



Maitland Valley Conservation Authority

Working for a Healthy Environment

2011 Stream Sampling ACLA-MVCA

The 2011 sampling marked the eleventh year of a cooperative arrangement between the Ashfield-Colborne Lakefront Association and the Maitland Valley Conservation Authority. Since 2003, the annual program has had the purpose of general monitoring of the major watercourses sampled in 2001.

Sampling in 2011 was conducted roughly every other week from April 19th to November 15th for a total of 15 sampling events at 12 locations. The samples were analyzed by ALS Laboratory Group, Waterloo. Samples were tested for Escherichia coli (E. coli), nitrate and total phosphorus. The results are on the following pages.

Key findings as a result of the 2011 sampling include:

- The geometric mean of E. coli for 5 sample location exceeded the recreation limit of 100cfu/100mL.
- Sample location A6 (Griffins Creek) had the highest geometric mean for E. coli for the 2011 sample season.
- Griffins Creek (A6) also had the highest levels of Nitrate and Total Phosphorus.
- Overall Griffins Creek (A6) ranked the worst in water quality for the 2011 sample season.
- Grades have been assigned to the sample locations based upon the Watershed Report Card criteria established by Conservation Ontario. These will assist in detecting changes through time.
- A graph depicting the precipitation and sampling events has been included with the sampling events being the long lines.



Ashfield-Colborne Lakefront Association Sampling 2011

Stream Name	Site	Date	E. COLI (cfu/100ml)													Total	GeoMean	Percentage of Samples above:		Grade	Rank	
			Apr 19/11	May 3/11	May 17/11	Jun 1/11	Jun 14/11	Jun 28/11	Jul 12/11	Jul 27/10	Aug 9/11	Sep 6/11	Sep 19/11	Oct 3/11	Oct 18/11			Nov 1/11	Nov 15/11			100CFU/100mL
Boyd Creek	A1	10	10	170	90	170	100	70	80	10	10	80	420	10	170	14	51.119	36%	0%	B	2	
Eighteen Mile River	A2	10	70	300	12	120	190	360	170	60	290		40	10	10	14	55.214	43%	0%	B	3	
Kintail Creek	A3	40	20	240		130	170					30	130	10	80	9	61.847	44%	0%	B	4	
Kerry's Creek	A4	10	10	270	110	290	200	140	50	210	80	550	40	80	120	40	15	88.898	53%	0%	B	6
Near Kingsbridge	A5	10	190	510	260	460	1490	2690			510		180	380	250	1290	12	362.949	92%	25%	C	11
Griffins Creek	A6	20	20	170	720	400	2210	1960	510	470	1770	910	500	1290	140	500	15	408.626	87%	27%	C	12
Near Midhuron	A7	10	120	160	250	380	650	70					190	190	200	120	11	147.501	82%	0%	C	9
Nine Mile River	A8	10	50	150	50	90	280	340	30	210	100	90	50	10	70	40	15	67.160	33%	0%	B	5
Boundary Creek	A9	30	60	230	660	310	740	370	90	330	90	120	230	130	280	50	15	170.957	67%	0%	C	10
Bogies Road Creek	C1	10	20	110	80	190	1310	240	190	120	20	300	120	110	80	160	15	106.098	67%	7%	C	8
Allans Creek	C2	10	30	180	70	840	450	300	100	150	180	100	90	160	10	30	15	95.484	60%	0%	B	7
Maitland River	C3	10	30	140	30	10	20	40	10	200	70		50	150	40	20	14	36.836	21%	0%	B	1
GeoMean		13.032196	35.05828	201.1367	110.7756	191.25	349.987	266.0006	82.54457	186.7188	116.8604	148.885	92.79721	124.57	53.30981	81.09052						

- Exceeds recreation limit (100cfu/100ml) but less than 1000.
- Exceeds limit for recreation by 10x.
- Microbiologists often consider an order of magnitude (10 fold) as a significant difference.
- Less than the detection limit of 10
- Geometric mean across all sites was 74.036cfu/100mL

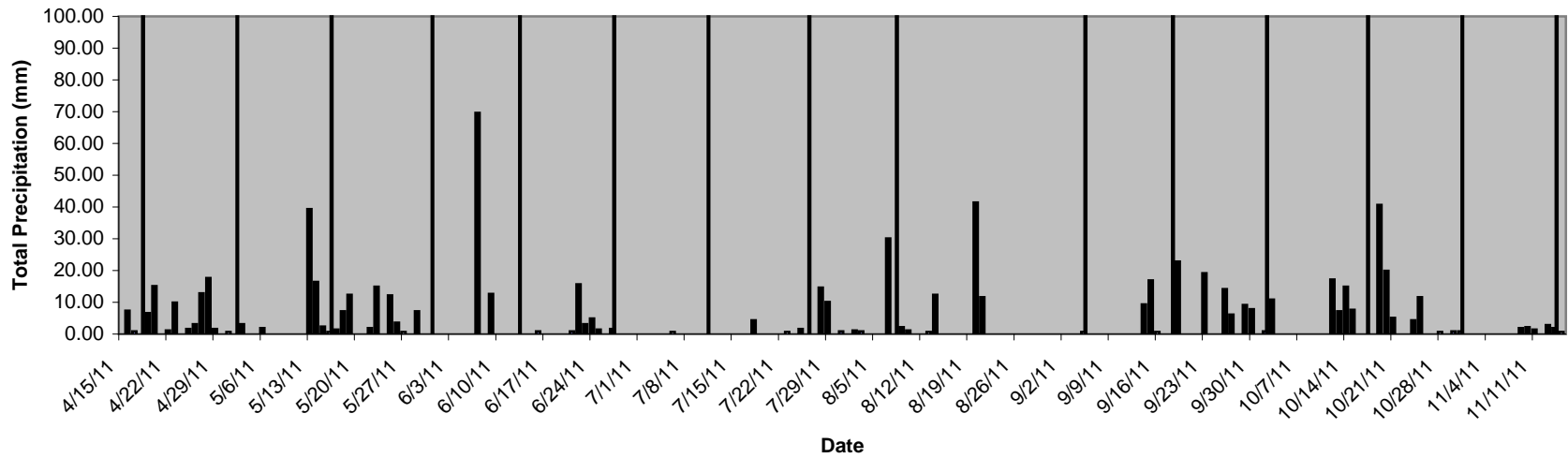
Stream Name	Site	Date	NITRATE as N (mg/l)													Total	75th Percentile	Percent of samples above:		Grade	Rank		
			Apr 19/11	May 3/11	May 17/11	Jun 1/11	Jun 14/11	Jun 28/11	Jul 12/11	Jul 27/10	Aug 9/11	Sep 6/11	Sep 19/11	Oct 3/11	Oct 18/11			Nov 1/11	Nov 15/11			Aquatic Protection Limit (2.93 mg/L as N)	Drinking Water Guideline (10 mg/L as N)
Boyd Creek	A1		3.98	5.72	7.12	5.99	9	6.54	1.56	0.3		0.1	0.1	8.49	10.2	8.99	7.54	14	8.25	71%	7%	C	11
Eighteen Mile River	A2		3.27	4.88	6.05	4.32	6.3	5.24	1.98	0.3	0.3	0.19		5.27	8.65	6.88	7.45	14	6.24	71%	0%	B	8
Kintail Creek	A3		3.4	5.42	6.62		4.14	3.2						2.67	5.89	7.55	4.52	9	5.89	89%	0%	B	7
Kerry's Creek	A4		4.31	5.59	6.48	4.7	5.6	4.76	2	1.17	0.97	1.26	1.56	3.64	8.86	7.06	3.69	15	5.60	67%	0%	B	3
Near Kingsbridge	A5		4.38	5.3	6.6	5.34	5.16	4.95	0.3			0.1		12.9	9.74	8.81	5.46	12	7.15	83%	8%	C	9
Griffins Creek	A6		5.49	7.19	9.52	7.47	7.96	6.95	1.18	0.3	0.3	0.1	0.1	8.59	10.2	9.7	7.12	15	8.28	67%	7%	C	12
Near Midhuron	A7		4.05	5.52	9.26	6.26	5.83	6.23	0.3					7.15	7.74	8.06	8	11	7.87	91%	0%	C	10
Nine Mile River	A8		1.64	1.8	2.17	1.54	1.86	1.75	1.14	0.95	0.79	1.03	1.09	1.18	2.86	2.3	1.47	15	1.83	0%	0%	A	1
Boundary Creek	A9		3.01	3.64	4.48	3.71	3.88	3.59	2.28	0.37	0.3	0.17	0.1	3.15	5.65	6.16	3.88	15	3.88	67%	0%	B	2
Bogies Road Creek	C1		4.26	5.27	6.86	5.67	4.73	5.25	0.3	0.3	0.3	0.18	0.86	5.54	7.41	10.3	4.9	15	5.61	67%	7%	B	4
Allans Creek	C2		4.16	5.15	6.33	5.86	5.68	5.04	1.51	0.81	0.93	2.18	2.24	3.3	6.58	6.41	3.93	15	5.77	67%	0%	B	6
Maitland River	C3		4.36	5.48	5.83	6.46	4.02	5.58	0.9	0.3	0.3	0.51		3.3	6.93	5.68	3.52	14	5.66	71%	0%	B	5
75th Percentile			4.3225	5.5375	6.925	6.125	5.9475	5.7425	1.77	0.81	0.825	0.9	1.325	7.485	9.08	8.855	7.2025						

- Exceeds proposed Canadian Aquatic Objective of 2.9 mg/l of nitrate as N
- Exceeds Drinking Water Guidelines of 10 mg/L of nitrate as N
- Less than the detection limit.
- 75th percentile across all sites was 6.3075mg/L

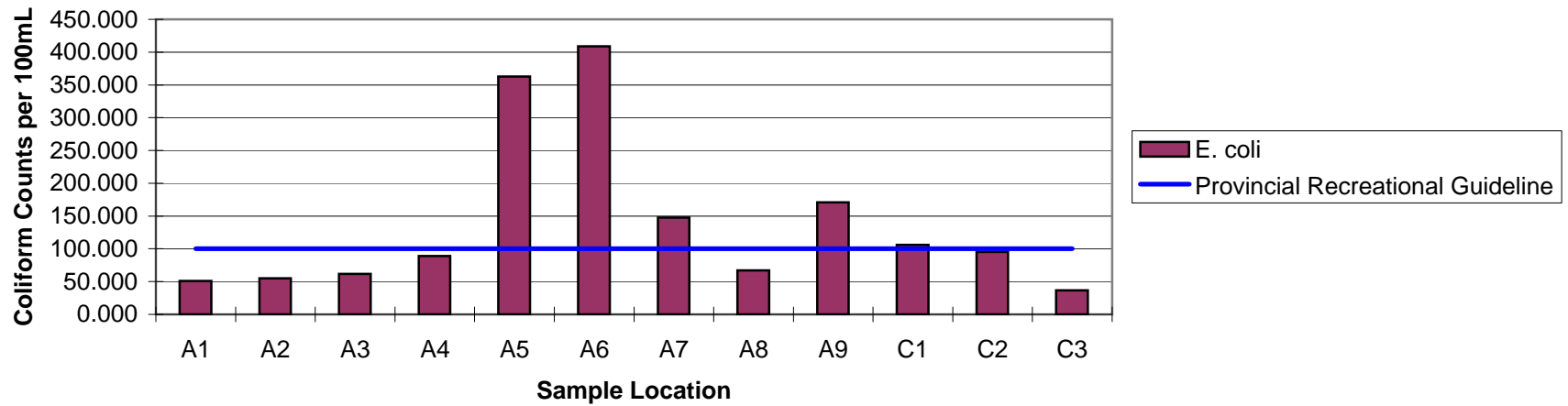
Stream Name	Site	Date	TOTAL PHOSPHORUS P (mg/l)													Total	75th Percentile	Percent of samples above:		Grade	Rank		
			Apr 19/11	May 3/11	May 17/11	Jun 1/11	Jun 14/11	Jun 28/11	Jul 12/11	Jul 27/10	Aug 9/11	Sep 6/11	Sep 19/11	Oct 3/11	Oct 18/11			Nov 1/11	Nov 15/11			Provincial Water Quality Objective (0.03mg/L)	
Boyd Creek	A1		0.0057	0.0066	0.008	0.0181	0.024	0.0273	0.0136	0.0142		0.0092	0.0157	0.0109	0.0268	0.0099	0.0124	14	0.0175	0%		A	3
Eighteen Mile River	A2		0.0151	0.0195	0.0164	0.0107	0.011	0.0157	0.0131	0.0222		0.0295		0.0085	0.0195	0.0115	0.0079	14	0.0195	7%		A	4
Kintail Creek	A3		0.0233	0.013	0.016		0.0194	0.02						0.0223	0.0242	0.0188	0.0107	9	0.0223	0%		A	7
Kerry's Creek	A4		0.0115	0.0094	0.0082	0.0189	0.0245	0.0155	0.0133	0.0161	0.0176	0.0201	0.0405	0.0109	0.0136	0.0229	0.007	15	0.0195	0%		A	4
Near Kingsbridge	A5		0.0108	0.027	0.0273	0.025	0.0522	0.0296	0.0308			0.0422		0.013	0.0304	0.026	0.0109	12	0.0305	33%		B	10
Griffins Creek	A6		0.0073	0.015	0.0275	0.0314	0.0351	0.0335	0.0239	0.0352	0.134	0.0596	0.0792	0.0172	0.0477	0.0329	0.0296	15	0.0415	53%		B	12
Near Midhuron	A7		0.0051	0.0164	0.0377	0.0193	0.0166	0.0157	0.0281					0.0134	0.0238	0.0187	0.0164	11	0.0216	9%		A	6
Nine Mile River	A8		0.0045	0.0101	0.0068	0.017	0.0116	0.0133	0.0108	0.0094	0.125	0.0119	0.0094	0.0051	0.0153	0.0069	0.0043	15	0.0126	7%		A	1
Boundary Creek	A9		0.0101	0.0146	0.0217	0.0295	0.0201	0.0362	0.0183	0.0288	0.0255	0.0174	0.019	0.012	0.0109	0.0254	0.0045	15	0.0255	7%		A	9
Bogies Road Creek	C1		0.0051	0.0068	0.013	0.011	0.0245	0.0546	0.0183	0.0344	0.0322	0.0322	0.0341	0.0112	0.0091	0.0125	0.0077	15	0.0322	27%		B	11
Allans Creek	C2		0.0065	0.0069	0.0084	0.018	0.0236	0.0246	0.0164	0.0189	0.0308	0.0262	0.0182	0.0166	0.0165	0.0118	0.0212	15	0.0224	7%		A	8
Maitland River	C3		0.005	0.009	0.0147	0.0129	0.0076		0.0084	0.0175	0.0172	0.0137		0.0141	0.0347	0.0072	0.0128	13	0.0147	8%		A	2
75th Percentile			0.010975	0.01535	0.0231	0.02215	0.0245	0.03155	0.0211	0.0288	0.0554	0.031525	0.0373	0.014725	0.0277	0.023525	0.0137						

- Exceeds MVCA target to avoid excessive algae growth of .03mg/L Total Phosphorus as P (Intrium Prov. Water Quality objective for streams and rivers is .03mg/L)
- Less than the detection limit
- 75th percentile across all sites was 0.0248mg/L

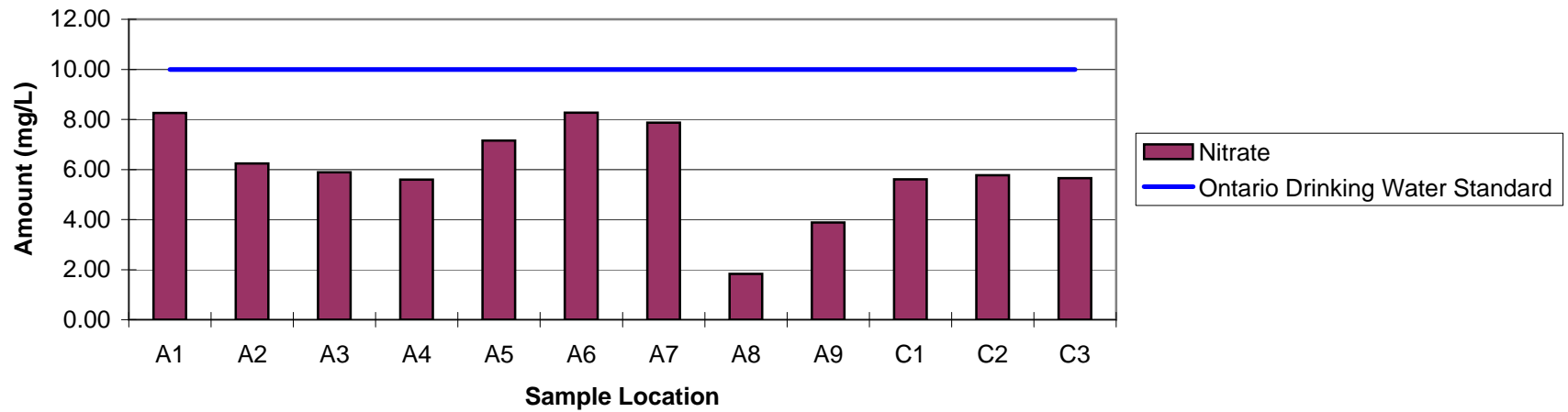
Total Daily Precipitation (mm) at Benmiller



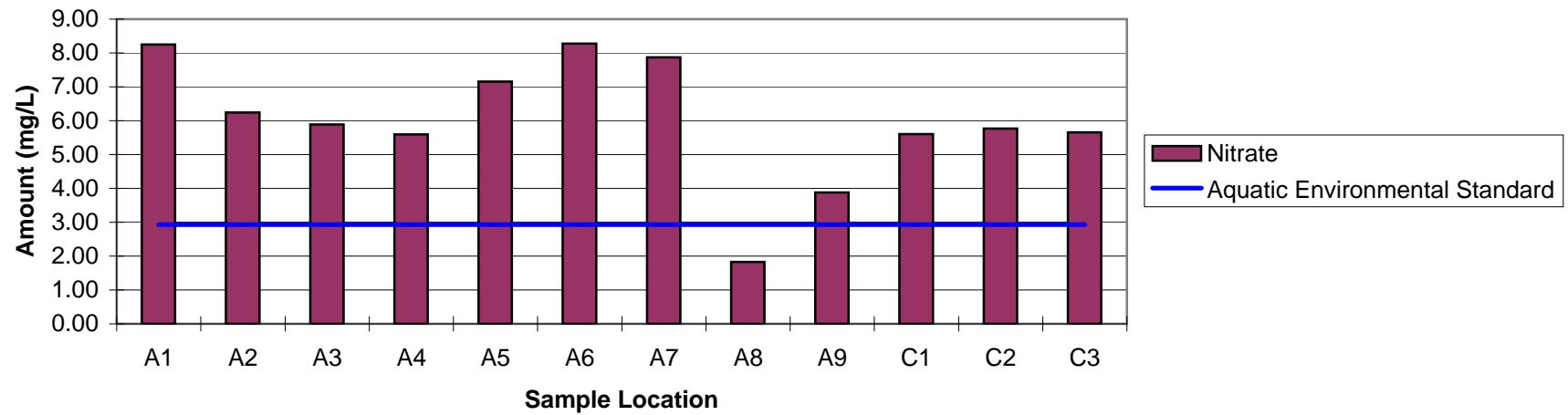
Geometric Mean for E. Coli for the 2011 Sample Season per Sample Location



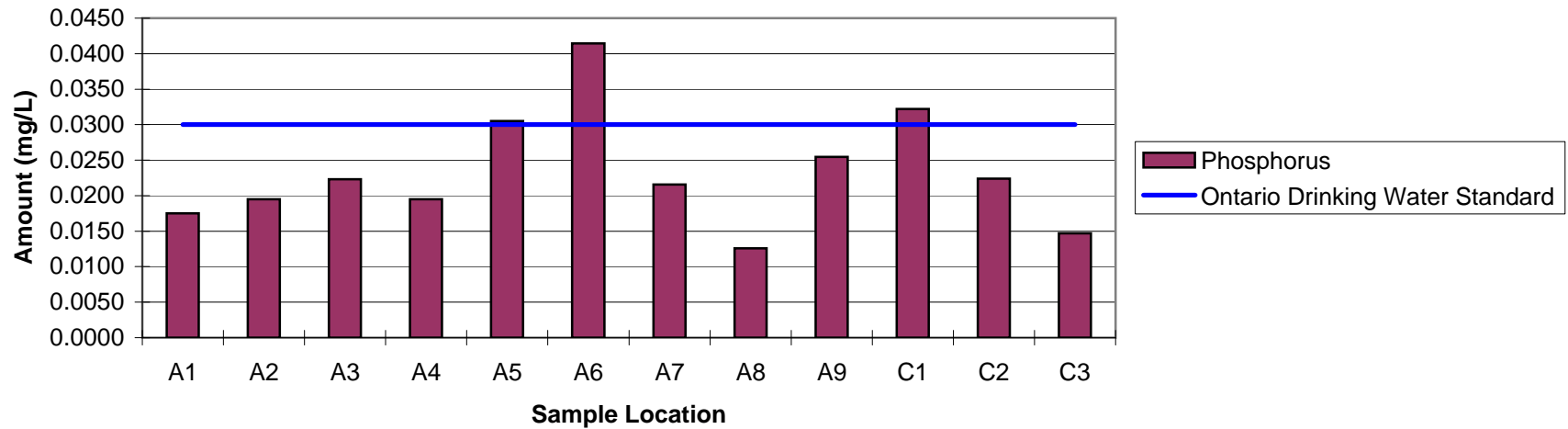
75th Percentile of Nitrate as N for the 2011 Sample Season per Sample Location



75th Percentile of Nitrate as N for the 2011 Sample Season per Sample Location



75th Percentile of Phosphorus for the 2011 Sample Season per Sample Location



Comparative Rank Between Sample Locations.
Best Water Quality to Worst

