

**APPENDIX 15-M  
NITROGEN AND PHOSPHORUS  
LOAD CALCULATIONS**

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### Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	
		Years 30-44	Years 30-44	30-44	Loading Rate <sup>3</sup>	Loading Rate <sup>3</sup>	in NO <sub>3</sub> Loading Rate	30-44	Loading Rate	Loading Rate	in NO <sub>2</sub> Loading Rate	30-44	Loading Rate	Loading Rate	in NH <sub>4</sub> Loading Rate	Loading Rate	in Total N Loading Rate	30-44	Loading Rate	Loading Rate	Total P Loading Rate	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ] (mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	[Total P] (mg/L)	(mg/day)	(kg/day)	Rate
North Treaty Creek	January	0.28	2.4E+07	0.248	6.0E+06	5.99	0.91	0.0347	8.4E+05	0.84	80.87	0.0053	1.3E+05	0.13	2.47	6.96	1.05	0.0080	1.9E+05	0.19	1.63	77 :1
	February	0.29	2.5E+07	0.203	5.1E+06	5.08	0.82	0.0352	8.8E+05	0.88	75.56	0.0052	1.3E+05	0.13	2.24	6.10	0.97	0.0090	2.2E+05	0.22	1.42	58 :1
	March	0.32	2.8E+07	0.240	6.6E+06	6.64	0.91	0.0400	1.1E+06	1.11	91.48	0.0054	1.5E+05	0.15	2.48	7.89	1.07	0.0066	1.8E+05	0.18	1.74	92 :1
	April	0.79	6.8E+07	0.756	5.2E+07	51.58	0.99	0.0410	2.8E+06	2.80	89.93	0.0053	3.7E+05	0.37	2.35	54.74	1.05	0.0071	4.8E+05	0.48	1.58	243 :1
	May	3.41	2.9E+08	0.649	1.9E+08	191.36	0.83	0.0375	1.1E+07	11.04	79.38	0.0050	1.5E+06	1.47	2.12	203.87	0.88	0.0379	1.1E+07	11.17	0.95	39 :1
	June	4.41	3.8E+08	0.128	4.9E+07	48.91	0.76	0.0287	1.1E+07	10.95	62.11	0.0041	1.6E+06	1.55	1.76	61.41	0.94	0.0238	9.1E+06	9.05	1.10	15 :1
	July	3.12	2.7E+08	0.015	4.0E+06	3.99	0.77	0.0267	7.2E+06	7.21	60.68	0.0057	1.5E+06	1.53	1.50	12.73	2.02	0.0121	3.3E+06	3.27	1.54	8 :1
	August	1.60	1.4E+08	0.003	4.5E+05	0.45	0.22	0.0169	2.3E+06	2.34	15.56	0.0100	1.4E+06	1.38	1.35	4.17	1.28	0.0127	1.8E+06	1.76	1.29	5 :1
	September	1.67	1.4E+08	0.006	9.2E+05	0.92	0.11	0.0272	3.9E+06	3.93	58.63	0.0048	6.9E+05	0.69	2.06	5.53	0.66	0.0166	2.4E+06	2.39	1.14	5 :1
	October	1.23	1.1E+08	0.121	1.3E+07	12.88	0.75	0.0300	3.2E+06	3.19	69.69	0.0050	5.4E+05	0.54	2.34	16.61	0.96	0.0021	2.3E+05	0.23	0.26	158 :1
	November	0.60	5.2E+07	0.170	8.8E+06	8.79	0.79	0.0310	1.6E+06	1.61	74.45	0.0051	2.7E+05	0.27	2.47	10.67	0.95	0.0071	3.7E+05	0.37	1.71	62 :1
	December	0.42	3.6E+07	0.241	8.7E+06	8.74	0.91	0.0340	1.2E+06	1.23	81.64	0.0053	1.9E+05	0.19	2.57	10.17	1.05	0.0084	3.0E+05	0.30	1.67	72 :1
NTR2 Water Quality Sampling Station	January	0.17	1.5E+07	0.310	4.6E+06	4.56	0.69	0.0005	7.3E+03	0.01	0.71	0.0025	3.7E+04	0.04	0.71	4.60	0.69	0.0062	9.1E+04	0.09	0.77	108 :1
	February	0.18	1.6E+07	0.248	3.9E+06	3.86	0.62	0.0005	7.8E+03	0.01	0.67	0.0025	3.9E+04	0.04	0.67	3.90	0.62	0.0075	1.2E+05	0.12	0.74	72 :1
	March	0.20	1.7E+07	0.299	5.2E+06	5.17	0.71	0.0005	8.6E+03	0.01	0.71	0.0025	4.3E+04	0.04	0.71	5.22	0.71	0.0043	7.4E+04	0.07	0.70	151 :1
	April	0.50	4.3E+07	0.973	4.2E+07	42.04	0.81	0.0005	2.2E+04	0.02	0.69	0.0025	1.1E+05	0.11	0.69	42.17	0.81	0.0050	2.2E+05	0.22	0.71	420 :1
	May	2.26	2.0E+08	0.817	1.6E+08	159.50	0.69	0.0005	9.8E+04	0.10	0.70	0.0025	4.9E+05	0.49	0.70	160.09	0.69	0.0459	9.0E+06	8.97	0.76	38 :1
	June	2.85	2.5E+08	0.152	3.7E+07	37.47	0.58	0.0005	1.2E+05	0.12	0.70	0.0025	6.2E+05	0.62	0.70	38.20	0.59	0.0260	6.4E+06	6.40	0.78	13 :1
	July	1.93	1.7E+08	0.003	4.2E+05	0.42	0.08	0.0005	8.3E+04	0.08	0.70	0.0042	7.1E+05	0.71	0.69	1.21	0.19	0.0098	1.6E+06	1.63	0.77	2 :1
	August	1.02	8.8E+07	0.003	2.2E+05	0.22	0.11	0.0014	1.2E+05	0.12	0.81	0.0096	8.5E+05	0.85	0.83	1.19	0.37	0.0123	1.1E+06	1.09	0.80	2 :1
	September	1.08	9.3E+07	0.003	2.3E+05	0.23	0.03	0.0005	4.7E+04	0.05	0.70	0.0025	2.3E+05	0.23	0.70	0.51	0.06	0.0169	1.6E+06	1.58	0.76	1 :1
	October	0.74	6.4E+07	0.152	9.7E+06	9.73	0.57	0.0005	3.2E+04	0.03	0.70	0.0025	1.6E+05	0.16	0.70	9.92	0.57	0.0010	6.4E+04	0.06	0.07	332 :1
	November	0.35	3.0E+07	0.215	6.5E+06	6.50	0.59	0.0005	1.5E+04	0.02	0.70	0.0025	7.6E+04	0.08	0.70	6.60	0.59	0.0049	1.5E+05	0.15	0.69	95 :1
	December	0.24	2.1E+07	0.309	6.4E+06	6.40	0.67	0.0005	1.0E+04	0.01	0.69	0.0025	5.2E+04	0.05	0.69	6.46	0.67	0.0066	1.4E+05	0.14	0.75	102 :1
STWM-H1 Hydrometric Station (cont'd)	January	0.24	2.1E+07	0.306	6.3E+06	6.35	0.96	0.0006	1.2E+04	0.01	1.14	0.0025	5.2E+04	0.05	1.00	6.41	0.96	0.0110	2.3E+05	0.23	1.91	60 :1
	February	0.25	2.2E+07	0.255	5.5E+06	5.51	0.88	0.0006	1.2E+04	0.01	1.04	0.0025	5.4E+04	0.05	0.93	5.57	0.88	0.0117	2.5E+05	0.25	1.60	47 :1
	March	0.28	2.4E+07	0.299	7.2E+06	7.22	0.99	0.0006	1.4E+04	0.01	1.15	0.0025	6.0E+04	0.06	1.00	7.30	0.99	0.0096	2.3E+05	0.23	2.21	67 :1
	April	0.71	6.1E+07	0.863	5.3E+07	52.92	1.02	0.0006	3.5E+04	0.03	1.12	0.0025	1.5E+05	0.15	0.99	53.11	1.02	0.0099	6.0E+05	0.60	1.98	188 :1
	May	3.27	2.8E+08	0.684	1.9E+08	193.17	0.84	0.0006	1.6E+05	0.16	1.15	0.0025	7.1E+05	0.71	1.02	194.03	0.84	0.0412	1.2E+07	11.64	0.99	36 :1
	June	4.12	3.6E+08	0.186	6.6E+07	66.35	1.03	0.0006	2.0E+05	0.20	1.12	0.0025	8.9E+05	0.89	1.01	67.43	1.03	0.0266	9.5E+06	9.48	1.16	15 :1
	July	2.62	2.3E+08	0.067	1.5E+07	15.14	2.92	0.0006	1.3E+05	0.13	1.09	0.0034	7.7E+05	0.77	0.76	16.04	2.54	0.0139	3.2E+06	3.15	1.49	11 :1
	August	1.34	1.2E+08	0.060	6.9E+06	6.90	3.31	0.0013	1.6E+05	0.16	1.03	0.0084	9.7E+05	0.97	0.95	8.03	2.47	0.0160	1.8E+06	1.85	1.35	9 :1
	September	1.48	1.3E+08	0.048	6.2E+06	6.16	0.77	0.0005	6.8E+04	0.07	1.02	0.0025	3.2E+05	0.32	0.95	6.55	0.78	0.0192	2.5E+06	2.45	1.17	6 :1
	October	1.05	9.1E+07	0.179	1.6E+07	16.22	0.95	0.0006	5.2E+04	0.05	1.13	0.0025	2.3E+05	0.23	0.99	16.50	0.95	0.0019	1.7E+05	0.17	0.20	205 :1
	November	0.49	4.2E+07	0.221	9.4E+06	9.35	0.84	0.0006	2.4E+04	0.02	1.11	0.0025	1.1E+05	0.11	0.98	9.48	0.84	0.0097	4.1E+05	0.41	1.90	49 :1
	December	0.35	3.0E+07	0.305	9.2E+06	9.21	0.96	0.0006	1.7E+04	0.02	1.14	0.0025	7.6E+04	0.08	1.00	9.30	0.96	0.0114	3.4E+05	0.34	1.89	58 :1









**Appendix 15-M. Nitrogen and Phosphorus Load Calculations**

Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio
		Years	Years	30-50	Loading	Loading	in NO <sub>3</sub>	30-50	Loading	Loading	in NO <sub>2</sub>	30-50	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	30-50	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	Rate	[Total P]	Rate	Rate	Rate	
Sulphurets Creek	January	3.19	2.8E+08	0.054	1.5E+07	14.90	0.55	0.0005	1.4E+05	0.14	0.97	0.0025	6.9E+05	0.69	0.92	15.734	0.57	0.0224	6.2E+06	6.16	0.84	6 :1
	February	2.71	2.3E+08	0.046	1.1E+07	10.83	0.58	0.0005	1.2E+05	0.12	0.94	0.0043	1.0E+06	1.00	0.98	11.953	0.60	0.0472	1.1E+07	11.03	0.77	2 :1
	March	2.46	2.1E+08	0.057	1.2E+07	12.09	0.51	0.0005	1.1E+05	0.11	0.97	0.0025	5.3E+05	0.53	0.92	12.735	0.52	0.0157	3.3E+06	3.34	0.34	8 :1
	April	3.40	2.9E+08	0.138	4.1E+07	40.51	0.72	0.0005	1.6E+05	0.16	1.01	0.0026	7.8E+05	0.78	0.98	41.444	0.72	0.0386	1.1E+07	11.32	0.58	8 :1
	May	16.27	1.4E+09	0.092	1.3E+08	128.95	0.58	0.0006	7.9E+05	0.79	1.09	0.0064	9.0E+06	9.03	1.97	138.774	0.61	0.4679	6.6E+08	657.71	0.63	0 :1
	June	39.25	3.4E+09	0.038	1.3E+08	128.14	0.65	0.0006	2.0E+06	2.00	1.27	0.0265	9.0E+07	89.95	9.91	220.087	1.05	0.0498	1.7E+08	168.75	0.15	3 :1
	July	53.27	4.6E+09	0.016	7.2E+07	71.90	0.69	0.0005	2.3E+06	2.32	1.04	0.0505	2.3E+08	232.64	13.32	306.856	2.47	0.3019	1.4E+09	1389.55	0.86	0 :1
	August	54.37	4.7E+09	0.009	4.3E+07	42.90	0.71	0.0005	2.4E+06	2.35	1.02	0.0285	1.3E+08	133.90	8.42	179.146	2.28	0.1688	7.9E+08	793.07	0.67	1 :1
	September	38.65	3.3E+09	0.014	4.6E+07	45.87	0.55	0.0006	1.8E+06	1.84	1.05	0.0216	7.2E+07	72.23	5.89	119.928	1.23	0.0581	1.9E+08	194.19	0.20	1 :1
	October	15.14	1.3E+09	0.046	6.0E+07	59.93	0.64	0.0006	7.6E+05	0.76	1.18	0.0352	4.6E+07	46.01	14.30	106.688	1.10	0.1414	1.9E+08	185.02	0.69	1 :1
	November	5.20	4.5E+08	0.047	2.1E+07	21.02	0.53	0.0006	2.7E+05	0.27	1.15	0.0157	7.1E+06	7.05	6.00	28.347	0.69	0.0357	1.6E+07	16.03	0.36	4 :1
	December	2.88	2.5E+08	0.063	1.6E+07	15.75	0.65	0.0006	1.4E+05	0.14	1.04	0.0065	1.6E+06	1.63	2.45	17.519	0.70	0.0352	8.8E+06	8.77	0.68	4 :1
	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio
		Years	Years	50-60	Loading	Loading	in NO <sub>3</sub>	50-60	Loading	Loading	in NO <sub>2</sub>	50-60	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	50-60	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	Rate	[Total P]	Rate	Rate	Rate	
SC2 Water Quality Sampling Station	January	3.02	2.6E+08	0.057	1.5E+07	14.92	0.55	0.0005	1.4E+05	0.14	0.92	0.0025	6.5E+05	0.65	0.87	15.707	0.56	0.0210	5.5E+06	5.48	0.75	6 :1
	February	2.62	2.3E+08	0.048	1.1E+07	10.99	0.59	0.0005	1.2E+05	0.12	0.96	0.0041	9.4E+05	0.94	0.92	12.058	0.61	0.0504	1.1E+07	11.42	0.80	2 :1
	March	2.39	2.1E+08	0.059	1.2E+07	12.25	0.51	0.0006	1.1E+05	0.11	0.99	0.0025	5.2E+05	0.52	0.89	12.879	0.53	0.0182	3.7E+06	3.74	0.39	8 :1
	April	3.33	2.9E+08	0.141	4.1E+07	40.69	0.72	0.0006	1.6E+05	0.16	1.03	0.0025	7.2E+05	0.72	0.91	41.574	0.72	0.0412	1.2E+07	11.84	0.61	8 :1
	May	15.81	1.4E+09	0.094	1.3E+08	128.64	0.58	0.0006	7.5E+05	0.75	1.04	0.0025	3.5E+06	3.45	0.75	132.843	0.59	0.4741	6.5E+08	647.55	0.62	0 :1
	June	36.86	3.2E+09	0.039	1.2E+08	123.29	0.62	0.0005	1.7E+06	1.72	1.09	0.0027	8.7E+06	8.68	0.96	133.690	0.64	0.0201	6.4E+07	63.94	0.06	5 :1
	July	50.35	4.3E+09	0.016	6.8E+07	68.15	0.65	0.0005	2.2E+06	2.18	0.97	0.0027	1.2E+07	11.93	0.68	82.262	0.66	0.3071	1.3E+09	1336.01	0.83	0 :1
	August	51.41	4.4E+09	0.009	4.2E+07	41.61	0.69	0.0005	2.2E+06	2.22	0.97	0.0027	1.2E+07	11.81	0.74	55.632	0.71	0.1705	7.6E+08	757.41	0.64	0 :1
	September	35.78	3.1E+09	0.014	4.3E+07	42.79	0.51	0.0005	1.6E+06	1.59	0.91	0.0030	9.2E+06	9.16	0.75	53.534	0.55	0.0519	1.6E+08	160.35	0.17	1 :1
	October	13.05	1.1E+09	0.049	5.5E+07	55.22	0.59	0.0005	5.7E+05	0.57	0.88	0.0025	2.8E+06	2.82	0.88	58.608	0.60	0.1206	1.4E+08	135.93	0.51	1 :1
	November	4.76	4.1E+08	0.050	2.0E+07	20.44	0.52	0.0005	2.2E+05	0.22	0.95	0.0025	1.0E+06	1.03	0.88	21.695	0.53	0.0194	8.0E+06	7.97	0.18	6 :1
	December	2.71	2.3E+08	0.067	1.6E+07	15.56	0.64	0.0006	1.3E+05	0.13	0.98	0.0025	5.8E+05	0.58	0.88	16.279	0.65	0.0326	7.6E+06	7.62	0.59	5 :1
	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio
		Years	Years	>60	Loading	Loading	in NO <sub>3</sub>	>60	Loading	Loading	in NO <sub>2</sub>	>60	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	>60	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	Rate	[Total P]	Rate	Rate	Rate	
Modelled Hydrometric Data (cont'd)	January	3.17	2.7E+08	0.056	1.5E+07	15.24	0.57	0.0006	1.5E+05	0.15	1.01	0.0025	6.8E+05	0.68	0.92	16.078	0.58	0.0224	6.1E+06	6.13	0.84	6 :1
	February	2.75	2.4E+08	0.048	1.1E+07	11.30	0.60	0.0006	1.4E+05	0.14	1.04	0.0040	9.4E+05	0.94	0.92	12.377	0.62	0.0500	1.2E+07	11.87	0.83	2 :1
	March	2.50	2.2E+08	0.058	1.3E+07	12.53	0.53	0.0006	1.3E+05	0.13	1.09	0.0025	5.4E+05	0.54	0.94	13.196	0.54	0.0195	4.2E+06	4.22	0.43	7 :1
	April	3.49	3.0E+08	0.137	4.1E+07	41.27	0.73	0.0006	1.8E+05	0.18	1.12	0.0025	7.5E+05	0.75	0.95	42.205	0.73	0.0411	1.2E+07	12.37	0.64	8 :1
	May	16.49	1.4E+09	0.092	1.3E+08	131.69	0.59	0.0005	7.8E+05	0.78	1.08	0.0025	3.6E+06	3.56	0.78	136.038	0.60	0.4599	6.6E+08	655.29	0.63	0 :1
	June	39.35	3.4E+09	0.038	1.3E+08	130.27	0.66	0.0005	1.8E+06	1.78	1.13	0.0026	8.9E+06	8.93	0.98	140.984	0.67	0.0219	7.4E+07	74.36	0.06	4 :1
	July	53.46	4.6E+09	0.016	7.2E+07	71.91	0.69	0.0005	2.3E+06	2.31	1.03	0.0028	1.3E+07	12.75	0.73	86.972	0.70	0.2854	1.3E+09	1318.15	0.82	0 :1
	August	54.60	4.7E+09	0.009	4.5E+07	44.70	0.74	0.0005	2.4E+06	2.36	1.03	0.0027	1.3E+07	12.91	0.81	59.965	0.76	0.1679	7.9E+08	792.15	0.67	0 :1
	September	37.15	3.2E+09	0.014	4.5E+07	45.21	0.54	0.0005	1.7E+06	1.65	0.95	0.0029	9.3E+06	9.30	0.76	56.160	0.57	0.0585	1.9E+08	187.80	0.20	1 :1
	October	13.52	1.2E+09	0.046	5.4E+07	53.85	0.58	0.0005	5.9E+05	0.59	0.91	0.0025	2.9E+06	2.92	0.91	57.361	0.59	0.1277	1.5E+08	149.19	0.56	1 :1
	November	4.97	4.3E+08	0.048	2.0E+07	20.45	0.52	0.0006	2.5E+05	0.25	1.06	0.0025	1.1E+06	1.07	0.91	21.774	0.53	0.0275	1.2E+07	11.79	0.27	4 :1
	December	2.82	2.4E+08	0.063	1.5E+07	15.43	0.64	0.0006	1.4E+05	0.14	1.09	0.0025	6.1E+05	0.61	0.92	16.187	0.65	0.0377	9.2E+06	9.18	0.71	4 :1

Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Baseline Discharge	Baseline Discharge	Baseline [NO <sub>3</sub> ]	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Baseline [NO <sub>2</sub> ]	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Baseline [NH <sub>3</sub> ]	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>4</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Baseline [Total P]	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(mg/L)	(mg/day)	(kg/day)	(kg/day)	
Sulphurets Creek  SC3 Water Quality Sampling Station  SC-H1 hydrometric station data	January	3.95	3.4E+08	0.120	4.1E+07	40.99	0.0005	1.7E+05	0.17		0.0025	8.5E+05	0.85		42.013		0.0174	5.9E+06	5.94		16 :1	
	February	3.51	3.0E+08	0.108	3.3E+07	32.75	0.0005	1.5E+05	0.15		0.0025	7.6E+05	0.76		33.662		0.0208	6.3E+06	6.31		12 :1	
	March	3.11	2.7E+08	0.141	3.8E+07	37.91	0.0005	1.3E+05	0.13		0.0025	6.7E+05	0.67		38.721		0.0333	8.9E+06	8.94		10 :1	
	April	4.00	3.5E+08	0.077	2.7E+07	26.69	0.0005	1.7E+05	0.17		0.0025	8.6E+05	0.86		27.727		0.0171	5.9E+06	5.92		10 :1	
	May	16.68	1.4E+09	0.197	2.8E+08	284.33	0.0005	7.2E+05	0.72		0.0025	3.6E+06	3.60		288.650		0.3198	4.6E+08	460.97		1 :1	
	June	37.85	3.3E+09	0.057	1.9E+08	186.73	0.0005	1.6E+06	1.64		0.0041	1.3E+07	13.41		201.776		0.3570	1.2E+09	1167.49		0 :1	
	July	56.26	4.9E+09	0.030	1.5E+08	146.64	0.0005	2.4E+06	2.43		0.0039	1.9E+07	18.80		167.863		0.4675	2.3E+09	2272.47		0 :1	
	August	60.49	5.2E+09	0.018	9.5E+07	95.37	0.0005	2.6E+06	2.61		0.0025	1.3E+07	13.06		111.051		0.1983	1.0E+09	1036.04		0 :1	
	September	48.60	4.2E+09	0.029	1.2E+08	122.83	0.0005	2.1E+06	2.10		0.0064	2.7E+07	26.67		151.598		0.6903	2.9E+09	2898.97		0 :1	
	October	21.87	1.9E+09	0.105	2.0E+08	199.08	0.0005	9.4E+05	0.94		0.0073	1.4E+07	13.86		213.883		0.1997	3.8E+08	377.37		1 :1	
	November	8.01	6.9E+08	0.115	8.0E+07	79.76	0.0005	3.5E+05	0.35		0.0025	1.7E+06	1.73		81.833		0.1063	7.4E+07	73.59		2 :1	
	December	3.96	3.4E+08	0.118	4.0E+07	40.23	0.0005	1.7E+05	0.17		0.0025	8.6E+05	0.86		41.257		0.0619	2.1E+07	21.16		4 :1	
	January	3.66	3.2E+08	0.884	2.8E+08	279.22	6.81	0.0007	2.1E+05	0.21	1.21	0.0420	1.3E+07	13.27	15.54	292.703	10.51	0.0439	1.4E+07	13.89	2.34	47 :1
	February	3.18	2.7E+08	0.883	2.4E+08	242.50	7.40	0.0007	1.9E+05	0.19	1.23	0.0338	9.3E+06	9.29	12.26	251.982	12.68	0.0432	1.2E+07	11.86	1.88	47 :1
	March	2.86	2.5E+08	0.922	2.3E+08	227.91	6.01	0.0007	1.7E+05	0.17	1.27	0.0327	8.1E+06	8.08	12.03	236.160	9.64	0.0427	1.1E+07	10.56	1.18	50 :1
	April	3.79	3.3E+08	0.842	2.8E+08	275.55	10.32	0.0007	2.2E+05	0.22	1.28	0.0384	1.3E+07	12.58	14.55	288.351	5.02	0.0231	7.6E+06	7.55	1.28	85 :1
	May	18.26	1.6E+09	0.970	1.5E+09	1530.96	5.38	0.0006	9.6E+05	0.96	1.33	0.0537	8.5E+07	84.72	23.51	1616.644	7.13	0.1469	2.3E+08	231.79	0.50	15 :1
	June	40.12	3.5E+09	1.124	3.9E+09	3895.83	20.86	0.0005	1.8E+06	1.84	1.13	0.1144	4.0E+08	396.59	29.58	4294.267	20.53	0.1091	3.8E+08	378.18	0.32	25 :1
	July	57.77	5.0E+09	1.587	7.9E+09	7920.06	54.01	0.0005	2.5E+06	2.50	1.03	0.1848	9.2E+08	922.60	49.09	8845.151	71.31	0.4344	2.2E+09	2168.10	0.95	9 :1
	August	60.13	5.2E+09	0.895	4.6E+09	4648.96	48.74	0.0005	2.6E+06	2.63	1.01	0.1023	5.3E+08	531.66	40.69	5183.246	65.88	0.1316	6.8E+08	683.45	0.66	17 :1
	September	47.51	4.1E+09	0.918	3.8E+09	3768.46	30.68	0.0006	2.4E+06	2.42	1.15	0.1053	4.3E+08	432.10	16.20	4202.982	42.99	0.5172	2.1E+09	2122.87	0.73	4 :1
	October	21.06	1.8E+09	1.052	1.9E+09	1915.06	9.62	0.0006	1.0E+06	1.02	1.08	0.0997	1.8E+08	181.52	13.10	2097.607	21.61	0.1408	2.6E+08	256.18	0.68	18 :1
	November	7.46	6.4E+08	1.298	8.4E+08	836.47	10.49	0.0007	4.5E+05	0.45	1.31	0.1021	6.6E+07	65.80	38.02	902.718	22.11	0.0831	5.4E+07	53.53	0.73	37 :1
	December	3.70	3.2E+08	1.048	3.3E+08	334.75	8.32	0.0007	2.1E+05	0.21	1.24	0.0654	2.1E+07	20.89	24.42	355.855	14.25	0.0765	2.4E+07	24.43	1.15	32 :1
	January	3.61	3.1E+08	0.326	1.0E+08	101.60	2.48	0.0006	1.8E+05	0.18	1.04	0.0109	3.4E+06	3.41	4.00	105.188	3.78	0.0245	7.6E+06	7.63	1.28	31 :1
	February	3.15	2.7E+08	0.366	9.9E+07	99.44	3.04	0.0006	1.6E+05	0.16	1.04	0.0102	2.8E+06	2.77	3.66	102.373	5.15	0.0233	6.3E+06	6.34	1.00	36 :1
	March	2.83	2.4E+08	0.382	9.3E+07	93.40	2.46	0.0006	1.4E+05	0.14	1.06	0.0080	2.0E+06	1.96	2.92	95.497	3.90	0.0225	5.5E+06	5.50	0.62	38 :1
	April	3.74	3.2E+08	0.320	1.0E+08	103.69	3.89	0.0006	1.9E+05	0.19	1.10	0.0074	2.4E+06	2.38	2.76	106.266	1.85	0.0057	1.8E+06	1.85	0.31	127 :1
	May	18.22	1.6E+09	0.495	7.8E+08	779.46	2.74	0.0006	9.0E+05	0.90	1.24	0.0102	1.6E+07	16.12	4.47	796.473	3.51	0.0957	1.5E+08	150.60	0.33	12 :1
	June	39.96	3.5E+09	0.640	2.2E+09	2210.88	11.84	0.0006	2.0E+06	2.00	1.22	0.0340	1.2E+08	117.25	8.74	2330.126	11.14	0.2608	9.0E+08	900.43	0.77	6 :1
	July	57.41	5.0E+09	0.687	3.4E+09	3406.98	23.23	0.0005	2.6E+06	2.56	1.05	0.0610	3.0E+08	302.44	16.09	3711.990	29.92	0.4396	2.2E+09	2180.66	0.96	4 :1
	August	59.62	5.2E+09	0.656	3.4E+09	3377.86	35.42	0.0005	2.6E+06	2.58	0.99	0.0599	3.1E+08	308.81	23.64	3689.249	46.89	0.1370	7.1E+08	705.94	0.68	12 :1
	September	47.16	4.1E+09	0.402	1.6E+09	1636.51	13.32	0.0005	2.2E+06	2.15	1.02	0.0402	1.6E+08	163.85	6.14	1802.514	18.44	0.5180	2.1E+09	2110.78	0.73	2 :1
	October	20.99	1.8E+09	0.695	1.3E+09	1259.67	6.33	0.0005	9.6E+05	0.96	1.02	0.0556	1.0E+08	100.78	7.27	1361.410	14.03	0.1382	2.5E+08	250.60	0.66	12 :1
	November	7.42	6.4E+08	0.511	3.3E+08	327.62	4.11	0.0006	3.9E+05	0.39	1.12	0.0302	1.9E+07	19.36	11.19	347.370	8.51	0.0599	3.8E+07	38.37	0.52	20 :1
	December	3.66	3.2E+08	0.504	1.6E+08	159.55	3.97	0.0006	1.9E+05	0.19	1.11	0.0228	7.2E+06	7.23	8.45	166.970	6.68	0.0640	2.0E+07	20.25	0.96	18 :1

Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	
		Years	Years	30-50	Loading	Loading	in NO <sub>3</sub>	30-50	Loading	Loading	in NO <sub>2</sub>	30-50	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	30-50	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	[Total P]	Rate	Rate	Rate	N:P ratio	
Sulphurets Creek	January	3.62	3.1E+08	0.091	2.8E+07	28.49	0.70	0.0005	1.6E+05	0.16	0.96	0.0025	7.8E+05	0.78	0.92	29.436	1.06	0.0151	4.7E+06	4.73	0.80	14 :1
	February	3.19	2.8E+08	0.089	2.5E+07	24.50	0.75	0.0005	1.4E+05	0.14	0.94	0.0027	7.3E+05	0.73	0.97	25.378	1.28	0.0107	2.9E+06	2.95	0.47	19 :1
	March	2.88	2.5E+08	0.104	2.6E+07	25.81	0.68	0.0005	1.3E+05	0.13	0.97	0.0025	6.2E+05	0.62	0.93	26.561	1.08	0.0098	2.4E+06	2.43	0.27	24 :1
	April	3.74	3.2E+08	0.035	1.1E+07	11.44	0.43	0.0005	1.7E+05	0.17	1.01	0.0026	8.5E+05	0.85	0.98	12.469	0.22	0.0010	3.2E+05	0.32	0.05	85 :1
	May	18.13	1.6E+09	0.145	2.3E+08	227.72	0.80	0.0006	8.7E+05	0.87	1.20	0.0053	8.3E+06	8.35	2.32	236.933	1.04	0.0897	1.4E+08	140.57	0.30	4 :1
	June	39.70	3.4E+09	0.035	1.2E+08	120.39	0.64	0.0006	2.0E+06	1.99	1.22	0.0249	8.5E+07	85.40	6.37	207.782	0.99	0.0803	2.8E+08	275.38	0.24	2 :1
	July	56.96	4.9E+09	0.023	1.1E+08	114.47	0.78	0.0005	2.5E+06	2.48	1.02	0.0448	2.2E+08	220.69	11.74	337.635	2.72	0.4148	2.0E+09	2041.28	0.90	0 :1
	August	59.18	5.1E+09	0.015	7.5E+07	74.74	0.78	0.0005	2.6E+06	2.56	0.98	0.0245	1.3E+08	125.31	9.59	202.615	2.58	0.1225	6.3E+08	626.23	0.60	1 :1
	September	46.83	4.0E+09	0.021	8.3E+07	83.14	0.68	0.0005	2.2E+06	2.20	1.05	0.0222	9.0E+07	89.97	3.37	175.308	1.79	0.5176	2.1E+09	2094.29	0.72	0 :1
	October	20.86	1.8E+09	0.082	1.5E+08	146.95	0.74	0.0006	1.0E+06	1.03	1.09	0.0359	6.5E+07	64.75	4.67	212.724	2.19	0.1422	2.6E+08	256.36	0.68	2 :1
	November	7.37	6.4E+08	0.084	5.4E+07	53.63	0.67	0.0006	3.7E+05	0.37	1.08	0.0140	8.9E+06	8.91	5.15	62.913	1.54	0.0560	3.6E+07	35.69	0.48	4 :1
	December	3.64	3.1E+08	0.095	3.0E+07	29.84	0.74	0.0005	1.7E+05	0.17	1.00	0.0060	1.9E+06	1.89	2.21	31.903	1.28	0.0510	1.6E+07	16.03	0.76	4 :1
	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	
		Years	Years	50-60	Loading	Loading	in NO <sub>3</sub>	50-60	Loading	Loading	in NO <sub>2</sub>	50-60	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	50-60	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	[Total P]	Rate	Rate	Rate	N:P ratio	
SC3 Water Quality Sampling Station	January	3.39	2.9E+08	0.095	2.8E+07	27.92	0.68	0.0005	1.5E+05	0.15	0.90	0.0025	7.3E+05	0.73	0.86	28.808	1.03	0.0136	4.0E+06	3.99	0.67	16 :1
	February	2.99	2.6E+08	0.092	2.4E+07	23.69	0.72	0.0005	1.4E+05	0.14	0.92	0.0026	6.7E+05	0.67	0.88	24.497	1.23	0.0126	3.2E+06	3.25	0.51	17 :1
	March	2.68	2.3E+08	0.107	2.5E+07	24.78	0.65	0.0005	1.3E+05	0.13	0.94	0.0025	5.8E+05	0.58	0.86	25.490	1.04	0.0117	2.7E+06	2.72	0.30	21 :1
	April	3.52	3.0E+08	0.037	1.1E+07	11.20	0.42	0.0006	1.7E+05	0.17	0.98	0.0025	7.6E+05	0.76	0.88	12.127	0.21	0.0011	3.3E+05	0.33	0.06	81 :1
	May	16.42	1.4E+09	0.149	2.1E+08	210.82	0.74	0.0005	7.7E+05	0.77	1.07	0.0025	3.5E+06	3.55	0.98	215.139	0.95	0.0866	1.2E+08	122.88	0.27	4 :1
	June	36.28	3.1E+09	0.036	1.1E+08	112.06	0.60	0.0005	1.7E+06	1.68	1.03	0.0040	1.2E+07	12.39	0.92	126.134	0.60	0.0555	1.7E+08	174.10	0.15	2 :1
	July	52.75	4.6E+09	0.024	1.1E+08	107.94	0.74	0.0005	2.3E+06	2.28	0.94	0.0029	1.3E+07	12.99	0.69	123.209	0.99	0.4223	1.9E+09	1924.50	0.85	0 :1
	August	55.24	4.8E+09	0.015	7.2E+07	72.21	0.76	0.0005	2.4E+06	2.39	0.91	0.0025	1.2E+07	11.93	0.91	86.524	1.10	0.1213	5.8E+08	578.79	0.56	0 :1
	September	43.88	3.8E+09	0.021	7.9E+07	79.49	0.65	0.0005	1.9E+06	1.94	0.93	0.0061	2.3E+07	23.24	0.87	104.669	1.07	0.5343	2.0E+09	2025.57	0.70	0 :1
	October	19.61	1.7E+09	0.087	1.5E+08	147.71	0.74	0.0005	8.5E+05	0.85	0.90	0.0074	1.3E+07	12.59	0.91	161.152	1.66	0.1244	2.1E+08	210.66	0.56	2 :1
	November	7.00	6.1E+08	0.089	5.4E+07	53.74	0.67	0.0005	3.3E+05	0.33	0.94	0.0025	1.5E+06	1.51	0.87	55.581	1.36	0.0432	2.6E+07	26.13	0.36	5 :1
	December	3.47	3.0E+08	0.099	3.0E+07	29.63	0.74	0.0005	1.6E+05	0.16	0.96	0.0025	7.5E+05	0.75	0.88	30.541	1.22	0.0493	1.5E+07	14.78	0.70	5 :1
	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	
		Years	Years	>60	Loading	Loading	in NO <sub>3</sub>	>60	Loading	Loading	in NO <sub>2</sub>	>60	Loading	Loading	in NH <sub>4</sub>	Loading	in Total	>60 [Total P]	Loading	Loading	Total P	
		(m <sup>3</sup> /s)	(L/day)	[NO <sub>3</sub> ]	Rate <sup>3</sup>	Rate <sup>3</sup>	Rate	[NO <sub>2</sub> ]	Rate	Rate	Rate	[NH <sub>3</sub> ]	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	N:P ratio	
SC-H1 hydrometric station data (cont'd)	January	3.66	3.2E+08	0.093	2.9E+07	29.36	0.72	0.0005	1.7E+05	0.17	1.01	0.0025	7.9E+05	0.79	0.93	30.320	1.09	0.0151	4.8E+06	4.77	0.80	14 :1
	February	3.20	2.8E+08	0.090	2.5E+07	24.74	0.76	0.0006	1.5E+05	0.15	1.02	0.0025	6.9E+05	0.69	0.91	25.581	1.29	0.0138	3.8E+06	3.82	0.61	15 :1
	March	2.88	2.5E+08	0.104	2.6E+07	25.92	0.68	0.0006	1.4E+05	0.14	1.05	0.0025	6.2E+05	0.62	0.93	26.679	1.09	0.0131	3.3E+06	3.26	0.36	18 :1
	April	3.80	3.3E+08	0.036	1.2E+07	11.92	0.45	0.0006	1.9E+05	0.19	1.10	0.0025	8.2E+05	0.82	0.95	12.930	0.23	0.0010	3.3E+05	0.33	0.06	87 :1
	May	18.02	1.6E+09	0.146	2.3E+08	226.55	0.80	0.0005	8.5E+05	0.85	1.17	0.0025	3.9E+06	3.89	1.08	231.285	1.02	0.0855	1.3E+08	133.02	0.29	4 :1
	June	39.56	3.4E+09	0.036	1.2E+08	121.41	0.65	0.0005	1.8E+06	1.78	1.09	0.0038	1.3E+07	13.06	0.97	136.254	0.65	0.0562	1.9E+08	192.13	0.16	2 :1
	July	57.18	4.9E+09	0.023	1.1E+08	114.75	0.78	0.0005	2.5E+06	2.47	1.02	0.0029	1.4E+07	14.13	0.75	131.354	1.06	0.3979	2.0E+09	1965.95	0.87	0 :1
	August	59.54	5.1E+09	0.015	7.7E+07	76.95	0.81	0.0005	2.6E+06	2.57	0.98	0.0025	1.3E+07	12.86	0.98	92.385	1.17	0.1213	6.2E+08	624.26	0.60	0 :1
	September	47.08	4.1E+09	0.021	8.5E+07	84.52	0.69	0.0005	2.1E+06	2.09	0.99	0.0059	2.4E+07	23.98	0.90	110.585	1.13	0.5128	2.1E+09	2086.27	0.72	0 :1
	October	20.92	1.8E+09	0.081	1.5E+08	147.05	0.74	0.0005	9.1E+05	0.91	0.96	0.0069	1.3E+07	12.53	0.90	160.487	1.65	0.1303	2.4E+08	235.50	0.62	2 :1
	November	7.44	6.4E+08	0.085	5.5E+07	54.53	0.68	0.0006	3.7E+05	0.37	1.05	0.0025	1.6E+06	1.61	0.93	56.501	1.38	0.0488	3.1E+07	31.37	0.43	4 :1
	December	3.71	3.2E+08	0.094	3.0E+07	30.20	0.75	0.0006	1.9E+05	0.19	1.09	0.0025	8.0E+05	0.80	0.94	31.191	1.25	0.0528	1.7E+07	16.91	0.80	4 :1

Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Baseline Discharge	Baseline Discharge	Baseline [NO <sub>3</sub> ]	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Baseline [NO <sub>2</sub> ]	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Baseline [NH <sub>3</sub> ]	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>3</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Baseline [Total P]	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)			(mg/L)	(mg/day)	(kg/day)			
Unuk River UR1 sampling station Modelled hydrometric data	January	8.21	7.1E+08	0.099	7.0E+07	69.91	0.0005	3.5E+05	0.35			0.0067	4.8E+06	4.75		75.020		0.0086	6.1E+06	6.10		27 :1
	February	7.47	6.5E+08	0.091	5.9E+07	58.60	0.0005	3.2E+05	0.32			0.0025	1.6E+06	1.61		60.539		0.0086	5.6E+06	5.55		24 :1
	March	7.07	6.1E+08	0.111	6.8E+07	67.95	0.0005	3.1E+05	0.31			0.0025	1.5E+06	1.53		69.782		0.0161	9.8E+06	9.81		16 :1
	April	12.99	1.1E+09	0.111	1.2E+08	124.80	0.0005	5.6E+05	0.56			0.0025	2.8E+06	2.81		128.165		0.0161	1.8E+07	18.02		16 :1
	May	48.26	4.2E+09	0.137	5.7E+08	569.16	0.0005	2.1E+06	2.08			0.0025	1.0E+07	10.42		581.666		0.1822	7.6E+08	759.50		2 :1
	June	99.48	8.6E+09	0.056	4.8E+08	483.62	0.0005	4.3E+06	4.30			0.0032	2.7E+07	27.29		515.208		0.1513	1.3E+09	1300.73		1 :1
	July	124.09	1.1E+10	0.029	3.1E+08	309.86	0.0005	5.4E+06	5.36			0.0025	2.7E+07	26.80		342.021		0.0733	7.9E+08	785.36		1 :1
	August	116.13	1.0E+10	0.016	1.6E+08	160.29	0.0005	5.0E+06	5.02			0.0025	2.5E+07	25.08		190.393		0.1512	1.5E+09	1516.62		0 :1
	September	88.81	7.7E+09	0.033	2.5E+08	249.39	0.0005	3.8E+06	3.84			0.0073	5.6E+07	56.02		309.238		0.5710	4.4E+09	4381.13		0 :1
	October	52.01	4.5E+09	0.081	3.6E+08	363.96	0.0005	2.2E+06	2.25			0.0039	1.8E+07	17.67		383.882		0.0865	3.9E+08	388.45		2 :1
	November	23.18	2.0E+09	0.089	1.8E+08	178.88	0.0005	1.0E+06	1.00			0.0025	5.0E+06	5.01		184.883		0.0318	6.4E+07	63.61		6 :1
	December	10.95	9.5E+08	0.105	9.9E+07	98.92	0.0005	4.7E+05	0.47			0.0025	2.4E+06	2.36		101.756		0.0210	2.0E+07	19.90		11 :1
Creek	Month	Discharge Years 0-10	Discharge Years 0-10	Years 0-10 [NO <sub>3</sub> ]	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Years 0-10 [NO <sub>2</sub> ]	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Years 0-10 [NH <sub>3</sub> ]	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>3</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Years 0-10 [Total P]	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)			(mg/L)	(mg/day)	(kg/day)			
Unuk River UR1 sampling station Modelled hydrometric data	January	8.16	7.1E+08	0.467	3.3E+08	328.98	4.71	0.0006	4.0E+05	0.40	1.14	0.0257	1.8E+07	18.15	3.82	347.531	12.48	0.0214	1.5E+07	15.07	2.47	51 :1
	February	7.14	6.2E+08	0.452	2.8E+08	278.45	4.75	0.0006	3.6E+05	0.36	1.11	0.0171	1.1E+07	10.54	6.53	289.350	14.57	0.0190	1.2E+07	11.69	2.11	55 :1
	March	6.82	5.9E+08	0.455	2.7E+08	268.31	3.95	0.0006	3.4E+05	0.34	1.13	0.0158	9.3E+06	9.33	6.11	277.984	11.35	0.0204	1.2E+07	12.02	1.22	51 :1
	April	12.78	1.1E+09	0.349	3.9E+08	385.02	3.09	0.0006	6.1E+05	0.61	1.09	0.0139	1.5E+07	15.29	5.45	400.927	6.98	0.0181	2.0E+07	20.02	1.11	44 :1
	May	49.84	4.3E+09	0.417	1.8E+09	1797.46	3.16	0.0005	2.3E+06	2.32	1.11	0.0211	9.1E+07	90.92	8.72	1890.705	8.33	0.1226	5.3E+08	527.98	0.70	8 :1
	June	101.75	8.8E+09	0.473	4.2E+09	4156.17	8.59	0.0005	4.5E+06	4.50	1.05	0.0462	4.1E+08	406.03	14.88	4566.704	21.83	0.0568	5.0E+08	499.04	0.38	20 :1
	July	125.60	1.1E+10	0.754	8.2E+09	8181.22	26.40	0.0005	5.4E+06	5.43	1.01	0.0868	9.4E+08	941.78	35.14	9128.427	73.59	0.0582	6.3E+08	631.17	0.80	32 :1
	August	115.77	1.0E+10	0.483	4.8E+09	4832.57	30.15	0.0005	5.0E+06	5.03	1.00	0.0557	5.6E+08	557.31	22.22	5394.912	68.58	0.1156	1.2E+09	1156.08	0.76	10 :1
	September	87.72	7.6E+09	0.519	3.9E+09	3932.69	15.77	0.0005	4.2E+06	4.16	1.08	0.0614	4.7E+08	465.58	8.31	4402.429	45.03	0.4752	3.6E+09	3601.10	0.82	3 :1
	October	51.20	4.4E+09	0.439	1.9E+09	1943.59	5.34	0.0005	2.3E+06	2.32	1.03	0.0388	1.7E+08	171.70	9.71	2117.607	21.82	0.0644	2.8E+08	284.81	0.73	16 :1
	November	22.62	2.0E+09	0.486	9.5E+08	950.67	5.31	0.0006	1.1E+06	1.11	1.11	0.0359	7.0E+07	70.15	14.01	1021.922	25.03	0.0241	4.7E+07	47.16	0.74	48 :1
	December	10.68	9.2E+08	0.450	4.2E+08	415.16	4.20	0.0006	5.2E+05	0.52	1.10	0.0258	2.4E+07	23.83	10.08	439.515	17.60	0.0261	2.4E+07	24.14	1.21	40 :1
Creek	Month	Discharge Years 10-30	Discharge Years 10-30	Years 10-30 [NO <sub>3</sub> ]	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Years 10-30 [NO <sub>2</sub> ]	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Years 10-30 [NH <sub>3</sub> ]	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>3</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Years 10-30 [Total P]	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)			(mg/L)	(mg/day)	(kg/day)			
Unuk River UR1 sampling station Modelled hydrometric data	January	8.14	7.0E+08	0.193	1.4E+08	135.74	1.94	0.0005	3.7E+05	0.37	1.06	0.0107	7.5E+06	7.52	1.58	143.628	5.16	0.0115	8.1E+06	8.08	1.32	39 :1
	February	7.11	6.1E+08	0.205	1.3E+08	125.93	2.15	0.0005	3.3E+05	0.33	1.02	0.0059	3.6E+06	3.65	2.26	129.907	6.54	0.0092	5.7E+06	5.67	1.02	51 :1
	March	6.79	5.9E+08	0.211	1.2E+08	123.73	1.82	0.0005	3.1E+05	0.31	1.03	0.0048	2.8E+06	2.82	1.85	126.864	5.18	0.0111	6.5E+06	6.49	0.66	43 :1
	April	12.73	1.1E+09	0.181	2.0E+08	198.70	1.59	0.0005	5.8E+05	0.58	1.03	0.0039	4.3E+06	4.26	1.52	203.543	3.54	0.0128	1.4E+07	14.09	0.78	32 :1
	May	49.79	4.3E+09	0.239	1.0E+09	1027.54	1.81	0.0005	2.3E+06	2.25	1.08	0.0052	2.2E+07	22.24	2.13	1052.033	4.64	0.1042	4.5E+08	448.10	0.59	5 :1
	June	101.59	8.8E+09	0.286	2.5E+09	2510.74	5.19	0.0005	4.7E+06	4.67	1.09	0.0150	1.3E+08	131.29	4.81	2646.696	12.65	0.2416	2.1E+09	2120.96	1.63	3 :1
	July	125.25	1.1E+10	0.336	3.6E+09	3633.44	11.73	0.0005	5.5E+06	5.50	1.03	0.0293	3.2E+08	316.73	11.82	3955.674	31.89	0.0616	6.7E+08	666.79	0.85	13 :1
	August	115.27	1.0E+10	0.357	3.6E+09	3553.15	22.17	0.0005	5.0E+06	4.98	0.99	0.0332	3.3E+08	330.78	13.19	3888.915	49.43	0.1186	1.2E+09	1180.75	0.78	7 :1
	September	87.37	7.5E+09	0.235	1.8E+09	1770.42	7.10	0.0005	3.9E+06	3.89	1.01	0.0257	1.9E+08	193.89	3.46	1968.196	20.13	0.4752	3.6E+09	3586.89	0.82	1 :1
	October	51.12	4.4E+09	0.303	1.3E+09	1336.73	3.67	0.0005	2.3E+06	2.26	1.01	0.0221	9.7E+07	97.48	5.52	1436.473	14.80	0.0638	2.8E+08	281.75	0.73	11 :1
	November	22.58	2.0E+09	0.217	4.2E+08	423.82	2.37	0.0005	1.0E+06	1.04	1.04	0.0115	2.2E+07	22.39	4.47	447.244	10.95	0.0157	3.1E+07	30.70	0.48	32 :1
	December	10.65	9.2E+08	0.244	2.2E+08	224.63	2.27	0.0005	4.9E+05	0.49	1.04	0.0099	9.1E+06	9.07	3.84	234.191	9.38	0.0210	1.9E+07	19.37	0.97	27 :1

**Appendix 15-M. Nitrogen and Phosphorus Load Calculations**

Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio	
		Years 30-50	Years 30-50	30-50 [NO <sub>3</sub> ]	Loading Rate <sup>3</sup>	Loading Rate <sup>3</sup>	in NO <sub>3</sub> Loading Rate	30-50 [NO <sub>2</sub> ]	Loading Rate	Loading Rate	in NO <sub>2</sub> Loading Rate	30-50 [NH <sub>3</sub> ]	Loading Rate	Loading Rate	in NH <sub>4</sub> Loading Rate		in Total N Loading	30-50 [Total P]	Loading Rate	Loading Rate	Total P Loading		
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(kg/day)	(mg/day)	(kg/day)
Unuk River	8.159914	8.15	7.0E+08	0.084	5.9E+07	59.44	0.85	0.0005	3.6E+05	0.36	1.01	0.0066	4.6E+06	4.62	0.97	64.421	2.31	0.0072	5.1E+06	5.10	0.84	28 :1	
	7.137636	7.15	6.2E+08	0.082	5.0E+07	50.40	0.86	0.0005	3.1E+05	0.31	0.97	0.0026	1.6E+06	1.59	0.98	52.302	2.63	0.0036	2.2E+06	2.22	0.40	52 :1	
	UR1 sampling station	6.824972	6.85	5.9E+08	0.095	5.6E+07	55.99	0.82	0.0005	3.0E+05	0.30	0.99	0.0025	1.5E+06	1.48	0.97	57.770	2.36	0.0057	3.4E+06	3.39	0.35	38 :1
		12.77889	12.73	1.1E+09	0.100	1.1E+08	110.10	0.88	0.0005	5.6E+05	0.56	1.00	0.0025	2.8E+06	2.79	0.99	113.448	1.98	0.0096	1.1E+07	10.60	0.59	24 :1
	Modelled hydrometric data (cont'd)	49.8371	49.71	4.3E+09	0.118	5.1E+08	507.50	0.89	0.0005	2.2E+06	2.23	1.07	0.0035	1.5E+07	14.89	1.43	524.621	2.31	0.1021	4.4E+08	438.67	0.58	3 :1
		101.7485	101.33	8.8E+09	0.048	4.2E+08	416.19	0.86	0.0005	4.7E+06	4.65	1.08	0.0115	1.0E+08	100.38	3.68	521.221	2.49	0.0459	4.0E+08	402.15	0.31	3 :1
		125.602	124.79	1.1E+10	0.026	2.8E+08	276.66	0.89	0.0005	5.4E+06	5.41	1.01	0.0218	2.4E+08	235.30	8.78	517.373	4.17	0.0528	5.7E+08	568.97	0.72	2 :1
		115.7743	114.83	9.9E+09	0.014	1.4E+08	139.33	0.87	0.0005	5.0E+06	4.96	0.99	0.0143	1.4E+08	142.29	5.67	286.585	3.64	0.1109	1.1E+09	1099.87	0.73	1 :1
		87.71733	87.04	7.5E+09	0.028	2.1E+08	209.51	0.84	0.0005	3.9E+06	3.94	1.03	0.0159	1.2E+08	119.72	2.14	333.170	3.41	0.4748	3.6E+09	3570.97	0.82	0 :1
		51.19573	50.99	4.4E+09	0.072	3.2E+08	317.99	0.87	0.0005	2.3E+06	2.32	1.03	0.0147	6.5E+07	64.78	3.67	385.088	3.97	0.0655	2.9E+08	288.37	0.74	3 :1
		22.6195	22.54	1.9E+09	0.079	1.5E+08	153.72	0.86	0.0005	1.0E+06	1.03	1.03	0.0062	1.2E+07	12.12	2.42	166.866	4.09	0.0145	2.8E+07	28.26	0.44	13 :1
		10.68483	10.63	9.2E+08	0.096	8.8E+07	88.27	0.89	0.0005	4.7E+05	0.47	1.00	0.0038	3.5E+06	3.46	1.46	92.201	3.69	0.0163	1.5E+07	14.95	0.75	14 :1
Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio	
		Years 50-60	Years 50-60	50-60 [NO <sub>3</sub> ]	Loading Rate <sup>3</sup>	Loading Rate <sup>3</sup>	in NO <sub>3</sub> Loading Rate	50-60 [NO <sub>2</sub> ]	Loading Rate	Loading Rate	in NO <sub>2</sub> Loading Rate	50-60 [NH <sub>3</sub> ]	Loading Rate	Loading Rate	in NH <sub>4</sub> Loading Rate		in Total N Loading	50-60 [Total P]	Loading Rate	Loading Rate	Total P Loading		
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(kg/day)	(mg/day)	(kg/day)
Unuk River	January	7.92	6.8E+08	0.086	5.9E+07	58.96	0.84	0.0005	3.5E+05	0.35	0.99	0.0065	4.4E+06	4.44	0.93	63.750	2.29	0.0064	4.4E+06	4.40	0.72	32 :1	
	February	6.95	6.0E+08	0.083	5.0E+07	49.67	0.85	0.0005	3.1E+05	0.31	0.96	0.0025	1.5E+06	1.52	0.94	51.506	2.59	0.0044	2.6E+06	2.62	0.47	44 :1	
	March	6.64	5.7E+08	0.096	5.5E+07	55.07	0.81	0.0005	3.0E+05	0.30	0.98	0.0025	1.4E+06	1.43	0.94	56.799	2.32	0.0065	3.7E+06	3.74	0.38	34 :1	
	April	12.51	1.1E+09	0.101	1.1E+08	108.82	0.87	0.0005	5.6E+05	0.56	1.00	0.0025	2.7E+06	2.70	0.96	112.083	1.95	0.0102	1.1E+07	10.97	0.61	23 :1	
	May	47.99	4.1E+09	0.119	4.9E+08	493.60	0.87	0.0005	2.1E+06	2.14	1.02	0.0025	1.0E+07	10.37	0.99	506.106	2.23	0.1012	4.2E+08	419.53	0.55	3 :1	
	June	97.91	8.5E+09	0.048	4.1E+08	406.40	0.84	0.0005	4.3E+06	4.34	1.01	0.0031	2.6E+07	26.39	0.97	437.133	2.09	0.0358	3.0E+08	302.73	0.23	3 :1	
	July	120.58	1.0E+10	0.026	2.7E+08	268.37	0.87	0.0005	5.2E+06	5.21	0.97	0.0025	2.6E+07	26.05	0.97	299.625	2.42	0.0502	5.2E+08	522.91	0.67	1 :1	
	August	110.88	9.6E+09	0.014	1.4E+08	136.93	0.85	0.0005	4.8E+06	4.79	0.95	0.0025	2.4E+07	23.95	0.95	165.670	2.11	0.1099	1.1E+09	1052.60	0.69	0 :1	
	September	84.09	7.3E+09	0.028	2.1E+08	205.29	0.82	0.0005	3.7E+06	3.68	0.96	0.0072	5.2E+07	52.47	0.94	261.443	2.67	0.4822	3.5E+09	3503.42	0.80	0 :1	
	October	49.74	4.3E+09	0.074	3.2E+08	317.68	0.87	0.0005	2.2E+06	2.15	0.96	0.0039	1.7E+07	16.71	0.95	336.547	3.47	0.0567	2.4E+08	243.49	0.63	3 :1	
	November	22.17	1.9E+09	0.080	1.5E+08	153.68	0.86	0.0005	9.8E+05	0.98	0.98	0.0025	4.8E+06	4.79	0.96	159.449	3.91	0.0098	1.9E+07	18.85	0.30	19 :1	
	December	10.46	9.0E+08	0.097	8.8E+07	88.05	0.89	0.0005	4.7E+05	0.47	0.99	0.0025	2.3E+06	2.26	0.96	90.780	3.63	0.0153	1.4E+07	13.86	0.70	14 :1	
Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N	Change	Years	Total P	Total P	Change in	N:P ratio	
		Years >60	Years >60	>60 [NO <sub>3</sub> ]	Loading Rate <sup>3</sup>	Loading Rate <sup>3</sup>	in NO <sub>3</sub> Loading Rate	>60 [NO <sub>2</sub> ]	Loading Rate	Loading Rate	in NO <sub>2</sub> Loading Rate	>60 [NH <sub>3</sub> ]	Loading Rate	Loading Rate	in NH <sub>4</sub> Loading Rate		in Total N Loading	>60 [Total P]	Loading Rate	Loading Rate	Total P Loading		
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(mg/L)	(mg/day)	(kg/day)	(kg/day)	(mg/day)	(kg/day)
Unuk River	January	8.19	7.1E+08	0.085	6.0E+07	60.28	0.86	0.0005	3.7E+05	0.37	1.04	0.0064	4.5E+06	4.54	0.96	65.185	2.34	0.0072	5.1E+06	5.08	0.83	28 :1	
	February	7.16	6.2E+08	0.082	5.1E+07	50.66	0.86	0.0005	3.3E+05	0.33	1.01	0.0026	1.6E+06	1.58	0.98	52.568	2.65	0.0051	3.1E+06	3.12	0.56	37 :1	
	March	6.84	5.9E+08	0.095	5.6E+07	56.11	0.83	0.0005	3.1E+05	0.31	1.02	0.0025	1.5E+06	1.48	0.97	57.905	2.36	0.0072	4.2E+06	4.23	0.43	30 :1	
	April	12.79	1.1E+09	0.100	1.1E+08	110.49	0.89	0.0005	5.8E+05	0.58	1.03	0.0025	2.8E+06	2.76	0.98	113.829	1.98	0.0104	1.1E+07	11.49	0.64	22 :1	
	May	49.59	4.3E+09	0.118	5.1E+08	506.86	0.89	0.0005	2.2E+06	2.21	1.06	0.0025	1.1E+07	10.71	1.03	519.775	2.29	0.1006	4.3E+08	431.21	0.57	3 :1	
	June	101.19	8.7E+09	0.048	4.2E+08	417.75	0.86	0.0005	4.4E+06	4.45	1.03	0.0031	2.7E+07	26.93	0.99	449.124	2.15	0.0362	3.2E+08	316.79	0.24	3 :1	
	July	125.01	1.1E+10	0.026	2.8E+08	275.54	0.89	0.0005	5.4E+06	5.40	1.01	0.0025	2.7E+07	27.00	1.01	307.940	2.48	0.0471	5.1E+08	508.45	0.65	1 :1	
	August	115.19	1.0E+10	0.014	1.4E+08	141.57	0.88	0.0005	5.0E+06	4.98	0.99	0.0025	2.5E+07	24.88	0.99	171.422	2.18	0.1102	1.1E+09	1096.88	0.72	0 :1	
	September	87.29	7.5E+09	0.028	2.1E+08	210.73	0.84	0.0005	3.8E+06	3.82	1.00	0.0071	5.3E+07	53.30	0.95	267.853	2.74	0.4725	3.6E+09	3563.78	0.81	0 :1	
	October	51.06	4.4E+09	0.072	3.2E+08	318.76	0.88	0.0005	2.2E+06	2.21	0.98	0.0038	1.7E+07	16.87	0.95	337.837	3.48	0.0610	2.7E+08	268.89	0.69	3 :1	
	November	22.60	2.0E+09	0.079	1.5E+08	154.60	0.86	0.0005	1.0E+06	1.02	1.02	0.0025	4.9E+06	4.88	0.98	160.498	3.93	0.0122	2.4E+07	23.85	0.37	15 :1	
	December	10.70	9.2E+08	0.096	8.9E+07	88.62	0.90	0.0005	4.9E+05	0.49	1.03	0.0025	2.3E+06	2.31	0.98	91.418	3.66	0.0173	1.6E+07	15.94	0.80	13 :1	

Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Baseline Discharge	Baseline Discharge	Baseline [NO <sub>3</sub> ]	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Baseline [NO <sub>2</sub> ]	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Baseline [NH <sub>3</sub> ]	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>4</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Baseline [Total P]	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio
		(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)		(mg/L)	(mg/day)	(kg/day)				(mg/L)	(mg/day)	(kg/day)		
Unuk River UR2 sampling station Modelled hydrometric data	January	16.27	1.4E+09	0.157	2.2E+08	220.70		0.0005	7.0E+05	0.70		0.0025	3.5E+06	3.51		224.922		0.0059	8.3E+06	8.29		60 :1
	February	15.15	1.3E+09	0.149	2.0E+08	195.33		0.0005	6.5E+05	0.65		0.0025	3.3E+06	3.27		199.258		0.0069	9.0E+06	9.03		49 :1
	March	15.16	1.3E+09	0.142	1.9E+08	185.34		0.0005	6.5E+05	0.65		0.0025	3.3E+06	3.27		189.265		0.0079	1.0E+07	10.35		41 :1
	April	34.39	3.0E+09	0.142	4.2E+08	420.42		0.0005	1.5E+06	1.49		0.0025	7.4E+06	7.43		429.332		0.0079	2.3E+07	23.47		41 :1
	May	120.78	1.0E+10	0.266	2.8E+09	2775.81		0.0005	5.2E+06	5.22		0.0025	2.6E+07	26.09		2807.115		0.0851	8.9E+08	888.05		7 :1
	June	235.75	2.0E+10	0.091	1.9E+09	1858.02		0.0005	1.0E+07	10.18		0.0040	8.1E+07	81.47		1949.680		0.1453	3.0E+09	2959.15		1 :1
	July	259.47	2.2E+10	0.052	1.2E+09	1159.78		0.0005	1.1E+07	11.21		0.0041	9.2E+07	91.92		1262.908		0.0460	1.0E+09	1030.50		3 :1
	August	212.86	1.8E+10	0.026	4.7E+08	473.27		0.0005	9.2E+06	9.20		0.0025	4.6E+07	45.98		528.439		0.1335	2.5E+09	2454.60		0 :1
	September	153.80	1.3E+10	0.061	8.1E+08	813.80		0.0005	6.6E+06	6.64		0.0035	4.7E+07	47.04		867.490		0.2796	3.7E+09	3715.27		1 :1
	October	115.26	1.0E+10	0.143	1.4E+09	1424.04		0.0005	5.0E+06	4.98		0.0025	2.5E+07	24.90		1453.920		0.0770	7.7E+08	766.79		4 :1
	November	58.00	5.0E+09	0.144	7.2E+08	719.09		0.0005	2.5E+06	2.51		0.0025	1.3E+07	12.53		734.121		0.0127	6.4E+07	63.64		26 :1
	December	26.74	2.3E+09	0.157	3.6E+08	362.66		0.0005	1.2E+06	1.15		0.0025	5.8E+06	5.77		369.592		0.0059	1.4E+07	13.63		60 :1
Discharge		Discharge	Years	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Years	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Years	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>4</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Years	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio	
	0-10	0-10	0-10	(mg/day)	(kg/day)		0-10	(mg/day)	(kg/day)		0-10	(mg/day)	(kg/day)				0-10	(mg/day)	(kg/day)			
Month	(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	Rate	(mg/L)	(mg/day)	(kg/day)	Rate	(mg/L)	(mg/day)	(kg/day)	Rate	Rate	Rate	(mg/L)	(mg/day)	(kg/day)	Rate		
January	16.99	1.5E+09	0.186	2.7E+08	272.72	1.24	0.0005	7.3E+05	0.73	1.04	0.0121	1.8E+07	17.78	5.06	291.228	10.46	0.0065	9.6E+06	9.59	1.16	67 :1	
February	14.82	1.3E+09	0.247	3.2E+08	316.70	1.62	0.0005	6.4E+05	0.64	0.98	0.0097	1.2E+07	12.36	3.78	329.701	16.60	0.0090	1.2E+07	11.54	1.28	63 :1	
March	14.91	1.3E+09	0.301	3.9E+08	388.02	2.09	0.0005	6.9E+05	0.69	1.06	0.0087	1.1E+07	11.21	3.42	399.926	16.33	0.0099	1.3E+07	12.81	1.24	69 :1	
April	34.17	3.0E+09	0.231	6.8E+08	681.81	1.62	0.0005	1.5E+06	1.54	1.03	0.0068	2.0E+07	20.07	2.70	703.416	12.25	0.0087	2.6E+07	25.80	1.10	60 :1	
May	122.36	1.1E+10	0.379	4.0E+09	4008.04	1.44	0.0005	5.4E+06	5.45	1.04	0.0101	1.1E+08	106.51	4.08	4119.998	18.16	0.0617	6.5E+08	652.54	0.73	14 :1	
June	238.01	2.1E+10	0.269	5.5E+09	5529.02	2.98	0.0005	1.0E+07	10.39	1.02	0.0223	4.6E+08	459.57	5.64	5998.983	28.68	0.1049	2.2E+09	2157.96	0.73	6 :1	
July	260.98	2.3E+10	0.406	9.2E+09	9162.14	7.90	0.0005	1.1E+07	11.28	1.01	0.0453	1.0E+09	1021.96	11.12	10195.379	82.19	0.0386	8.7E+08	870.42	0.84	26 :1	
August	212.50	1.8E+10	0.287	5.3E+09	5274.82	11.15	0.0005	9.2E+06	9.21	1.00	0.0323	5.9E+08	593.02	12.90	5877.049	74.70	0.1135	2.1E+09	2084.60	0.85	6 :1	
September	152.71	1.3E+10	0.344	4.5E+09	4533.88	5.57	0.0005	7.0E+06	6.97	1.05	0.0349	4.6E+08	460.86	9.80	5001.717	51.16	0.2225	2.9E+09	2935.74	0.79	4 :1	
October	114.45	9.9E+09	0.293	2.9E+09	2900.80	2.04	0.0005	5.0E+06	5.04	1.01	0.0171	1.7E+08	169.18	6.80	3075.024	31.68	0.0678	6.7E+08	670.90	0.87	10 :1	
November	57.44	5.0E+09	0.300	1.5E+09	1486.66	2.07	0.0005	2.6E+06	2.61	1.04	0.0156	7.7E+07	77.49	6.19	1566.767	38.38	0.0097	4.8E+07	48.26	0.76	72 :1	
December	26.47	2.3E+09	0.301	6.9E+08	688.17	1.90	0.0005	1.2E+06	1.20	1.04	0.0122	2.8E+07	27.91	4.83	717.285	28.72	0.0080	1.8E+07	18.25	1.34	87 :1	
Discharge		Discharge	Years	NO <sub>3</sub> Loading Rate <sup>3</sup>	NO <sub>3</sub> Loading Rate <sup>3</sup>	Change in NO <sub>3</sub> Loading Rate	Years	NO <sub>2</sub> Loading Rate	NO <sub>2</sub> Loading Rate	Change in NO <sub>2</sub> Loading Rate	Years	NH <sub>3</sub> Loading Rate	NH <sub>3</sub> Loading Rate	Change in NH <sub>4</sub> Loading Rate	Total N Loading Rate	Change in Total N Loading	Years	Total P Loading Rate	Total P Loading Rate	Change in Total P Loading Rate	N:P ratio	
	10-30	10-30	10-30	(mg/day)	(kg/day)		10-30	(mg/day)	(kg/day)		10-30	(mg/day)	(kg/day)				10-30	(mg/day)	(kg/day)			
Month	(m <sup>3</sup> /s)	(L/day)	(mg/L)	(mg/day)	(kg/day)	Rate	(mg/L)	(mg/day)	(kg/day)	Rate	(mg/L)	(mg/day)	(kg/day)	Rate	Rate	Rate	(mg/L)	(mg/day)	(kg/day)	Rate		
January	17.05	1.5E+09	0.047	6.9E+07	69.16	0.31	0.0005	7.4E+05	0.74	1.05	0.0044	6.5E+06	6.54	1.86	76.433	2.75	0.0019	2.8E+06	2.75	0.33	61 :1	
February	14.78	1.3E+09	0.125	1.6E+08	160.09	0.82	0.0005	6.4E+05	0.64	0.98	0.0042	5.3E+06	5.31	1.62	166.041	8.36	0.0042	5.3E+06	5.32	0.59	69 :1	
March	14.88	1.3E+09	0.187	2.4E+08	240.70	1.30	0.0005	6.6E+05	0.66	1.01	0.0035	4.6E+06	4.56	1.39	245.927	10.04	0.0055	7.1E+06	7.10	0.69	77 :1	
April	34.13	2.9E+09	0.167	4.9E+08	492.98	1.17	0.0005	1.5E+06	1.50	1.01	0.0030	8.9E+06	8.86	1.19	503.345	8.76	0.0067	2.0E+07	19.62	0.84	57 :1	
May	122.31	1.1E+10	0.307	3.2E+09	3246.79	1.17	0.0005	5.4E+06	5.38	1.03	0.0036	3.8E+07	37.71	1.45	3289.884	14.50	0.0537	5.7E+08	567.43	0.64	13 :1	
June	237.85	2.1E+10	0.189	3.9E+09	3892.11	2.09	0.0005	1.1E+07	10.55	1.04	0.0090	1.9E+08	185.81	2.28	4088.467	19.55	0.2849	5.9E+09	5855.81	1.98	2 :1	
July	260.63	2.3E+10	0.202	4.5E+09	4548.84	3.92	0.0005	1.1E+07	11.35	1.01	0.0172	3.9E+08	386.75	4.21	4946.930	39.88	0.0403	9.1E+08	907.88	0.88	12 :1	
August	212.00	1.8E+10	0.217	4.0E+09	3971.73	8.39	0.0005	9.2E+06	9.16	1.00	0.0197	3.6E+08	361.29	7.86	4342.184	55.19	0.1152	2.1E+09	2110.37	0.86	5 :1	
September	152.36	1.3E+10	0.178	2.3E+09	2346.80	2.88	0.0005	6.7E+06	6.70	1.01	0.0141	1.9E+08	185.85	3.95	2539.344	25.97	0.2209	2.9E+09	2908.48	0.78	2 :1	
October	114.37	9.9E+09	0.236	2.3E+09	2327.92	1.63	0.0005	5.0E+06	4.99	1.00	0.0101	1.0E+08	99.66	4.00	2432.573	25.06	0.0676	6.7E+08	667.56	0.87	8 :1	
November	57.40	5.0E+09	0.194	9.6E+08	959.69	1.33	0.0005	2.5E+06	2.54	1.02	0.0060	3.0E+07	29.70	2.37	991.930	24.30	0.0064	3.2E+07	31.61	0.50	69 :1	
December	26.44	2.3E+09	0.215	4.9E+08	491.04	1.35	0.0005	1.2E+06	1.18	1.02	0.0055	1.3E+07	12.64	2.19	504.863	20.21	0.0058	1.3E+07	13.22	0.97	85 :1	

Appendix 15-M. Nitrogen and Phosphorus Load Calculations

Creek	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N Loading Rate	Change in Total N Loading	Years 30-50 [Total P] (mg/L)	Total P Loading Rate (mg/day)	Total P Loading Rate (kg/day)	Change in Total P Loading Rate	N:P ratio
		Years 30-50 (m <sup>3</sup> /s)	Years 30-50 (L/day)	30-50 [NO <sub>3</sub> ] (mg/L)	Loading Rate <sup>3</sup> (mg/day)	Loading Rate <sup>3</sup> (kg/day)	in NO <sub>3</sub> Loading Rate	[NO <sub>2</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NO <sub>2</sub> Loading Rate	[NH <sub>3</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NH <sub>4</sub> Loading Rate							
Unuk River	January	17.06	1.5E+09	0.003	3.7E+06	3.68	0.02	0.0005	7.4E+05	0.74	1.05	0.0025	3.7E+06	3.68	1.05	8.106	0.29	0.0010	1.5E+06	1.47	0.18	12 :1
	February	14.83	1.3E+09	0.066	8.4E+07	84.45	0.43	0.0005	6.4E+05	0.64	0.98	0.0025	3.2E+06	3.25	0.99	88.340	4.45	0.0015	1.9E+06	1.89	0.21	103 :1
	March	14.93	1.3E+09	0.134	1.7E+08	173.40	0.94	0.0005	6.5E+05	0.65	0.99	0.0025	3.2E+06	3.23	0.99	177.275	7.24	0.0031	4.0E+06	4.00	0.39	98 :1
	April	34.13	2.9E+09	0.138	4.1E+08	405.90	0.97	0.0005	1.5E+06	1.49	1.00	0.0025	7.4E+06	7.41	1.00	414.795	7.22	0.0055	1.6E+07	16.19	0.69	57 :1
	May	122.23	1.1E+10	0.259	2.7E+09	2737.15	0.99	0.0005	5.4E+06	5.36	1.03	0.0029	3.0E+07	30.48	1.17	2772.986	12.22	0.0528	5.6E+08	557.75	0.63	11 :1
	June	237.60	2.1E+10	0.087	1.8E+09	1788.65	0.96	0.0005	1.1E+07	10.54	1.04	0.0076	1.6E+08	155.09	1.90	1954.284	9.34	0.1000	2.1E+09	2053.64	0.69	2 :1
	July	260.17	2.2E+10	0.050	1.1E+09	1124.31	0.97	0.0005	1.1E+07	11.26	1.00	0.0136	3.1E+08	305.53	3.32	1441.094	11.62	0.0360	8.1E+08	810.28	0.79	4 :1
	August	211.55	1.8E+10	0.025	4.5E+08	449.49	0.95	0.0005	9.1E+06	9.14	0.99	0.0092	1.7E+08	167.49	3.64	626.116	7.96	0.1109	2.0E+09	2027.08	0.83	1 :1
	September	152.04	1.3E+10	0.059	7.7E+08	773.98	0.95	0.0005	6.7E+06	6.75	1.02	0.0085	1.1E+08	111.23	2.36	891.950	9.12	0.2205	2.9E+09	2895.95	0.78	1 :1
	October	114.24	9.9E+09	0.139	1.4E+09	1373.75	0.96	0.0005	5.0E+06	5.04	1.01	0.0070	6.9E+07	69.15	2.78	1447.942	14.92	0.0682	6.7E+08	673.61	0.88	5 :1
	November	57.36	5.0E+09	0.140	6.9E+08	692.51	0.96	0.0005	2.5E+06	2.53	1.01	0.0039	2.0E+07	19.56	1.56	714.605	17.50	0.0059	2.9E+07	29.24	0.46	54 :1
	December	26.42	2.3E+09	0.154	3.5E+08	351.39	0.97	0.0005	1.2E+06	1.16	1.00	0.0030	6.9E+06	6.89	1.19	359.438	14.39	0.0038	8.7E+06	8.70	0.64	91 :1
UR2 sampling station	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N Loading Rate	Change in Total N Loading	Years 50-60 [Total P] (mg/L)	Total P Loading Rate (mg/day)	Total P Loading Rate (kg/day)	Change in Total P Loading Rate	N:P ratio
		Years 50-60 (m <sup>3</sup> /s)	Years 50-60 (L/day)	50-60 [NO <sub>3</sub> ] (mg/L)	Loading Rate <sup>3</sup> (mg/day)	Loading Rate <sup>3</sup> (kg/day)	in NO <sub>3</sub> Loading Rate	[NO <sub>2</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NO <sub>2</sub> Loading Rate	[NH <sub>3</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NH <sub>4</sub> Loading Rate							
Modelled hydrometric data (cont'd)	January	16.83	1.5E+09	0.003	3.6E+06	3.64	0.02	0.0005	7.3E+05	0.73	1.03	0.0025	3.6E+06	3.64	1.03	7.998	0.29	0.0010	1.5E+06	1.45	0.18	12 :1
	February	14.63	1.3E+09	0.066	8.4E+07	83.90	0.43	0.0005	6.3E+05	0.63	0.97	0.0025	3.2E+06	3.18	0.97	87.718	4.42	0.0018	2.3E+06	2.29	0.25	85 :1
	March	14.73	1.3E+09	0.135	1.7E+08	171.99	0.93	0.0005	6.5E+05	0.65	0.99	0.0025	3.2E+06	3.18	0.97	175.822	7.18	0.0034	4.4E+06	4.38	0.42	89 :1
	April	33.90	2.9E+09	0.138	4.0E+08	404.02	0.96	0.0005	1.5E+06	1.48	1.00	0.0025	7.3E+06	7.32	0.99	412.824	7.19	0.0057	1.7E+07	16.62	0.71	55 :1
	May	120.51	1.0E+10	0.260	2.7E+09	2706.35	0.97	0.0005	5.3E+06	5.27	1.01	0.0025	2.6E+07	26.03	1.00	2737.654	12.07	0.0523	5.4E+08	544.49	0.61	11 :1
	June	234.17	2.0E+10	0.088	1.8E+09	1774.11	0.95	0.0005	1.0E+07	10.23	1.00	0.0040	8.0E+07	80.44	0.99	1864.787	8.92	0.0962	1.9E+09	1946.64	0.66	2 :1
	July	255.96	2.2E+10	0.050	1.1E+09	1105.33	0.95	0.0005	1.1E+07	11.06	0.99	0.0039	8.5E+07	85.17	0.93	1201.563	9.69	0.0355	7.8E+08	784.21	0.76	3 :1
	August	207.61	1.8E+10	0.025	4.5E+08	446.53	0.94	0.0005	9.0E+06	8.97	0.98	0.0025	4.5E+07	44.84	0.98	500.346	6.36	0.1103	2.0E+09	1979.33	0.81	1 :1
	September	149.08	1.3E+10	0.060	7.7E+08	767.27	0.94	0.0005	6.5E+06	6.49	0.98	0.0034	4.4E+07	43.73	0.93	817.493	8.36	0.2211	2.8E+09	2848.11	0.77	1 :1
	October	112.99	9.8E+09	0.141	1.4E+09	1372.25	0.96	0.0005	4.9E+06	4.89	0.98	0.0025	2.4E+07	24.41	0.98	1401.538	14.44	0.0639	6.2E+08	623.72	0.81	5 :1
	November	56.99	4.9E+09	0.141	6.9E+08	692.44	0.96	0.0005	2.5E+06	2.49	0.99	0.0025	1.2E+07	12.31	0.98	707.238	17.32	0.0041	2.0E+07	19.96	0.31	78 :1
	December	26.24	2.3E+09	0.155	3.5E+08	350.93	0.97	0.0005	1.2E+06	1.15	1.00	0.0025	5.7E+06	5.67	0.98	357.745	14.32	0.0034	7.7E+06	7.67	0.56	103 :1
Modelled hydrometric data (cont'd)	Month	Discharge	Discharge	Years	NO <sub>3</sub>	NO <sub>3</sub>	Change	Years	NO <sub>2</sub>	NO <sub>2</sub>	Change	Years	NH <sub>3</sub>	NH <sub>3</sub>	Change	Total N Loading Rate	Change in Total N Loading	Years >60 [Total P] (mg/L)	Total P Loading Rate (mg/day)	Total P Loading Rate (kg/day)	Change in Total P Loading Rate	N:P ratio
		Years >60 (m <sup>3</sup> /s)	Years >60 (L/day)	>60 [NO <sub>3</sub> ] (mg/L)	Loading Rate <sup>3</sup> (mg/day)	Loading Rate <sup>3</sup> (kg/day)	in NO <sub>3</sub> Loading Rate	[NO <sub>2</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NO <sub>2</sub> Loading Rate	[NH <sub>3</sub> ] (mg/L)	Loading Rate (mg/day)	Loading Rate (kg/day)	in NH <sub>4</sub> Loading Rate							
Modelled hydrometric data (cont'd)	January	17.10	1.5E+09	0.003	3.7E+06	3.69	0.02	0.0005	7.4E+05	0.74	1.05	0.0025	3.7E+06	3.69	1.05	8.126	0.29	0.0010	1.5E+06	1.48	0.18	12 :1
	February	14.83	1.3E+09	0.065	8.4E+07	83.52	0.43	0.0005	6.4E+05	0.64	0.98	0.0025	3.2E+06	3.20	0.98	87.362	4.40	0.0021	2.7E+06	2.72	0.30	71 :1
	March	14.93	1.3E+09	0.134	1.7E+08	173.42	0.94	0.0005	6.6E+05	0.66	1.01	0.0025	3.2E+06	3.22	0.98	177.304	7.24	0.0038	4.8E+06	4.84	0.47	81 :1
	April	34.18	3.0E+09	0.138	4.1E+08	406.26	0.97	0.0005	1.5E+06	1.50	1.01	0.0025	7.4E+06	7.38	0.99	415.140	7.23	0.0058	1.7E+07	17.07	0.73	54 :1
	May	122.11	1.1E+10	0.259	2.7E+09	2733.49	0.98	0.0005	5.3E+06	5.34	1.02	0.0025	2.6E+07	26.38	1.01	2765.206	12.19	0.0523	5.5E+08	551.44	0.62	11 :1
	June	237.46	2.1E+10	0.087	1.8E+09	1791.92	0.96	0.0005	1.0E+07	10.33	1.01	0.0040	8.1E+07	81.12	1.00	1883.367	9.00	0.0960	2.0E+09	1970.19	0.67	2 :1
	July	260.39	2.2E+10	0.050	1.1E+09	1116.24	0.96	0.0005	1.1E+07	11.25	1.00	0.0038	8.6E+07	86.46	0.94	1213.951	9.79	0.0341	7.7E+08	767.32	0.74	4 :1
	August	211.92	1.8E+10	0.025	4.5E+08	452.52	0.96	0.0005	9.2E+06	9.15	1.00	0.0025	4.6E+07	45.77	1.00	507.453	6.45	0.1105	2.0E+09	2023.88	0.82	1 :1
	September	152.29	1.3E+10	0.059	7.7E+08	774.47	0.95	0.0005	6.6E+06	6.63	1.00	0.0034	4.4E+07	44.36	0.94	825.455	8.44	0.2200	2.9E+09	2894.65	0.78	1 :1
	October	114.31	9.9E+09	0.139	1.4E+09	1373.05	0.96	0.0005	4.9E+06	4.94	0.99	0.0025	2.5E+07	24.69	0.99	1402.684	14.45	0.0656	6.5E+08	647.53	0.84	5 :1
	November	57.43	5.0E+09	0.140	6.9E+08	693.62	0.96	0.0005	2.5E+06	2.52	1.01	0.0025	1.2E+07	12.40	0.99	708.552	17.35	0.0050	2.5E+07	24.84	0.39	63 :1
	December	26.49	2.3E+09	0.154	3.5E+08	351.57	0.97	0.0005	1.2E+06	1.17	1.01	0.0025	5.7E+06	5.72	0.99	358.467	14.35	0.0043	9.8E+06	9.75	0.72	81 :1

NO<sub>3</sub> = nitrate, NO<sub>2</sub> = nitrate, NH<sub>3</sub> = ammonia, Total P = total phosphorus

The grouping of years for loading calculations was based on hydrological data (i.e. changes in predicted stream discharge) rather than phases of Project activities

<sup>1</sup> Baseline discharge determine based on hydrological data from the NTWM-H2 hydrometric station for South Teigen Creek, STWM-H1 hydrometric station for Treaty Creek (Tables 15.7-16 and 15.7-17), and modeled hydrological data at Sulphurets Creek at SC2 (Appendix 13-B)

<sup>2</sup> Baseline concentrations of each nutrient were determined as the mean monthly concentration at STE3 (South Teigen) and NTR2 (North Treaty), as in Appendix 14-J

<sup>3</sup> Loading rate (mg/day) is calculated as the discharge (L/s) x nutrient concentration (mg/L)

<sup>4</sup> Change in nutrient rate was calculated as a ratio for each timeframe using predicted nutrient loading rates relative to the baseline nutrient loading rate