City of Detroit

Water and Sewerage Department

Laboratory Analysis of Water Samples Collected at Lake Huron Plant

October 6, 2009

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.3	0.05	0.3/95% *(1)*		
Total Solids		mg/L	124	136		500	10
Total Dissolved Solids		mg/L	119	128		500	10
Aluminum	Al	mg/L	0.065	0.137		0.05-0.2	0.005
Iron	Fe	mg/L	<0.050	<0.050		0.3	0.005
Copper	Cu	mg/L	0.008	0.005	1.3		0.002
Magnesium	Mg	mg/L	8.84	8.35			0.5
Calcium	Ca	mg/L	28.67	28.04			0.1
Sodium	Na	mg/L	6.09	6.18		20 *(2)*	0.1
Potassium	K	mg/L	0.84	0.8609			0.1
Manganese	Mn	mg/L	<0.002	<0.002		0.05	0.002
Zinc	Zn	mg/L	<0.1	<0.1		5	0.1
Silica	SiO_2	mg/L	0.66	1.05			0.4
Sulfate	SO_4	mg/L	22.2	28.6			
Chloride	Cl^-	mg/L	7.00	8.50		250	5
Phosphorus	P	mg/L	<0.05	0.42			0.05
Free Carbon Dioxide	CO_2	mg/L	2.17	4.09			
Total Hardness *(3), (4), (5)*		mg/L	99	98			
Total Alkalinity *(3)*		mg/L	89	78			
Carbonate Alkalinity *(3)*		mg/L	0	0			
Bi-Carbonate Alkalinity *(3)*		mg/L	89	78			
Non-Carbonate Hardness *(3)*		mg/L	10	20			
Chemical Oxygen Demand		mg/L	5.2	4.8			2
Dissolved Oxygen		mg/L	8.21	8.45			
Ammonia Nitrogen	NH_3-N	mg/L	<0.1	<0.1			0.1
Organic Nitrogen		mg/L	0.12	<0.1			0.1
Nitrite Nitrogen	NO_2-N	mg/L	<0.1	<0.1	1		0.1
Nitrate Nitrogen	NO_3-N	mg/L	0.32	0.30	10	10	0.1
Fluoride	F	mg/L	0.12	1.01	4		0.5
pH			7.91	7.58	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 ^oC.		micromhos	213	219			
Temperature		°C	17.7	18.3			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of daily samples in any month
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)
MDL: Method Detection Limit	(4) By Titration
<: Less than	(5) Tap Water Hardnessin in Grains per Gallon **5.68 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: 01/20/2009

Reviewed By: Patrick Williford — Water Quality Manager, Acting — Initial **P.D.W** — Date: 01/26/2009

Pam Turner
Detroit Water & Sewerage Department

Revised May 2006

City of Detroit

Water and Sewerage Department
Laboratory Analysis of Water Samples Collected at
Southwest Plant
October 6, 2009

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	5.73	0.05	0.3/95% *(1)*		
Total Solids		mg/L	146	154		500	10
Total Dissolved Solids		mg/L	139	141		500	10
Aluminum	Al	mg/L	0.202	0.077		0.05-0.2	0.005
Iron	Fe	mg/L	0.192	<0.050		0.3	0.005
Copper	Cu	mg/L	0.006	0.008	1.3		0.002
Magnesium	Mg	mg/L	9.185	9.768			0.5
Calcium	Ca	mg/L	29.2	31.2			0.1
Sodium	Na	mg/L	5.96	6.22		20 *(2)*	0.1
Potassium	K	mg/L	0.86	0.86			0.1
Manganese	Mn	mg/L	0.005	0.002		0.05	0.002
Zinc	Zn	mg/L	<0.1	<0.1		5	0.1
Silica	SiO_2	mg/L	0.66	0.87			0.4
Sulfate	SO_4	mg/L	32.9	30.3			
Chloride	Cl^-	mg/L	7.50	9.00		250	5
Phosphorus	P	mg/L	<0.05	0.42			0.05
Free Carbon Dioxide	CO_2	mg/L	2.39	5.78			
Total Hardness *(3), (4), (5)*		mg/L	104	106			
Total Alkalinity *(3)*		mg/L	85	78			
Carbonate Alkalinity *(3)*		mg/L	0	0			
Bi-Carbonate Alkalinity *(3)*		mg/L	85	78			
Non-Carbonate Hardness *(3)*		mg/L	19	28			
Chemical Oxygen Demand		mg/L	7.2	3.6			2
Dissolved Oxygen		mg/L	8.11	8.07			
Ammonia Nitrogen	NH_3-N	mg/L	<0.1	<0.1			0.1
Organic Nitrogen		mg/L	0.12	0.11			0.1
Nitrite Nitrogen	NO_2-N	mg/L	<0.1	<0.1	1		0.1
Nitrate Nitrogen	NO_3-N	mg/L	0.26	0.26	10	10	0.1
Fluoride	F	mg/L	0.12	0.90	4		0.5
pH			7.91	7.43	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	223	204			
Temperature		°C	15.1	15.1			

Legend	**Notes:**
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of daily samples in any month
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)
MDL: Method Detection Limit	(4) By Titration
<: Less than	(5) Tap Water Hardnessin in Grains per Gallon **6.15 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: 01/20/2009

Reviewed By: Patrick Williford — Water Quality Manager, Acting — Initial **P.D.W.** — Date: 01/26/2009

Pam Turner
Detroit Water & Sewerage Department

Revised May 2006

City of Detroit

Water and Sewerage Department
Laboratory Analysis of Water Samples Collected at
Water Works Park Plant
October 6, 2009

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	8.38	0.08	0.3/95% *(1)*		
Total Solids		mg/L	142	139		500	10
Total Dissolved Solids		mg/L	138	139		500	10
Aluminum	Al	mg/L	0.217	0.143		0.05-0.2	0.005
Iron	Fe	mg/L	0.226	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.006	0.004	1.3		0.002
Magnesium	Mg	mg/L	7.89	8.66			0.5
Calcium	Ca	mg/L	30.57	25.80			0.1
Sodium	Na	mg/L	6.14	6.17		20 *(2)*	0.1
Potassium	K	mg/L	1.00	0.86			0.1
Manganese	Mn	mg/L	0.007	< 0.002		0.05	0.002
Zinc	Zn	mg/L	< 0.1	< 0.1		5	0.1
Silica	SiO_2	mg/L	0.97	0.79			0.4
Sulfate	SO_4	mg/L	AE	31.2			
Chloride	Cl^-	mg/L	7.50	7.50		250	5
Phosphorus	P	mg/L	< 0.05	0.32			0.05
Free Carbon Dioxide	CO_2	mg/L	3.01	5.26			
Total Hardness *(3), (4), (5)*		mg/L	101	103			
Total Alkalinity *(3)*		mg/L	85	76			
Carbonate Alkalinity *(3)*		mg/L	0	0			
Bi-Carbonate Alkalinity *(3)*		mg/L	85	76			
Non-Carbonate Hardness *(3)*		mg/L	16	27			
Chemical Oxygen Demand		mg/L	5.2	3.6			2
Dissolved Oxygen		mg/L	9.88	10.15			
Ammonia Nitrogen	NH_3-N	mg/L	< 0.1	< 0.1			0.1
Organic Nitrogen		mg/L	< 0.1	< 0.1			0.1
Nitrite Nitrogen	NO_2-N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO_3-N	mg/L	0.31	0.31	10	10	0.1
Fluoride	F	mg/L	0.11	0.995	4		0.5
pH			7.75	7.46	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	218	223			
Temperature		°C	14.5	16.7			

Legend	**Notes:**
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of daily samples in any month
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
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