



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Lake Huron Plant
3/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.31	0.03	0.3/95% (1)		
Total Solids		mg/L	149	142		500	10
Total Dissolved Solids		mg/L	119	122		500	10
Aluminum	Al	mg/L	0.598	0.073		0.05-0.2	0.005
Iron	Fe	mg/L	< 0.050	0.165		0.3	0.005
Copper	Cu	mg/L	0.006	0.009	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.06	8.58			0.5
Calcium	Ca	mg/L	28.1	25.9			0.1
Sodium	Na	mg/L	4.25	4.30		20 (2)	0.1
Potassium	K	mg/L	0.82	0.82			0.1
Manganese	Mn	mg/L	< 0.002	0.018		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 ₂	mg/L	1.1	1.0			0.4
Sulfate	SO ₄ ²⁻	mg/L	17.5	20.3		250	
Chloride	Cl ⁻	mg/L	7.5	8.5		250	5
Phosphorus	P	mg/L	< 0.05	0.30			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.4	6.1			
Total Hardness (3), (4), (5)		mg/L	108	102			
Total Alkalinity (3)		mg/L	104	90			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	104	90			
Non-Carbonate Hardness (3)		mg/L	4	12			
Chemical Oxygen Demand		mg/L	< 2.0	< 2.0			2
Dissolved Oxygen		mg/L	10.6	10.5			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.41	0.41	10		0.1
Fluoride	F ⁻	mg/L	0.12	0.57	4.0	2.0	0.5
pH			7.93	7.47	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	232	234			
Temperature		°C	8.8	8.0			

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

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 6/12/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/22/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Southwest Plant
3/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.60	0.03	0.3/95% (1)		
Total Solids		mg/L	147	144		500	10
Total Dissolved Solids		mg/L	131	126		500	10
Aluminum	Al	mg/L	0.081	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.065	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.011	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.35	8.76			0.5
Calcium	Ca	mg/L	25.7	26.1			0.1
Sodium	Na	mg/L	4.65	4.62		20 (2)	0.1
Potassium	K	mg/L	0.87	0.89			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 ₂	mg/L	1.1	1.2			0.4
Sulfate	SO ₄ ²⁻	mg/L	17.9	22.4		250	
Chloride	Cl ⁻	mg/L	8.0	9.0		250	5
Phosphorus	P	mg/L	< 0.05	0.26			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.0	5.8			
Total Hardness (3), (4), (5)		mg/L	102	108			
Total Alkalinity (3)		mg/L	86	80			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	86	80			
Non-Carbonate Hardness (3)		mg/L	16	28			
Chemical Oxygen Demand		mg/L	2.4	< 2.0			2
Dissolved Oxygen		mg/L	10.6	10.6			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.43	0.40	10		0.1
Fluoride	F ⁻	mg/L	0.14	0.71	4.0	2.0	0.5
pH			7.93	7.44	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	235	239			
Temperature		°C	4.2	4.0			

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

Analyst: Brian Brown	Sr. Analytical Chemist	Initial	B. B.	Date:	6/12/2015
Reviewed By: Patrick Williford	Principal Chemist	Initial	P. W.	Date:	6/22/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Water Works Park Plant
 3/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.60	0.06	0.3/95% (1)		
Total Solids		mg/L	153	147		500	10
Total Dissolved Solids		mg/L	134	125		500	10
Aluminum	Al	mg/L	0.180	0.272		0.05-0.2	0.005
Iron	Fe	mg/L	0.167	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.007	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.66	8.10			0.5
Calcium	Ca	mg/L	26.7	27.9			0.1
Sodium	Na	mg/L	4.36	5.17		20 (2)	0.1
Potassium	K	mg/L	0.85	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 ₂	mg/L	1.0	1.2			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.5	20.9		250	
Chloride	Cl ⁻	mg/L	9.0	10.5		250	5
Phosphorus	P	mg/L	< 0.05	0.34			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.3	6.7			
Total Hardness (3), (4), (5)		mg/L	106	106			
Total Alkalinity (3)		mg/L	86	80			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	86	80			
Non-Carbonate Hardness (3)		mg/L	20	26			
Chemical Oxygen Demand		mg/L	< 2.0	< 2.0			2
Dissolved Oxygen		mg/L	10.3	10.9			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.38	0.42	10		0.1
Fluoride	F ⁻	mg/L	0.15	0.56	4.0	2.0	0.5
pH			7.88	7.38	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	244			
Temperature		°C	10.0	11.6			

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	(6) Reported results are below the low calibration standard but above the instrument detection limit.
IV: Invalid Sample	

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 6/12/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/22/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Northeast Plant
3/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.60	0.07	0.3/95% (1)		
Total Solids		mg/L	153	158		500	10
Total Dissolved Solids		mg/L	134	130		500	10
Aluminum	Al	mg/L	0.180	0.075		0.05-0.2	0.005
Iron	Fe	mg/L	0.167	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.007	0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.66	8.44			0.5
Calcium	Ca	mg/L	26.7	25.8			0.1
Sodium	Na	mg/L	4.36	5.78		20 (2)	0.1
Potassium	K	mg/L	0.85	0.91			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	0.04		5	0.1
Silica	SiO ₂	mg/L	1.0	1.0			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.5	21.7		250	
Chloride	Cl ⁻	mg/L	9.0	12.0		250	5
Phosphorus	P	mg/L	< 0.05	0.31			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.3	5.4			
Total Hardness (3), (4), (5)		mg/L	106	106			
Total Alkalinity (3)		mg/L	86	78			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	86	78			
Non-Carbonate Hardness (3)		mg/L	20	28			
Chemical Oxygen Demand		mg/L	< 2.0	< 2.0			2
Dissolved Oxygen		mg/L	10.3	10.7			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.38	0.42	10		0.1
Fluoride	F ⁻	mg/L	0.15	0.54	4.0	2.0	0.5
pH			7.88	7.46	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	251			
Temperature		°C	10.0	7.3			

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

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 6/12/2015
Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/22/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Springwells Plant
3/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.60	0.09	0.3/95% (1)		
Total Solids		mg/L	153	155		500	10
Total Dissolved Solids		mg/L	134	121		500	10
Aluminum	Al	mg/L	0.180	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.167	0.204		0.3	0.005
Copper	Cu	mg/L	0.007	0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.66	8.46			0.5
Calcium	Ca	mg/L	26.7	25.9			0.1
Sodium	Na	mg/L	4.36	5.53		20 (2)	0.1
Potassium	K	mg/L	0.85	0.91			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	0.03		5	0.1
Silica	SiO ₂	mg/L	1.0	1.1			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.5	24.9		250	
Chloride	Cl ⁻	mg/L	9.0	11.0		250	5
Phosphorus	P	mg/L	< 0.05	0.40			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.3	6.8			
Total Hardness (3), (4), (5)		mg/L	106	108			
Total Alkalinity (3)		mg/L	86	86			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	86	86			
Non-Carbonate Hardness (3)		mg/L	20	22			
Chemical Oxygen Demand		mg/L	< 2.0	A.E.			2
Dissolved Oxygen		mg/L	10.3	11.2			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.38	0.41	10		0.1
Fluoride	F ⁻	mg/L	0.15	0.52	4.0	2.0	0.5
pH			7.88	7.40	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	248			
Temperature		°C	10.0	6.0			

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

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 6/12/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/22/2015

Detroit Water & Sewerage Department



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

Date: 3/10/2015 3/10/2015 3/10/2015 3/10/2015 3/10/2015 3/10/2015 3/10/2015 3/10/2015

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	0.31	0.03	1.60	0.03	0.60	0.06	0.07	0.09	0.3/95% (1)				
Total Solids		mg/L	149	142	147	144	153	147	158	155			500	10	
Total Dissolved Solids		mg/L	119	122	131	126	134	125	130	121			500	10	
Aluminum	Al	mg/L	0.598	0.073	0.081	< 0.050	0.180	0.272	0.075	< 0.050			0.05-0.2	0.005	
Iron	Fe	mg/L	< 0.050	0.165	0.065	< 0.050	0.167	< 0.050	< 0.050	0.204			0.3	0.005	
Copper	Cu	mg/L	0.006	0.009	0.011	< 0.005	0.007	< 0.005	0.005	0.005		1.3	1.0	0.002	
Magnesium	Mg	mg/L	8.06	8.58	8.35	8.76	7.66	8.10	8.44	8.46				0.5	
Calcium	Ca	mg/L	28.1	25.9	25.7	26.1	26.7	27.9	25.8	25.9				0.1	
Sodium	Na	mg/L	4.25	4.30	4.65	4.62	4.36	5.17	5.78	5.53			20 (2)	0.1	
Potassium	K	mg/L	0.82	0.82	0.87	0.89	0.85	0.85	0.91	0.91				0.1	
Manganese	Mn	mg/L	< 0.002	0.018	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	0.04	0.03			5	0.1	
Silica	SiO ₂	mg/L	1.1	1.0	1.1	1.2	1.0	1.2	1.0	1.1				0.4	
Sulfate	SO ₄ ²⁻	mg/L	17.5	20.3	17.9	22.4	16.5	20.9	21.7	24.9			250		
Chloride	Cl ⁻	mg/L	7.5	8.5	8.0	9.0	9.0	10.5	12.0	11.0			250	5	
Phosphorus	P	mg/L	< 0.05	0.30	< 0.05	0.26	< 0.05	0.34	0.31	0.40				0.05	
Free Carbon Dioxide	CO ₂	mg/L	2.4	6.1	2.0	5.8	2.3	6.7	5.4	6.8					
Total Hardness (3), (4), (5)		mg/L	108	102	102	108	106	106	106	108					
Total Alkalinity (3)		mg/L	104	90	86	80	86	80	78	86					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	104	90	86	80	86	80	78	86					
Non-Carbonate Hardness (3)		mg/L	4	12	16	28	20	26	28	22					
Chemical Oxygen Demand		mg/L	< 2.0	< 2.0	2.4	< 2.0	< 2.0	< 2.0	< 2.0	A.E.				2	
Dissolved Oxygen		mg/L	10.6	10.5	10.6	10.6	10.3	10.9	10.7	11.2					
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	0.41	0.41	0.43	0.40	0.38	0.42	0.42	0.41		10		0.1	
Fluoride	F ⁻	mg/L	0.12	0.57	0.14	0.71	0.15	0.56	0.54	0.52		4.0	2.0	0.5	
pH			7.93	7.47	7.93	7.44	7.88	7.38	7.46	7.40		6.5-8.5	6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	232	234	235	239	239	244	251	248					
Temperature		°C	8.8	8.0	4.2	4.0	10.0	11.6	7.3	6.0					

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.

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 6/12/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/22/2015

Detroit Water & Sewerage Department