EVENT-BASED WATER QUALITY MONITORING OF THE ROSS AND BLACK RIVER BASINS DURING THE 2006/07 WET SEASON.

Volume 2 - Appendices

Report No. 07/09

for the Creek to Coral Ross Black WQIP

October 2007

Event-based water quality monitoring of the Ross and Black River Basins during the 2006/07 wet season.

Volume 2 - Appendices

for the Townsville Thuringowa Creek to Coral Water Quality Improvement Plan

ACTFR Report No. 07/09

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APPENDIX A

Stream Discharge Volumes

Appendix A: Annual stream flow (ML) for the major waterways within the Townsville Thuringowa Region (Sourced: NRW Watershed)

Gauging Station	Black River at Bruce Highway (117002A)			Bohle River at Hervey Range Road (118003A)			Alligator Creek at Allendale (118106A)			Bluewater Creek at Bluewater (117003A)		
Rank	Year Starting October	Annual Total (Megalitres)	Days Missing	Year Starting October	Annual Total (Megalitres)	Days Missing	Year Starting October	Annual Total (Megalitres)	Days Missing	Year Starting October	Annual Total (Megalitres)	Days Missing
1	1973/74	395064		1990/91	206742		1990/91	117200		1990/91	177849	
2	1990/91	345603		1997/98	151937		1999/ 0	102230		1980/81	158460	
3	1999/ 0	197967		2006/07	147000		1976/77	66881		1999/ 0	143425	
4	1980/81	189046		1999/ 0	130611		1975/76	66546		1973/74	134269	47
5	1997/98	183673		1988/89	75649		1997/98	63525		1997/98	122112	
6	1976/77	147851		1996/97	73225		1980/81	62562		1975/76	116584	
7	2006/07	136000		1989/90	64274		1989/90	61120		1996/97	86564	
8	1989/90	113431		2003/ 4	55979		1988/89	49444		1976/77	81447	
9	1975/76	107400		2001/ 2	47467		1978/79	46516		2000/ 1	79589	
10	2000/ 1	105592		1993/94	30645		1998/99	44324		1988/89	70045	
11	1988/89	90532		2000/ 1	29221		1996/97	44307		2006/07	63500	
12	1996/97	77562		1985/86	21647		2006/07	41500		1978/79	61907	
13	1978/79	72355		1995/96	21150		2000/ 1	37639		1989/90	53655	
14	1998/99	57852		2004/ 5	21058	80	1977/78	35094		1974/75	41730	
15	1979/80	51073		1994/95	11897		1987/88	29636		1998/99	39731	
16	1977/78	47503		1991/92	8994		1985/86	28849		1993/94	39438	
17	2003/ 4	45349		1998/99	8815		1974/75	24877		1983/84	33554	
18	1983/84	44620		2002/ 3	7780		1995/96	23023		1977/78	30442	
19	2001/ 2	40416		1987/88	7174		1979/80	22826		2003/ 4	29474	13
20	1974/75	37807		1992/93	3440		2001/ 2	19036		1982/83	29441	
21	1993/94	35991		1986/87	506		2004/ 5	16285	83	2001/ 2	29298	
22	1982/83	29366					1983/84	16207		1979/80	25384	
23	2004/ 5	27610	212				1986/87	14936		1995/96	23155	
24	1985/86	21050					1984/85	11079		2004/ 5	18493	123
25	1995/96	17939					1993/94	10926		1981/82	13721	
26	1991/92	14656					2003/ 4	10447		1985/86	11468	
27	2002/ 3	10386					1982/83	9786		1992/93	10411	
28	1981/82	5869					1992/93	8738		1991/92	9808	
29	1987/88	1768					1994/95	7071		1986/87	5231	
30	1992/93	945					1981/82	6317		2002/ 3	3708	
31	1994/95	748					2002/ 3	5001		1994/95	2212	
32	1986/87	345					1991/92	4176		1987/88	1787	
33	1984/85	46					2005/ 6	0	365	1984/85	288	

APPENDIX B

Water Quality Data

Appendix B: Freshwater : Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Alligator Ck (U/S)	Natural	21-01-07	17:15	50	1.0		163	18	141.4	16
Alligator Ck (U/S)	Natural	22-01-07	8:45	48	34.2		697	500	163.8	2
Alligator Ck (U/S)	Natural	22-01-07	17:45	47	4.9		327	113	187.3	0
Alligator Ck (U/S)	Natural	25-01-07	9:00	70	3.5		296	66	205.3	0
Alligator Ck (U/S)	Natural	01-02-07	17:45	44	19.0		264	50	184.4	6
Alligator Ck (U/S)	Natural	03-02-07	9:45	46	9.0		211	20	142.3	0
Bluewater Ck (U/S)	Natural	22-01-07	12:50	64	13.1		576	152	211.7	0
Bluewater Ck (U/S)	Natural	22-01-07	9:15	69	21.3		386	165	134.1	10
Bluewater Ck (U/S)	Natural	22-01-07	16:40	62	5		788	398	303.2	4
Bluewater Ck (U/S)	Natural	23-01-07	5:40	62	2.8		421	40	326.3	1
Bluewater Ck (U/S)	Natural	01-02-07	8:45	34	239.0		940	652	159.2	8
Bluewater Ck (U/S)	Natural	01-02-07	15:00	34	83.0		280	38	127	2
Bluewater Ck (U/S)	Natural	02-02-07	14:55	44	18.0		282	35	205.6	2
Campus Ck (U/S)	Natural	22-01-07	9:50	97	25.9	1	993	258	420.8	0
Campus Ck (U/S)	Natural	23-01-07	8:09	120	0.2		507	14	300.2	0
Campus Ck (U/S)	Natural	30-01-07	18:30	98	1.4		296	89	191.2	13
Campus Ck (U/S)	Natural	31-01-07	16:45	79	3.4		350	100	201.1	3
Campus Ck (U/S)	Natural	01-02-07	9:00	58	49.3	< 1	303	92	198.8	2
Campus Ck (U/S)	Natural	02-02-07	8:50	72	3.5		217	2	158.1	2
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	10:15	121	365.0	<1	1040	548	258.7	2
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	17:50	143	66.0		781	170	331.2	0
Stuart Ck (U/S)	Nat/Graz min use	23-01-07	8:34	146	29.9		644	144	272.1	61
Stuart Ck (U/S)	Nat/Graz min use	23-01-07	14:36	173	95.3		665	177	240.1	0
Stuart Ck (U/S)	Nat/Graz min use	24-01-07	10:20	214	3.7		424			5
Stuart Ck (U/S)	Nat/Graz min use	25-01-07	14:30	106	60.0		692	103	313.7	2
Stuart Ck (U/S)	Nat/Graz min use	30-01-07	17:10	92	160.7		692	254	338.3	69
Stuart Ck (U/S)	Nat/Graz min use	31-01-07	9:30	112	62.8		508	90	318.7	50
Stuart Ck (U/S)	Nat/Graz min use	31-01-07	15:50	88	40.8		454	124	255.4	44
Stuart Ck (U/S)	Nat/Graz min use	01-02-07	10:05	65	145.3	< 1	380	8	296.2	5

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Stuart Ck (U/S)	Nat/Graz min use	02-02-07	10:00	89	24.7		283	132	76.9	2
Hen Camp Ck Bruce Hwy	Nat/Graz min use	17-01-07	22:50	84	0.8		103	41	59	0
Hen Camp Ck Bruce Hwy	Nat/Graz min use	21-01-07	8:15	74	0.8		212	53	146.8	0
Hen Camp Ck Bruce Hwy	Nat/Graz min use	22-01-07	9:15	62	9.3		359	124	197.9	42
Hen Camp Ck Bruce Hwy	Nat/Graz min use	23-01-07	18:10	72	0.3		211	19	139.8	43
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	7:20	55	5.6		472	155	211.3	0
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	20:15	47	4.6		397	63	227.5	6
Hen Camp Ck Bruce Hwy	Nat/Graz min use	01-02-07	8:30	35	37.0		432	165	194.1	3
Hen Camp Ck Bruce Hwy	Nat/Graz min use	01-02-07	23:55	28	80.8		330	59	230	3
Hen Camp Ck (D/S)	Nat/Graz min use	31-01-07	7:40	172	32.5	< 10	587	96	450.1	1
Hen Camp Ck (D/S)	Nat/Graz min use	31-01-07	20:45	178	27.8		478	53	344	4
Hen Camp Ck (D/S)	Nat/Graz min use	01-02-07	8:55	41	6.4		700	192	440.4	5
Black R	Nat/Graz min use	22-01-07	13:30	92	105.2		1070	150	534.2	34
Black R	Nat/Graz min use	23-01-07	9:40	55	322.8	< 1	969	365	381.9	37
Black R	Nat/Graz min use	23-01-07	15:05	82	159.0		719	6	471.3	8
Black R	Nat/Graz min use	24-01-07	9:00	62	188.5		1150	571	428.2	16
Black R	Nat/Graz min use	24-01-07	16:50	81	142.0		689	236	324.4	2
Black R	Nat/Graz min use	30-01-07	16:30	62	301.3		862	344	467	6
Black R	Nat/Graz min use	30-01-07	18:00	76	306.0		975	341	570.5	2
Black R	Nat/Graz min use	31-01-07	11:10	81	198.5		755	218	477.7	6
Black R	Nat/Graz min use	01-02-07	12:15	39	638.7		784	421	221.9	0
Black R	Nat/Graz min use	01-02-07	12:25	39	710.0		907	575	193.1	0
Black R	Nat/Graz min use	01-02-07	17:15	35	237.0		801	171	570.9	0
Black R	Nat/Graz min use	02-02-07	10:50	51	337.0		503	85	313.7	23
Black R	Nat/Graz min use	03-02-07	15:30	75	128.8		424	39	236.5	0
Black R	Nat/Graz min use	05-02-07	16:20	87	36.5				265.8	75
Black R	Nat/Graz min use	09-02-07	13:00	114	8.0		315	32	200.5	2
Ross Dam	Nat/Graz min use	01-02-07	18:10	57	458.0		992	450	398.8	120
Ross Dam	Nat/Graz min use	02-02-07	13:00	71	173.5		626	93	388.9	10

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Sachs Ck (D/S)	Rural residential	22-01-07	10:45	81	268.0		956	271	324.6	9
Sachs Ck (D/S)	Rural residential	22-01-07	17:40	86	17.0		866	54	289.1	0
Sachs Ck (D/S)	Rural residential	23-01-07	18:00	116	7.1		798	46	318.7	0
Sachs Ck (D/S)	Rural residential	24-01-07	17:50	130	3.0		455	25	240.3	0
Sachs Ck (D/S)	Rural residential	25-01-07	6:55	94	4.2		517	83	245.2	3
Sachs Ck (D/S)	Rural residential	25-01-07	16:30	90	7.0		564	102	281	3
Sachs Ck (D/S)	Rural residential	26-01-07	11:00	110	1.6		724	262	270.1	0
Sachs Ck (D/S)	Rural residential	27-01-07		124	1.4		380	69	184.1	0
Sachs Ck (D/S)	Rural residential	28-01-07	7:05	74	13.5		724	180	503.6	2
Sachs Ck (D/S)	Rural residential	28-01-07	18:00	131	1.3		269	53	163.5	0
Sachs Ck (D/S)	Rural residential	31-01-07	9:15	82	10.0		631	335	248	7
Sachs Ck (D/S)	Rural residential	01-02-07			28.2		245	67	136.7	3
Sachs Ck (D/S)	Rural residential	03-02-07	9:00		7.8		245	33	141.4	4
Alligator Ck (D/S)	Rural residential	21-01-07	16:45	111	2.5		286	49	225.8	107
Alligator Ck (D/S)	Rural residential	22-01-07	9:15	66	9.5		285	119	127.1	35
Alligator Ck (D/S)	Rural residential	22-01-07	18:15	55	14.0		673	107	269	7
Alligator Ck (D/S)	Rural residential	25-01-07	8:30	77	48.0		465	201	222.8	0
Alligator Ck (D/S)	Rural residential	01-02-07	18:30	48	23.0		385	54	235.6	7
Alligator Ck (D/S)	Rural residential	03-02-07	9:15	44	25.0		340	132	139.3	5
Bluewater Ck (D/S)	Rural residential	22-01-07	13:15	172	4.8		836	28	380.2	25
Bluewater Ck (D/S)	Rural residential	24-01-07	8:45	60	28.0		452	143	148.4	1
Bluewater Ck (D/S)	Rural residential	24-01-07	15:30	60	4.4		405	39	183.9	0
Bluewater Ck (D/S)	Rural residential	25-01-07	17:50	66	0.5		300	34	134.8	0
Bluewater Ck (D/S)	Rural residential	28-01-07	15:25	61	0.9		262	74	173.5	0
Bluewater Ck (D/S)	Rural residential	31-01-07	6:45	58	2.5		164	41	102	0
Bluewater Ck (D/S)	Rural residential	31-01-07	18:15	48	48.8		508	86	281.6	2
Bluewater Ck (D/S)	Rural residential	01-02-07	9:15	34	114.0		466	134	191.6	2

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Bluewater Ck (D/S)	Rural residential	01-02-07	16:45	37	58.5		331	22	165.6	11
Bluewater Ck (D/S)	Rural residential	04-02-07	15:20	47	11.8		269	39	71.8	3
Woolcock St Drain	Urban	21-01-07	10:30	290	22.8	< 1	666	61	445.1	111
Woolcock St Drain	Urban	22-01-07	11:30	73	29.2	< 1	926	561	249.1	5
Woolcock St Drain	Urban	22-01-07	4:15	55	35.0	< 1	722	157	398.3	22
Woolcock St Drain	Urban	23-01-07	9:35	390	33.6	< 1	907	2	740.2	90
Woolcock St Drain	Urban	30-01-07	17:45	140	24.4	< 1	564	106	403.7	16
Woolcock St Drain	Urban	31-01-07	9:45	127	9.5	< 1	643	47	509.2	30
Woolcock St Drain	Urban	31-01-07	17:50	85	10.9		595	45	435.9	15
Woolcock St Drain	Urban	01-02-07	9:50	47	27.7	< 1	491	277	166.3	24
Woolcock St Drain	Urban	02-02-07	11:35	127	8.6		579	39	426.2	41
Black Weir	Urban	01-02-07	7:20	92	36.2	< 1	542	236	259.1	9
Black Weir	Urban	01-02-07	15:30	54	128.4		502	176	244.9	17
Black Weir	Urban	02-02-07	9:20	68	234.0		829	501	207.1	63
Aplins Weir	Urban	01-02-07	15:55	90	152.0					
Aplins Weir	Urban	01-02-07	9:35	127	147.6	< 1	433	122	250.2	27
Aplins Weir	Urban	02-02-07	9:30	58	328.0		883	428	332.5	95
Aplins Weir	Urban	03-02-07	16:50	62	212.0		625	203	318.2	269
Aplins Weir	Urban	05-02-07	17:00	67	33.0		490	72	323.7	52
Aplins Weir	Urban	09-02-07	16:50	57	15.0		502	59	345.2	60
Aplins Weir	Urban	12-02-07	15:25		82.0		564	115	324	59
Aplins Weir	Urban	22-02-07	15:00	85	12.0		394	105	267.3	4
Aplins Weir	Urban	22-03-07	13:30	109	6.5		513	2	502.3	31
Gordon Ck	Urban	02-01-07	14:40	6140	435.7	1	833	104	424.2	50
Gordon Ck	Urban	21-01-07	10:00	15	189.2	< 1	1010	231	441	216
Gordon Ck	Urban	22-01-07	4:50	294	1568.0	< 1	889	366	333.6	46
Gordon Ck	Urban	22-01-07	11:10	715	536.0	< 1	570	0	369.7	54
Gordon Ck	Urban	22-01-07	18:15	864	178.0	< 1	727	152	388.3	48
Gordon Ck	Urban	23-01-07	9:15	1087	227.6	< 1	639	136	319.5	43
Gordon Ck	Urban	23-01-07	15:00	1064	85.0	< 1	643	98	406.7	42
Gordon Ck	Urban	24-01-07	9:50	985	85.0		769	173	490.6	14

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Gordon Ck	Urban	30-01-07	16:00	1467	602.0		694	140	401.5	40
Gordon Ck	Urban	31-01-07	9:20	1358	600.5	< 1	616	129	433	32
Gordon Ck	Urban	31-01-07	16:10	371	363.0		701	199	446.8	11
Gordon Ck	Urban	01-02-07	10:50	201	351.3	< 1	469	157	218.8	16
Gordon Ck	Urban	02-02-07	10:30	277	89.5		546	121	295.7	20
Kern Drain	Urban	10-12-06	7:50	174	59.8		1210	130	755	105
Kern Drain	Urban	01-01-07	15:00	132	283.6		611	51	458.3	104
Kern Drain	Urban	21-01-07	11:30	108	222.8	< 1	566	139	328.4	36
Kern Drain	Urban	21-01-07	16:00	165	80.2	< 1	646	190	408.7	26
Kern Drain	Urban	22-01-07	2:25	96	1119.0	1	685	226	348.3	48
Kern Drain	Urban	22-01-07	14:15	119	335.0	3	705	148	388.8	17
Kern Drain	Urban	23-01-07	9:00	193	214.0	3	828	350	386.2	5
Kern Drain	Urban	23-01-07	14:30	254	59.0	< 1	814	2	732.7	1
Kern Drain	Urban	24-01-07	8:00	127			1340	845	367.4	49
Kern Drain	Urban	30-01-07	17:40	113	650.0		724	208	463.9	17
Kern Drain	Urban	31-01-07	10:40	121	399.0		602	84	435.1	
Kern Drain	Urban	31-01-07	15:50	107	278.0		620	8	543.8	45
Kern Drain	Urban	01-02-07	11:00	78	232.9	< 1	398	38	327.3	41
Kern Drain	Urban	02-02-07	10:10	84	475.0	< 1	430	25	343.3	26
Bohle R	Urban/Industry	22-01-07	13:50	127	558.3	< 1	1590	1022	307	40
Bohle R	Urban/Industry	23-01-07	10:25	184	168.0		907	218	508.9	13
Bohle R	Urban/Industry	23-01-07	15:30	107	134.0		953	208	571.7	17
Bohle R	Urban/Industry	24-01-07	9:25	374	69.0		806	54	571.4	40
Bohle R	Urban/Industry	24-01-07	16:10	109	142.5		1020	191	686.6	5
Bohle R	Urban/Industry	30-01-07	18:30	115	423.0		632	91	465.7	8
Bohle R	Urban/Industry	31-01-07	11:20	86	273.0		824	192	578.9	16
Bohle R	Urban/Industry	31-01-07	16:50	78	215.0		935	294	512.2	23
Bohle R	Urban/Industry	01-02-07	13:10	47	93.2	< 1	420	83	223.4	5
Bohle R	Urban/Industry	01-02-07	17:35	25	222.8		349	164	125.7	3
Bohle R	Urban/Industry	02-02-07	11:20	44	175		423	164	214	4

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Bohle R	Urban/Industry	03-02-07	15:50	44	74.6		292	17	230.8	6
Bohle R	Urban/Industry	05-02-07	16:40	98	62.0		616	198	343.9	4
Bohle R	Urban/Industry	09-02-07	13:20	205	13.8		498	14	391	64
Louisa Ck	Urban/Industry	21-01-07	11:10	867	12.5	< 1	808	337	461.9	21
Louisa Ck	Urban/Industry	22-01-07	12:10	62	15.0	< 1	519	100	273.3	7
Louisa Ck	Urban/Industry	22-01-07	3:00	88	41.5	< 1	400	3	332.5	3
Louisa Ck	Urban/Industry	23-01-07	10:45	158	3.3		464	102	335.2	1
Louisa Ck	Urban/Industry	30-01-07	19:30	106	11.6		548	161	349.8	4
Louisa Ck	Urban/Industry	31-01-07	11:45	115	10.9		639	78	492.9	1
Louisa Ck	Urban/Industry	31-01-07	17:10	91	11.9		650	92	426	7
Louisa Ck	Urban/Industry	01-02-07	10:40	78	18.0	< 1	511	59	271.2	29
Louisa Ck	Urban/Industry	02-02-07	12:00	109	5.7		526	97	310.5	0
Louisa Ck	Urban/Industry	02-02-07	12:05	110	5.8		540	54	370.4	42
Stuart Ck (D/S)	Urban/Industry	23-01-07	8:55	105	83.4	< 1	643	249	208.9	0
Stuart Ck (D/S)	Urban/Industry	23-01-07	14:50	126	50.0		752	227	382.5	0
Stuart Ck (D/S)	Urban/Industry	24-01-07	10:00	186	16.0		682	148	378.8	3
Stuart Ck (D/S)	Urban/Industry	30-01-07	Auto	89	209.0		1050	480	453.3	6
Stuart Ck (Auto)	Urban/Industry	30-01-07	15:00	160	262.0		891	274	469.1	15
Stuart Ck (Auto)	Urban/Industry	31-01-07	9:00	110	48.3		608	144	360.6	25
Stuart Ck (Auto)	Urban/Industry	31-01-07	12:19	119	113.2		578	121	354.7	0
Stuart Ck (Auto)	Urban/Industry	31-01-07	13:19	106	130.5					
Stuart Ck (Auto)	Urban/Industry	31-01-07	14:19	94	96.0					
Stuart Ck (Auto)	Urban/Industry	31-01-07	17:35	92	53.9		689	279	350.3	0
Stuart Ck (Auto)	Urban/Industry	31-01-07	18:35	92	37.2					
Stuart Ck (Auto)	Urban/Industry	01-02-07	23:15	98	45.9		584	124	365.5	0
Stuart Ck (Auto)	Urban/Industry	01-02-07	0:15	94	85.1					
Stuart Ck (Auto)	Urban/Industry	01-02-07	1:15	84	200.0					
Stuart Ck (Auto)	Urban/Industry	01-02-07	2:15	75	215.6					
Stuart Ck (Auto)	Urban/Industry	01-02-07	3:15	72	160.4					

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Stuart Ck (Auto)	Urban/Industry	01-02-07	4:15	68	320.6		724	487	199	0
Stuart Ck (Auto)	Urban/Industry	01-02-07	5:15	61	512.0					
Stuart Ck (Auto)	Urban/Industry	01-02-07	6:15	56	560.0					
Stuart Ck (Auto)	Urban/Industry	01-02-07	7:15	52	500.7					
Stuart Ck (Auto)	Urban/Industry	01-02-07	8:02	50	409.0					
Stuart Ck (Auto)	Urban/Industry	01-02-07	9:02	53	231.1		581	319	225.9	0
Stuart Ck (Auto)	Urban/Industry	01-02-07	10:02	56	173.6					
Stuart Ck (Auto)	Urban/Industry	01-02-07	11:02	58	162.7					
Stuart Ck (Auto)	Urban/Industry	01-02-07	11:15	66	174.5					
Stuart Ck (Auto)	Urban/Industry	01-02-07	12:15	64	184.5					
Stuart Ck (Auto)	Urban/Industry	01-02-07	13:15	57	288.0		602	411	185.6	0
Stuart Ck (Auto)	Urban/Industry	01-02-07	14:15	53	307.0					
Stuart Ck (Auto)	Urban/Industry	02-02-07	18:09	96	662.0		1070	766	188.4	1
Stuart Ck (Auto)	Urban/Industry	02-02-07	19:09	68	489.0					
Stuart Ck (Auto)	Urban/Industry	02-02-07	20:09	55	353.0					
Stuart Ck (Auto)	Urban/Industry	02-02-07	21:09	53	242.5		464	265	195.9	3
Stuart Ck (Auto)	Urban/Industry	02-02-07	22:09	51	196.0					
Stuart Ck (Auto)	Urban/Industry	02-02-07	23:09	48	349.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	0:09	42	483.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	1:09	37	509.0		641	490	146	2
Stuart Ck (Auto)	Urban/Industry	03-02-07	2:09	35	360.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	3:09	38	270.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	4:09	42	222.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	5:09	43	183.0		416	256	143.75	2
Stuart Ck (Auto)	Urban/Industry	03-02-07	6:09	46	144.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	7:09	51	142.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	8:09	59	103.0					
Stuart Ck (Auto)	Urban/Industry	03-02-07	9:09	68	95.5		432	212	170.7	0
Stuart Ck (Auto)	Urban/Industry	30-01-07	17:46	89	209.0					
Captain Ck Drain	Urban/Industry	21-01-07	10:50	6	14.9	< 1	642	189	321.6	81

Appendix B: Freshwater: Conductivity, TSS, oil and grease and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil and Grease (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia-N (µg N/L)
Captain Ck Drain	Urban/Industry	22-01-07	11:50	191	21.1	< 1	537	69	410.1	7
Captain Ck Drain	Urban/Industry	22-01-07	3:45	164	41.8	< 1	598	190	294.1	24
Captain Ck Drain	Urban/Industry	23-01-07	11:10	392	2.9		1350	855	491	31
Captain Ck Drain	Urban/Industry	30-01-07	18:00	226	15.0		770	199	555.6	11
Captain Ck Drain	Urban/Industry	31-01-07	10:00	154	17.7		479	62	359.2	16
Captain Ck Drain	Urban/Industry	31-01-07	17:30	93	6.0		694	169	453.4	3
Captain Ck Drain	Urban/Industry	01-02-07	10:20	73	8.7	< 1	457	52	243.6	11
Captain Ck Drain	Urban/Industry	02-02-07	12:00	224	4.4		938	54	293.5	17

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Aligator Ck (U/S)	Natural	21-01-07	17:15	4	14	0	3	11.0	26.5	0.7
Aligator Ck (U/S)	Natural	22-01-07	8:45	33	21	12	6	2.9	72.0	25.3
Aligator Ck (U/S)	Natural	22-01-07	17:45	27	21	9	4	8.0	34.9	7.4
Aligator Ck (U/S)	Natural	25-01-07	9:00	25	41	7	2	32.0	16.0	1.7
Aligator Ck (U/S)	Natural	01-02-07	17:45	30	54	23	0	31.0	10.9	2.1
Aligator Ck (U/S)	Natural	03-02-07	9:45	49	38	14	4	19.7	12.2	5.5
Bluewater Ck (U/S)	Natural	22-01-07	12:50	212	106	96	7	2.3	12.1	204.1
Bluewater Ck (U/S)	Natural	22-01-07	9:15	86	35	18	5	11.9	24.2	16.0
Bluewater Ck (U/S)	Natural	22-01-07	16:40	87	42	31	1	9.7	41.7	19.8
Bluewater Ck (U/S)	Natural	23-01-07	5:40	55	140	130	4	7.1	6.6	17.1
Bluewater Ck (U/S)	Natural	01-02-07	8:45	129	168	156	7	4.5	12.4	63.3
Bluewater Ck (U/S)	Natural	01-02-07	15:00	115	50	38	9	3.2	12.3	79.5
Bluewater Ck (U/S)	Natural	02-02-07	14:55	41	19	10	5	5.1	32.6	18.0
Campus Ck (U/S)	Natural	22-01-07	9:50	315	188	53	22	113.2	11.7	6.1
Campus Ck (U/S)	Natural	23-01-07	8:09	193	75	12	16	47.0	15.0	9.1
Campus Ck (U/S)	Natural	30-01-07	18:30	16	75	14	15	46.2	8.7	0.8
Campus Ck (U/S)	Natural	31-01-07	16:45	50	87	21	5	61.7	8.9	1.8
Campus Ck (U/S)	Natural	01-02-07	9:00	12	95	60	9	25.3	7.1	1.1
Campus Ck (U/S)	Natural	02-02-07	8:50	58	92	26	6	60.9	5.2	2.1
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	10:15	234	232	127	20	84.9	9.9	6.1
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	17:50	280	159	85	6	68.1	10.9	9.1
Stuart Ck (U/S)	Nat/Graz min use	23-01-07	8:34	228	123	63	1	59.0	11.6	8.5
Stuart Ck (U/S)	Nat/Graz min use	23-01-07	14:36	248	163	112	11	40.4	9.0	13.6
Stuart Ck (U/S)	Nat/Graz min use	24-01-07	10:20	131	42	1	1	40.0	22.3	7.3
Stuart Ck (U/S)	Nat/Graz min use	25-01-07	14:30	275	179	59	112	8.0	8.6	76.1
Stuart Ck (U/S)	Nat/Graz min use	30-01-07	17:10	100	190	98	18	73.0	8.1	3.0
Stuart Ck (U/S)	Nat/Graz min use	31-01-07	9:30	99	133	69	19	44.5	8.5	4.9
Stuart Ck (U/S)	Nat/Graz min use	31-01-07	15:50	75	116	53	9	54.5	8.6	3.0
Stuart Ck (U/S)	Nat/Graz min use	01-02-07	10:05	76	148	74	11	63.2	5.7	2.7

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Stuart Ck (U/S)	Nat/Graz min use	02-02-07	10:00	74	91	35	6	50.0	6.9	3.3
Hen Camp Ck Bruce Hwy	Nat/Graz min use	17-01-07	22:50	3	17	3	8	5.1	13.6	1.3
Hen Camp Ck Bruce Hwy	Nat/Graz min use	21-01-07	8:15	12	15	3	6	6.6	30.6	4.1
Hen Camp Ck Bruce Hwy	Nat/Graz min use	22-01-07	9:15	38	20	12	3	4.9	39.7	17.0
Hen Camp Ck Bruce Hwy	Nat/Graz min use	23-01-07	18:10	52	13	2	1	10.6	34.8	10.9
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	7:20	106	23	15	6	1.5	46.0	155.8
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	20:15	107	26	17	4	5.1	33.3	46.3
Hen Camp Ck Bruce Hwy	Nat/Graz min use	01-02-07	8:30	73	33	24	6	2.9	29.1	55.6
Hen Camp Ck Bruce Hwy	Nat/Graz min use	01-02-07	23:55	41	28	13	1	14.6	25.7	6.3
Hen Camp Ck (D/S)	Nat/Graz min use	31-01-07	7:40	41	43	25	15	2.7	30.3	33.5
Hen Camp Ck (D/S)	Nat/Graz min use	31-01-07	20:45	81	26	13	7	6.9	40.0	26.0
Hen Camp Ck (D/S)	Nat/Graz min use	01-02-07	8:55	68	39	19	1	19.4	39.5	7.8
Black R	Nat/Graz min use	22-01-07	13:30	386	206	47	56	102.7	11.5	8.3
Black R	Nat/Graz min use	23-01-07	9:40	222	158	103	12	43.3	13.6	11.3
Black R	Nat/Graz min use	23-01-07	15:05	242	97	44	14	38.3	16.5	14.0
Black R	Nat/Graz min use	24-01-07	9:00	151	1010	879	4	127.0	2.5	2.6
Black R	Nat/Graz min use	24-01-07	16:50	129	92	47	5	40.0	16.6	7.1
Black R	Nat/Graz min use	30-01-07	16:30	51	164	111	17	36.0	11.6	3.1
Black R	Nat/Graz min use	30-01-07	18:00	64	277	178	24	75.4	7.8	1.9
Black R	Nat/Graz min use	31-01-07	11:10	59	154	95	19	39.9	10.9	3.3
Black R	Nat/Graz min use	01-02-07	12:15	142	177	132	15	29.1	9.8	10.8
Black R	Nat/Graz min use	01-02-07	12:25	139	165	124	12	29.8	12.1	10.3
Black R	Nat/Graz min use	01-02-07	17:15	59	124	58	38	28.5	14.3	4.6
Black R	Nat/Graz min use	02-02-07	10:50	104	119	77	7	34.9	9.4	6.6
Black R	Nat/Graz min use	03-02-07	15:30	149	73	34	2	37.0	12.8	8.9
Black R	Nat/Graz min use	05-02-07	16:20	111			22	22.6		10.9
Black R	Nat/Graz min use	09-02-07	13:00	83	47	18	2	27.0	14.9	6.8
Ross Dam	Nat/Graz min use	01-02-07	18:10	143	201	182	4	14.7	10.9	21.5
Ross Dam	Nat/Graz min use	02-02-07	13:00	144	103	78	10	14.8	13.5	21.5

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Sachs Ck (D/S)	Rural residential	22-01-07	10:45	360	215	63	37	114.8	9.8	6.9
Sachs Ck (D/S)	Rural residential	22-01-07	17:40	523	109	44	23	41.6	17.6	27.8
Sachs Ck (D/S)	Rural residential	23-01-07	18:00	433	44	20	3	22.0	39.8	43.6
Sachs Ck (D/S)	Rural residential	24-01-07	17:50	190	27	4	4	19.1	36.9	22.0
Sachs Ck (D/S)	Rural residential	25-01-07	6:55	189	50	19	0	30.6	23.0	13.6
Sachs Ck (D/S)	Rural residential	25-01-07	16:30	181	58	18	7	33.5	21.5	11.9
Sachs Ck (D/S)	Rural residential	26-01-07	11:00	192	46	24	0	21.6	34.9	19.6
Sachs Ck (D/S)	Rural residential	27-01-07		127	32	13	4	14.8	26.6	18.9
Sachs Ck (D/S)	Rural residential	28-01-07	7:05	40	60	6	14	39.2	26.7	2.3
Sachs Ck (D/S)	Rural residential	28-01-07	18:00	52	26	7	3	14.8	23.2	7.8
Sachs Ck (D/S)	Rural residential	31-01-07	9:15	48	49	2	18	29.1	28.4	3.6
Sachs Ck (D/S)	Rural residential	01-02-07		42	78	37	3	39.0	6.9	2.4
Sachs Ck (D/S)	Rural residential	03-02-07	9:00	71	57	24	7	27.1	9.5	5.8
Alligator Ck (D/S)	Rural residential	21-01-07	16:45	11	41	20	16	4.6	15.5	5.4
Alligator Ck (D/S)	Rural residential	22-01-07	9:15	39	50	25	10	15.1	12.6	5.7
Alligator Ck (D/S)	Rural residential	22-01-07	18:15	297	34	13	7	14.0	44.4	46.9
Alligator Ck (D/S)	Rural residential	25-01-07	8:30	41	154	73	7	74.0	6.7	1.2
Alligator Ck (D/S)	Rural residential	01-02-07	18:30	95	50	3	23	24.1	17.0	8.8
Alligator Ck (D/S)	Rural residential	03-02-07	9:15	69	69	26	5	37.6	10.9	4.0
Bluewater Ck (D/S)	Rural residential	22-01-07	13:15	428	27	9	13	5.5	68.5	172.0
Bluewater Ck (D/S)	Rural residential	24-01-07	8:45	161	28	19	4	4.8	36.0	74.0
Bluewater Ck (D/S)	Rural residential	24-01-07	15:30	182	22	12	2	8.1	41.1	49.7
Bluewater Ck (D/S)	Rural residential	25-01-07	17:50	131	15	3	5	7.4	45.1	39.2
Bluewater Ck (D/S)	Rural residential	28-01-07	15:25	15	11	0	6	4.7	52.7	6.8
Bluewater Ck (D/S)	Rural residential	31-01-07	6:45	21	17	1	8	8.1	21.6	5.7
Bluewater Ck (D/S)	Rural residential	31-01-07	18:15	140	39	28	3	8.6	28.8	36.1
Bluewater Ck (D/S)	Rural residential	01-02-07	9:15	140	41	31	5	4.9	25.3	63.4

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Bluewater Ck (D/S)	Rural residential	01-02-07	16:45	143	24	15	2	6.7	30.9	47.3
Bluewater Ck (D/S)	Rural residential	04-02-07	15:20	158	14	7	2	5.4	41.3	64.8
Woolcock St Drain	Urban	21-01-07	10:30	160	264	17	41	206.5	5.6	1.7
Woolcock St Drain	Urban	22-01-07	11:30	116	258	27	17	213.7	7.9	1.2
Woolcock St Drain	Urban	22-01-07	4:15	167	339	8	30	300.9	4.7	1.2
Woolcock St Drain	Urban	23-01-07	9:35	165	415	90	25	300.2	4.8	1.2
Woolcock St Drain	Urban	30-01-07	17:45	54	256	81	17	158.0	4.9	0.8
Woolcock St Drain	Urban	31-01-07	9:45	87	285	63	11	211.0	5.0	0.9
Woolcock St Drain	Urban	31-01-07	17:50	114	354	58	3	293.5	3.7	0.9
Woolcock St Drain	Urban	01-02-07	9:50	48	276	114	79	83.5	3.9	1.3
Woolcock St Drain	Urban	02-02-07	11:35	114	381	23	90	268.4	3.4	0.9
Black Weir	Urban	01-02-07	7:20	47	65	37	11	17.0	18.3	6.1
Black Weir	Urban	01-02-07	15:30	81	165	117	11	37.0	6.7	4.8
Black Weir	Urban	02-02-07	9:20	121	174	157	2	15.1	10.5	17.7
Aplins Weir	Urban	01-02-07	9:35	61	135	86	9	39.2	7.1	3.4
Aplins Weir	Urban	02-02-07	9:30	122	162	143	5	14.4	12.1	18.8
Aplins Weir	Urban	03-02-07	16:50	104	113	100	1	11.9	12.2	19.3
Aplins Weir	Urban	05-02-07	17:00	94	64	39	11	14.2	17.1	14.7
Aplins Weir	Urban	09-02-07	16:50	98	45	18	6	21.0	24.7	10.3
Aplins Weir	Urban	12-02-07	15:25	125	70	39	4	26.9	17.9	10.3
Aplins Weir	Urban	22-02-07	15:00	22	47	30	8	8.9	18.7	5.4
Aplins Weir	Urban	22-03-07	13:30	9	39	18	13	7.7	29.3	2.7
Gordon Ck	Urban	02-01-07	14:40	305	194	52	18	123.8	9.5	5.5
Gordon Ck	Urban	21-01-07	10:00	338	94	71	4	19.4	23.8	38.5
Gordon Ck	Urban	22-01-07	4:50	189	326	199	0	127.0	6.0	3.3
Gordon Ck	Urban	22-01-07	11:10	200	163	26	7	129.7	7.7	3.4
Gordon Ck	Urban	22-01-07	18:15	187	317	157	20	140.0	5.1	2.9
Gordon Ck	Urban	23-01-07	9:15	140	197	55	124	17.8	7.2	22.8
Gordon Ck	Urban	23-01-07	15:00	138	234	100	3	130.6	6.1	2.3
Gordon Ck	Urban	24-01-07	9:50	105	225	66	4	155.0	7.6	1.5

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_x	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Gordon Ck	Urban	30-01-07	16:00	153	143	84	13	46.3	10.7	7.3
Gordon Ck	Urban	31-01-07	9:20	54	182	90	9	83.4	7.5	1.4
Gordon Ck	Urban	31-01-07	16:10	55	268	123	18	127.4	5.8	1.0
Gordon Ck	Urban	01-02-07	10:50	93	253	134	14	105.2	4.1	2.0
Gordon Ck	Urban	02-02-07	10:30	130	179	55	7	116.4	6.8	2.5
Kern Drain	Urban	10-12-06	7:50	325	593	90	54	449.8	4.5	1.6
Kern Drain	Urban	01-01-07	15:00	102	379	176	2	201.7	3.6	1.1
Kern Drain	Urban	21-01-07	11:30	98	264	114	16	134.3	4.7	1.6
Kern Drain	Urban	21-01-07	16:00	47	316	120	26	170.0	4.5	0.6
Kern Drain	Urban	22-01-07	2:25	111	374	168	16	190.0	4.1	1.3
Kern Drain	Urban	22-01-07	14:15	168	517	191	19	307.0	3.0	1.2
Kern Drain	Urban	23-01-07	9:00	92	335	102	27	206.5	5.5	1.0
Kern Drain	Urban	23-01-07	14:30	79	299	64	1	234.0	6.0	0.7
Kern Drain	Urban	24-01-07	8:00	128	117	41	1	75.0	25.3	3.8
Kern Drain	Urban	30-01-07	17:40	52	476	265	34	176.9	3.4	0.7
Kern Drain	Urban	31-01-07	10:40	83	381	193	5	182.7	3.5	1.0
Kern Drain	Urban	31-01-07	15:50	68	344	18	112	214.2	4.0	0.7
Kern Drain	Urban	01-02-07	11:00	33	261	56	62	143.7	3.4	0.5
Kern Drain	Urban	02-02-07	10:10	62	293	127	7	159.0	3.2	0.9
Bohle R	Urban/Industry	22-01-07	13:50	261	783	285	108	390.2	4.5	1.5
Bohle R	Urban/Industry	23-01-07	10:25	180	308	118	33	157.8	6.5	2.5
Bohle R	Urban/Industry	23-01-07	15:30	173	271	124	15	132.0	7.8	2.9
Bohle R	Urban/Industry	24-01-07	9:25	181	376	109	9	258.6	4.7	1.5
Bohle R	Urban/Industry	24-01-07	16:10	142	949	812	22	115.4	2.4	2.7
Bohle R	Urban/Industry	30-01-07	18:30	75	165	50	15	100.6	8.5	1.7
Bohle R	Urban/Industry	31-01-07	11:20	53	174	68	24	81.7	10.5	1.4
Bohle R	Urban/Industry	31-01-07	16:50	129	163	36	51	75.9	12.7	3.8
Bohle R	Urban/Industry	01-02-07	13:10	114	137	55	10	72.0	6.8	3.5
Bohle R	Urban/Industry	01-02-07	17:35	59	80	53	22	4.8	9.7	27.3
Bohle R	Urban/Industry	02-02-07	11:20	45	127	84	5	37.6	7.4	2.7

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Bohle R	Urban/Industry	03-02-07	15:50	44	87	30	8	48.9	7.5	2.0
Bohle R	Urban/Industry	05-02-07	16:40	74	114	44	7	63.6	11.9	2.6
Bohle R	Urban/Industry	09-02-07	13:20	93	112	19	7	87.0	9.8	2.4
Louisa Ck	Urban/Industry	21-01-07	11:10	9	162	130	14	18.2	11.0	1.1
Louisa Ck	Urban/Industry	22-01-07	12:10	146	172	27	3	142.0	6.7	2.3
Louisa Ck	Urban/Industry	22-01-07	3:00	65	130	14	54	62.0	6.8	2.3
Louisa Ck	Urban/Industry	23-01-07	10:45	27	168	19	23	125.7	6.1	0.5
Louisa Ck	Urban/Industry	30-01-07	19:30	37	154	48	20	86.3	7.9	1.0
Louisa Ck	Urban/Industry	31-01-07	11:45	68	178	35	24	119.0	7.9	1.3
Louisa Ck	Urban/Industry	31-01-07	17:10	132	250	48	46	156.9	5.7	1.9
Louisa Ck	Urban/Industry	01-02-07	10:40	182	191	20	13	157.5	5.9	2.6
Louisa Ck	Urban/Industry	02-02-07	12:00	119	191	38	3	150.0	6.1	1.7
Louisa Ck	Urban/Industry	02-02-07	12:05	116	193	36	3	154.0	6.2	1.7
Stuart Ck (D/S)	Urban/Industry	23-01-07	8:55	185	204	92	6	106.1	7.0	3.9
Stuart Ck (D/S)	Urban/Industry	23-01-07	14:50	143	193	71	22	100.4	8.6	3.1
Stuart Ck (D/S)	Urban/Industry	24-01-07	10:00	155	153	41	10	101.7	9.9	3.4
Stuart Ck (D/S)	Urban/Industry	30-01-07	Auto	117	254	158	13	83.1	9.1	3.1
Stuart Ck (Auto)	Urban/Industry	30-01-07	15:00	148	441	343	16	82.0	4.5	4.0
Stuart Ck (Auto)	Urban/Industry	31-01-07	9:00	103	166	69	19	78.9	8.1	2.9
Stuart Ck (Auto)	Urban/Industry	31-01-07	12:19	102	143	51	20	71.9	8.9	3.1
Stuart Ck (Auto)	Urban/Industry	31-01-07	13:19							
Stuart Ck (Auto)	Urban/Industry	31-01-07	14:19							
Stuart Ck (Auto)	Urban/Industry	31-01-07	17:35	60	163	71	19	73.8	9.4	1.8
Stuart Ck (Auto)	Urban/Industry	31-01-07	18:35							
Stuart Ck (Auto)	Urban/Industry	01-02-07	23:15	95	155	52	20	82.8	8.3	2.5
Stuart Ck (Auto)	Urban/Industry	01-02-07	0:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	1:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	2:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	3:15							

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_x	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Stuart Ck (Auto)	Urban/Industry	01-02-07	4:15	38	180	59	13	108.4	8.9	0.8
Stuart Ck (Auto)	Urban/Industry	01-02-07	5:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	6:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	7:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	8:02							
Stuart Ck (Auto)	Urban/Industry	01-02-07	9:02	36	341	218	17	106.3	3.8	0.8
Stuart Ck (Auto)	Urban/Industry	01-02-07	10:02							
Stuart Ck (Auto)	Urban/Industry	01-02-07	11:02							
Stuart Ck (Auto)	Urban/Industry	01-02-07	11:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	12:15							
Stuart Ck (Auto)	Urban/Industry	01-02-07	13:15	5	402	306	15	79.9	3.3	0.1
Stuart Ck (Auto)	Urban/Industry	01-02-07	14:15							
Stuart Ck (Auto)	Urban/Industry	02-02-07	18:09	115	673	576	8	88.6	3.5	2.9
Stuart Ck (Auto)	Urban/Industry	02-02-07	19:09							
Stuart Ck (Auto)	Urban/Industry	02-02-07	20:09							
Stuart Ck (Auto)	Urban/Industry	02-02-07	21:09	3	211	125	7	78.5	4.9	0.1
Stuart Ck (Auto)	Urban/Industry	02-02-07	22:09							
Stuart Ck (Auto)	Urban/Industry	02-02-07	23:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	0:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	1:09	5	635	546	14	75.2	2.2	0.1
Stuart Ck (Auto)	Urban/Industry	03-02-07	2:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	3:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	4:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	5:09	16	203	122	7	73.7	4.5	0.5
Stuart Ck (Auto)	Urban/Industry	03-02-07	6:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	7:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	8:09							
Stuart Ck (Auto)	Urban/Industry	03-02-07	9:09	50	267	179	6	82.9	3.6	1.3
Stuart Ck (Auto)	Urban/Industry	30-01-07	17:46							
Captain Ck Drain	Urban/Industry	21-01-07	10:50	131	162	47	6	109.6	8.8	2.7

Appendix B: Freshwater: Nutrients

Site name	Land use	Date Collected	Time Collected	NO_X	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Captain Ck Drain	Urban/Industry	22-01-07	11:50	58	245	14	133	97.8	4.8	1.3
Captain Ck Drain	Urban/Industry	22-01-07	3:45	113	235	46	106	82.9	5.6	3.0
Captain Ck Drain	Urban/Industry	23-01-07	11:10	4	281	130	12	138.8	10.6	0.1
Captain Ck Drain	Urban/Industry	30-01-07	18:00	15	322	116	44	161.9	5.3	0.2
Captain Ck Drain	Urban/Industry	31-01-07	10:00	58	280	117	16	147.8	3.8	0.9
Captain Ck Drain	Urban/Industry	31-01-07	17:30	72	271	37	68	165.5	5.7	1.0
Captain Ck Drain	Urban/Industry	01-02-07	10:20	161	175	19	18	137.9	5.8	2.6
Captain Ck Drain	Urban/Industry	02-02-07	12:00	591	147	24	7	116.0	14.1	11.3

Appendix B: Freshwater: Pesticides

Site name	Land use	Date Collected	Time Collected	Ametryn (µg/L)	Atrazine (µg/L)	Desethyl Atrazine (µg/L)	Desisopropyl Atrazine (µg/L)	Diuron (µg/L)	Fluometuron (µg/L)	Hexazinone (µg/L)
Alligator Ck (U/S)	Natural	21-01-07	17:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (U/S)	Natural	22-01-07	8:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (U/S)	Natural	22-01-07	17:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (U/S)	Natural	25-01-07	9:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (U/S)	Natural	03-02-07	9:45	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Bluewater Ck (U/S)	Natural	22-01-07	12:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Campus Ck (U/S)	Natural	01-02-07	9:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	10:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	01-02-07	10:05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	02-02-07	10:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	17-01-07	22:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	21-01-07	8:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	22-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	23-01-07	18:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	31-01-07	7:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	31-01-07	20:15	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Hencamp Ck Bruce Hwy	Nat/Graz min use	01-02-07	8:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hencamp Ck (D/S)	Nat/Graz min use	31-01-07	7:40	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Black R	Nat/Graz min use	22-01-07	13:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	23-01-07	9:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	30-01-07	18:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	01-02-07	12:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	01-02-07	12:25	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	02-02-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ross Dam	Nat/Graz min use	02-02-07	13:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	22-01-07	10:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	22-01-07	17:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	25-01-07	16:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Freshwater: Pesticides

Site name	Land use	Date Collected	Time Collected	Ametryn (µg/L)	Atrazine (µg/L)	Desethyl Atrazine (µg/L)	Desisopropyl Atrazine (µg/L)	Diuron (µg/L)	Fluometuron (µg/L)	Hexazinone (µg/L)
Sachs Ck (D/S)	Rural residential	28-01-07	7:05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	01-02-07		< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Alligator Ck (D/S)	Rural residential	21-01-07	16:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (D/S)	Rural residential	22-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (D/S)	Rural residential	22-01-07	18:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (D/S)	Rural residential	25-01-07	8:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alligator Ck (D/S)	Rural residential	03-02-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01
Bluewater Ck (D/S)	Rural residential	22-01-07	13:15	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bluewater Ck (D/S)	Rural residential	24-01-07	8:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	21-01-07	10:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Woolcock St Drain	Urban	22-01-07	11:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.05**	< 0.01	< 0.01
Woolcock St Drain	Urban	23-01-07	9:35	< 0.01	< 0.01	< 0.01	< 0.01	**0.3**	< 0.01	< 0.01
Woolcock St Drain	Urban	31-01-07	9:45	< 0.01	< 0.01	< 0.01	< 0.01	**0.09**	< 0.01	**0.01**
Woolcock St Drain	Urban	01-02-07	9:50	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Woolcock St Drain	Urban	02-02-07	11:35	< 0.01	< 0.01	< 0.01	< 0.01	**0.04**	< 0.01	< 0.01
Black Weir	Urban	01-02-07	7:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black Weir	Urban	02-02-07	9:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aplins Weir	Urban	01-02-07	9:35	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aplins Weir	Urban	02-02-07	9:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	02-01-07	14:40	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Gordon Ck	Urban	21-01-07	10:00	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Gordon Ck	Urban	22-01-07	4:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	22-01-07	11:10	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Gordon Ck	Urban	23-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Gordon Ck	Urban	23-01-07	15:00	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Gordon Ck	Urban	31-01-07	9:20	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Gordon Ck	Urban	01-02-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	02-02-07	10:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	21-01-07	11:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Kern Drain	Urban	21-01-07	16:00	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01

Appendix B: Freshwater: Pesticides

Site name	Land use	Date Collected	Time Collected	Ametryn (µg/L)	Atrazine (µg/L)	Desethyl Atrazine (µg/L)	Desisopropyl Atrazine (µg/L)	Diuron (µg/L)	Fluometuron (µg/L)	Hexazinone (µg/L)
Kern Drain	Urban	22-01-07	2:25	< 0.01	< 0.01	< 0.01	< 0.01	**0.07**	< 0.01	< 0.01
Kern Drain	Urban	22-01-07	14:15	< 0.01	< 0.01	< 0.01	< 0.01	**0.04**	< 0.01	**0.02**
Kern Drain	Urban	23-01-07	9:00	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	**0.01**
Kern Drain	Urban	23-01-07	14:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Kern Drain	Urban	30-01-07	17:40	< 0.01	< 0.01	< 0.01	< 0.01	**0.07**	< 0.01	< 0.01
Kern Drain	Urban	31-01-07	15:50	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Kern Drain	Urban	01-02-07	11:00	< 0.01	**0.01**	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Kern Drain	Urban	02-02-07	10:10	< 0.01	< 0.01	< 0.01	< 0.01	**0.06**	< 0.01	< 0.01
Bohle R	Urban/Industry	30-01-07	18:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Bohle R	Urban/Industry	31-01-07	11:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	01-02-07	13:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	02-02-07	11:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	21-01-07	11:10	< 0.01	**0.02**	< 0.01	< 0.01	**0.05**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	22-01-07	12:10	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	22-01-07	3:00	< 0.01	**0.01**	< 0.01	< 0.01	**0.04**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	23-01-07	10:45	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	30-01-07	19:30	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	01-02-07	10:40	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	02-02-07	12:00	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	02-02-07	12:05	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Stuart Ck (D/S))	Urban/Industry	23-01-07	8:55	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	21-01-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	22-01-07	11:50	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	22-01-07	3:45	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	23-01-07	11:10	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	01-02-07	10:20	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	02-02-07	12:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Freshwater :Pesticides

Site name	Land use	Date Collected	Time Collected	Prometryn (µg/L)	Simazine (µg/L)	Tebuthiuron (µg/L)	Bromacil (µg/L)	Malathion (µg/L)	Endosulfan alpha (OC) (µg/L)	Enosulfan beta (OC) (µg/L)
Aligator Ck (U/S)	Natural	21-01-07	17:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (U/S)	Natural	22-01-07	8:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (U/S)	Natural	22-01-07	17:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (U/S)	Natural	25-01-07	9:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (U/S)	Natural	03-02-07	9:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bluewater Ck (U/S)	Natural	22-01-07	12:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Campus Ck (U/S)	Natural	01-02-07	9:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	22-01-07	10:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	01-02-07	10:05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (U/S)	Nat/Graz min use	02-02-07	10:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	17-01-07	22:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	21-01-07	8:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	22-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	23-01-07	18:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	7:20	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	31-01-07	20:15	< 0.01	< 0.01	< 0.01	**0.09**	< 0.01	< 0.01	< 0.01
Hen Camp Ck Bruce Hwy	Nat/Graz min use	01-02-07	8:30	< 0.01	< 0.01	< 0.01	**0.05**	< 0.01	< 0.01	< 0.01
Hen Camp Ck (D/S)	Nat/Graz min use	31-01-07	7:40	< 0.01	< 0.01	< 0.01	**0.07**	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	22-01-07	13:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	23-01-07	9:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	30-01-07	18:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	01-02-07	12:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	01-02-07	12:25	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black R	Nat/Graz min use	02-02-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ross Dam	Nat/Graz min use	02-02-07	13:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	22-01-07	10:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	22-01-07	17:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	25-01-07	16:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Freshwater: Pesticides

Site name	Land use	Date Collected	Time Collected	Prometryn (µg/L)	Simazine (µg/L)	Tebuthiuron (µg/L)	Bromacil (µg/L)	Malathion (µg/L)	Endosulfan alpha (OC) (µg/L)	Enosulfan beta (OC) (µg/L)
Sachs Ck (D/S)	Rural residential	28-01-07	7:05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sachs Ck (D/S)	Rural residential	01-02-07		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (D/S)	Rural residential	21-01-07	16:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (D/S)	Rural residential	22-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (D/S)	Rural residential	22-01-07	18:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.36**	**0.23**
Aligator Ck (D/S)	Rural residential	25-01-07	8:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aligator Ck (D/S)	Rural residential	03-02-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bluewater Ck (D/S)	Rural residential	22-01-07	13:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bluewater Ck (D/S)	Rural residential	24-01-07	8:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	21-01-07	10:30	< 0.01	< 0.01	< 0.01	**0.45**	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	22-01-07	11:30	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	23-01-07	9:35	< 0.01	**0.02**	< 0.01	**2.1**	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	31-01-07	9:45	< 0.01	< 0.01	< 0.01	**1.1**	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	01-02-07	9:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Woolcock St Drain	Urban	02-02-07	11:35	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black Weir	Urban	01-02-07	7:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Black Weir	Urban	02-02-07	9:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aplins Weir	Urban	01-02-07	9:35	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aplins Weir	Urban	02-02-07	9:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	02-01-07	14:40	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	21-01-07	10:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	22-01-07	4:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	22-01-07	11:10	< 0.01	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	23-01-07	9:15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	23-01-07	15:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	31-01-07	9:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	01-02-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Gordon Ck	Urban	02-02-07	10:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	21-01-07	11:30	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	21-01-07	16:00	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Freshwater: Pesticides

Site name	Land use	Date Collected	Time Collected	Prometryn (µg/L)	Simazine (µg/L)	Tebuthiuron (µg/L)	Bromacil (µg/L)	Malathion (µg/L)	Endosulfan alpha (OC) (µg/L)	Enosulfan beta (OC) (µg/L)
Kern Drain	Urban	22-01-07	2:25	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	22-01-07	14:15	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	23-01-07	9:00	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	23-01-07	14:30	< 0.01	**0.04**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	30-01-07	17:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	31-01-07	15:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	01-02-07	11:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Kern Drain	Urban	02-02-07	10:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	30-01-07	18:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	31-01-07	11:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	01-02-07	13:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bohle R	Urban/Industry	02-02-07	11:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	21-01-07	11:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	22-01-07	12:10	< 0.01	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	22-01-07	3:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	23-01-07	10:45	< 0.01	**0.01**	< 0.01	< 0.01	**2.9**	< 0.01	< 0.01
Louisa Ck	Urban/Industry	30-01-07	19:30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	01-02-07	10:40	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	02-02-07	12:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Louisa Ck	Urban/Industry	02-02-07	12:05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (D/S))	Urban/Industry	23-01-07	8:55	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01	< 0.01
Stuart Ck (Auto)	Urban/Industry			< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	21-01-07	10:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	22-01-07	11:50	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	22-01-07	3:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	23-01-07	11:10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Captain Ck Drain	Urban/Industry	01-02-07	10:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.09**
Captain Ck Drain	Urban/Industry	02-02-07	12:00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Opportunistic sampling sites: Conductivity, TSS and nutrients.

Site name	Land use	Date Collected	Time Collected	Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Nitrogen (µg N/L)	Particulate N (µg N/L)	DON (µg N/L)	Ammonia (µg N/L)	NO_x
Dev urban site 1	Urban	22-01-07	2:05	169	30540					141
Dev urban site 2	Urban			163	1527	1030	304	585	138	
Dev urban site 2	Urban			164	33890	4020				
Dev urban site 2	Urban			142	13370	2940				
Dev urban site 2	Urban			90.4	2480	735	500.2	147.8	5	55.1
Non Dev adjacent to site 2	Urban			65.4	3715	2000				
Non Dev adjacent to site 2	Urban			135	828	1160				87
Non Dev adjacent to site 2	Urban			83.8	475	420.7	193.2	172.4	2	
Saunders Creek	Urban	01-02-07	12:45	20.1	117					
Campus Ck (Nursing)	Natural	22-01-07	2:00	67.5	96					
Hencamp Ck (upstream)	Natural	02-02-07	23:30	21.3	82					
Hencamp Ck (upstream)	Natural	03-02-07	0:10	20.1	59					171.3
Ross Ck (Victory Bridge)	Urban/Industry	01-02-07	16:45	1419	72	662	166	324.7	49	267
Ross Ck (Victory Bridge)	Urban/Industry	02-02-07	11:00	5	17	780	16	497	101	91.6
Sachs Ck (U/S)	Rural residential	25-01-07	16:15	84.5	4	348	54	202.4	0	24.8
Sachs Ck (U/S)	Rural residential	30-01-07			8	401	53	323.2	0	

Appendix B: Opportunistic sampling sites: Nutrients

Site name	Land use	Date Collected	Time Collected	Total Phosphorus (µg P/L)	Particulate P (µg P/L	DOP (µg P/L)	Filterable Reactive P (µg P/L)	TN:TP Ratio	DIN:DIP Ratio
Dev urban site 1	Urban	22-01-07	2:05	382	272	99.9	10.4	6.0	30.0
Dev urban site 2	Urban			4170				2.1	
Dev urban site 2	Urban			844				5.2	
Dev urban site 2	Urban			549				4.7	
Dev urban site 2	Urban			140	72	1.3	67.4	6.6	1.8
Non Dev adjacent to site 2	Urban			2430				2.7	
Non Dev adjacent to site 2	Urban			407	381	7	18.9	4.0	10.2
Non Dev adjacent to site 2	Urban								
Saunders Creek	Urban	01-02-07	12:45						
Campus Ck (Nursing)	Natural	22-01-07	2:00						
Hencamp Ck (upstream)	Natural	02-02-07	23:30						
Hencamp Ck (upstream)	Natural	03-02-07	0:10	338	90	34.9	213.3	4.3	1.8
Ross Ck (Victory Bridge)	Urban/Industry	01-02-07	16:45	254	59	18.7	176	6.8	3.4
Ross Ck (Victory Bridge)	Urban/Industry	02-02-07	11:00	41	14	4.9	22.1	18.9	9.2
Sachs Ck (U/S)	Rural residential	25-01-07	16:15	61	15	13.2	32.6	14.6	1.7
Sachs Ck (U/S)	Rural residential	30-01-07							

Appendix B: Opportunistic sampling sites: Pesticides

Site name	Land use	Date Collected	Time Collected	Ametryn (µg/L)	Atrazine (µg/L)	Desethyl Atrazine (µg/L)	Desisopropyl Atrazine (µg/L)	Diuron (µg/L)	Fluometuron (µg/L)	Hexazinone (µg/L)
Ross Ck (Victory Bridge)	Urban/Industry	01-02-07	16:45	< 0.01	< 0.01	< 0.01	< 0.01	**0.1**	< 0.01	**0.01**

Site name	Land use	Date Collected	Time Collected	Prometryn (µg/L)	Simazine (µg/L)	Tebuthiuron (µg/L)	Bromacil (µg/L)	Malathion (µg/L)	Endosulfan alpha (OC) (µg/L)	Enosulfan beta (OC) (µg/L)
Ross Ck (Victory Bridge)	Urban/Industry	01-02-07	16:45	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Appendix B: Marine: Salinity and nutrients

Sample ID	Location	Salinity	TN (µM)	PN (µM)	DON (µM)	Ammonia (µM)	NOx (µM)	DIN (µM)	TP (µM)	PP (µM)	DOP (µM)	FRP (µM)	TN:TP Molar Ratio	DIN:FRP Molar Ratio
16J350 - 197	Ambient	25.5	10.71	1.93	6.11	1.09	1.58	2.67	1.02	0.25	0.22	0.55	10.5	4.8
16J350 - 196	Black River	6.1	35.96	23.36	6.55	1.21	4.82	6.04	2.73	2.02	0.00	0.96	13.2	6.3
16J350 - 204	Black River	19.3	15.43	2.78	8.93	1.50	2.21	3.71	1.10	0.15	0.39	0.56	14.0	6.7
16J350 - 207	Black River	20	22.05	7.30	10.83	0.71	3.19	3.91	1.93	0.80	0.44	0.69	11.4	5.7
16J350 - 219	Black River	17.8	15.64	6.85	2.84	2.37	3.57	5.94	1.07	0.33	0.10	0.65	14.6	9.2
16J350 - 205	Black River	13.8	18.36	5.78	7.69	0.85	4.03	4.88	1.55	0.63	0.09	0.84	11.8	5.8
16J350 - 195	Bohle River	18.9	15.86	3.64	8.12	1.64	2.45	4.09	1.66	0.49	0.14	1.03	9.6	4.0
16J350 - 200	Bohle River	14.4	17.71	8.64	5.27	1.79	2.01	3.80	2.35	1.49	0.12	0.74	7.6	5.1
16J350 - 211	Bohle River	14.6	19.43	6.00	8.58	1.92	2.92	4.84	2.23	0.87	0.20	1.16	8.7	4.2
16J350 - 220	Bohle River	23.1	13.86	3.71	6.57	1.50	2.07	3.57	1.13	0.18	0.27	0.68	12.3	5.3
16J350 - 213	Ross River	31	11.29	3.28	7.14	1.42	0.86	2.28	0.78	0.24	0.24	0.30	14.6	463.9
16J350 - 100	Ross River	7.1	39.71	14.78	12.92	5.89	6.10	12.00	4.19	3.29	0.12	0.77	9.5	15.5
16J350 - 113	Ross River	23.8	13.14	2.00	8.27	1.06	1.81	2.87	1.10	0.24	0.30	0.56	12.0	5.1
16J350 - 201	Ross River	18.3	20.57	3.86	9.27	3.56	3.87	7.44	1.19	0.33	0.21	0.65	17.4	11.5
16J350 - 202	Ross River	22.9	12.87	0.33	9.88	0.67	1.98	2.66	1.21	0.21	0.36	0.64	10.7	4.2
16J350 - 206	Ross River	15.9	17.29	4.36	7.09	2.58	3.26	5.84	1.15	0.21	0.30	0.64	15.1	9.2
16J350 - 214	Ross River	25.1	12.93	1.14	8.66	1.26	1.86	3.12	1.07	0.24	0.23	0.60	12.1	5.2
16J350 - 215	Ross River	25.2	14.43	3.71	6.68	1.88	2.15	4.04	1.10	0.34	0.24	0.52	13.1	7.7
16J350 - 210	Sandfly Creek	19.5	24.93	6.35	10.96	4.13	3.47	7.61	3.03	0.63	0.33	2.07	8.2	3.7
16J350 - 225	Sandfly Creek	22	30.43	6.07	14.35	4.25	5.75	10.00	3.80	0.38	0.35	3.07	8.0	3.3

Appendix B: Marine: Pesticides and Oil and Grease

Sample ID	Location	Ametryn (µg/L)	Atrazine (µg/L)	Desethyl Atrazine (µg/L)	Desisopropyl Atrazine (µg/L)	Diuron (µg/L)	Fluometuron (µg/L)	Hexazinone (µg/L)	Prometryn (µg/L)	Simazine (µg/L)	Tebuthiuron (µg/L)	Oil and Grease (mg/L)
16J350 -100	Ross River	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -196	Black River	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -200	Bohle River	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -202	Ross River	<0.01	**0.02**	<0.01	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -210	Sandfly Creek	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -213	Ross River	<0.01	**0.02**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -219	Black River	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -220	Bohle River	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 1
16J350 -225	Sandfly Creek	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	**0.02**	<0.01	<0.01	<0.01	< 1

APPENDIX C

Range of Pesticides Analysed and Reporting Limits

Appendix C: Range of pesticides analysed and reporting limits

Method	Units	Reporting Limit	Method	Units	Reporting Limit
Aldrin (OC)	ug/L	0.1	Phorate (OP)	ug/L	0.1
Chlordane cis (OC)	ug/L	0.1	Phosmet (OP)	ug/L	0.1
Chlordane trans (OC)	ug/L	0.1	Pirimiphos methyl (OP)	ug/L	0.1
Chlordene (OC)	ug/L	0.1	Profenofos (OP)	ug/L	0.1
Chlordene epoxide (OC)	ug/L	0.1	Prothiofos (OP)	ug/L	0.1
op-DDD (OC)	ug/L	0.1	Pyrazophos (OP)	ug/L	0.1
pp-DDD (OC)	ug/L	0.1	Tetrachlorvinphos (OP)	ug/L	0.1
op-DDE (OC)	ug/L	0.1	Terbufos (OP)	ug/L	0.1
pp-DDE (OC)	ug/L	0.1	Diclofop methyl (HGCMS)	ug/L	0.1
op-DDT (OC)	ug/L	0.1	Haloxyfop-2-etotyl (HGCMS)	ug/L	0.1
pp-DDT (OC)	ug/L	0.1	Haloxyfop methyl (HGCMS)	ug/L	0.1
Total DDT (OC)	ug/L	0.3	Metolachlor (HGCMS)	ug/L	0.1
Dicofol (OC)	ug/L	0.1	Metribuzin (HGCMS)	ug/L	0.1
Dieldrin (OC)	ug/L	0.05	Oxyfluorfen (HGCMS)	ug/L	0.1
Endosulfan alpha (OC)	ug/L	0.05	Pendimethalin (HGCMS)	ug/L	0.1
Endosulfan beta (OC)	ug/L	0.05	Propanil (HGCMS)	ug/L	0.1
Endosulfan Sulphate (OC)	ug/L	0.05	Propazine (HGCMS)	ug/L	0.1
Endosulfan Ether (OC)	ug/L	0.1	Terbuthylazine (HGCMS)	ug/L	0.1
Endosulfan Lactone (OC)	ug/L	0.1	Tri-allate (HGCMS)	ug/L	0.1
Total Endosulfan (OC)	ug/L	0.15	Trifluralin (HGCMS)	ug/L	0.1
Endrin (OC)	ug/L	0.1	Ametryn (HLCMS)	ug/L	0.01
Endrin Aldehyde (OC)	ug/L	0.1	Atrazine (HLCMS)	ug/L	0.01
HCB (OC)	ug/L	0.1	Bromacil (HLCMS)	ug/L	0.01
HCH alpha (OC)	ug/L	0.1	Desethyl Atrazine (HLCMS)	ug/L	0.01
HCH beta (OC)	ug/L	0.1	Desisopropyl Atrazine (HLCMS)	ug/L	0.01
HCH delta (OC)	ug/L	0.1	Diuron (HLCMS)	ug/L	0.01
Heptachlor (OC)	ug/L	0.1	Fluometuron (HLCMS)	ug/L	0.01
Heptachlor Epoxide (OC)	ug/L	0.1	Prometryn (HLCMS)	ug/L	0.01
Lindane (OC)	ug/L	0.1	Simazine (HLCMS)	ug/L	0.01
Methoxychlor (OC)	ug/L	0.1	Tebuthiuron (HLCMS)	ug/L	0.01
Nonachlor trans (OC)	ug/L	0.1	Terbutryn (HLCMS)	ug/L	0.01
Oxychlordane (OC)	ug/L	0.1	Benalaxyl (OTHER)	ug/L	0.1
Azinphos ethyl (OP)	ug/L	0.1	Bitertinol (OTHER)	ug/L	0.1
Azinphos methyl (OP)	ug/L	0.1	Carbaryl (OTHER)	ug/L	0.1
Bromophos ethyl (OP)	ug/L	0.1	Dichlorfluanid (OTHER)	ug/L	0.1
Cadusafos (OP)	ug/L	0.1	Dichloran (OTHER)	ug/L	0.1
Carbophenothion (OP)	ug/L	0.1	Fipronil (OTHER)	ug/L	0.1
Chlorfenvinphos (OP)	ug/L	0.1	Furalaxyl (OTHER)	ug/L	0.1
Chlorpyrifos (OP)	ug/L	0.1	Metalaxyl (OTHER)	ug/L	0.1
Chlorpyrifos methyl (OP)	ug/L	0.1	Oxadiazinon (OTHER)	ug/L	0.1
Chlorpyrifos oxon (OP)	ug/L	0.1	Piperonyl Butoxide (OTHER)	ug/L	0.1
Coumaphos (OP)	ug/L	0.1	Pirimicarb (OTHER)	ug/L	0.1
Diazinon (OP)	ug/L	0.1	Procymidone (OTHER)	ug/L	0.1
Dichlorvos (OP)	ug/L	0.1	Propiconazole (OTHER)	ug/L	0.1
Dimethoate (OP)	ug/L	0.1	Propoxur (OTHER)	ug/L	1
Ethion (OP)	ug/L	0.1	Tebuconazole (OTHER)	ug/L	0.1
Ethoprophos (OP)	ug/L	0.1	Tetradifon (OTHER)	ug/L	0.1
Etrimphos (OP)	ug/L	0.1	Vinclozolin (OTHER)	ug/L	0.1

Appendix C: Range of pesticides analysed and reporting limits

Method	Units	Reporting Limit	Method	Units	Reporting Limit
Famphur (OP)	ug/L	0.1	Bifenthrin (SP)	ug/L	0.1
Fenamiphos (OP)	ug/L	0.1	lambda-Cyhalothrin (SP)	ug/L	0.1
Fenchlorphos (OP)	ug/L	0.1	Cyfluthrin (SP)	ug/L	0.1
Fenitrothion (OP)	ug/L	0.1	Cypermethrin (SP)	ug/L	0.1
Fenthion ethyl (OP)	ug/L	0.1	Deltamethrin (SP)	ug/L	0.1
Fenthion methyl (OP)	ug/L	0.1	Fluvalinate (SP)	ug/L	0.1
Isophenphos (OP)	ug/L	0.1	Phenothrin (SP)	ug/L	0.1
Malathion (OP)	ug/L	0.1	Tetramethrin (SP)	ug/L	0.1
Methidathion (OP)	ug/L	0.1	Transfluthrin (SP)	ug/L	0.1
Mevinphos (OP)	ug/L	0.1	Permethrin (SP)	ug/L	0.1
Parathion ethyl (OP)	ug/L	0.1	Fenvalerate (SP)	ug/L	0.1
Parathion methyl (OP)	ug/L	0.1	Allethrin (SP)	ug/L	0.1
			Bioresmethrin (SP)	ug/L	0.1

OC = Organochlorine Pesticides
OP = Organophosphorus Pesticides
HGCMS = Herbicides by GCMS
HLCMS = Herbicides by LCMS
OTHER = Other Pesticides
SP = Synthetic Pyrethroids

APPENDIX D

Summary Statistics of Nutrient Data

Appendix D: Summary statistics of nutrient data

Land Use	Site no	Waterway	Total Nitrogen (µg N/L)				Particulate N (µg N/L)			
			Site		Land use		Site		Land use	
			Median	Range	Median	Range	Median	Range	Median	Range
Natural	1	Alligator Ck (U/S)	280	163-697	327	163-940	58	18-500	89	2-652
	2	Bluewater Ck (U/S)	421	280-940			152	35-652		
	3	Campus Ck	327	217-993			91	2-258		
Mixed (Natural/ Grazing or Minimal Use)	4	Stuart Ck (U/S)	644	283-1040	635	103-1070	138	8-548	144	61-272
	5	Hen Camp Ck (Hwy)	345	103-472			61	19-165		
	6	Hen Camp Ck (D/S)	587	478-700			96	53-192		
	7	Black R	793	315-1070			227	6-575		
	8	Ross River 1 (below dam)	809	626-992			272	32-450		
Rural Residential	9	Sachs Ck	564	245-956	452	164-1340	69	25-335	68.8	22-335
	10	Alligator Ck (D/S)	363	284-673			113	49-201		
	11	Bluewater CK (D/S)	368	164-836			40	22-143		
Urban	12	Woolcock St Drain	643	491-907	639	394-1340	61	2-561	130	0.1-845
	13	Ross River 2 (Black weir)	542	502-829			236	176-501		
	14	Ross River 3 (Aplins weir)	508	394-883			110	2-428		
	15	Gordon Ck	694	469-1010			140	0.1-366		
	16	Kern Drain	666	398-1340			135	2-845		
Urban/ Industrial	17	Bohle R	719	292-1590	624	292-1590	178	14-1022	179	3-1022
	18	Louisa Ck	533	400-808			95	3-337		
	19	Stuart Ck (D/S)	641	416-1070			265	121-766		
	20	Captains Ck	642	479-1350			169	52-855		

Appendix D: Summary statistics of nutrient data

Land Use	Site no	Waterway	DON µg N/L)				Ammonia (µg N/L)			
			Site		Land use		Site		Land use	
			Median	Range	Median	Range	Median	Range	Median	Range
Natural	1	Alligator Ck (U/S)	174	141-205	191	127-421	1	0-16	2	0-16
	2	Bluewater Ck (U/S)	206	127-326			2	0-10		
	3	Campus Ck	200	158-421			2	0-13		
Mixed (Natural, Grazing or Minimal Use)	4	Stuart Ck (U/S)	284	78-338	305	59-571	5	0-69	5	0-120
	5	Hen Camp Ck (Hwy)	196	59-230			3	0-43		
	6	Hen Camp Ck (D/S)	440	344-450			4	1-5		
	7	Black R	382	193-571			6	0-75		
	8	Ross River 1 (below dam)	394	389-399			65	10-120		
Rural Residential	9	Sachs Ck	248	137-504	223	72-755	2	0-9	2	0-107
	10	Alligator Ck (D/S)	224	127-269			7	0-107		
	11	Bluewater CK (D/S)	170	72-380			2	0-25		
Urban	12	Woolcock St Drain	426	166-740	388	72-755	24	5-111	36	1-269
	13	Ross River 2 (Black weir)	245	207-259			17	9-63		
	14	Ross River 3 (Aplins weir)	324	267-502			56	4-269		
	15	Gordon Ck	402	219-491			42	11-216		
	16	Kern Drain	399	327-755			31	1-105		
Urban/ Industrial	17	Bohle R	428	126-687	350	126-687	11	3-40	3	0-81
	18	Louisa Ck	343	271-493			6	1-42		
	19	Stuart Ck (D/S)	226	144-470			0	0-25		
	20	Captains Ck	359	244-556			3	3-81		

Appendix D: Summary statistics of nutrient data

Land Use	Site no	Waterway	Nitrate + Nitrite (µg N/L)				Total Phosphorus (µg P/L)			
			Site		Land use		Site		Land use	
			Median	Range	Median	Range	Median	Range	Median	Range
Natural	1	Alligator Ck (U/S)	28	4-49	50	4-315	30	14-54	54	14-188
	2	Bluewater Ck (U/S)	87	41-212			50	19-168		
	3	Campus Ck	54	12-315			90	75-188		
Mixed (Natural, Grazing or Minimal Use)	4	Stuart Ck (U/S)	131	74-280	104	3-386	148	42-232	118	13-1010
	5	Hen Camp Ck (Hwy)	47	3-107			21	13-33		
	6	Hen Camp Ck (D/S)	68	41-81			39	26-43		
	7	Black R	129	51-386			156	47-1010		
	8	Ross River 1 (below dam)	144	143-144			152	103-201		
Rural Residential	9	Sachs Ck	181	40-523	140	11-523	50	26-215	41	11-215
	10	Alligator Ck (D/S)	55	11-297			50	41-154		
	11	Bluewater CK (D/S)	142	15-428			23	11-41		
Urban	12	Woolcock St Drain	114	48-167	104	9-338	285	256-381	258	39-593
	13	Ross River 2 (Black weir)	81	47-121			165	65-174		
	14	Ross River 3 (Aplins weir)	96	9-125			67	39-162		
	15	Gordon Ck	140	54-338			197	94-326		
	16	Kern Drain	87	33-325			340	117-593		
Urban/ Industrial	17	Bohle R	103	44-180	94	3-590	164	80-949	191	80-949
	18	Louisa Ck	92	9-146			175	130-250		
	19	Stuart Ck (D/S)	95	3-185			204	143-635		
	20	Captains Ck	72	4-590			245	147-322		

Appendix D: Summary statistics of nutrient data

Land Use	Site no	Waterway	Particulate P (µg P/L				DOP (µg P/L)			
			Site		Land use		Site		Land use	
			Median	Range	Median	Range	Median	Range	Median	Range
Natural	1	Alligator Ck (U/S)	10	0-23	20.6	0-156	4	0-6	5	0-22
	2	Bluewater Ck (U/S)	38	10-156			5	1-9		
	3	Campus Ck	23	12-60			12	5-22		
Mixed (Natural, Grazing or Minimal Use)	4	Stuart Ck (U/S)	69	1-127	55.4	1-879	11	1-112	8	1-112
	5	Hen Camp Ck (Hwy)	12	2-24			5	1-8		
	6	Hen Camp Ck (D/S)	19	13-25			7	1-15		
	7	Black R	86	34-879			14	2-56		
	8	Ross River 1 (below dam)	130	78-182			7	4-10		
Rural Residential	9	Sachs Ck	19	2-63	17.9	0-63	4	0-37	5	0-37
	10	Alligator Ck (D/S)	22	3-26			9	5-23		
	11	Bluewater CK (D/S)	10	0-31			4	2-13		
Urban	12	Woolcock St Drain	58	8-114	84.1	18-265	25	3-90	11	0-124
	13	Ross River 2 (Black weir)	117	37-157			11	2-11		
	14	Ross River 3 (Aplins weir)	39	18-143			7	1-13		
	15	Gordon Ck	84	26-199			9	0-124		
	16	Kern Drain	117	18-265			18	1-112		
Urban/ Industrial	17	Bohle R	61	19-812	56.9	14-812	15	5-108	15	3-108
	18	Louisa Ck	36	14-130			17	3-54		
	19	Stuart Ck (D/S)	122	41-576			14	6-22		
	20	Captains Ck	46	14-130			18	6-133		

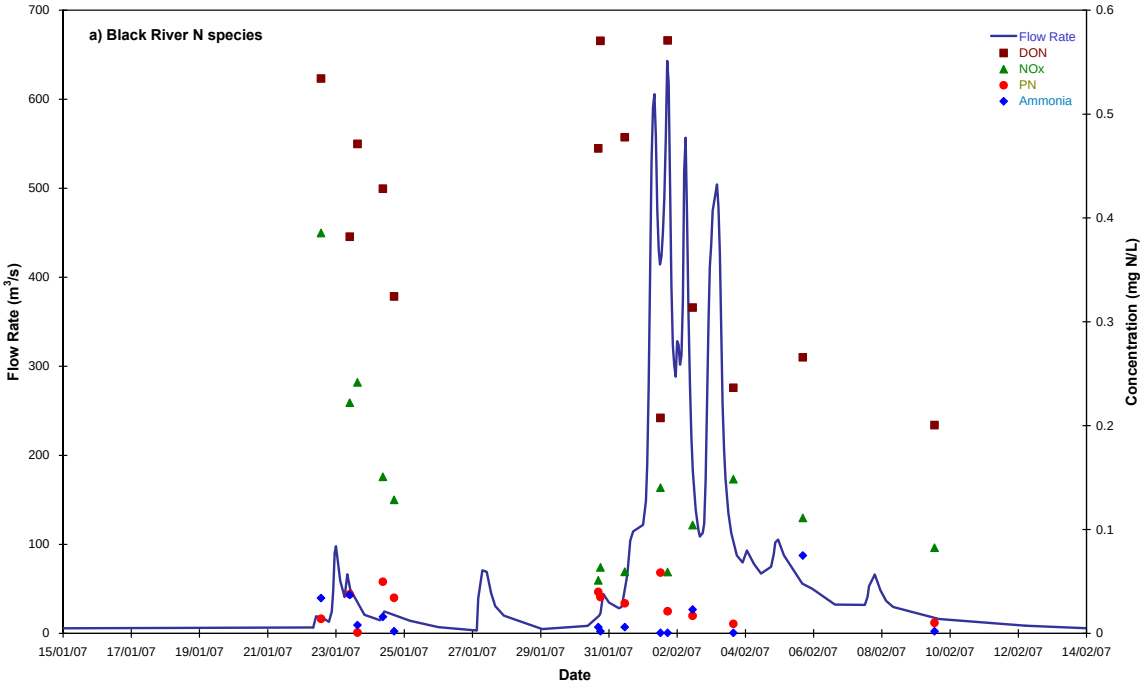
Appendix D: Summary statistics of nutrient data

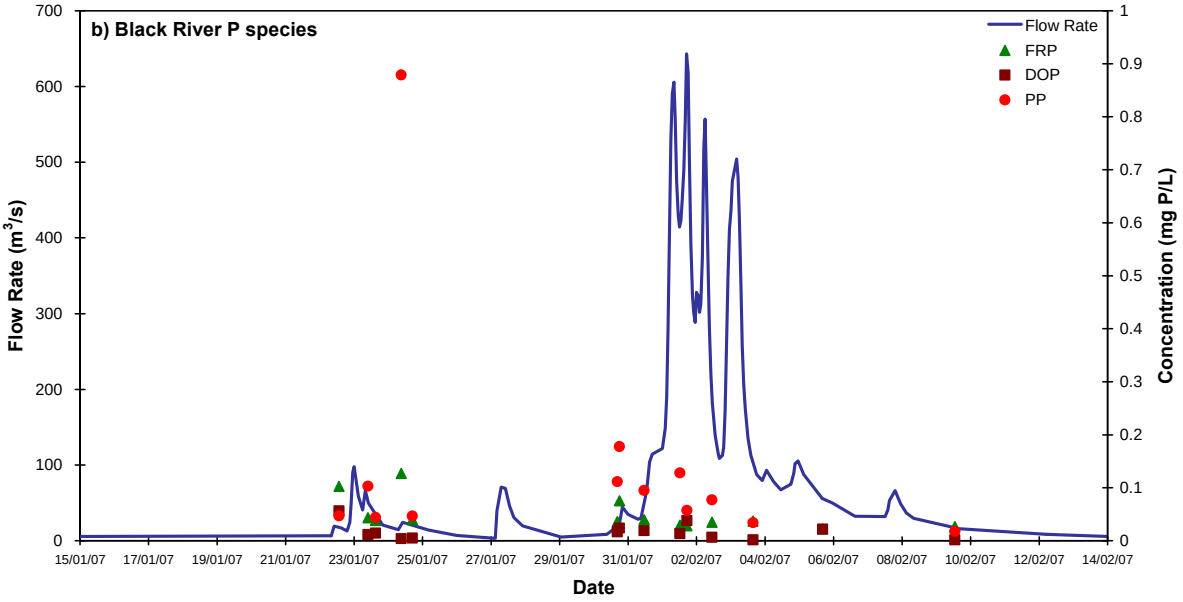
Land Use	Site no	Waterway	Filterable Reactive P (µg P/L)			
			Site		Land use	
			Median	Range	Median	Range
Natural	1	Alligator Ck (U/S)	15	3-32	12	2-113
	2	Bluewater Ck (U/S)	5	2-12		
	3	Campus Ck	54	25-113		
Mixed (Natural, Grazing or Minimal Use)	4	Stuart Ck (U/S)	55	8-85	35	2-127
	5	Hen Camp Ck (Hwy)	5	2-15		
	6	Hen Camp Ck (D/S)	7	3-19		
	7	Black R	37	27-127		
	8	Ross River 1 (below dam)	15	15-15		
Rural Residential	9	Sachs Ck	29	15-114	15	5-114
	10	Alligator Ck (D/S)	20	5-74		
	11	Bluewater CK (D/S)	6	5-9		
Urban	12	Woolcock St Drain	214	84-301	131	8-450
	13	Ross River 2 (Black weir)	17	15-37		
	14	Ross River 3 (Aplins weir)	14	8-39		
	15	Gordon Ck	124	18-155		
	16	Kern Drain	186	75-450		
Urban/ Industrial	17	Bohle R	84	5-390	99	5-390
	18	Louisa Ck	134	18-158		
	19	Stuart Ck (D/S)	83	72-108		
	20	Captains Ck	138	83-166		

APPENDIX E

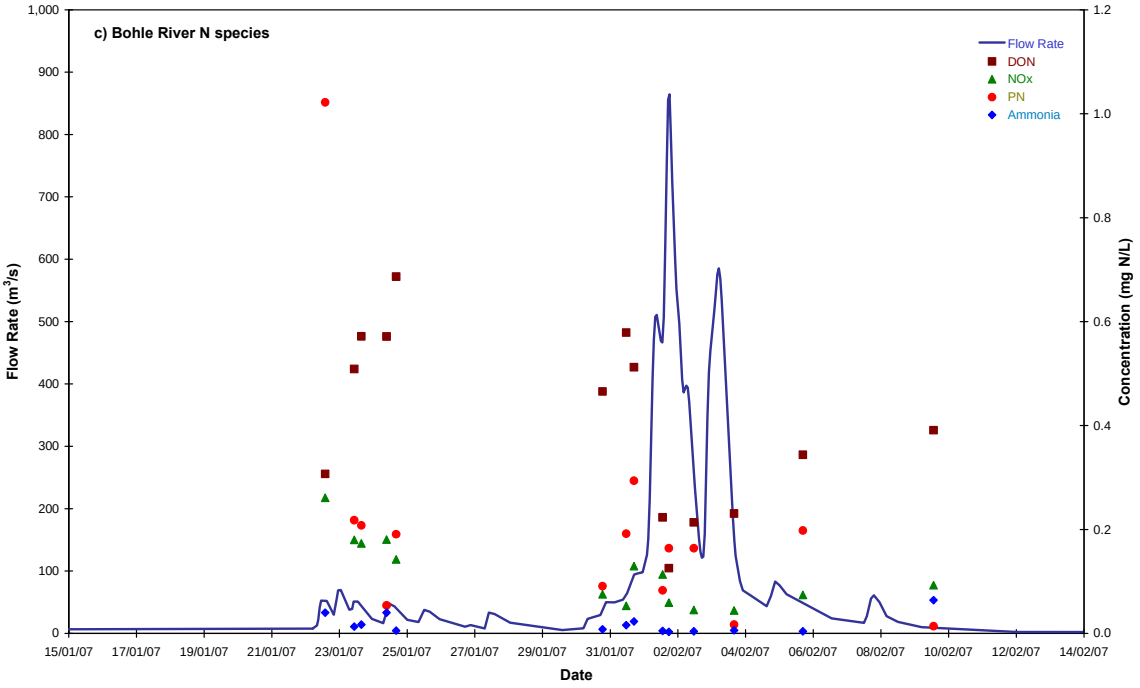
Stream Flow/Heights and Nutrient Concentrations

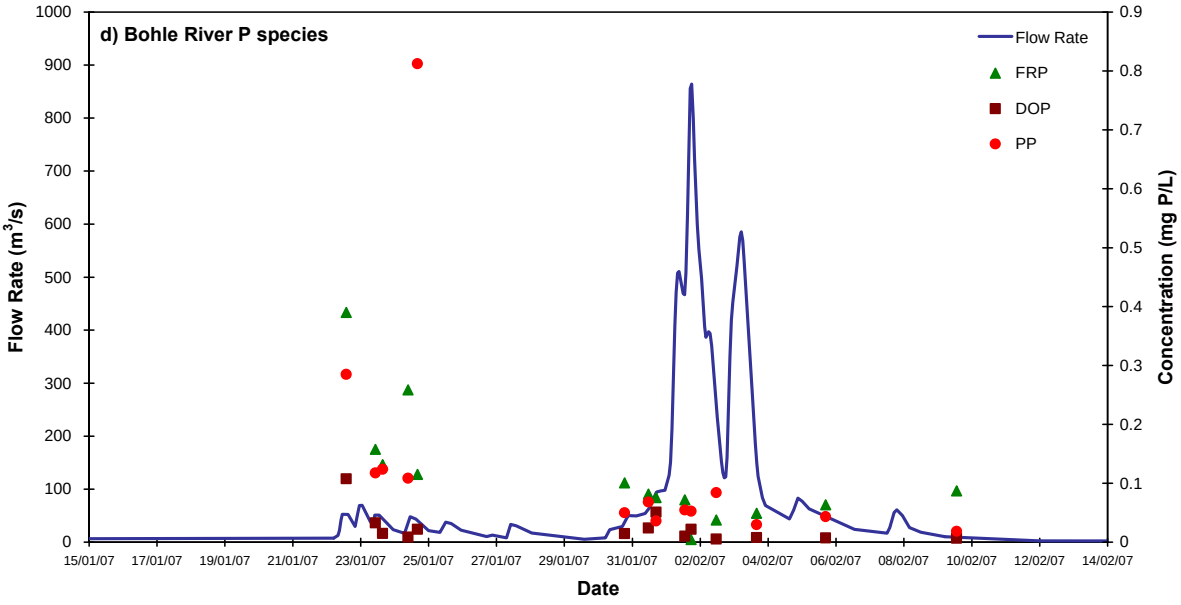
Appendix E: Stream flow for the Black River and corresponding nitrogen (a) and phosphorus (b) concentrations (Sourced: NRW Watershed)



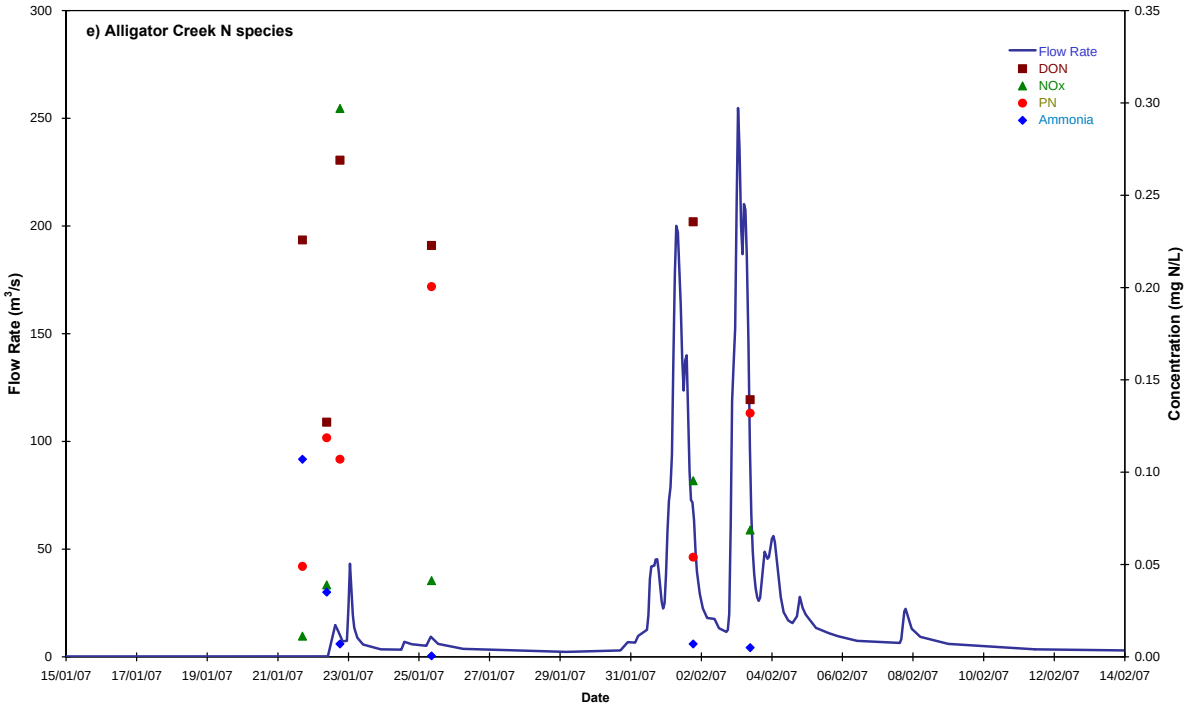


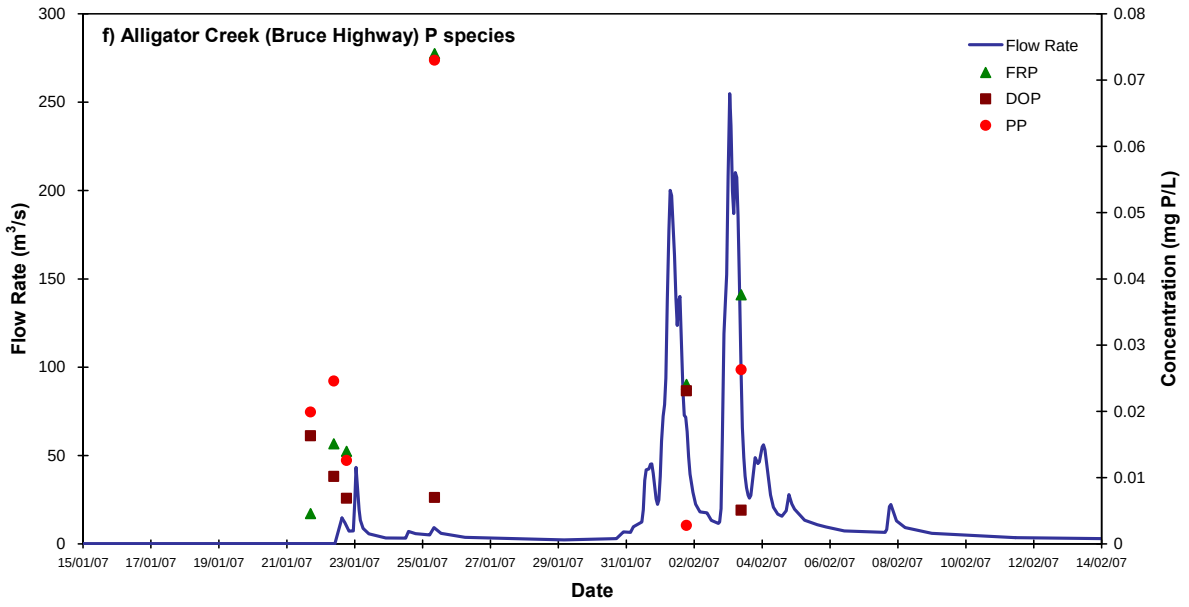
Appendix E: Stream flow for the Bohle River and corresponding nitrogen (c) and phosphorus (d) concentrations (Sourced: NRW Watershed)



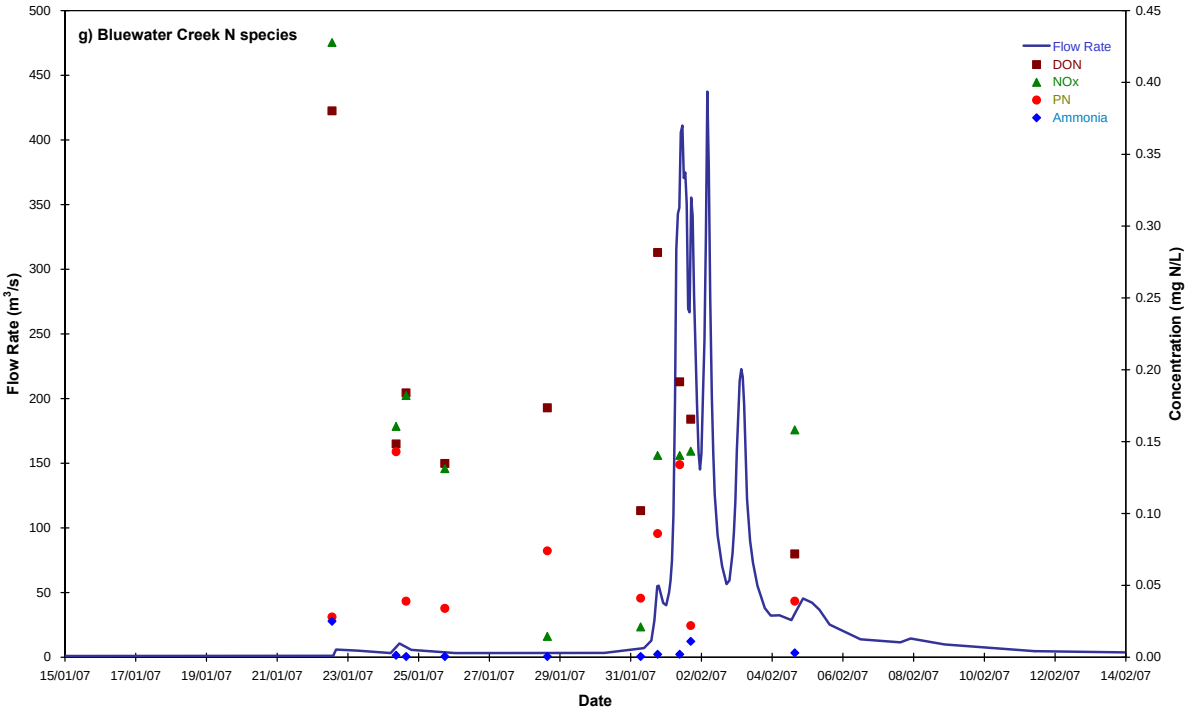


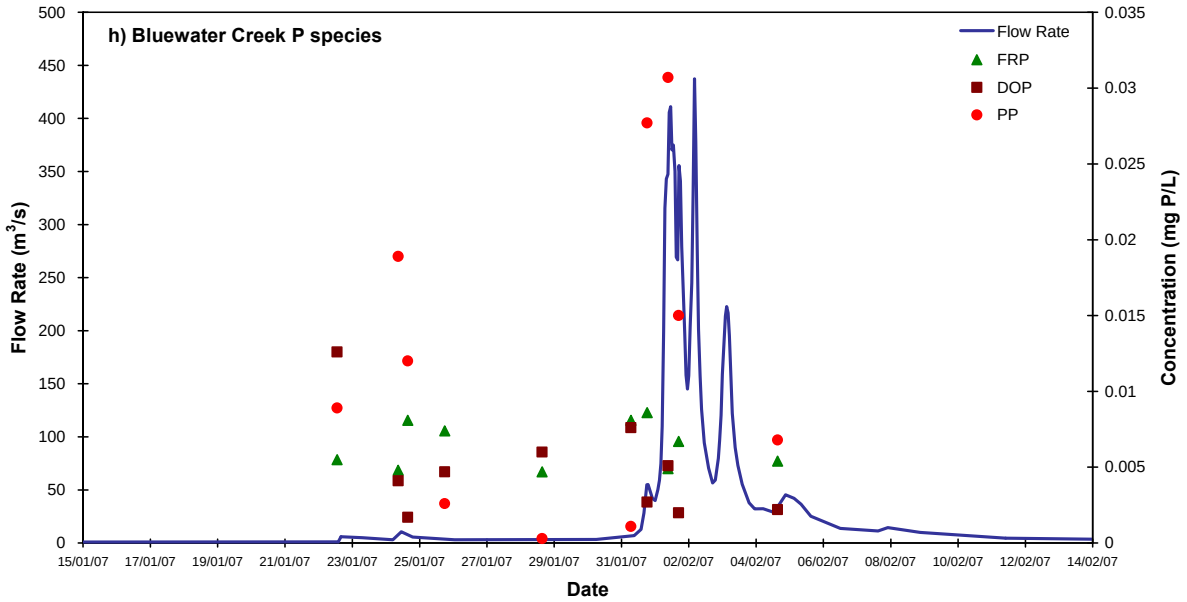
Appendix E: Stream flow for Alligator Creek and corresponding nitrogen (e) and phosphorus (f) concentrations (Sourced: NRW Watershed).



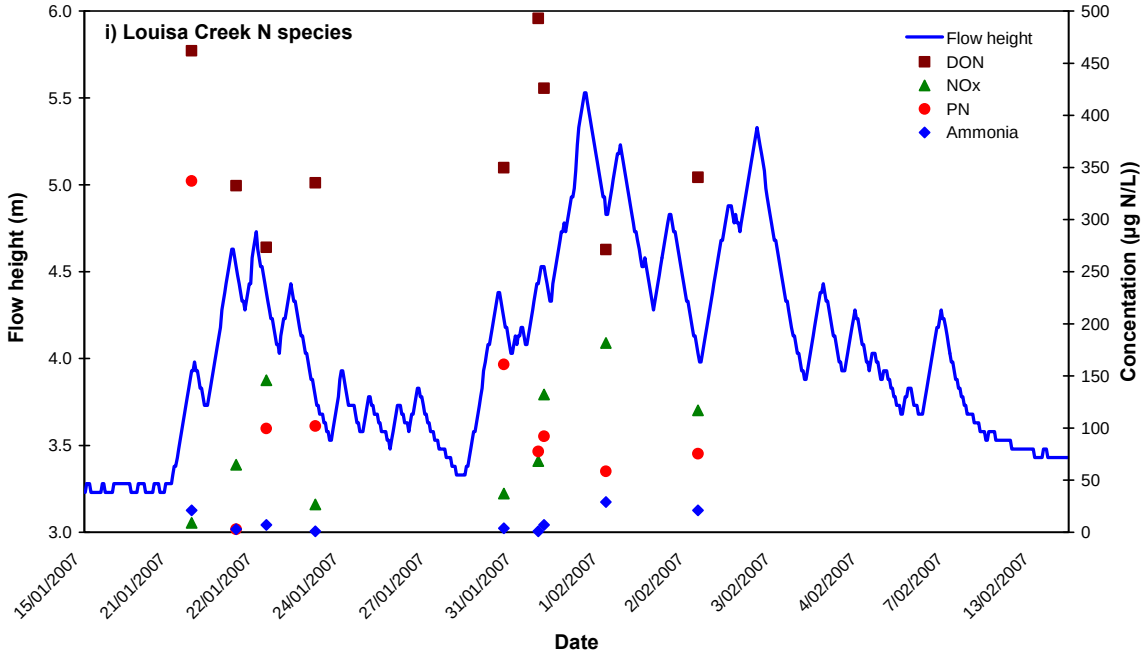


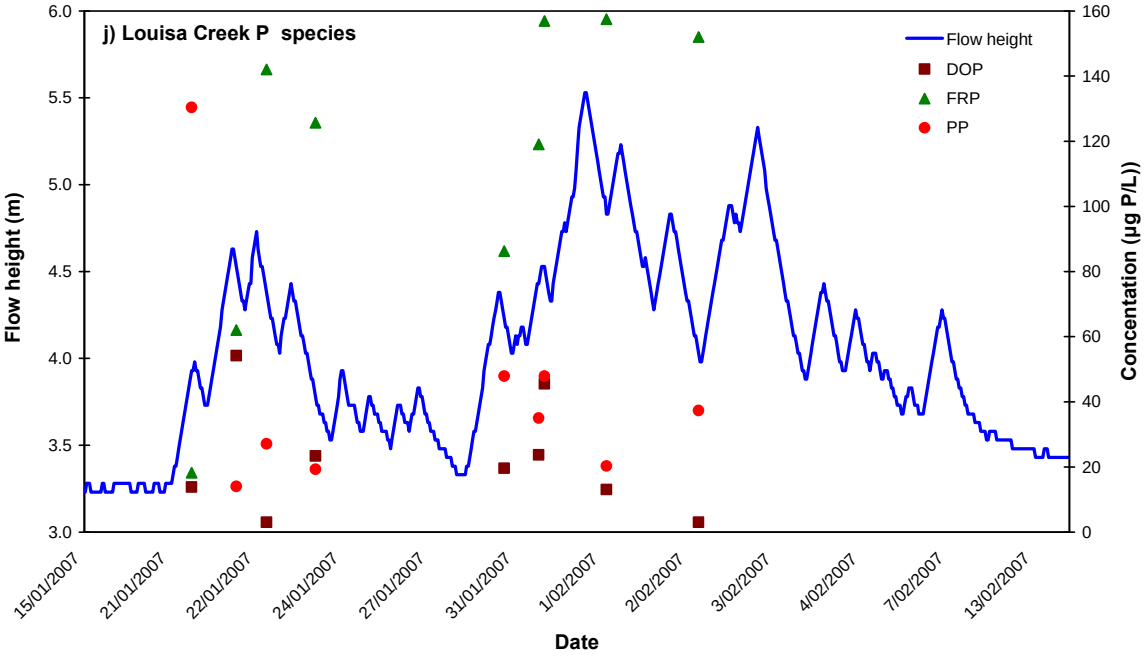
Appendix E: Stream flow for Bluewater Creek and corresponding nitrogen (g) and phosphorus (h) concentrations (Sourced: NRW Watershed)



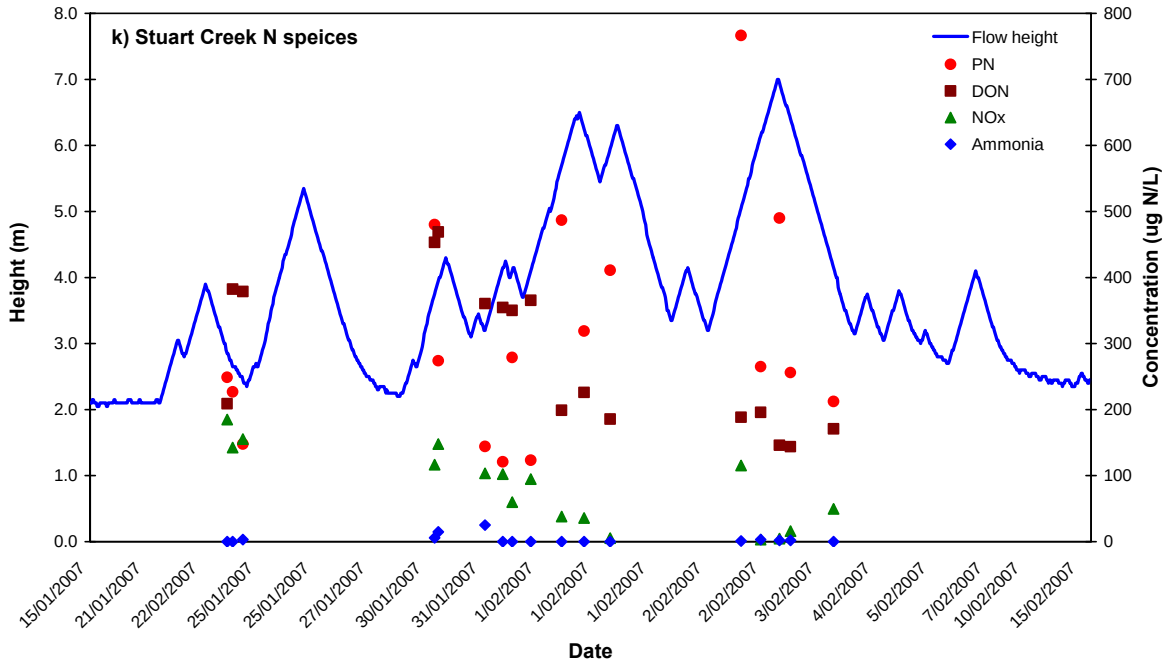


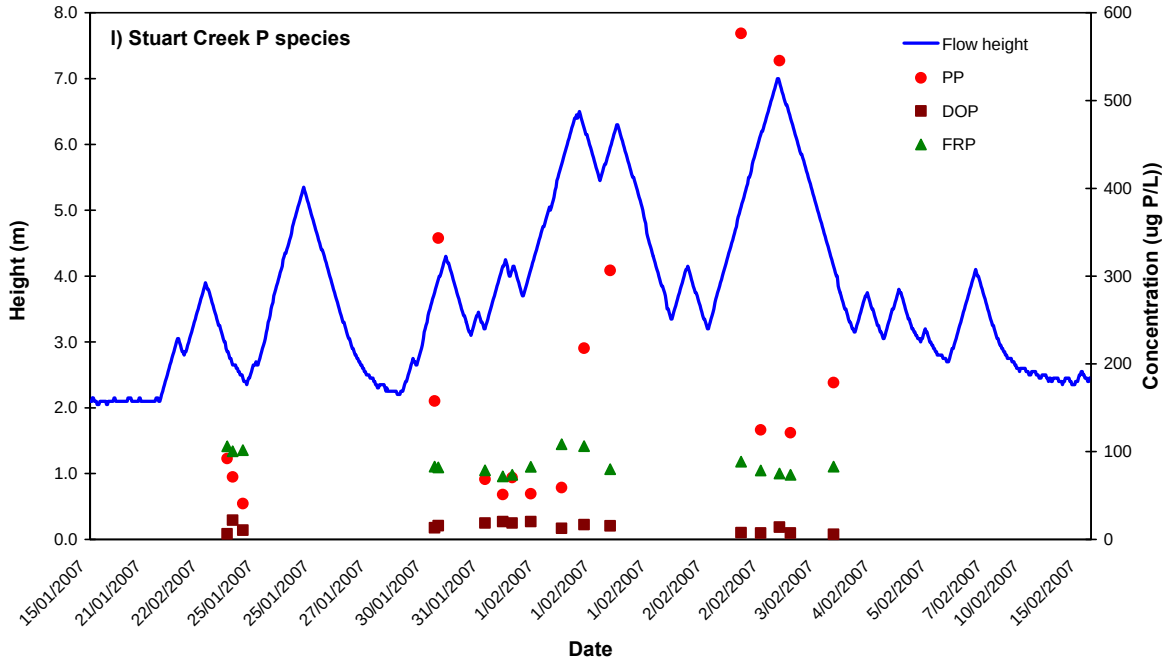
Appendix E: Flow height for Louisa Creek and corresponding nitrogen (i) and phosphorus (j) concentrations (Sourced: BoM, 2007)





Appendix E: Flow height for Stuart Creek and corresponding nitrogen (k) and phosphorus (l) concentrations (Sourced: BoM, 2007)





APPENDIX F

Trace Metal Results

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Ag_{total}	Ag_{filt}	Al_{total}	Al_{filt}	As_{total}	As_{filt}	Ba_{total}	Ba_{filt}	Be_{total}	Be_{filt}	Bi_{total}	Bi_{filt}	Co_{total}	Co_{filt}	Cr_{total}	Cr_{filt}	Cu_{total}	Cu_{filt}
Creek Site	**Date**																		
Campus Ck	22-01-07	< 0.05	< 0.05	590	83	< 1	< 1	15	8	< 0.1	< 0.1	< 0.05	< 0.05	0.2	< 0.1	7	< 0.1	0.9	1
Campus Ck	01-02-07	< 0.05	< 0.05	462	54	< 1	< 1	11	6	< 0.1	< 0.1	< 0.05	< 0.05	0.2	< 0.1	< 0.1	0.1	0.8	2
Bohle River	22-01-07	< 0.05	< 0.05	5810	22	5	4	135	23	0.9	< 0.1	< 0.05	< 0.05	4	0.3	37	0.7	7	1
Bohle River	30-01-07	0.1	< 0.05	6100	0.8	2	2	177	43	0.7	< 0.1	0.4	< 0.05	4	0.3	12	< 0.1	6	2
Bohle River	01-02-07	< 0.05	< 0.05	1590	< 0.5	2	2	30	12	0.2	< 0.1	< 0.05	< 0.05	1	< 0.1	7	2	4	2
Bohle River	02-02-07	< 0.05	0.1	1950	75	2	2	58	18	0.3	< 0.1	< 0.05	< 0.05	1	< 0.1	65	< 0.1	4	1
Louisa Ck	22-01-07	< 0.05	< 0.05	357	< 0.5	5	4	17	13	< 0.1	< 0.1	< 0.05	< 0.05	0.1	< 0.1	34	0.6	3	2
Louisa Ck	30-01-07	0.1	< 0.05	346	< 0.5	3	2	29	23	< 0.1	< 0.1	< 0.05	< 0.05	0.2	< 0.1	0.5	0.3	3	3
Louisa Ck	01-02-07	< 0.05	< 0.05	378	4	5	6	21	14	< 0.1	< 0.1	< 0.05	< 0.05	0.2	< 0.1	8	0.6	2	3
Stuart Ck (upper)	22-01-07	< 0.05	< 0.05	5810	< 0.5	< 1	< 1	87	17	0.5	< 0.1	< 0.05	< 0.05	4	< 0.1	8	< 0.1	12	3
Stuart Ck (upper)	30-01-07	< 0.05	< 0.05	2450	5	< 1	< 1	45	15	0.2	< 0.1	< 0.05	< 0.05	2	< 0.1	6	0.2	4	3

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element **(µg/L)**	**Ag**	**Al**	**As**	**Ba**	**Be**	**Bi**	**Co**	**Cr**	**Cu**
99%	0.02	27	0.8	-	I.D.*	I.D.	I.D.	I.D.	1
95%	0.05	55	13	-	I.D.	I.D.	I.D	I.D	1.4

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Fe_{total}	Fe_{filt}	Mn_{total}	Mn_{filt}	Mo_{total}	Mo_{filt}	Ni_{total}	Ni_{filt}	Pb_{total}	Pb_{filt}	Sb_{total}	Sb_{filt}	Se_{total}	Se_{filt}	Tl_{total}	Tl	Zn_{total}	Zn_{filt}
Creek Site	**Date**																		
Campus Ck	22-01-07	526	< 100	30	3	< 0.1	< 0.1	0.8	< 0.1	2	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	7	< 5
Campus Ck	01-02-07	431	< 100	21	0.1	< 0.1	< 0.1	0.2	< 0.1	1	< 0.05	0.6	< 0.05	< 1	< 1	< 0.05	< 0.05	< 5	< 5
Bohle River	22-01-07	7230	< 100	377	51	< 0.1	< 0.1	3	0.3	12	0.1	< 0.05	< 0.05	< 1	< 1	0.19	< 0.05	27	< 5
Bohle River	30-01-07	6820	< 100	368	38	< 0.1	< 0.1	3	0.6	11	< 0.05	2	< 0.05	< 1	< 1	0.2	< 0.05	25	< 5
Bohle River	01-02-07	1520	< 100	63	7	0.2	0.2	< 0.1	< 0.1	3	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	33	< 5
Bohle River	02-02-07	2640	< 100	115	14	< 0.1	< 0.1	2	0.1	6	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	16	< 5
Louisa Ck	22-01-07	438	< 100	13	7	< 0.1	< 0.1	0.9	< 0.1	2	0.2	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	27	11
Louisa Ck	30-01-07	733	157	23	12	< 0.1	< 0.1	0.6	< 0.1	3	0.2	0.4	0.1	< 1	< 1	< 0.05	< 0.05	15	7
Louisa Ck	01-02-07	462	< 100	15	2	< 0.1	< 0.1	0.8	< 0.1	3	0.1	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	34	14
Stuart Ck (upper)	22-01-07	6570	< 100	285	5	< 0.1	< 0.1	5	< 0.1	15	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	38	< 5
Stuart Ck (upper)	30-01-07	2750	< 100	97	1	< 0.1	< 0.1	2	< 0.1	4	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	12	< 5

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element (µg/L)	Fe	Mn	Mo	Ni_t	Pb	Sb_t	Se	Tl	Zn
99%	I.D.*	1200	I.D.	8	1	I.D.	5	I.D.	2.4
95%	I.D.	1900	I.D.	11	3.4	I.D.	11	I.D.	8

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Ag_{total}	Ag_{filt}	Al_{total}	Al_{filt}	As_{total}	As_{filt}	Ba_{total}	Ba_{filt}	Be_{total}	Be_{filt}	Bi_{total}	Bi_{filt}	Co_{total}	Co_{filt}	Cr_{total}	Cr_{filt}	Cu_{total}	Cu_{filt}
Creek Site	**Date**																		
Stuart Ck (upper)	01-02-07	0.1	< 0.05	1940	15	< 1	< 1	28	10	0.1	< 0.1	< 0.05	< 0.05	2	< 0.1	1	< 0.1	4	2
Stuart Ck (lower)	23-01-07	< 0.05	< 0.05	2040	< 0.5	< 1	< 1	42	20	0.1	< 0.1	< 0.05	< 0.05	2	< 0.1	6	< 0.1	6	3
Stuart Ck (Auto)	30-01-07	0.1	< 0.05	5460	< 0.5	1	< 1	98	27	0.5	< 0.1	23	< 0.05	5	< 0.1	17	< 0.1	10	3
Stuart Ck (Auto)	16/17/18	2	0.5	3450	21	< 1	< 1	52	12	0.2	< 0.1	< 0.05	< 0.05	3	< 0.1	3	< 0.1	9	5
Stuart Ck (Auto)	1/2/3	7	0.2	2280	< 0.5	< 1	< 1	48	21	0.2	< 0.1	< 0.05	< 0.05	2	< 0.1	2	< 0.1	14	9
Captains Ck	22-01-07	< 0.05	< 0.05	738	< 0.5	4	3	19	12	< 0.1	< 0.1	< 0.05	< 0.05	0.5	0.1	45	0.5	4	2
Captains Ck	01-02-07	< 0.05	< 0.05	237	7	3	4	13	9	< 0.1	< 0.1	< 0.05	< 0.05	0.1	< 0.1	6	0.3	3	3
Woolcock Drain	22-01-07	< 0.05	< 0.05	667	8	4	3	14	5	< 0.1	< 0.1	< 0.05	< 0.05	0.4	< 0.1	46	0.3	4	3
Woolcock Drain	30-01-07	< 0.05	< 0.05	640	< 0.5	2	3	13	6	< 0.1	< 0.1	< 0.05	< 0.05	0.4	< 0.1	7	0.8	5	4
Woolcock Drain	01-02-07	< 0.05	< 0.05	399	< 0.5	5	6	13	8	< 0.1	< 0.1	< 0.05	< 0.05	0.2	< 0.1	8	0.6	3	3
Black River	23-01-07	< 0.05	< 0.05	5200	< 0.5	< 1	< 1	84	17	1	< 0.1	< 0.05	< 0.05	5	< 0.1	5	4	8	3

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element **(µg/L)**	**Ag**	**Al**	**As**	**Ba**	**Be**	**Bi**	**Co**	**Cr**	**Cu**
99%	0.02	27	0.8	-	I.D.*	I.D.	I.D.	I.D.	1
95%	0.05	55	13	-	I.D.	I.D.	I.D	I.D	1.4

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Fe_{total}	Fe_{filt}	Mn_{total}	Mn_{filt}	Mo_{total}	Mo_{filt}	Ni_{total}	Ni_{filt}	Pb_{total}	Pb_{filt}	Sb_{total}	Sb_{filt}	Se_{total}	Se_{filt}	Tl_{total}	Tl	Zn_{total}	Zn_{filt}
Creek Site	**Date**																		
Stuart Ck (upper)	01-02-07	2310	< 100	87	4	< 0.1	< 0.1	1	< 0.1	4	< 0.05	0.4	< 0.05	< 1	< 1	< 0.05	< 0.05	8	< 5
Stuart Ck (lower)	23-01-07	2280	< 100	82	5	< 0.1	< 0.1	3	0.2	3	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	14	< 5
Stuart Ck (Auto)	30-01-07	6340	< 100	450	8	< 0.1	< 0.1	5	0.1	9	< 0.05	8	< 0.05	< 1	< 1		< 0.05	24	< 5
Stuart Ck (Auto)	16/17/18	4310	< 100	156	< 0.1	< 0.1	< 0.1	3	< 0.1	6	< 0.05	0.1	< 0.05	< 1	< 1	< 0.05	< 0.05	17	< 5
Stuart Ck (Auto)	1/2/3	2810	< 100	123	< 0.1	< 0.1	< 0.1	2	< 0.1	5	< 0.05	0.1	< 0.05	< 1	< 1	< 0.05	< 0.05	14	< 5
Captains Ck	22-01-07	915	< 100	62	33	< 0.1	< 0.1	1	< 0.1	6	0.2	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	32	11
Captains Ck	01-02-07	268	< 100	14	3	< 0.1	< 0.1	0.8	< 0.1	3	0.2	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	17	9
Woolcock Drain	22-01-07	877	< 100	34	15	< 0.1	< 0.1	2	< 0.1	6	0.2	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	35	11
Woolcock Drain	30-01-07	863	< 100	33	9	< 0.1	< 0.1	1	< 0.1	7	0.5	< 0.05	0.2	< 1	< 1	< 0.05	< 0.05	36	15
Woolcock Drain	01-02-07	510	< 100	16	1	< 0.1	< 0.1	0.9	< 0.1	4	0.1	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	31	16
Black River	23-01-07	5660	< 100	303	2	< 0.1	0.1	8	2	4	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	20	< 5

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element (µg/L)	Fe	Mn	Mo	Ni_t	Pb	Sb_t	Se	Tl	Zn
99%	I.D.*	1200	I.D.	8	1	I.D.	5	I.D.	2.4
95%	I.D.	1900	I.D.	11	3.4	I.D.	11	I.D.	8

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Ag_{total}	Ag_{filt}	Al_{total}	Al_{filt}	As_{total}	As_{filt}	Ba_{total}	Ba_{filt}	Be_{total}	Be_{filt}	Bi_{total}	Bi_{filt}	Co_{total}	Co_{filt}	Cr_{total}	Cr_{filt}	Cu_{total}	Cu_{filt}
Creek Site	**Date**																		
Black River	01-02-07	< 0.05	< 0.05	5250	46	< 1	< 1	119	15	0.6	< 0.1	< 0.05	< 0.05	5	< 0.1	6	< 0.1	6	2
Gordon Ck	02-01-07	< 0.05	< 0.05	3860	5	7	7	97	75	0.6	< 0.1			4	0.8	81	72	9	2
Gordon Ck	21-01-07	0.2	< 0.05	11200	1100	8	8	231	209	1	< 0.1	< 0.05	< 0.05	210	14	177	213	48	23
Gordon Ck	22-01-07	< 0.05	< 0.05	8880	< 0.5	2	2	121	317	1	< 0.1	< 0.05	< 0.05	8	0.2	38	0.3	13	3
Gordon Ck	31-01-07	< 0.05	< 0.05	10000	< 0.5	5	3	87	36	2	< 0.1	< 0.05	< 0.05	8	0.3	33	29	16	3
Gordon Ck	01-02-07	< 0.05	< 0.05	5280	< 0.5	1	2	61	12	0.5	< 0.1	< 0.05	< 0.05	4	< 0.1	9	0.2	7	2
Kern Drain	21-01-07	< 0.05	< 0.05	4650	< 0.5	4	4	66	17	0.5	< 0.1	< 0.05	< 0.05	2	< 0.1	4	3	6	4
Kern Drain	22-01-07	< 0.05	< 0.05	19000	233	6	8	276	13	2	< 0.1	< 0.05	< 0.05	10	0.2	15	3	11	3
Kern Drain	23-01-07	< 0.05	< 0.05	3500	< 0.5	11	13	69	40	0.5	< 0.1	< 0.05	< 0.05	2	< 0.1	9	8	9	7
Kern Drain	01-02-07	< 0.05	< 0.05	4110	36	7	10	72	11	0.4	< 0.1	< 0.05	< 0.05	2	< 0.1	8	1	4	2
Kern Drain		0.1	< 0.05	11700	< 0.5	8	6	131	22	0.9	< 0.1	< 0.05	< 0.05	4	< 0.1	7	1	9	4

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element **(µg/L)**	**Ag**	**Al**	**As**	**Ba**	**Be**	**Bi**	**Co**	**Cr**	**Cu**
99%	0.02	27	0.8	-	I.D.*	I.D.	I.D.	I.D.	1
95%	0.05	55	13	-	I.D.	I.D.	I.D	I.D	1.4

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in freshwater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Fe_{total}	Fe_{filt}	Mn_{total}	Mn_{filt}	Mo_{total}	Mo_{filt}	Ni_{total}	Ni_{filt}	Pb_{total}	Pb_{filt}	Sb_{total}	Sb_{filt}	Se_{total}	Se_{filt}	Tl_{total}	Tl	Zn_{total}	Zn_{filt}
Creek Site	**Date**																		
Black River	01-02-07	8090	< 100	349	3	< 0.1	< 0.1	4	0.5	9	< 0.05	< 0.05	< 0.05	< 1	< 1	0.2	< 0.05	20	< 5
Gordon Ck	02-01-07	2620	288	420	139	< 0.1	< 0.1	4	2	6	< 0.05	0.1	< 0.05	31	33	< 0.05	< 0.05	< 5	< 5
Gordon Ck	21-01-07	8820	< 100	1280	1080	7	7	28	14	8	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	514	425
Gordon Ck	22-01-07	12100	< 100	413	19	< 0.1	< 0.1	7	0.3	18	0.1	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	40	< 5
Gordon Ck	31-01-07	11900	< 100	377	65	0.8	1	7.5	< 0.1	9	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	48	< 5
Gordon Ck	01-02-07	7730	< 100	162	7	< 0.1	< 0.1	5	< 0.1	11	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	24	< 5
Kern Drain	21-01-07	3960	< 100	144	15	0.6	0.4	1	< 0.1	5	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	19	< 5
Kern Drain	22-01-07	19200	131	739	14	< 0.1	< 0.1	5	< 0.1	28	< 0.05	< 0.05	< 0.05	< 1	< 1	0.5	< 0.05	37	< 5
Kern Drain	23-01-07	3150	< 100	123	6	1	1	0.8	< 0.1	8	< 0.05	< 0.05	< 0.05	< 1	< 1	< 0.05	< 0.05	18	< 5
Kern Drain	01-02-07	4840	< 100	142	0.7	< 0.1	< 0.1	2	< 0.1	6	< 0.05	< 0.05	< 0.05	< 1	< 1	0.1	< 0.05	13	< 5
Kern Drain		11300	< 100	305	6	< 0.1	< 0.1	3	0.3	13	< 0.05	0.3	< 0.05	< 1	< 1	0.2	< 0.05	27	< 5

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element (µg/L)	Fe	Mn	Mo	Ni_t	Pb	Sb_t	Se	Tl	Zn
99%	I.D.*	1200	I.D.	8	1	I.D.	5	I.D.	2.4
95%	I.D.	1900	I.D.	11	3.4	I.D.	11	I.D.	8

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in marine water samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Ag_{total}	Ag_{filt}	Al_{total}	Al_{filt}	As_{total}	As_{filt}	Ba_{total}	Ba_{filt}	Be_{total}	Be_{filt}	Bi_{total}	Bi_{filt}	Co_{total}	Co_{filt}	Cr_{total}	Cr_{filt}	Cu_{total}	Cu_{filt}
Creek Site	**Job No.**																		
Black R. (mouth)	16J350 -196	< 0.5	< 0.5	3090	< 5	< 1	< 1	93	76	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Bohle R. (mouth)	16J350 -200	< 0.5	< 0.5	3400	< 5	< 1	< 1	13	12	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Bohle R.	16J350 -220	< 0.5	< 0.5	162	< 5	< 1	< 1	8	14	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Ross R. (off mouth)	16J350 -201	< 0.5	< 0.5	687	< 5	< 1	< 1	17	18	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Bawden Rock	16J350 -213	< 0.5	< 0.5	< 5	< 5	< 1	< 1	2	28	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Black R. (mouth	16J350 -219	< 0.5	< 0.5	< 5	< 5	< 1	< 1	29	2	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Sandfly Ck	16J350 -210	< 0.5	< 0.5	157	< 5	< 1	< 1	21	20	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1
Sandfly Ck	16J350 -225	< 0.5	< 0.5	369	< 5	< 1	< 1	19	13	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

Element **(µg/L)**	**Ag**	**Al**	**As**	**Ba**	**Be**	**Bi**	**Co**	**Cr**	**Cu**
99%	0.8	I.D.	0.8	-	I.D.	I.D.	0.005	7.7	0.3
95%	1.4	I.D.	13	-	I.D.	I.D.	1	27.4	1.3

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

Appendix F: Total and filterable trace metals in marinewater samples collected from the Townsville/Thuringowa study sites. ANZECC AND ARMCANZ and ARMCANZ (2000) guideline default freshwater trigger values for protection of ecosystem health. Values that do not conform with guideline values are highlighted by colour depending on the exceedances of trigger values at 95% (red) and 99% (yellow) species protection level.

Element (µg/L)		Fe_{total}	Fe_{filt}	Mn_{total}	Mn_{filt}	Mo_{total}	Mo_{filt}	Ni_{total}	Ni_{filt}	Pb_{total}	Pb_{filt}	Sb_{total}	Sb_{filt}	Se_{total}	Se_{filt}	Tl_{total}	Tl	Zn_{total}	Zn_{filt}
Creek Site	**Job No.**																		
Black R. (mouth)	16J350 - 196	3740	28	84	9	< 1	< 1	< 1	< 1	2	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Bohle R. (mouth)	16J350 - 200	3660	11	37	4	< 1	< 1	< 1	< 1	2	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Bohle R.	16J350 - 220	780	< 10	6	< 1	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Ross R. (off mouth)	16J350 - 201	1450	10	5	< 1	< 1	< 1	< 1	< 1	0.6	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Bawden Rock	16J350 - 213	493	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Black R. (mouth	16J350 - 219	715	24	7	< 1	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Stuart Ck.	16J350 - 210	111	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5
Stuart Ck.	16J350 - 225	1400	65	15	< 1	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	< 0.5	< 5	< 5

ANZECC AND ARMCANZ and ARMCANZ (2000) Trigger Vales for Trace Metals Toxicants

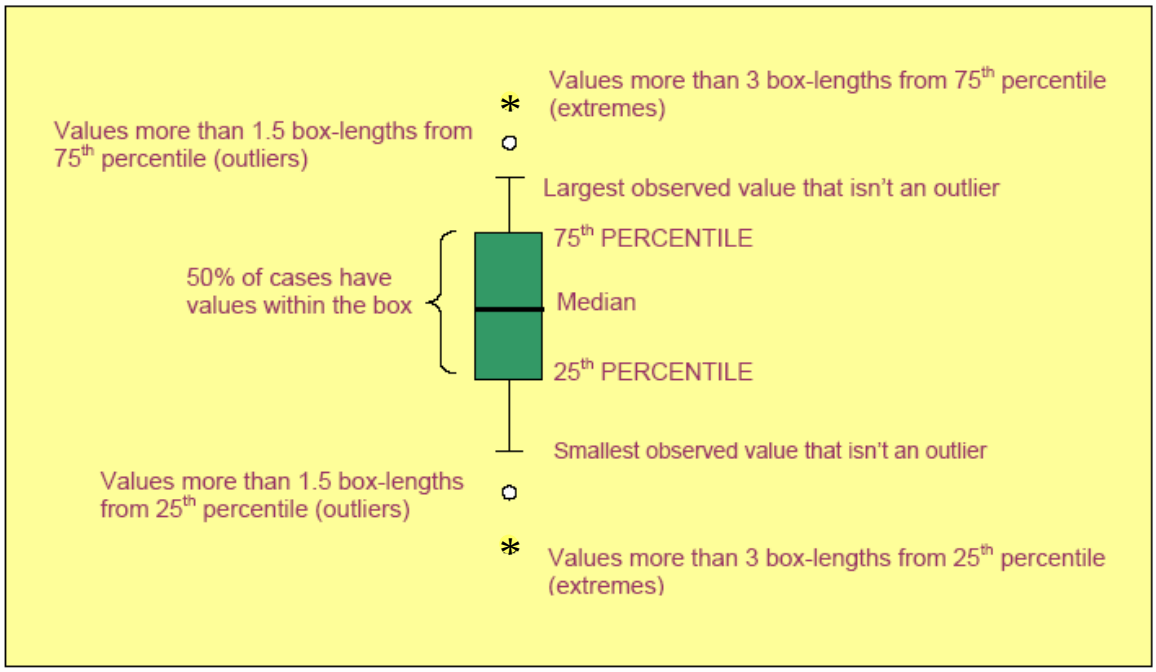
Element (µg/L)	Fe	Mn	Mo	Ni_t	Pb	Sb_t	Se	Tl	Zn
99%	I.D.*	I.D.	I.D.	7	2..2	I.D.	I.D.	I.D.	7
95%	I.D.	I.D.	I.D.	70	4.4	I.D.	I.D.	I.D.	15

I.D.* – Insufficient Data; NST** – Not Sufficiently Toxic

APPENDIX G

Box Plot Diagram

Appendix G: Box plot diagram showing major features of the plot



Box Plots: Summary plot based on the median, quartiles, and extreme values. The box represents the inter-quartile range which contains the 50% of values. The whiskers are lines that extend from the box to the highest and lowest values, excluding outliers. A line across the box indicates the median.

APPENDIX H

Sampling Sites Photographs

Appendix H: a) Aplins weir overflowing, resulting from the intense rainfall which occurred during the 29th the 31st January 2007

b) Black weir resulting from the intense rainfall which occurred from the 29th to the 31st January.

Appendix H: c) Flooding of the lower Bruce Highway at Bohle River following the larger event which occurred on the 29th to the 31st January.

d) High flow at Stuart Creek (upstream) flowing of the culvert crossing at Boganville Road resulting from the intense down pour occurring during the first flush event on the 22nd January.

Appendix H: e) Turbid water flowing from adjacent developing lands into Kern Drain.

f) Turbid waters resulting from the freshwater plume flowing from the mouth of the Black River, extending out into Halifax Bay (2nd February).

Appendix H: g) Alligator Creek (upstream) which was classified as Natural land use, was taken at the commencement of the 1st flushed event on the 22nd January (Photo Courtesy of Rick Willis).

APPENDIX I

Sampling Site Catchment Areas and Major Land Uses

Appendix I: Catchment areas and major land uses (%) of the monitoring sites

Sites	Land use categories	Catchment areas (Ha)	Natural lands	Defence lands	Intensive land use (industrial, mining)	Rural residential	Urban	Services	Cropping	Horticulture	Grazing	Wetlands
Alligator Ck U/S	Natural	770	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bluewater Ck U/S		12,705	28.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.9	0.0
Campus Ck		386	0.0	99.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stuart Ck U/S	Mixed (Natural, Grazing or Minimal Use)	787	32.3	0.0	2.4	0.0	0.0	0.0	0.0	0.0	65.4	0.0
Hen Camp Ck		2,225	98.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Black R		25,314	12.1	0.0	0.0	1.8	1.8	0.1	0.4	0.2	82.8	0.9
Ross River Kelso		219,955	11.5	5.7	0.1	1.0	0.0	0.1	0.1	0.5	75.1	6.0
Sachs Ck	Rural Residential	7,151	0.0	64.1	0.0	9.0	0.0	4.0	0.0	0.0	22.9	0.0
Alligator Ck D/S		10740	85.1	0.0	0.0	4.4	0.0	0.0	0.1	0.3	10.1	0.0
Bluewater Ck D/S		14,961	26.8	0.0	0.1	0.9	0.0	0.1	0.0	0.2	71.9	0.1
Woolcock St Drain	Urban	2,471	0.0	0.0	0.8	0.0	79.3	19.9	0.0	0.0	0.0	0.0
Ross River Aplins weir		225,874	11.3	7.1	0.1	1.0	0.7	0.3	0.1	0.4	73.1	5.9
Ross River Blacks weir		224,507	11.3	6.9	0.1	1.0	0.5	0.2	0.1	0.5	73.6	5.9
Gordon Ck		374	25.5	0.6	6.5	0.0	38.0	14.1	0.0	0.0	13.3	1.9
Kern Drain *		32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	94.5	0.0
Bohle R *	Urban/ Industrial	18,293	2.1	0.0	1.3	3.2	6.3	1.9	0.0	1.6	83.5	0.0
Louisa Ck		169	0.0	0.0	17.4	0.0	59.4	23.3	0.0	0.0	0.0	0.0
Stuart Ck D/S		7,293	18.5	14.9	3.5	1.4	0.9	0.4	0.0	0.0	60.4	0.0
Captains Ck		3,396	2.5	0.0	2.9	0.0	73.2	20.8	0.0	0.0	0.0	0.6

* Due to recent urban development in these catchments, these percentages may not be accurate.