



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Lake Huron Plant**  
**5/11/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.35	0.04	0.3/95% (1)		
Total Solids		mg/L	132	137		500	10
Total Dissolved Solids		mg/L	110	110		500	10
Aluminum	Al	mg/L	0.091	0.053		0.05-0.2	0.005
Iron	Fe	mg/L	< 0.050	< 0.050		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.26	7.14			0.5
Calcium	Ca	mg/L	23.9	22.6			0.1
Sodium	Na	mg/L	4.31	4.00		20 (2)	0.1
Potassium	K	mg/L	0.84	0.80			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	1.0	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	15.8	19.4		250	
Chloride	Cl <sup>-</sup>	mg/L	7.5	9.5		250	5
Phosphorus	P	mg/L	< 0.05	0.36			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.9	10.3			
Total Hardness (3), (4), (5)		mg/L	98	96			
Total Alkalinity (3)		mg/L	78	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	76			
Non-Carbonate Hardness (3)		mg/L	20	20			
Chemical Oxygen Demand		mg/L	7.2	2.4			2
Dissolved Oxygen		mg/L	11.1	11.9			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.37	0.32	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.08	0.45	4.0	2.0	0.5
pH			7.91	7.17	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	223	219			
Temperature		°C	12.9	11.5			

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
AE: Analytical Error	<b>5.57 GPG</b>
IV: Invalid Sample	(6) Reported results are below the low calibration standard but above the instrument detection limit.

Analyst: Brian Brown      Chemist      Initial    **B. B.**      Date:      7/7/2015  
 Reviewed By: Patrick Williford      Chemist      Initial    **P. W.**      Date:      7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Southwest Plant**  
 5/11/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.50	0.03	0.3/95% (1)		
Total Solids		mg/L	162	145		500	10
Total Dissolved Solids		mg/L	114	115		500	10
Aluminum	Al	mg/L	0.095	0.463		0.05-0.2	0.005
Iron	Fe	mg/L	0.079	0.070		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.56	7.08			0.5
Calcium	Ca	mg/L	21.6	25.2			0.1
Sodium	Na	mg/L	4.45	5.41		20 (2)	0.1
Potassium	K	mg/L	0.95	0.95			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.7	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.5	24.0		250	
Chloride	Cl <sup>-</sup>	mg/L	10.5	12.5		250	5
Phosphorus	P	mg/L	< 0.05	0.27			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.4	13.2			
Total Hardness (3), (4), (5)		mg/L	99	106			
Total Alkalinity (3)		mg/L	84	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	84	76			
Non-Carbonate Hardness (3)		mg/L	15	30			
Chemical Oxygen Demand		mg/L	< 2.0	5.6			2
Dissolved Oxygen		mg/L	10.8	10.7			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.44	0.43	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.08	0.54	4.0	2.0	0.5
pH			8.06	7.06	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	235	243			
Temperature		°C	14.3	13.7			

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 <b>6.15 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Chemist      Initial **B. B.**      Date: 7/7/2015  
 Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Water Works Park Plant**  
5/11/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	8.30	0.08	0.3/95% (1)		
Total Solids		mg/L	137	150		500	10
Total Dissolved Solids		mg/L	121	120		500	10
Aluminum	Al	mg/L	0.086	0.086		0.05-0.2	0.005
Iron	Fe	mg/L	0.086	< 0.050		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.11	7.23			0.5
Calcium	Ca	mg/L	22.8	22.6			0.1
Sodium	Na	mg/L	4.85	4.50		20 (2)	0.1
Potassium	K	mg/L	1.02	0.81			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.9	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.2	23.2		250	
Chloride	Cl <sup>-</sup>	mg/L	8.5	10.5		250	5
Phosphorus	P	mg/L	< 0.05	0.30			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.5	13.3			
Total Hardness (3), (4), (5)		mg/L	98	102			
Total Alkalinity (3)		mg/L	78	68			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	68			
Non-Carbonate Hardness (3)		mg/L	20	34			
Chemical Oxygen Demand		mg/L	8.0	3.2			2
Dissolved Oxygen		mg/L	10.7	11.9			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.31	0.26	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.09	0.48	4.0	2.0	0.5
pH			8.00	7.01	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	221	227			
Temperature		°C	18.0	18.3			

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 <b>5.92 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Chemist      Initial **B. B.**      Date: 7/7/2015  
Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Northeast Plant**  
 5/11/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	8.30	0.06	0.3/95% (1)		
Total Solids		mg/L	137	148		500	10
Total Dissolved Solids		mg/L	121	121		500	10
Aluminum	Al	mg/L	0.086	0.094		0.05-0.2	0.005
Iron	Fe	mg/L	0.086	0.052		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.11	7.79			0.5
Calcium	Ca	mg/L	22.8	24.0			0.1
Sodium	Na	mg/L	4.85	4.96		20 (2)	0.1
Potassium	K	mg/L	1.02	0.85			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.9	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.2	20.4		250	
Chloride	Cl <sup>-</sup>	mg/L	8.5	11.0		250	5
Phosphorus	P	mg/L	< 0.05	0.27			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.5	10.7			
Total Hardness (3), (4), (5)		mg/L	98	102			
Total Alkalinity (3)		mg/L	78	74			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	74			
Non-Carbonate Hardness (3)		mg/L	20	28			
Chemical Oxygen Demand		mg/L	8.0	4.8			2
Dissolved Oxygen		mg/L	10.7	11.1			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.31	0.39	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.09	0.46	4.0	2.0	0.5
pH			8.00	7.14	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	221	223			
Temperature		°C	18.0	15.1			

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 <b>5.92 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Chemist      Initial **B. B.**      Date: 7/7/2015  
 Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Springwells Plant**  
**5/11/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	8.30	0.05	0.3/95% (1)		
Total Solids		mg/L	137	142		500	10
Total Dissolved Solids		mg/L	121	119		500	10
Aluminum	Al	mg/L	0.086	0.079		0.05-0.2	0.005
Iron	Fe	mg/L	0.086	< 0.050		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.11	7.54			0.5
Calcium	Ca	mg/L	22.8	23.0			0.1
Sodium	Na	mg/L	4.85	4.36		20 (2)	0.1
Potassium	K	mg/L	1.02	0.85			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	0.05		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.9	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.2	22.1		250	
Chloride	Cl <sup>-</sup>	mg/L	8.5	10.5		250	5
Phosphorus	P	mg/L	< 0.05	0.34			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.5	11.8			
Total Hardness (3), (4), (5)		mg/L	98	96			
Total Alkalinity (3)		mg/L	78	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	76			
Non-Carbonate Hardness (3)		mg/L	20	20			
Chemical Oxygen Demand		mg/L	8.0	< 2.0			2
Dissolved Oxygen		mg/L	10.7	10.5			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.31	0.29	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.09	0.43	4.0	2.0	0.5
pH			8.00	7.11	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	221	223			
Temperature		°C	18.0	14.2			

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 <b>5.57 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Chemist      Initial **B. B.**      Date: 7/7/2015  
Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department  
Water Quality Division  
Laboratory Analysis of Water Samples Collected at Each Plant**

Date: 5/11/2015 5/11/2015 5/11/2015 5/11/2015 5/11/2015 5/11/2015 5/11/2015

Parameter	Formula	Units	Lake Huron		Southwest		Belle Isle	Water Works Park		Northeast		Springwells	MCL	Sec.Std	MDL
			Raw	Tap	Raw	Tap	Raw	Tap	Tap	Tap	Tap				
Turbidity		NTU	0.35	0.04	1.50	0.03	8.30	0.08	0.06	0.05	0.3/95% (1)				
Total Solids		mg/L	132	137	162	145	137	150	148	142			500	10	
Total Dissolved Solids		mg/L	110	110	114	115	121	120	121	119			500	10	
Aluminum	Al	mg/L	0.091	0.053	0.095	0.463	0.086	0.086	0.094	0.079			0.05-0.2	0.005	
Iron	Fe	mg/L	< 0.050	< 0.050	0.079	0.070	0.086	< 0.050	0.052	< 0.050			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	1.0	0.002	
Magnesium	Mg	mg/L	7.26	7.14	7.56	7.08	7.11	7.23	7.79	7.54				0.5	
Calcium	Ca	mg/L	23.9	22.6	21.6	25.2	22.8	22.6	24.0	23.0				0.1	
Sodium	Na	mg/L	4.31	4.00	4.45	5.41	4.85	4.50	4.96	4.36			20 (2)	0.1	
Potassium	K	mg/L	0.84	0.80	0.95	0.95	1.02	0.81	0.85	0.85				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)		0.002	
Zinc	Zn	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		0.05	5	0.1	
Silica	SiO <sub>2</sub>	mg/L	1.0	1.0	0.7	1.0	0.9	1.0	1.0	1.0				0.4	
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	15.8	19.4	16.5	24.0	14.2	23.2	20.4	22.1			250		
Chloride	Cl <sup>-</sup>	mg/L	7.5	9.5	10.5	12.5	8.5	10.5	11.0	10.5			250	5	
Phosphorus	P	mg/L	< 0.05	0.36	< 0.05	0.27	< 0.05	0.30	0.27	0.34				0.05	
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.9	10.3	1.4	13.2	1.5	13.3	10.7	11.8					
Total Hardness (3), (4), (5)		mg/L	98	96	99	106	98	102	102	96					
Total Alkalinity (3)		mg/L	78	76	84	76	78	68	74	76					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	78	76	84	76	78	68	74	76					
Non-Carbonate Hardness (3)		mg/L	20	20	15	30	20	34	28	20					
Chemical Oxygen Demand		mg/L	7.2	2.4	< 2.0	5.6	8.0	3.2	4.8	< 2.0				2	
Dissolved Oxygen		mg/L	11.1	11.9	10.8	10.7	10.7	11.9	11.1	10.5					
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -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 <sub>3</sub> <sup>-</sup> -N	mg/L	0.37	0.32	0.44	0.43	0.31	0.26	0.39	0.29		10		0.1	
Fluoride	F <sup>-</sup>	mg/L	0.08	0.45	0.08	0.54	0.09	0.48	0.46	0.43		4.0	2.0	0.5	
pH			7.91	7.17	8.06	7.06	8.00	7.01	7.14	7.11		6.5-8.5	6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	223	219	235	243	221	227	223	223					
Temperature		°C	12.9	11.5	14.3	13.7	18.0	18.3	15.1	14.2					

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.

Analyst: Brian Brown      Chemist      Initial      **B. B.**      Date: 7/7/2015  
 Reviewed By: Patrick Williford      Chemist      Initial      **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**