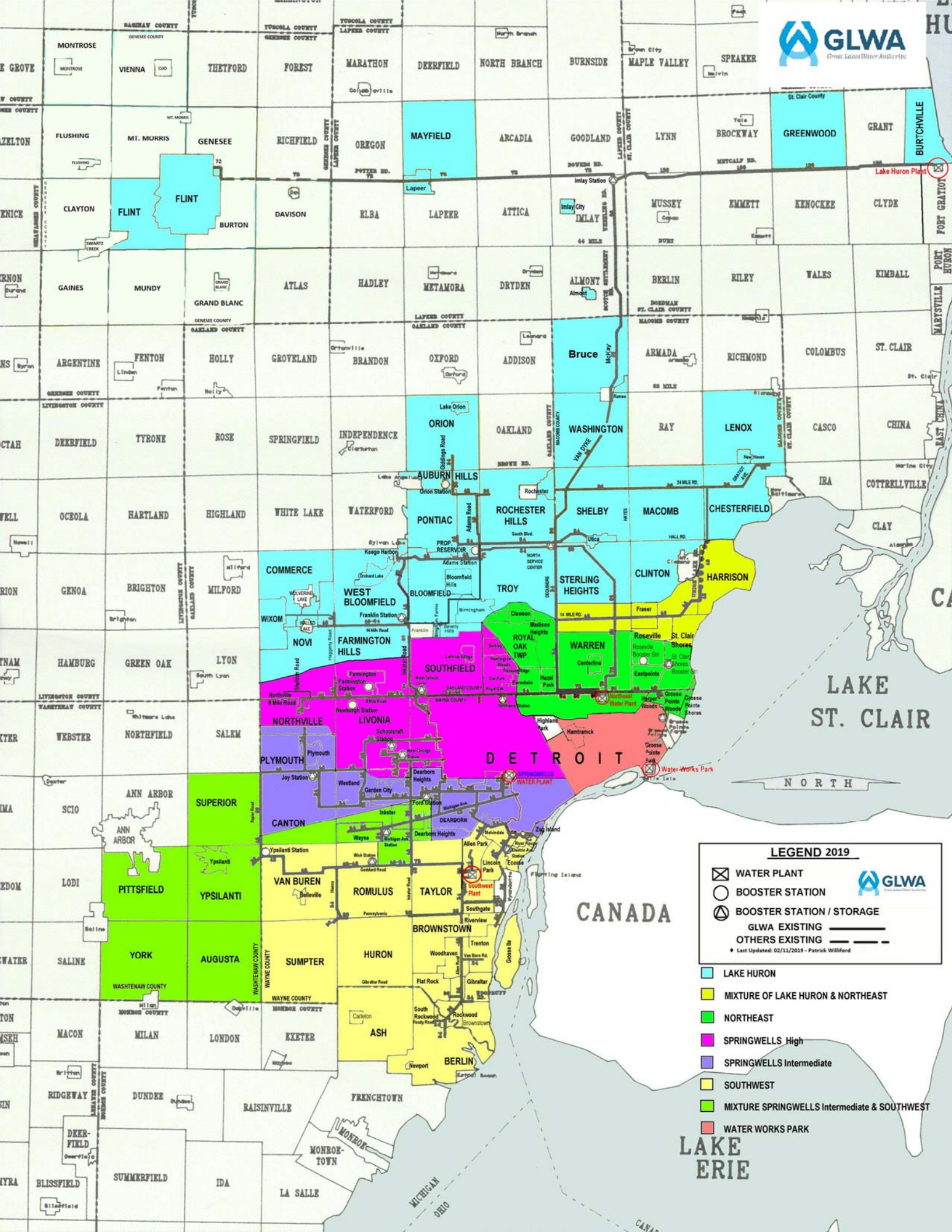
GLWA Water Treatment Plants' - Mineral Reports

Parameter	Formula	Units	Sample Dates: 10/09/2018		10/09/2018		10/09/2018		10/09/2018		10/09/2018		MCL	Sec.Std	RL/MDL		
			Lake Huron		Southwest		Belle Isle		Water Works Park		Northeast					Springwells	
			Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap				Raw	Tap
Turbidity		NTU	0.51	0.07	2.10	0.05	5.10	0.05	0.07	0.12	0.3/95% (1)						
Total Solids		mg/L	112	119	119	131	104	121	130	141			500	10			
Total Dissolved Solids		mg/L	76	97	160	123	124	129	133	130			500	10			
Aluminum	Al	mg/L	0.014	0.138	AE	0.060	AE	0.064	0.081	0.058			0.05-0.2	0.005			
Iron	Fe	mg/L	0.060	0.063	0.309	0.066	0.171	0.046	0.069	0.073			0.3	0.005			
Copper	Cu	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.3 (AL)		1.0	0.005			
Magnesium	Mg	mg/L	7.85	7.98	8.78	8.60	8.03	8.10	8.35	8.05				0.5			
Calcium	Ca	mg/L	28.0	28.0	25.5	29.6	24.9	28.8	28.6	28.6				0.1			
Sodium	Na	mg/L	5.31	5.43	AE	5.81	AE	5.58	7.19	7.24			20 (2)	0.1			
Potassium	K	mg/L	1.06	1.06	1.30	1.14	1.18	1.09	1.11	1.11				0.1			
Manganese	Mn	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002			0.05	0.002			
Lead	Pb	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.015 (AL)			0.001			
Zinc	Zn	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			5	0.1			
Silica	SiO ₂	mg/L	1.9	2.2	2.1	2.3	2.1	2.3	2.4	2.3				0.4			
Sulfate	SO ₄ ²⁻	mg/L	15.9	18.0	16.8	21.9	15.9	21.3	23.8	27.5			250				
Chloride	Cl ⁻	mg/L	7.4	9.6	8.0	9.9	8.0	9.3	9.6	9.6			250	5			
Phosphorus	P	mg/L	< 0.05	0.39	< 0.05	0.26	< 0.05	0.34	0.49	0.49				0.05			
Free Carbon Dioxide	CO ₂	mg/L	1.0	4.7	1.2	8.6	1.4	7.0	7.6	11.8							
Total Hardness (3), (4), (5)		mg/L	98	98	98	100	99	99	100	99							
Total Alkalinity (3)		mg/L	80	74	84	73	82	72	73	80							
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0							
Bi-Carbonate Alkalinity (3)		mg/L	79	74	83	73	81	72	73	80							
Non-Carbonate Hardness (3)		mg/L	18	24	14	27	17	27	27	19							
Chemical Oxygen Demand		mg/L	AE	AE	AE	AE	AE	AE	AE	AE				2			
Dissolved Oxygen		mg/L	7.9	8.4	7.8	7.9	8.7	10.5	8.3	8.8							
Nitrite Nitrogen	NO ₂ ⁻ - N	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1			0.1			
Nitrate Nitrogen	NO ₃ ⁻ - N	mg/L	AE	AE	AE	AE	AE	AE	AE	AE	10			0.1			
Fluoride	F ⁻	mg/L	0.16	0.69	0.19	0.78	0.14	0.76	0.72	0.72	4.0		2.0	0.5			
pH			8.20	7.50	8.13	7.23	8.07	7.31	7.28	7.13			6.5-8.5				
Specific Conductance @ 25 °C.		micromhos	210	215	215	219	213	215	222	224							
Temperature		°C	12.8	16.9	17.5	18.1	16.3	17.5	18.0	19.0							




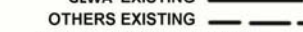
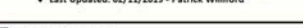
Legend MCL: Maximum Contaminant Level Sec.Std: Secondary Standard NTU: Nephelometric Turbidity Unit mg/L: Milligram Per Liter AL: Action Level MDL: Method Detection Limit < : Less than AE: Analytical Error IV: Invalid Sample	Notes: (1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU (2) EPA Guidance Level (3) As Calcium Carbonate mg/L is equivalent to part per million (ppm) (4) By Titration (5) Hardness in Grains per Gallon = 0.058 x (Hardness in mg/L) (6) Reported results are below the low calibration standard but above the instrument detection limit.
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Reporting Analyst: **Levoska & Khan** Chemist
 Reviewed By: **Williford** Management Professional - Operations



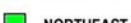


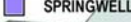
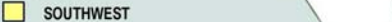
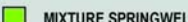
Great Lakes Water Authority



LEGEND 2019

-  WATER PLANT
-  BOOSTER STATION
-  BOOSTER STATION / STORAGE
-  GLWA EXISTING
-  OTHERS EXISTING

◆ Last Updated: 02/11/2019 - Patrick Williford

-  LAKE HURON
-  MIXTURE OF LAKE HURON & NORTHEAST
-  NORTHEAST
-  SPRINGWELLS High
-  SPRINGWELLS Intermediate
-  SOUTHWEST
-  MIXTURE SPRINGWELLS Intermediate & SOUTHWEST
-  WATER WORKS PARK

LAKE ERIE

MICHIGAN OHIO

