

CSO INTERIM WATER QUALITY MONITORING
2014 RED RIVER MONITORING REPORT

Survey Date : October 15, 2014		Red River Sampling Locations																
Parameter	Unit	SOUTH FLOODWAY CONTROL			FORT GARRY BRIDGE			NORWOOD BRIDGE			PROVENCHER BRIDGE			NORTH PERIMETER BRIDGE			LOCKPORT BRIDGE	
		(R5)			(R7)			(R8)			(RX2)			(R10)			(R11)	
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	C
Temperature	° C	9.6	9.6	9.6	10.3	10.3	10	10.3	10.3	10.3	9.9	10	10	10	10.2	10	9.7	9.7
Dissolved Oxygen	mg/L	10.6	10.5	10.4	10.2	10.1	10	10.1	9.9	10.2	10.6	10.7	10.7	10.8	10.8	10.8	10.4	10.5
Conductivity	mS/cm	0.873	0.881	0.88	0.892	0.894	0.891	0.9	0.897	0.899	1.08	1.06	1.038	1.016	1.017	1.013	1.02	1.021
pH	units	8.5	8.5	8.5	8.6	8.6	8.6	8.5	8.6	8.5	8.6	8.6	8.6	8.6	8.6	8.5	8.4	8.4
Biochemical Oxygen Demand	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Carbonaceous BOD	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Total Suspended Solids	mg/L	95	76	70	49	44	53	38	37	36	212	199	178	122	130	113	110	54
Ammonia Nitrogen	mg/L N	< 0.01	< 0.01	< 0.01	0.147	0.155	0.184	0.14	0.121	0.104	0.024	0.03	0.038	0.258	0.176	0.14	0.223	0.195
Nitrate Nitrogen	mg/L N	0.062	0.067	0.062	0.06	0.074	0.062	< 0.05	0.051	< 0.05	0.336	0.296	0.269	5.47	0.276	0.27	0.265	0.316
Nitrite Nitrogen	mg/L N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate-Nitrite Nitrogen	mg/L N	< 0.071	< 0.071	< 0.071	< 0.071	0.074	< 0.071	< 0.071	< 0.071	< 0.071	0.336	0.296	0.269	0.276	0.27	0.265	0.316	0.308
Total Kjeldahl Nitrogen	mg/L N	1.02	0.97	0.95	1.2	1.19	1.15	1.11	1.06	1.09	1.39	1.41	1.3	1.47	1.32	1.34	1.35	1.39
Total Nitrogen ¹	mg/L N	1.02	0.97	0.95	1.2	1.26	1.15	1.11	1.06	1.09	1.73	1.71	1.57	1.75	1.59	1.61	1.67	1.7
Total Phosphorus	mg/L P	0.169	0.168	0.166	0.179	0.177	0.179	0.164	0.166	0.163	0.252	0.262	0.221	0.261	0.237	0.249	0.24	0.214
Escherichia Coliform	MPN/100 mL	*	23	*	*	23	*	*	230	*	*	43	*	*	23	*	230	*
Fecal Coliform	MPN/100 mL	*	23	*	*	23	*	*	230	*	*	43	*	*	23	*	930	*

- Notes: 1) Calculated values
2) * - Fecal coliform testing performed only at Sample B locations to compare with historical data. Not a requirement of the Environment Act Licence No. 3042
3) Analysed by contract laboratory

Client File No: 3205.00

CSO INTERIM WATER QUALITY MONITORING
2014 RED RIVER MONITORING REPORT

Survey Date : October 16, 2014		Red River Sampling Locations																	
Parameter	Unit	SOUTH FLOODWAY CONTROL			FORT GARRY BRIDGE			NORWOOD BRIDGE			PROVENCHER BRIDGE			NORTH PERIMETER BRIDGE			LOCKPORT BRIDGE		
		(R5)			(R7)			(R8)			(RX2)			(R10)			(R11)		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Temperature	° C	9.4	9.6	9.4	10.2	10.3	10.2	10.2	10.2	10.2	9.5	9.5	9.6	10	10	10	9.8	9.7	
Dissolved Oxygen	mg/L	9.9	10	9.9	9.8	9.9	9.9	9.6	9.7	9.8	10.5	10.6	10.6	10.6	10.7	10.7	10.4	10.5	
Conductivity	mS/cm	0.874	0.877	0.873	0.886	0.889	0.887	0.901	0.898	0.902	1.107	1.065	0.901	1.019	1.019	1.018	1.023	1.022	
pH	units	8.6	8.6	8.6	8.6	8.6	8.6	8.5	8.5	8.5	8.4	8.4	8.5	8.4	8.4	8.5	8.4	8.4	
Biochemical Oxygen Demand	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	
Carbonaceous BOD	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	
Total Suspended Solids	mg/L	80	68.6	62	55	50	57	37	32	43	220	184	43	90	99	106	53	54	
Ammonia Nitrogen	mg/L N	< 0.01	< 0.01	< 0.01	0.15	0.16	0.188	0.108	0.134	0.114	0.023	0.04	0.105	0.251	0.186	0.148	0.274	0.243	
Nitrate Nitrogen	mg/L N	0.086	0.083	0.08	0.099	0.105	0.11	0.068	0.069	0.083	0.358	0.303	0.09	0.262	0.257	0.254	0.294	0.288	
Nitrite Nitrogen	mg/L N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrate-Nitrite Nitrogen	mg/L N	0.086	0.083	0.08	0.099	0.105	0.11	< 0.071	< 0.071	0.083	0.358	0.303	0.09	0.262	0.257	0.254	0.294	0.288	
Total Kjeldahl Nitrogen	mg/L N	1.03	0.93	0.93	1.2	1.18	1.25	1.12	1.13	1.08	1.42	1.37	1.1	1.5	1.35	1.38	1.43	1.32	
Total Nitrogen ¹	mg/L N	1.12	1.01	1.01	1.3	1.29	1.36	1.12	1.13	1.16	1.78	1.67	1.19	1.76	1.61	1.63	1.72	1.61	
Total Phosphorus	mg/L P	0.135	0.136	0.673	0.164	0.162	0.173	0.154	0.144	0.144	0.253	0.248	0.15	0.22	0.217	0.226	0.212	0.209	
Escherichia Coliform	MPN/100 mL	23	23	23	23	23	23	430	230	75	93	930	93	150	43	230	93	230	
Fecal Coliform	MPN/100 mL	*	23	*	*	23	*	*	230	*	*	2300	*	*	43	*	230	*	

- Notes: 1) Calculated values
2) * - Fecal coliform testing performed only at Sample B locations to compare with historical data. Not a requirement of the Environment Act Licence No. 3042
3) Analysed by contract laboratory

Client File No: 3205.00

CSO INTERIM WATER QUALITY MONITORING
2014 RED RIVER MONITORING REPORT

Survey Date : October 17, 2014		Red River Sampling Locations																
Parameter	Unit	SOUTH FLOODWAY CONTROL			FORT GARRY BRIDGE			NORWOOD BRIDGE			PROVENCHER BRIDGE			NORTH PERIMETER BRIDGE			LOCKPORT BRIDGE	
		(R5)			(R7)			(R8)			(RX2)			(R10)			(R11)	
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	C
Temperature	° C	9.2	9.1	9.1	9.4	9.4	9.3	9.4	9.3	9.4	9	9.1	9.1	9.2	9.2	9.3	8.9	8.9
Dissolved Oxygen	mg/L	10.5	10.6	10.5	9.9	9.9	9.8	9.8	9.8	10	10.5	10.5	10.6	10.6	10.7	10.6	10.4	10.6
Conductivity	mS/cm	0.865	0.865	0.865	0.878	0.875	0.878	0.892	0.895	0.895	1.038	1.04	0.962	1.024	1.024	1.024	1.027	1.026
pH	units	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.5	8.5	8.6	8.5	8.5	8.5	8.5	8.5
Biochemical Oxygen Demand	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Carbonaceous BOD	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Total Suspended Solids	mg/L	124	112	147	95	93	100	65	67	70	205	177	111	124	137	117	78.3	72
Ammonia Nitrogen	mg/L N	< 0.01	< 0.01	< 0.01	0.18	0.203	0.233	0.145	0.177	0.145	0.018	0.057	0.083	0.292	0.197	0.151	0.282	0.249
Nitrate Nitrogen	mg/L N	0.059	0.06	0.058	0.059	0.06	0.064	0.072	0.07	0.072	0.298	0.229	0.15	0.221	0.217	0.215	0.238	0.235
Nitrite Nitrogen	mg/L N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate-Nitrite Nitrogen	mg/L N	< 0.071	< 0.071	< 0.071	< 0.071	< 0.071	< 0.071	0.072	< 0.071	0.072	0.298	0.229	0.15	0.221	0.217	0.215	0.238	0.235
Total Kjeldahl Nitrogen	mg/L N	0.89	0.91	0.95	1.16	1.17	1.22	1.07	1.11	1.07	1.45	1.23	1.09	1.36	1.41	1.38	1.39	1.21
Total Nitrogen ¹	mg/L N	0.89	0.91	0.95	1.16	1.17	1.22	1.14	1.11	1.14	1.75	1.46	1.24	1.58	1.63	1.59	1.63	1.45
Total Phosphorus	mg/L P	0.131	0.147	0.152	0.174	0.176	0.185	0.161	0.169	0.165	0.28	0.219	0.193	0.243	0.25	0.225	0.23	0.203
Escherichia Coliform	MPN/100 mL	23	4	4	93	9	43	93	93	23	43	93	210	23	43	43	930	750
Fecal Coliform	MPN/100 mL	*	4	*	*	9	*	*	93	*	*	93	*	*	43	*	930	*

- Notes: 1) Calculated values
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2014 RED RIVER MONITORING REPORT

Survey Date : October 18, 2014		Red River Sampling Locations																
Parameter	Unit	SOUTH FLOODWAY CONTROL			FORT GARRY BRIDGE			NORWOOD BRIDGE			PROVENCHER BRIDGE			NORTH PERIMETER BRIDGE			LOCKPORT BRIDGE	
		(R5)			(R7)			(R8)			(RX2)			(R10)			(R11)	
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	C
Temperature	° C	8.7	8.7	8.6	8.6	8.7	8.9	8.9	8.8	8.9	8.9	9	9	8.7	8.7	8.7	8.6	8.7
Dissolved Oxygen	mg/L	9.8	10.1	10	9.5	9.6	9.7	9.8	9.8	9.9	10.2	10.3	10.7	10.4	10.2	10.1	10.7	10.5
Conductivity	mS/cm	0.867	0.867	0.868	0.868	0.867	0.868	0.878	0.879	0.878	1.115	0.995	0.914	1.022	1.021	1.018	1.031	1.027
pH	units	8.5	8.6	8.6	8.6	8.6	8.5	8.6	8.6	8.6	8.4	8.5	8.5	8.4	8.4	8.5	8.3	8.5
Biochemical Oxygen Demand	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Carbonaceous BOD	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Total Suspended Solids	mg/L	81	83	77	66	64	66	51.7	56.7	54	215	123	78.3	85	114	106	54	53
Ammonia Nitrogen	mg/L N	< 0.01	< 0.01	< 0.01	0.182	0.227	0.226	0.128	0.165	0.136	0.02	0.078	0.109	0.291	0.208	0.138	0.3	0.238
Nitrate Nitrogen	mg/L N	0.105	0.093	0.1	0.101	0.103	0.099	0.062	0.062	0.056	0.283	0.173	0.1	0.207	0.202	0.201	0.239	0.235
Nitrite Nitrogen	mg/L N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate-Nitrite Nitrogen	mg/L N	0.105	0.093	0.1	0.101	0.103	0.099	< 0.071	< 0.071	< 0.071	0.283	0.173	0.1	0.207	0.202	0.201	0.239	0.235
Total Kjeldahl Nitrogen	mg/L N	1.07	1.07	1.07	1.16	1.08	1.17	1.06	1.08	1.12	1.47	1.25	1.16	1.42	1.35	1.4	1.47	1.32
Total Nitrogen ¹	mg/L N	1.18	1.16	1.17	1.26	1.18	1.27	1.06	1.08	1.12	1.75	1.42	1.26	1.63	1.55	1.6	1.71	1.56
Total Phosphorus	mg/L P	0.172	0.175	0.17	0.19	0.189	0.191	0.173	0.173	0.172	0.319	0.255	0.201	0.237	0.225	0.241	0.229	0.219
Escherichia Coliform	MPN/100 mL	230	23	23	43	43	4	21	75	93	15	11	23	150	120	230	23	23
Fecal Coliform	MPN/100 mL	*	23	*	*	43	*	*	75	*	*	93	*	*	120	*	43	*

- Notes: 1) Calculated values
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3) Analysed by contract laboratory

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CSO INTERIM WATER QUALITY MONITORING
2014 RED RIVER MONITORING REPORT

Survey Date : October 19, 2014		Red River Sampling Locations																
Parameter	Unit	SOUTH FLOODWAY CONTROL			FORT GARRY BRIDGE			NORWOOD BRIDGE			PROVENCHER BRIDGE			NORTH PERIMETER BRIDGE			LOCKPORT BRIDGE	
		(R5)			(R7)			(R8)			(RX2)			(R10)			(R11)	
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	C
Temperature	° C	8	7.9	8.1	8.4	8.5	8.4	8.8	8.7	8.6	9.2	9.3	9.2	9.1	9.1	9.2	9.4	9.3
Dissolved Oxygen	mg/L	10.2	10	9.8	9.9	10	9.9	10.1	10.2	10.1	10.3	10.2	10.6	10.3	10.2	10.2	10.2	9.8
Conductivity	mS/cm	0.906	0.902	0.901	0.875	0.876	0.876	0.859	0.859	0.86	1.111	1.04	1.002	1.024	1.023	1.023	1.024	1.04
pH	units	8.6	8.7	8.7	8.5	8.6	8.5	8.6	8.6	8.5	8.5	8.4	8.4	8.3	8.3	8.4	8.5	8.4
Biochemical Oxygen Demand	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	6.1	< 6	< 6	< 6	< 6
Carbonaceous BOD	mg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Total Suspended Solids	mg/L	96	94	84	77	72	91	60	64	55	212	163	146	106	115	110	62	65
Ammonia Nitrogen	mg/L N	0.012	< 0.01	< 0.01	0.181	0.187	0.196	0.096	0.105	0.119	0.044	0.056	0.071	0.298	0.251	0.148	0.302	0.25
Nitrate Nitrogen	mg/L N	0.161	0.167	0.162	0.151	0.154	0.156	0.145	0.147	0.144	0.333	0.179	0.254	0.267	0.266	0.262	0.278	0.27
Nitrite Nitrogen	mg/L N	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate-Nitrite Nitrogen	mg/L N	0.161	0.167	0.162	0.151	0.154	0.156	0.145	0.147	0.144	0.333	0.279	0.254	0.267	0.266	0.262	0.278	0.05
Total Kjeldahl Nitrogen	mg/L N	0.92	1	1.01	1.01	0.92	0.95	0.9	0.9	0.91	1.2	1.26	1.16	1.34	1.29	1.26	1.33	1.14
Total Nitrogen ¹	mg/L N	1.08	1.17	1.17	1.16	1.08	1.1	1.04	1.05	1.05	1.53	1.54	1.41	1.61	1.56	1.52	1.61	1.41
Total Phosphorus	mg/L P	0.154	0.167	0.179	0.173	0.15	0.154	0.158	0.148	0.151	0.214	0.228	0.203	0.229	0.222	0.222	0.212	0.189
Escherichia Coliform	MPN/100 mL	43	9	73	15	43	15	23	15	43	43	43	23	43	43	43	23	93
Fecal Coliform	MPN/100 mL	*	15	*	*	43	*	*	15	*	*	93	*	*	43	*	23	*

- Notes: 1) Calculated values
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3) Analysed by contract laboratory

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