



WATER OPERATING SERVICES
 WATER QUALITY
 10100 EAST JEFFERSON AVENUE
 DETROIT, MICHIGAN 48214
 PHONE: 313-926-8102 / 313-926-8127

GLWA Water Treatment Plants - Mineral Reports

Sample Dates: 06/13/2017 06/13/2017 06/13/2017 06/13/2017 06/13/2017 06/13/2017 06/13/2017 06/13/2017

Lake Huron Southwest Belle Isle Water Works Park Northeast Springwells

| Parameter | Formula | Units | Lake Huron | | Southwest | | Belle Isle | | Water Works Park | | Northeast | | MCL | Sec.Std | MDL |
|-------------------------------|----------------------------------|-----------|------------|---------|-----------|---------|------------|---------|------------------|---------|------------|-------------|----------|---------|-----|
| | | | Raw | Tap | Raw | Tap | Raw | Tap | Raw | Tap | Raw | Tap | | | |
| Turbidity | | NTU | 0.44 | 0.05 | 4.30 | 0.04 | 4.80 | 0.07 | 0.07 | 0.07 | 0.03 | 0.3/95% (1) | | | |
| Total Solids | | mg/L | 135 | 145 | 149 | 148 | 86 | 146 | 144 | 142 | | | 500 | 10 | |
| Total Dissolved Solids | | mg/L | 115 | 125 | 116 | 125 | 119 | 113 | 109 | 134 | | | 500 | 10 | |
| Aluminum | Al | mg/L | 0.009 | 0.043 | 0.286 | 0.059 | 0.199 | 0.066 | 0.032 | 0.014 | | | 0.05-0.2 | 0.005 | |
| Iron | Fe | mg/L | 0.005 | < 0.050 | 0.577 | < 0.050 | 0.343 | < 0.050 | < 0.050 | 0.005 | | | 0.3 | 0.005 | |
| Copper | Cu | mg/L | 0.026 | 0.016 | 0.033 | 0.014 | 0.010 | 0.014 | 0.015 | 0.023 | 1.3 (AL) | | 1.0 | 0.002 | |
| Magnesium | Mg | mg/L | 8.75 | 9.45 | 10.98 | 10.40 | 9.58 | 8.93 | 8.90 | 8.83 | | | | 0.5 | |
| Calcium | Ca | mg/L | 24.1 | 23.3 | 26.9 | 24.6 | 24.8 | 24.9 | 23.5 | 24.4 | | | | 0.1 | |
| Sodium | Na | mg/L | 5.18 | 5.08 | 5.04 | 5.12 | 5.12 | 5.14 | 5.14 | 5.19 | | | 20 (2) | 0.1 | |
| Potassium | K | mg/L | 0.97 | 0.97 | 0.98 | 0.98 | 0.98 | 0.97 | 0.95 | 0.97 | | | | 0.1 | |
| Manganese | Mn | mg/L | < 0.002 | < 0.002 | 0.021 | < 0.002 | 0.013 | < 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 | 0.8 | 0.8 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.7 | | | | 0.4 | |
| Sulfate | SO ₄ ²⁻ | mg/L | 18.4 | 21.1 | 18.8 | 25.2 | 18.1 | 24.5 | 25.8 | 25.0 | | | 250 | | |
| Chloride | Cl ⁻ | mg/L | 8.6 | 10.5 | 8.6 | 10.5 | 8.6 | 11.1 | 11.1 | 11.1 | | | 250 | 5 | |
| Phosphorus | P | mg/L | < 0.05 | 0.34 | < 0.05 | 0.29 | < 0.05 | 0.30 | 0.29 | 0.63 | | | | 0.05 | |
| Free Carbon Dioxide | CO ₂ | mg/L | 0.8 | 0.9 | 0.8 | 1.1 | 4.6 | 1.3 | 1.0 | 1.0 | | | | | |
| Total Hardness (3), (4), (5) | | mg/L | 106 | 102 | 100 | 110 | 100 | 100 | 116 | 100 | | | | | |
| Total Alkalinity (3) | | mg/L | 86 | 82 | 88 | 86 | 84 | 76 | 84 | 80 | | | | | |
| Carbonate Alkalinity (3) | | mg/L | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Bi-Carbonate Alkalinity (3) | | mg/L | 86 | 82 | 88 | 86 | 84 | 76 | 84 | 80 | | | | | |
| Non-Carbonate Hardness (3) | | mg/L | 20 | 20 | 12 | 24 | 16 | 24 | 32 | 20 | | | | | |
| Chemical Oxygen Demand | | mg/L | 2.0 | 2.8 | 4.0 | 4.0 | 4.0 | 4.8 | 3.2 | < 2.0 | | | | 2 | |
| Dissolved Oxygen | | mg/L | 10.6 | 10.6 | 9.4 | 4.2 | 9.1 | 9.8 | 9.0 | 10.2 | | | | | |
| 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 | 0.34 | 0.38 | 0.43 | 0.42 | 0.40 | 0.38 | 0.40 | 0.38 | | | 10 | 0.1 | |
| Fluoride | F ⁻ | mg/L | 0.09 | 0.72 | 0.10 | 0.67 | 0.09 | 0.61 | 0.64 | 0.61 | | | 4.0 | 2.0 | 0.5 |
| pH | | | 8.32 | 8.27 | 8.34 | 8.20 | 7.56 | 8.07 | 8.20 | 8.18 | | | | 6.5-8.5 | |
| Specific Conductance @ 25 °C. | | micromhos | 233 | 234 | 234 | 242 | 234 | 219 | 240 | 243 | | | | | |
| Temperature | | °C | 10.1 | 17.2 | 20.2 | 19.8 | 21.8 | 20.4 | 23.0 | 21.0 | | | | | |

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

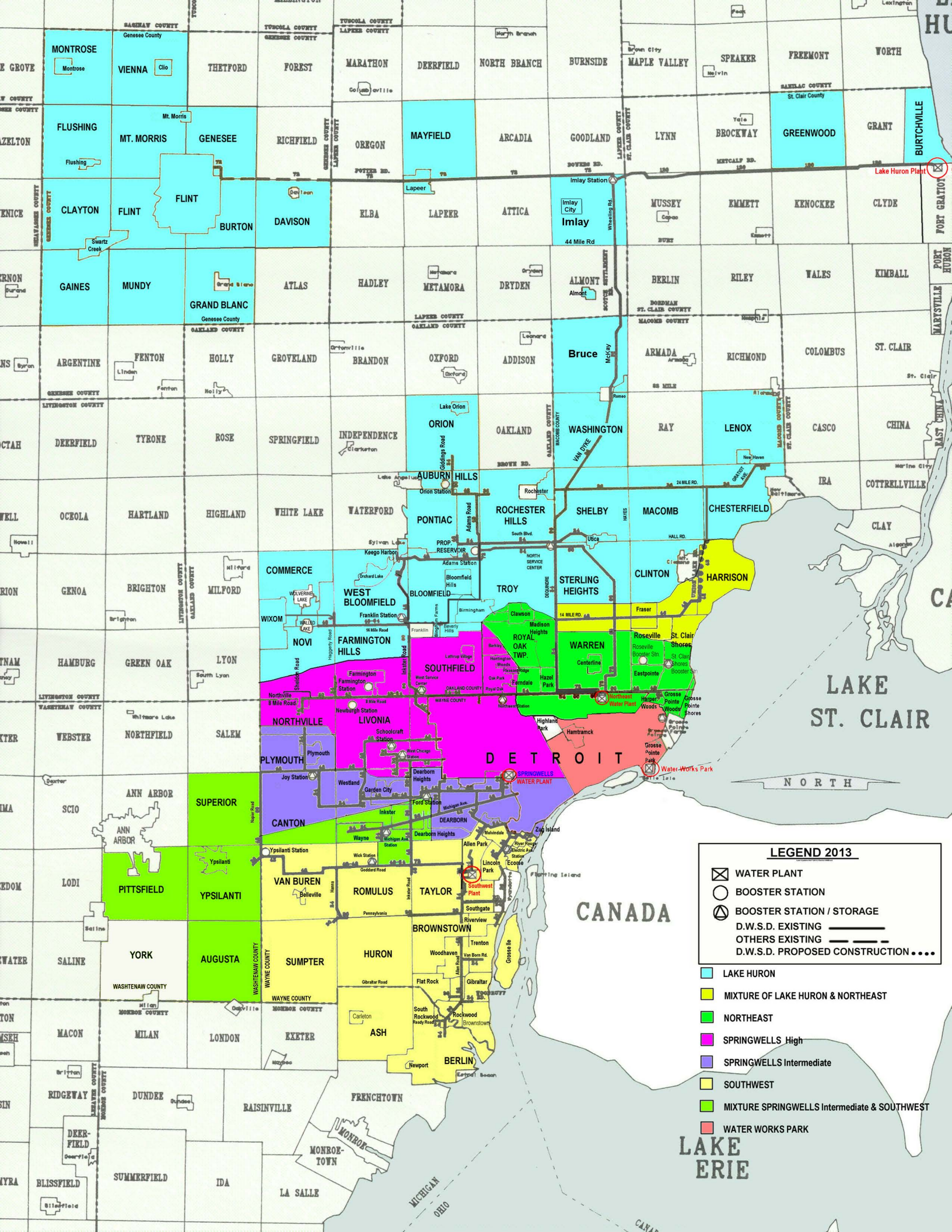
Analysts: Brown & Raupach
 Reviewed By: Patrick Williford

Chemist-I
 Management Professional - Ops.

Initials: **B. B. & K.R.**
 Initials: **P. W.**

Date: 07/20/2017
 Date: 07/31/2017

Great Lakes Water Authority



LEGEND 2013

- WATER PLANT
- BOOSTER STATION
- BOOSTER STATION / STORAGE
- D.W.S.D. EXISTING
- OTHERS EXISTING
- D.W.S.D. PROPOSED CONSTRUCTION

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

LAKE ERIE

NORTH

CANADA

MICHIGAN OHIO