





**Table S1.** Annual environmental variable values during recreational water sampling season in Toronto, 2007-2019

Variable	Total, mean, or median value ( $\pm$ SD)												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total seasonal rainfall	160	449	415.5	380.3	306.5	374.7	463.1	358.6	264.9	206.9	303.9	385.5	361.4
Mean seasonal air temperature	18.4 (4.4)	17.6 (4.2)	17.3 (4.0)	19.3 (4.5)	19.0 (4.6)	20.0 (4.1)	18.4 (4.3)	17.6 (3.9)	18.1 (3.9)	19.5 (4.9)	17.7 (4)	19.8 (4.5)	18.1 (4.7)
Mean seasonal solar radiation (Kortright station)	NA	960.3 (203.2)	1038 (197.6)	1049.3 (238.3)	1045 (243.6)	1071.7 (209.6)	1047.1 (234.9)	1030.9 (202.3)	1019.3 (228.8)	1097.7 (159.5)	993.1 (288.4)	988.3 (198.9)	996 (239.4)
Mean seasonal water level	74.92 (0.14)	75.19 (0.1)	75.15 (0.07)	74.88 (0.1)	75.18 (0.17)	74.82 (0.12)	75.04 (0.11)	75.12 (0.09)	75.05 (0.16)	74.99 (0.1)	75.7 (0.18)	75.14 (0.15)	75.76 (0.17)
Mean Humber River discharge (m <sup>3</sup> /s)	3.44 (5.42)	5.8 (5.7)	7.33 (6.33)	7.59 (9.35)	6.81 (7.73)	4.34 (5.62)	8.99 (17.85)	6.05 (4.9)	6.61 (7.55)	3.02 (2.27)	10.28 (13.77)	4.9 (2.98)	6.73 (6.84)
Mean Rouge River discharge (m <sup>3</sup> /s)	0.75 (1.32)	1.88 (1.96)	2.1 (2.24)	2.45 (3.37)	2.16 (2.49)	1.67 (2.22)	2.38 (2.95)	2.15 (2.26)	2.16 (3.62)	0.95 (0.79)	3.41 (5)	1.96 (2.06)	1.81 (1.79)
Mean Etobicoke Creek discharge (m <sup>3</sup> /s)	1.47 (3.64)	3.54 (6.44)	3.14 (4.45)	3.39 (5.78)	2.74 (4.2)	1.84 (2.97)	3.71 (7.92)	2.14 (3.01)	2.77 (4.94)	1.24 (2.27)	3.5 (7.25)	2.08 (2.41)	2.57 (3.27)
Mean seasonal count of waterfowl	NA	48 (53.7)	42 (47.9)	48 (66.4)	40 (47)	19 (23.2)	22 (31.2)	28 (41.9)	19 (26.2)	27 (30)	17 (46.9)	11 (21.9)	10 (25.6)

**Table S2.** Annual environmental variable values during recreational water sampling season in Niagara Region, 2011-2019

Variable	Total, mean, or median value ( $\pm$ SD)								
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total rainfall (mm)	339.7	187.0	476.5	345.8	253.3	161.2	381.2	402.4	372.3
Mean air temperature ( $^{\circ}$ C)	21.3 (3.5)	22.1 (3.4)	20.3 (3.9)	20.0 (3.4)	19.4 (4.0)	22.0 (3.7)	20.3 (2.9)	22.0 (3.4)	20.2 (3.6)
Mean UV radiation	6.87 (1.91)	6.98 (1.73)	6.40 (1.84)	6.49 (1.53)	6.62 (1.62)	6.88 (1.81)	6.41 (1.79)	6.66 (1.90)	6.87 (1.91)
Median turbidity (NTU)	5.2 (8.4)	4.3 (7.4)	5.0 (6.4)	5.7 (9.0)	4.0 (5.2)	4.4 (6.4)	4.8 (8.4)	3.0 (4.2)	6.5 (12.1)
Mean Niagara River discharge (m <sup>3</sup> /s)	6320 (306)	5547 (276)	5752 (256)	6116 (222)	6551 (415)	6567 (297)	7166 (270)	7168 (285)	7850 (272)
Mean Welland Canal discharge (m <sup>3</sup> /s)	122 (32.4)	231 (34.7)	175 (48.1)	182 (60.3)	232 (39.0)	233 (39.9)	137 (35.1)	160 (25.5)	NA
Mean Port Colborne Buoy Wave Height (m)	0.4 (0.54)	0.3 (0.40)	0.4 (0.54)	0.3 (0.49)	0.5 (0.58)	0.3 (0.45)	0.2 (0.43)	0.4 (0.50)	0.4 (0.48)
Mean Grimsby Buoy Wave Height (m)	0.3 (0.36)	0.2 (0.27)	0.2 (0.27)	0.3 (0.36)	0.2 (0.36)	0.2 (0.34)	0.1 (0.25)	0.3 (0.36)	0.3 (0.37)