APPENDIX 7 – WATER QUALITY

7.1 Data collected over the study period.

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
1	1	0.5	20.55	5884	3.2	5.84	0	50.2	7.54	84.8	24	5	115	600	99	137
1	1	1	19.31	22679	13.86	5.81	0	27.1	8.37	97.2						
1	1	1.5	19.24	28094	17.28	6.1	0	24.3	8.08	95.7						
1	1	2	19.39	36596	23.18	6.46	0	24.8	7.06	86.8						
1	1	2.3														
1	2	0.5	19.91	2050	1.09	7.4	0.17	50.9	7.63	83.1	32	5	24	580	99	150
1	2	1	19.32	12041	6.53	6.11	0	34	8.48	94.2						
1	2	1.5	19.24	25939	15.75	6.11	0	23.8	8.17	95.9						
1	2	2	19.51	41836	26.9	6.29	0	22.8	6.55	82.6						
1	2	2.1														
1	3	0.5	19.5	2872	0.14	6.99	0	53.4	7.98	84.4	15	5	13	647	55	84
1	3	1	19.34	4389	0.22	5.97	0	54.6	8.03	85						
1	3	1.5	19.25	1455	0.79	5.96	0.3525	51.5	7.7	82						
1	3	2	19.26	28755	17.22	5.37	0	23	7.18	85						
1	3	2.2														
1	4	0.5	20.74	13872	7.84	6.5	0	40.5	9.65	99.6	33	5	27	657	92	176
1	4	1	20.06	19045	11.4	6.49	0	33.1	9.56	99.4						
1	4	1.5	19.52	23858	14.43	6.52	0	24.8	8.21	96.1						
1	4	2	19.41	25899	15.81	6.52	0	32.8	8.03	94.6						
1	4	2.5	19.24	28400	17.35	6.56	0	19.3	8.03	95.1						
1	4	2.8														
1	5	0.5	20.11	20603	12.26	7.82	0	27	9.97	115.3	103	5	51	509	39	46
1	5	1	19.38	22404	13.36	7.75	0	22	9.01	104.8						
1	5	1.5	19.22	24115	14.62	7.74	0.3675	22.5	8.85	103.2						
1	5	2	19.14	25279	15.36	7.69	0.4025	17.1	8.92	103.3						
1	5	2.5	19.12	27228	16.61	7.71	0	17	8.47	99.6						
1	5	3	19.97	45478	29.1	7.75	0	11.1	5.15	66.9						
1	5	3.3														
1	6	0.5	23.37	12808	7.37	7.56	0	30.9	9	108.6	414	5	48	637	43	72
1	6	1	19.91	21273	11.76	7.22	0.92	17.2	8.61	100.2						
1	6	1.5	19.53	24247	14.6	7.12	0.1325	12.7	8.41	98.6						
1	6	2	19.44	26510	16.21	7.06	0.0625	10.7	8.1	95.5						
1	6	2.5	19.45	28422	17.62	6.99	0	10.5	7.93	94.4						
1	6	2.9														
1	7	0.5	20.78	21528	12.88	7.47	0	25.3	7.53	89.4	107	5	66	431	25	28

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
2	1	0.5	22.28	25358	15.42	7.51	0.9475	10.9	9.14	113.5	32	5	147	480	12	12
2	1	1	21.05	36457	23.47	7.96	1.5675	6.9	8.27	105.7						
2	1	1.5	21.02	46146	30.19	8.19	1.515	5	8.03	105.6						
2	1	2	21.19	51974	34.77	8.34	0	8	6.35	87.2						
2	1	2.1														
2	2	0.5	23.09	21371	13.13	7.79	5.34	13.2	9.11	113.6	79	5	39	584	23	24
2	2	1	21.21	27350	16.66	7.85	3.205	7.4	8.71	108.3						
2	2	1.5	20.86	43539	29.3	7.91	1.0675	6.9	7.53	99.8						
2	2	2	21.2	52389	35.69	8.23	0	11.8	7	96.3						
2	2	2.1														
2	3	0.5	21.2	1978	1.02	8.04	1.0675	34.1	6.72	75.2	13	5	25	641	31	32
2	3	1	20.58	30893	19.12	7.96	2.0575	6.5	7.37	90.8						
2	3	1.5	20.68	37836	24.18	7.65	1.5725	7.1	6.8	85.6						
2	3	2	20.87	50436	32.61	7.96	0	13.7	6.02	81.3						
2	3	2.2														
2	4	0.5	22.66	24974	15.2	7.61	4.8	7.2	9.4	117.5	75	5	57	420	11	11
2	4	1	22.37	26670	16.26	7.67	3.7025	5.9	9.44	117.5						
2	4	1.5	21.04	29894	18.36	7.79	3.1025	5.5	8.72	107.7						
2	4	2	20.66	35754	22.2	7.86	2.27	5.6	7.69	96.1						
2	4	2.5	20.83	44397	28.86	7.94	1.6475	7.7	6.76	89.2						
2	4	2.6														
2	5	0.5	22.55	25751	16.09	7.49	3.575	7	9.04	113.3	52	5	25	460	5	5
2	5	1	21.9	30041	18.58	7.63	4.98	5.6	9.09	114.1						
2	5	1.5	21.02	30755	19.02	7.77	3.68	5.6	8.17	101.6						
2	5	2	20.56	33271	21.77	7.74	2.26	4.9	7.22	90.4						
2	5	2.5	20.75	47106	30.72	7.73	1.08	4.4	5.97	79.2						
2	5	2.9														
2	6	0.5	20.62	28295	17.38	7.55	1.43	3.2	8.05	99.2	67	5	75	288	5	5
2	6	1	20.44	30020	18.57	7.55	1.98	4	7.8	95.3						
2	6	1.5	20.25	31942	20.17	7.58	2.88	4	7.17	87.4						
2	6	2	20.52	36899	23.24	7.56	2.9725	5.9	5.29	67						
2	6	2.5	20.83	42534	27.51	7.56	1.9275	8.9	4.59	60						
2	6	2.7														
2	7	0.5	22.28	20722	12.36	7.39	0	46.7	8.88	108.8	56	5	56	319	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
3	1	0.5	19.77	40935	26.46	8.12	0.1525	7.5	8.47	107.6	15	5	66	286	5	5
3	1	1	20.25	47461	31.17	8.44	0	7.2	7.77	102.8						
3	1	1.5	20.41	53092	35.12	8.62	0	7.3	7.98	106.3						
3	1	2	20.31	54098	35.8	8.73	0	8.3	7.78	105.6						
3	1	2.1														
3	2	0.5	18.15	32404	20.38	8.17	1.405	9	8	96.1	19	5	52	423	5	5
3	2	1	20.56	43278	29.23	8.26	0.685	7.4	7.09	92						
3	2	1.5	20.98	50268	33.01	8.38	0.0025	7.5	6.44	86.6						
3	2	2	20.67	53009	34.99	8.53	0	7.5	6.44	87.3						
3	2	2.1														
3	3	0.5	20.24	34031	21.35	7.77	3.9425	9.5	6.05	74.4	33	5	74	515	5	5
3	3	1	21.07	41811	27.06	7.76	0.7925	7.9	5.29	69						
3	3	1.5	21.38	51082	33.62	8.03	0	7.7	4.94	67.4						
3	3	2	21.53	52426	34.71	8.22	0	8.8	5.08	69.8						
3	3	2.2														
3	4	0.5	19.23	36724	23.37	7.83	0.565	7.8	8.03	99	29	13	354	396	5	5
3	4	1	19.6	37811	23.99	7.87	0.69	8	7.02	87.1						
3	4	1.5	20.3	42053	27.04	7.94	0.99	8.4	6.37	81.8						
3	4	2	20.51	44647	28.38	8.09	0.055	8.2	6.37	82.7						
3	4	2.5	21.03	49446	32.38	8.15	0	10.7	5.97	80.2						
3	4	2.6														
3	5	0.5	18.72	33301	20.81	8.03	2.1575	7.7	6.8	82.1	20	5	42	352	5	5
3	5	1	20.36	35933	22.72	7.92	1.4525	7.1	6.31	78.9						
3	5	1.5	21.19	40357	25.94	7.92	0.9475	6.5	5.84	75.8						
3	5	2	21.26	44815	29.09	8.04	0.355	6.6	5.66	75.1						
3	5	2.5	21.36	50098	32.85	8.12	0	6.7	5.26	71.6						
3	5	2.9														
3	6	0.5	17.93	27250	16.7	7.93	2.5575	7.3	8.52	97.9	95	5	35	427	5	5
3	6	1	19.14	30822	19.15	7.79	9.5325	7.1	7.78	92.7						
3	6	1.5	20.97	39097	25.03	7.61	3.9325	11.1	5.12	66.2						
3	6	2	21.38	47370	30.94	7.74	1.4675	7.7	3.86	51.4						
3	6	2.5	21.57	49819	31.93	7.83	0.2825	11.5	3.36	45.3						
3	6	2.7														
3	7	0.5	19.55	26461	16.17	8.03	1.1125	8.3	6.95	81	58	5	76	419	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
4	1	0.5	19.59	39103	24.91	7.25	1.1	0.8	7.62	95.1	24	5	102	302	5	5
4	1	1	19.94	52995	35.03	7.59	0	0.4	7.59	100.1						
4	1	1.5	19.96	53796	35.67	7.85	0	0.4	7.56	101.5						
4	1	2	19.95	54203	35.96	7.9	0	1.9	7.43	99.9						
4	1	2.3														
4	2	0.5	19.25	34617	22.04	7.16	2.07	2.4	7.39	90	39	5	62	276	5	5
4	2	1	19.69	37694	23.79	7.26	1.79	2.3	7.19	89.6						
4	2	1.5	20.09	52468	34.82	7.52	0.44	3.4	6.74	90.3						
4	2	2	20.02	53874	35.63	7.74	0.84	4.8	6.87	92.1						
4	2	2.5	20.01	54030	35.81	7.86	0	9.9	7.13	95.8						
4	2	2.6														
4	3	0.5	18.07	6675	3.07	6.9	9.6225	5.5	7.05	74.2	90	5	63	445	5	5
4	3	1	20.56	39703	25.8	6.83	3	1.8	5.33	68.5						
4	3	1.5	21.33	52058	34.35	7.21	1.12	3.5	3.9	53.4						
4	3	2	20.77	52495	34.66	7.58	1.1025	5.9	4.67	63.1						
4	3	2.1														
4	4	0.5	19.2	33648	21.73	7.21	2.17	1.2	7.54	91	37	5	56	307	5	5
4	4	1	19.42	37455	23.76	7.29	1.9	0.8	7.42	92.3						
4	4	1.5	20.07	41370	26.58	7.36	2.93	1	6.8	86.2						
4	4	2	20.35	48079	31.65	7.5	1.15	1.2	6.2	81.9						
4	4	2.2														
4	5	0.5	18.47	34019	21.23	7.24	2.13	1.5	7.6	91	23	5	157	356	5	5
4	5	1	19.04	35540	22.41	7.21	3.1	1.3	7.43	89.6						
4	5	1.5	19.85	38309	24.26	7.21	2.58	0.8	7.14	89.6						
4	5	2	20.95	48505	31.77	7.2	0.92	0	5.59	75						
4	5	2.5	21.09	51327	33.79	7.36	0.43	1.1	4.79	64.7						
4	5	3	21.38	51759	34.12	7.44	0.58	2.9	3.65	49.8						
4	5	3.4														
4	6	0.5	18	28491	17.57	7.27	2.61	1.4	8.24	95.5	52	5	128	584	5	5
4	6	1	19.16	34590	22.16	7.19	3.49	1.1	7.92	95.8						
4	6	1.5	20.23	39295	24.35	7.26	4.67	0.5	7.37	93.7						
4	6	2	21.53	46921	31.28	7.16	4.26	1.3	3.25	44.4						
4	6	2.5	21.79	49670	32.58	7.23	2.79	2.7	1.92	24.8						
4	6	2.8														
4	7	0.5	18.68	25954	15.93	7.28	2.48	0.4	8.82	102.4	46	5	110	371	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
5	1	0.5	20.68	40287	25.88	7.01	0.8	0.8	7.42	95.4	35	5	62	390	5	5
5	1	1	20.9	48572	31.28	7.61	0.66	0.2	7.41	99.8						
5	1	1.5	20.79	52894	34.34	7.85	0	0	7.44	100.6						
5	1	1.9														
5	2	0.5	20.38	31346	19.87	7.41	5.21	3.3	7.26	89.3	41	5	56	345	5	5
5	2	1	20.96	43752	28.25	7.56	3.17	1.3	6.81	89.2						
5	2	1.5	21.04	51573	34.07	7.76	0.76	0.8	6.74	91.9						
5	2	1.9														
5	3	0.5	20.92	32011	20.97	7.33	4.29	4.3	6.54	82	27	5	176	393	5	5
5	3	1	21.25	42563	27.93	7.49	2.15	1.5	6.66	87.7						
5	3	1.5	21.5	51858	34.18	7.51	1.73	3.1	4.46	61.2						
5	3	2	21.15	52814	32.9	7.85	0	16.1	4.35	59.3						
5	3	2.2														
5	4	0.5	20.3	36894	23.42	7.32	1.24	3.4	7.39	92.8	25	5	177	347	5	5
5	4	1	20.6	39152	24.81	7.47	1.86	2.8	7.51	95.4						
5	4	1.5	21.08	48701	31.87	7.6	2.29	1.7	6.29	84.1						
5	4	2	21.19	51458	33.87	7.81	1.17	2.5	6.49	88.1						
5	4	2.3														
5	5	0.5	19.72	35259	22.21	7.47	1.9	1.3	7.58	93.4	35	5	61	388	5	5
5	5	1	20.23	36437	23.04	7.59	2.39	1.6	7.9	97.9						
5	5	1.5	21.36	46236	30.37	7.69	6.99	2.3	6.38	85.6						
5	5	2	21.41	51549	33.99	7.81	4.18	1.3	5.31	71.8						
5	5	2.5	20.99	52193	34.44	7.97	2.88	3.3	5.06	68.1						
5	5	3	21.01	52328	34.55	8.07	2.705	5.4	4.09	55.6						
5	5	3.2														
5	6	0.5	19.79	26648	16.26	7.49	4.18	4	7.58	90.6	98	20	371	566	5	5
5	6	1	21.18	35558	23.27	7.35	2.73	1.3	8.15	104.7						
5	6	1.5	21.83	45762	31.01	7.45	5.47	2.5	5.37	72.9						
5	6	2	21.46	50828	33.29	7.59	4.58	3.9	3.67	50						
5	6	2.5	21.28	51234	33.72	7.78	3.1325	9.5	3.52	47.8						
5	6	2.7														
5	7	0.5	20.32	26080	15.91	7.45	0.3425	6.3	8.57	103	15	5	61	407	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
6	1	0.5	19.9	44161	28.59	7.96	2.28	1.3	8.07	102.1	19	5	115	443	5	5
6	1	1	19.81	44223	28.62	8.22	1.96	1.2	8.39	105.4						
6	1	1.5	19.86	45606	29.6	8.36	2.32	0.7	8.37	106.2						
6	1	2	20.95	42893	34.97	8.42	0	12.5	6.23	84.6						
6	1	2.1														
6	2	0.5	20.08	42053	27.04	7.98	1.03	3	8.61	109.7	16	5	70	322	5	5
6	2	1	21.62	49878	32.65	8.16	0.82	2	9.14	97						
6	2	1.5	21.33	52364	34.55	8.33	0	9.7	6.97	95.4						
6	2	1.8														
6	3	0.5	22.02	45812	30.33	7.94	1.16	1.2	6.57	89.6	16	5	79	357	5	5
6	3	1	22.06	51623	33.99	8.1	1.36	2.2	5.36	74.2						
6	3	1.5	21.81	52990	35.03	8.23	1.985	6.6	4.64	63.6						
6	3	2	21.9	53134	35.14	8.27	0.055	14.6	4.24	58.6						
6	3	2.1														
6	4	0.5	19.34	40814	26.14	7.94	4	1	7.96	98.5	23	5	65	325	5	5
6	4	1	21.28	47532	30.49	8.13	4.23	1.5	6.69	87.3						
6	4	1.5	21.76	51091	33.6	8.25	4.5	0.7	6.4	87.3						
6	4	2	21.81	52228	34.47	8.37	4.3	2.7	6.19	85.4						
6	4	2.3														
6	5	0.5	17.95	36566	23.13	7.99	0.99	0.9	8.56	102.4	41	5	63	343	5	5
6	5	1	19.34	39098	24.3	8.07	1.23	1.1	8.39	102.8						
6	5	1.5	21.89	51312	33.6	8.06	2.35	0.3	6.53	89						
6	5	2	21.63	52195	34.44	8.25	1.83	1.6	5.79	77.9						
6	5	2.5	21.47	52385	34.57	8.29	1.97	1.9	4.85	66.5						
6	5	3	21.5	52533	34.69	8.22	3.8225	5.1	3.23	43.7						
6	5	3.3														
6	6	0.5	18.08	31879	19.95	7.87	2.66	2.5	8.54	100.3	111	13	76	422	5	5
6	6	1	18.09	31924	19.98	8.02	2.93	2.4	8.48	99.5						
6	6	1.5	21.15	40997	26.03	8.1	3.67	1.5	7.65	95.2						
6	6	2	21.79	50535	33.22	7.91	2.45	2.7	3.9	50.7						
6	6	2.5	21.64	51906	34.23	7.97	3.3925	7.5	2.17	29.7						
6	6	2.7														
6	7	0.5	20.6	28404	17.47	7.43	1.25	0	7.7	92.8	36	5	54	380	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
7	1	0.5	20.59	41171	26.37	7.08	1.24	3.1	7.77	100.2	32	5	75	320	5	5
7	1	1	20.44	47623	31.08	7.73	0.99	3.1	7.83	102.4						
7	1	1.5	20.11	53919	35.18	8.09	0.07	2.1	7.69	103						
7	1	2	20.08	54990	36.07	8.25	0	2.5	7.59	102.4						
7	1	2.5	20.16	54462	36.12	8.31	0	10.3	7.1	95.1						
7	1	2.6														
7	2	0.5	20.26	40770	26.11	7.51	2.78	3	7.86	100.2	31	5	76	395	5	5
7	2	1	20.28	45221	29.42	7.76	9.52	2.8	7.67	100.2						
7	2	1.5	20.25	53457	35.24	8.13	2.5	1.8	7.41	99.6						
7	2	2	20.14	54014	35.65	8.29	2.35	2.9	7.54	101.7						
7	2	2.4														
7	3	0.5	19.9	40694	20.06	7.57	1.015	5.4	7.02	88	33	5	68	376	5	5
7	3	1	20.11	45387	29.45	7.65	0.72	6.8	6.03	79.4						
7	3	1.5	20.23	52466	34.62	7.77	2.3625	5.1	3.66	50.9						
7	3	2	20.9	53949	35.35	8.1	0.2925	7.5	4.71	63.9						
7	3	2.2														
7	4	0.5	20.53	40942	26.24	7.55	0.72	2.2	7.17	92	27	5	65	330	5	5
7	4	1	20.55	41016	26.29	7.76	0.97	3.1	7.19	91.8						
7	4	1.5	20.59	45834	29.73	7.97	2.26	3.2	6.65	87.2						
7	4	2	20.65	50402	33.12	8.13	1.71	2.6	6.29	84.4						
7	4	2.5	20.5	52535	34.69	8.25	1.6125	5.1	6.26	84.5						
7	4	2.7														
7	5	0.5	19.23	36797	23.29	7.46	0.3	1.1	8.35	102.6	39	5	68	376	5	5
7	5	1	20.55	42837	27.6	7.72	2.02	2.3	7.51	97.1						
7	5	1.5	20.89	45078	29.23	8	2.81	2.4	7.28	95.9						
7	5	2	21.97	51596	33.66	8.04	3.79	2.3	5.72	79.5						
7	5	2.5	20.64	52433	34.62	8.18	2.11	3.9	5.54	74.9						
7	5	3	20.49	52766	34.96	8.23	1.66	5.2	5.4	72.8						
7	5	3.4														
7	6	0.5	18.02	32794	20.53	7.26	1.68	2.3	9.39	110.6	98	12	85	552	5	5
7	6	1	17.86	33935	20.94	7.48	1.78	2.1	9.05	106.6						
7	6	1.5	20.69	46850	30.51	7.43	4.94	1.9	6.81	91.5						
7	6	2	22.04	51179	33.69	7.54	5.89	2.8	3.14	42						
7	6	2.5	22.36	52102	34.35	7.64	4.62	4.7	2.03	28.3						
7	6	2.9														
7	7	0.5	19.55	29611	18.3	7.1	1.76	1.7	6.87	82.1	18	5	112	450	5	5

Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
8	1	0.5	21.23	40094	25.65	7.09	6.5825	7.5	9.8	114	30	5	302	476	5	5
8	1	1	20.64	49997	32.38	7.48	5.6575	7.3	8.31	109.4						
8	1	1.5	20.28	52465	34.64	7.72	2.025	6.6	8.36	112						
8	1	2	20.16	53993	35.72	7.89	0.7975	7.7	8.22	109.8						
8	1	2.4														
8	2	0.5	20.93	38651	24.6	7.49	3.5675	6.1	8.48	108.2	30	5	77	394	5	5
8	2	1	20.39	43435	28.03	7.74	3.35	6.8	7.74	100.1						
8	2	1.5	20.39	52236	34.67	7.85	2.26	5.6	9.1	109						
8	2	2	20.19	54007	35.78	7.98	1.2425	10.7	8.07	108.9						
8	2	2.2														
8	3	0.5	21.65	39241	25.03	7.19	4.1475	7.7	7.3	95.1	58	5	79	396	5	5
8	3	1	21.44	42677	27.6	7.3	4.255	7	7.26	95.6						
8	3	1.5	21.5	52151	34.41	7.41	3.8625	5.9	5.84	80.2						
8	3	2	21.84	53781	35.61	7.71	1.5275	11.3	6.14	83.9						
8	3	2.4														
8	4	0.5	20.91	38360	24.39	7.43	2.775	7	7.95	101.6	34	5	75	379	5	5
8	4	1	20.74	39868	25.64	7.59	3.0475	7.3	8	101.4						
8	4	1.5	21.37	43446	28.04	7.74	3.38	8	7.73	99.9						
8	4	2	20.35	46615	30.34	7.88	4.4625	7.5	6.87	89.4						
8	4	2.4														
8	5	0.5	20.99	40457	26.89	7.47	4.2	6.8	7.77	100.5	21	5	130	393	5	5
8	5	1	20.6	41422	26.6	7.63	4.22	6	7.69	99.9						
8	5	1.5	20.86	43285	27.9	7.82	6.7075	6.5	8.47	110.7						
8	5	2	21.03	48637	31.92	7.83	5.69	6.4	6.94	92.3						
8	5	2.5	20.85	52738	34.84	7.83	3.77	5.6	5.76	76.8						
8	5	3	20.69	53353	35.3	7.83	2.98	7.6	5.04	68.4						
8	5	3.3														
8	6	0.5	21.12	32205	20.08	7.36	5.2625	6.7	9.12	113.1	102	13	161	455	5	5
8	6	1	20.67	42639	27.54	7.43	4.91	5.6	8.73	113						
8	6	1.5	21.61	45615	29.61	7.52	7.83	5.6	7.52	100						
8	6	2	22.02	49923	32.76	7.56	9.115	7	3.82	50.8						
8	6	2.5	21.5	52312	34.53	7.66	5.9475	8.1	3.19	43.4						
8	6	2.8														
8	7	0.5	20.21	27541	16.88	7.19	4.325	8.6	9.07	109.4	32	5	160	377	5	5

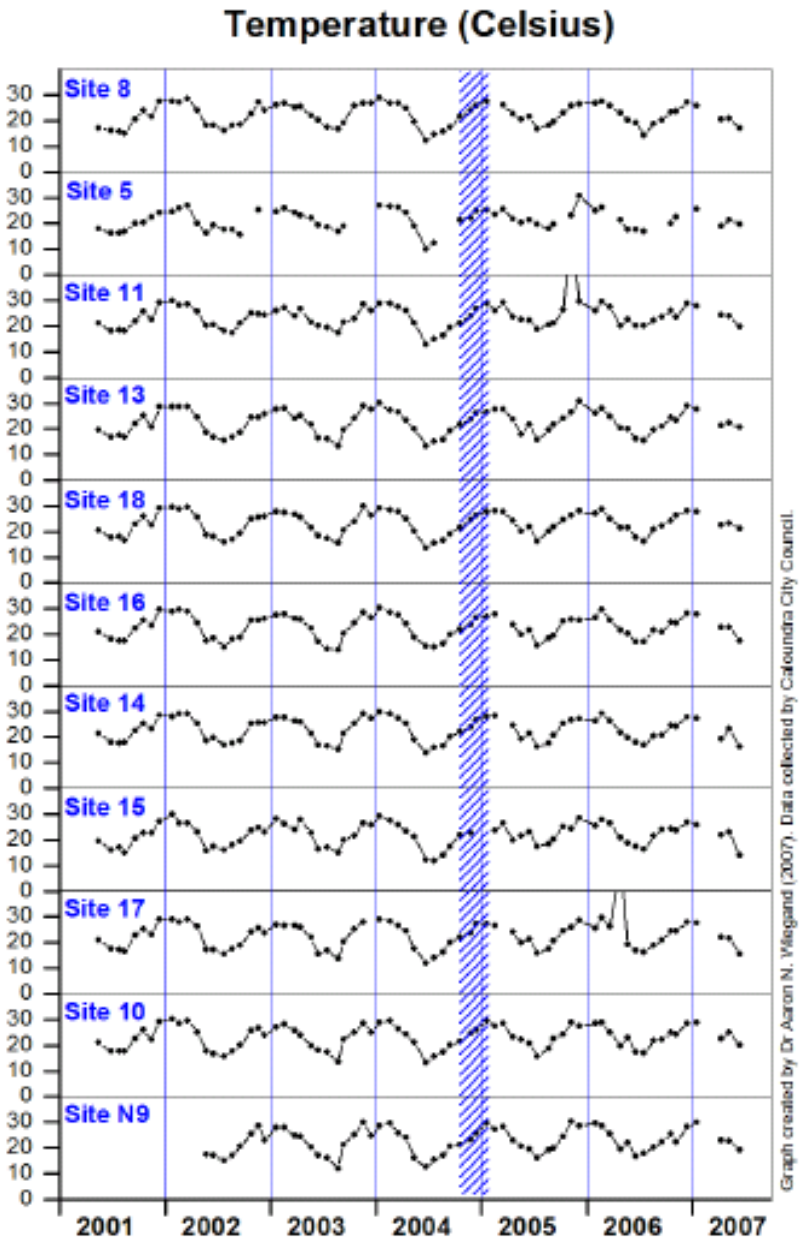
Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
9	1	0.5	19.05	44892	29.08	7.02	0	19.1	8.98	113.7	22	5	70	589	5	5
9	1	1	19.06	44876	29.06	7.52	0	21.4	9.25	116.6						
9	1	1.5	18.34	47280	30.83	7.75	0	20.4	9.18	115.6						
9	1	2	19.31	53455	35.61	7.76	0	25.1	8.62	115						
9	1	2.4														
9	2	0.5	19.94	43463	28.05	7.06	3.49	0.5	8.33	106.2	27	5	70	440	5	5
9	2	1	20.65	46380	30.1	7.3	6.3	1.3	8.37	109.8						
9	2	1.5	19.05	46747	31.78	7.61	9.57	0.2	8.31	106.7						
9	2	2	19.74	53593	35.33	7.65	4.19	4.4	8.36	111.1						
9	2	2.3														
9	3	0.5	20.42	45640	29.63	6.9	4.02	2.4	7.26	94.7	13	5	173	331	5	5
9	3	1	20.69	47473	31.17	7.09	4.91	1.7	6.92	92						
9	3	1.5	21.2	52231	34.47	7.28	4.04	1.8	6.57	89						
9	3	2	21.23	53414	35.36	7.39	4.55	4.02	5.04	69.2						
9	3	2.2														
9	4	0.5	19.58	47727	27.54	7.07	2.94	0.8	9.1	102.6	30	5	68	324	5	5
9	4	1	19.62	42797	27.27	7.24	3.32	0.6	8.33	105.7						
9	4	1.5	19.96	43994	28.65	7.44	6.08	1.4	7.88	101.6						
9	4	2	20.6	49457	32.44	7.54	9.05	2.7	7.83	104.3						
9	4	2.5	20.3	52730	34.83	7.62	4.555	5	7.67	103						
9	4	2.7														
9	5	0.5	17.65	39828	24.73	7.06	1.13	0.3	8.53	102.5	30	5	68	301	5	5
9	5	1	18.57	42158	27.11	7.19	1.7	0.6	9.07	112						
9	5	1.5	20.76	48782	31.93	7.36	4.11	0.7	8.28	110.5						
9	5	2	21.18	51912	34.31	7.47	3.67	0.1	7.36	99.92						
9	5	2.5	21.16	52798	34.89	7.5	4.71	1.8	5.75	78.76						
9	5	3	21.15	53186	35.17	7.43	4.64	2.3	4.01	54.9						
9	5	3.5	21.22	53258	35.23	7.33	5.84	10.4	3.1	42.5						
9	5	3.7														
9	6	0.5	17.56	35641	22.38	7	13.6	0.4	9.12	107.9	53	5	70	571	5	5
9	6	1	17.47	36788	23.28	7.11	12.3	0.1	9.44	111.9						
9	6	1.5	21.27	49405	32.21	7.1	17.31	0.9	5.29	71.2						
9	6	2	21.76	52466	34.78	7.15	19.54	2.2	3.43	45.6						
9	6	2.5	21.76	52951	35.01	7.15	20.19	4.1	1.97	25.8						
9	6	2.8														
9	7	0.5	19.55	33820	21.2	6.91	2.65	4.3	7.58	92.7	47	10	99	678	11	11

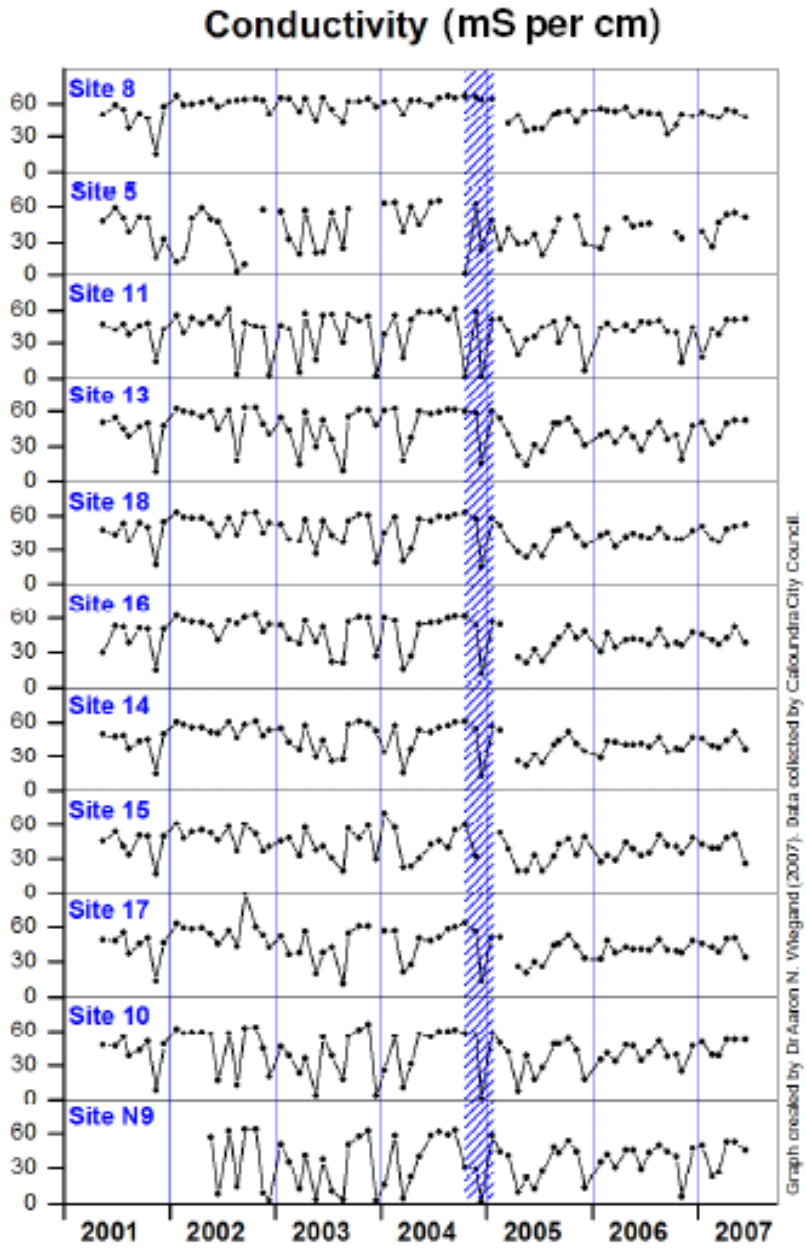
Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
10	1	0.5	17.12	45060	28.85	7.61	1.5	0	8.9	107.6	11	5	122	354	11	12
10	1	1	17.35	48557	31.42	7.79	0.81	0	8.9	110.9						
10	1	1.5	18.39	52890	34.95	7.86	0	0	8.2	105.8						
10	1	2	18.33	53460	35.36	7.88	0	0	8.55	111						
10	1	2.3														
10	2	0.5	16.95	42000	27	7.37	1.33	0	8.29	99.5	26	5	109	471	14	17
10	2	1	18.98	49253	32.36	7.5	0.63	0.1	7.62	99.5						
10	2	1.5	18.59	52963	35.01	7.63	0.13	0	7.75	100.2						
10	2	2	18.83	53274	35.24	7.66	0.59	1.7	7.41	97.2						
10	2	2.2														
10	3	0.5	17.22	41547	26.67	7.26	2.93	0	8.01	96.7	19	5	71	338	5	5
10	3	1	20.4	51179	33.69	7.22	3.62	0	6.16	82.6						
10	3	1.5	20.73	52738	34.94	7.38	2.54	0.2	5.29	71.6						
10	3	2	19.57	53446	35.37	7.61	1.8	2	6.25	83.1						
10	3	2.2														
10	4	0.5	17.01	40917	26.22	7.5	3.74	0.2	8.28	99	26	5	73	467	12	16
10	4	1	17.48	41918	26.98	7.45	3.2	0.8	8.93	108.9						
10	4	1.5	19.66	49396	32.38	7.46	1.72	0	7.63	99.2						
10	4	2	19	51654	34.04	7.59	0.86	0	7.76	100.7						
10	4	2.5	19	52942	34.99	7.62	1.03	2.3	7.93	102.7						
10	4	2.8														
10	5	0.5	15.29	39914	25.51	7.36	1.69	0	8.97	102	28	5	93	380	5	5
10	5	1	16.81	41132	27.11	7.24	5.8	0.2	8.62	102.3						
10	5	1.5	20.19	47894	31.28	7.27	6.14	0	7.99	104.9						
10	5	2	21.03	51448	33.67	7.24	5.44	0.6	4.65	63.5						
10	5	2.5	21.06	52954	35	7.24	5.3625	5.1	2.99	40.8						
10	5	3	20.25	52861	34.94	7.38	4.475	6.2	4.58	61.6						
10	6	3.4														
10	6	0.5	14.82	37143	23.54	6.99	2.1	0	9.24	103.8	53	5	72	493	5	5
10	6	1	18.09	42946	26.96	6.89	4.35	0	8.97	112.8						
10	6	1.5	20.76	48400	32	7.09	4.09	0	6.77	90.6						
10	6	2	21.78	52384	34.58	7.06	5.64	0.8	3.36	46.5						
10	6	2.5	21.94	52799	34.89	7.03	7.58	3.7	2.26	30.6						
10	6	2.7														
10	7	0.5	16.44	31518	19.6	7.17	1.72	0	9.28	105.3	57	5	78	310	5	5

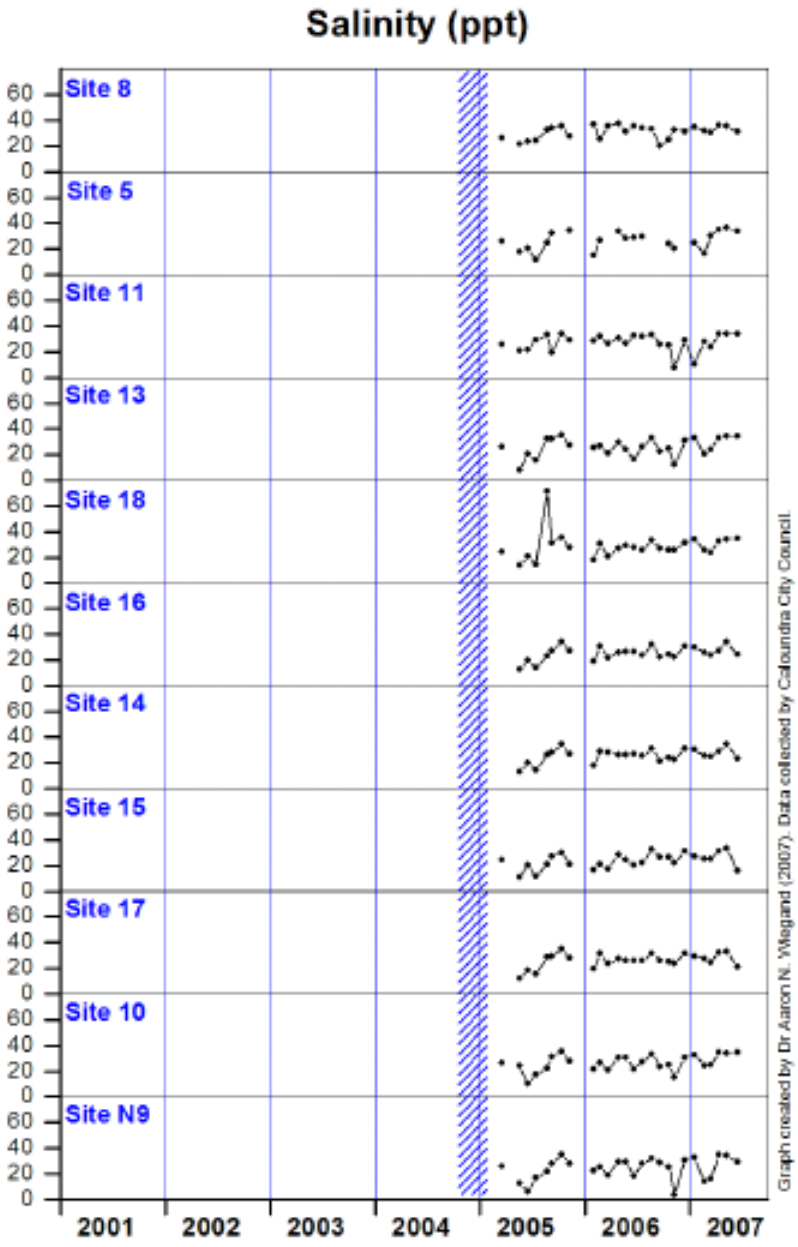
Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
11	1	0.5	17.82	43800	28.36	5.25	15.16	0.1	8.42	103.6	31	5	68	581	5	5
11	1	1	18.36	47491	30.98	5.67	14.11	0	8.37	106.5						
11	1	1.5	18.39	50996	33.55	5.92	13.01	0.2	8.12	104.2						
11	1	2	18.52	52967	34.47	6.04	11.61	0	8.16	105.9						
11	1	2.3														
11	2	0.5	17.53	41327	26.52	5.87	0.27	0	8.46	102.6	26	5	119	402	13	15
11	2	1	19.43	47079	30.64	6.04	1.17	0	8.11	104.8						
11	2	1.5	18.68	51282	33.77	6.18	1.24	0.1	7.98	103.4						
11	2	2	18.99	52562	34.7	6.21	0.27	0.9	7.22	94.5						
11	2	2.2														
11	3	0.5	20.05	42008	27	5.65	2.15	1.2	7.99	99	21	5	74	527	12	91
11	3	1	20.3	45849	29.95	5.9	3.25	1.1	7.18	92.4						
11	3	1.5	20.24	51510	33.93	6	2.3	0.7	6.46	86.6						
11	3	2	20.25	53003	35.03	6.06	2.35	4.1	5.39	72.4						
11	3	2.3														
11	4	0.5	18.31	41880	26.91	6.06	0	0	7.98	99.2	26	5	97	322	5	5
11	4	1	18.89	42667	27.48	6.25	0.94	0	8.15	102						
11	4	1.5	20.08	48057	31.57	6.23	1.92	0.5	7.29	95.8						
11	4	2	19.07	51594	34	6.39	0.68	1.8	7.67	100						
11	4	2.5	19.19	52326	35.54	6.39	0	7	7.28	95.6						
11	4	2.8														
11	5	0.5	16.89	41195	26.42	6.17	0.94	0	9.52	101.7	21	5	63	407	12	31
11	5	1	16.89	41430	26.49	6.17	2.47	1.1	9.58	114.9						
11	5	1.5	20.54	46936	30.46	6.15	4.04	0.5	8.79	115.6						
11	5	2	21.03	52460	34.64	6.16	4.47	0.3	5.73	78						
11	5	2.5	20.56	52913	34.8	6.21	7.23	1.5	4.84	65.4						
11	5	3	20.22	52922	34.97	6.21	5.84	2.6	4.48	60.1						
11	5	3.4														
11	6	0.5	16.51	38731	24.66	6.28	1.78	1.8	8.18	95.7	52	5	109	360	12	31
11	6	1	20.1	43695	28.23	6.1	2.08	0	8.28	108						
11	6	1.5	21.34	46513	30.27	6.2	3.39	1.9	7.73	104						
11	6	2	21.73	52628	34.67	6.04	8.35	2.7	4.43	59.9						
11	6	2.5	21.16	52699	34.8	6.06	7.29	3.7	3.74	51						
11	6	2.9														
11	7	0.5	17.87	31985	19.93	6.66	0.94	0.2	8.25	96.7	51	5	99	313	5	5

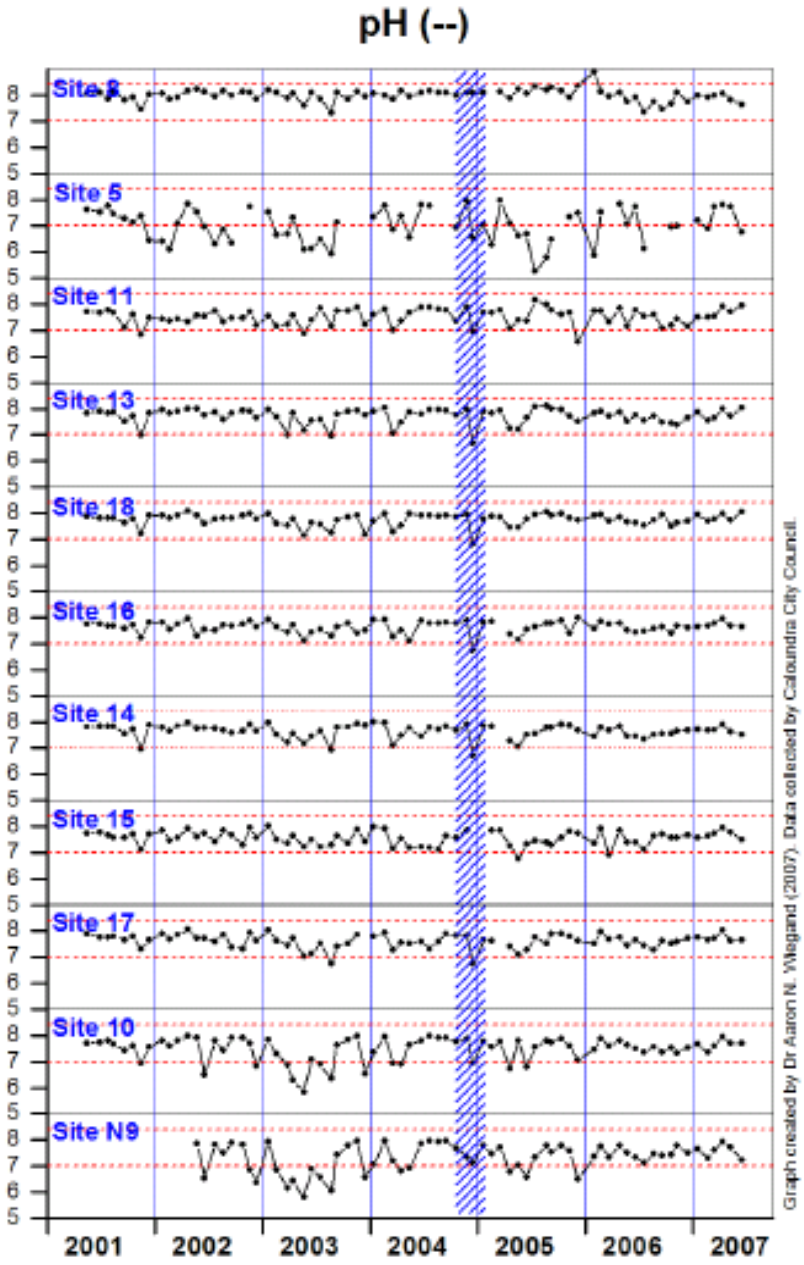
Trip	Site	Depth (m)	Temp oC	EC uS/cm	Salinity ppt	pH	Chl-a ug/L	Turbid. NTU	DO mg/L	DO %	NO3 ug/mL	NO2 ug/mL	NH3 ug/mL	N tot ug/mL	PO4 ug/mL	P tot ug/mL
12	1	0.5	18.07	43616	28.17	6.34	0.885	5.8	8.21	101.5	16	5	224	606	5	5
12	1	1	18.13	43754	28.27	6.49	0.985	5.8	8.27	102.5						
12	1	1.5	18.54	48391	31.63	6.55	1.24	4.8	8.1	104						
12	1	2	18.96	51281	33.77	6.6	0.93	5.6	7.5	97.6						
12	1	2.4														
12	2	0.5	18.44	42711	27.5	6.6	0.02	6	8.05	99.8	27	5	73	434	5	5
12	2	1	19.42	45850	29.79	6.63	1.445	5.8	7.97	102						
12	2	1.5	19.84	50200	32.8	6.75	1.81	5.2	8.16	105.3						
12	2	2	19.45	51900	34.27	6.69	0	8.5	7.15	94.3						
12	2	2.3														
12	3	0.5	18.73	41727	26.8	6.73	1.6675	7.7	7.8	96.5	18	5	57	359	5	5
12	3	1	20.76	44898	29.08	6.78	2.4475	6.5	7.17	93.9						
12	3	1.5	20.89	51211	33.71	6.77	0.945	7	6.08	82.1						
12	3	2	21.12	52853	34.93	6.73	0.535	11	4.08	54.8						
12	3	2.2														
12	4	0.5	18.53	42598	27.42	6.76	0	6.4	7.56	94	23	5	81	326	5	5
12	4	1	18.63	42996	27.7	6.94	0	6.7	8.51	107.3						
12	4	1.5	19.71	49806	32.92	6.99	3.2275	7.7	7.53	98.6						
12	4	2	19.75	51775	34.15	7	0.935	9.8	6.48	85.8						
12	4	2.4														
12	5	0.5	17.19	41213	26.43	6.84	0	8.5	8.88	106.5	17	5	73	330	5	5
12	5	1	18.05	42569	27.41	6.89	0	8.6	9.1	112						
12	5	1.5	20.96	48731	31.99	6.87	0.0525	7.9	8	107						
12	5	2	20.7	52430	34.34	6.97	1.12	8	7	94.3						
12	5	2.5	20.79	52477	34.65	6.94	1.73	8	6.18	83.7						
12	5	3	20.83	52895	34.95	6.83	2.9075	12.5	4.49	61						
12	5	3.4														
12	6	0.5	17.62	39665	25.33	6.62	0	7.4	8.92	107.5	57	5	77	488	5	5
12	6	1	17.76	39844	25.46	6.66	0.1875	7.7	8.94	106.9						
12	6	1.5	18.17	42029	27.02	6.6	2.1	7.6	9.05	113.7						
12	6	2	21.44	51393	33.85	6.59	14.325	7.8	5.76	79.2						
12	6	2.5	21.42	52653	34.79	6.59	9.4	10	2.85	37.9						
12	6	2.9														
12	7	0.5	18.52	33056	28.67	6.73	0	6.6	8.63	102.7	46	5	81	417	5	5

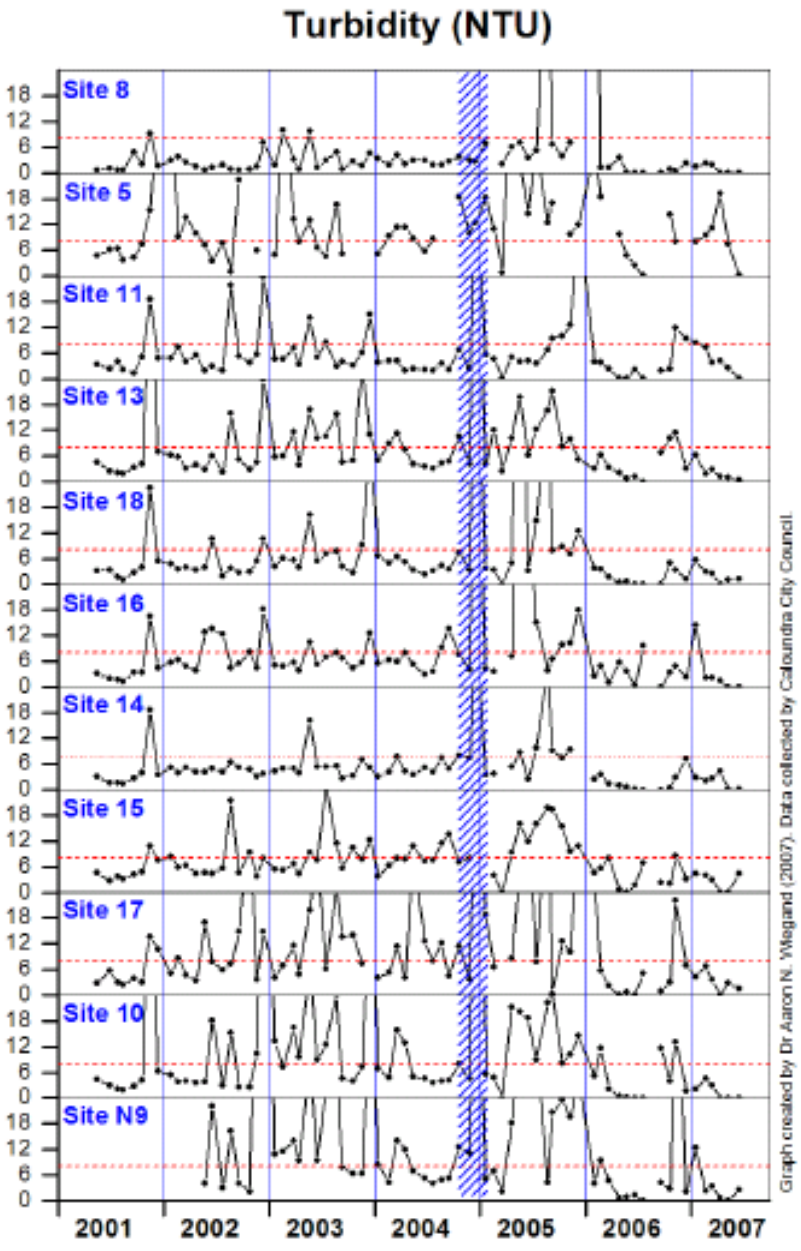
Appendix 7.2 Temporal patterns for the suite of water quality indicators measured during the Council monitoring program. The vertical blue bar indicates a period of transition during which the mouth of the system was opened and also pumping of water from Lake Kawana commenced.

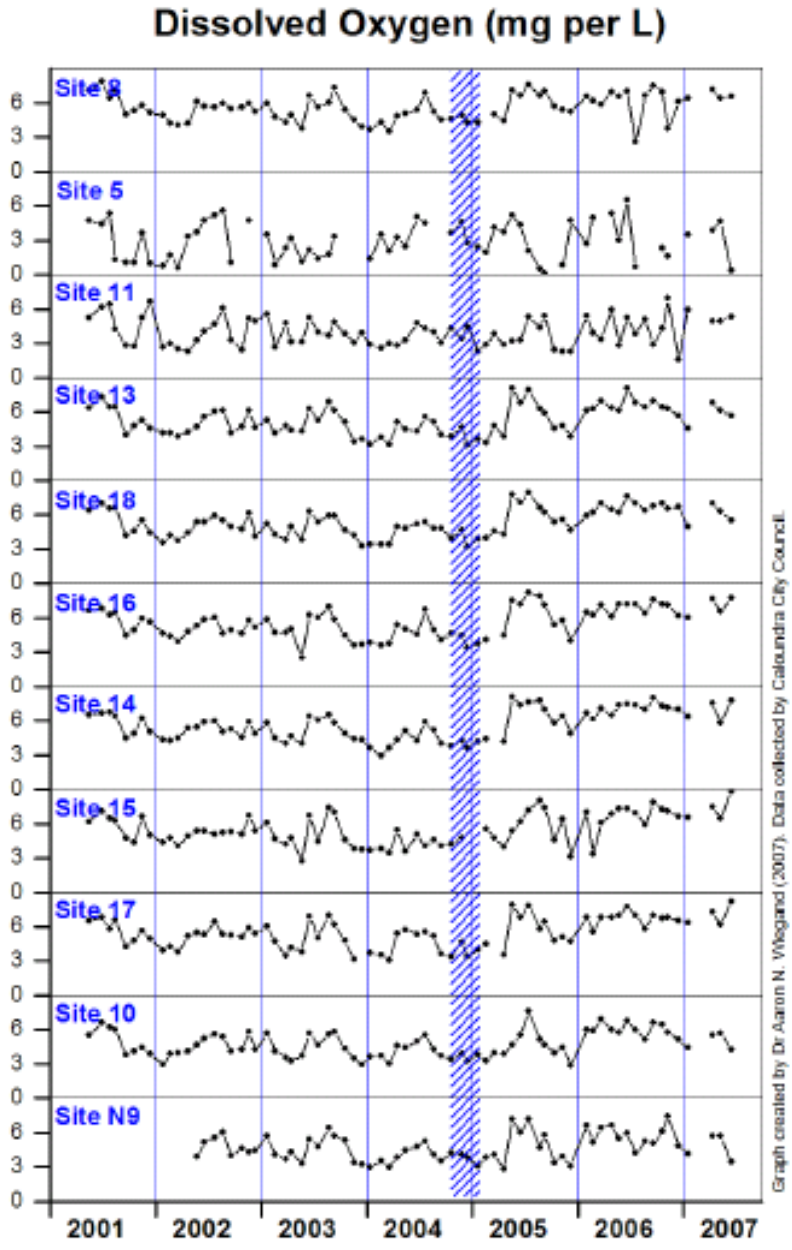


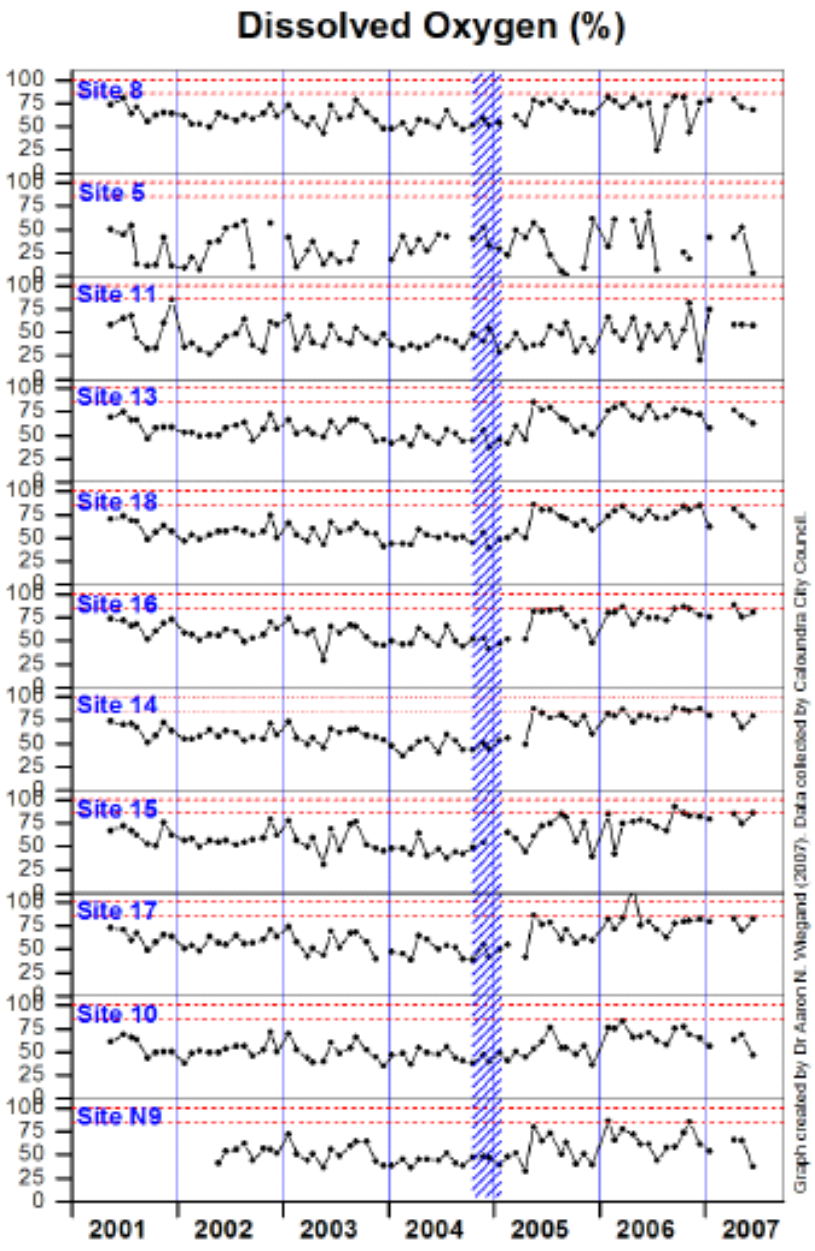

Conductivity (mS per cm)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
60
30
0
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.

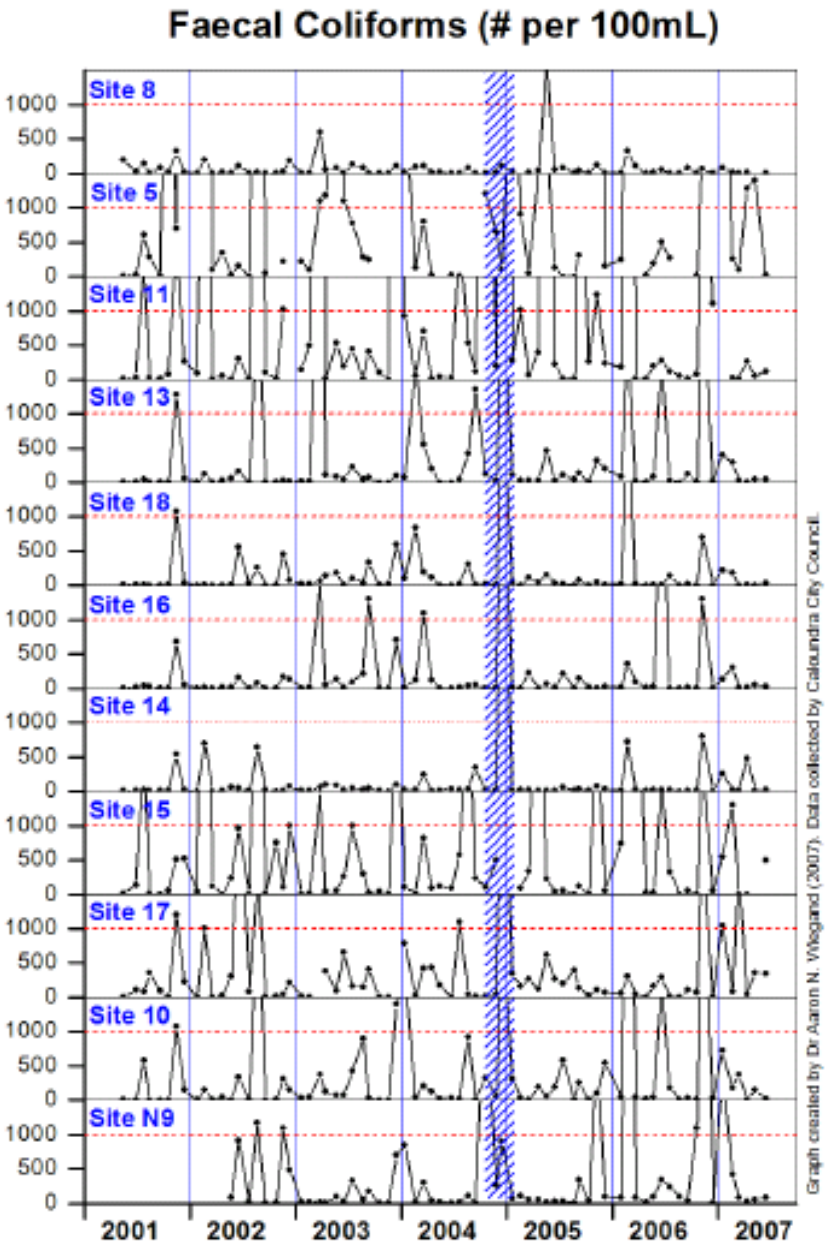

Salinity (ppt)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0
20
40
60
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.

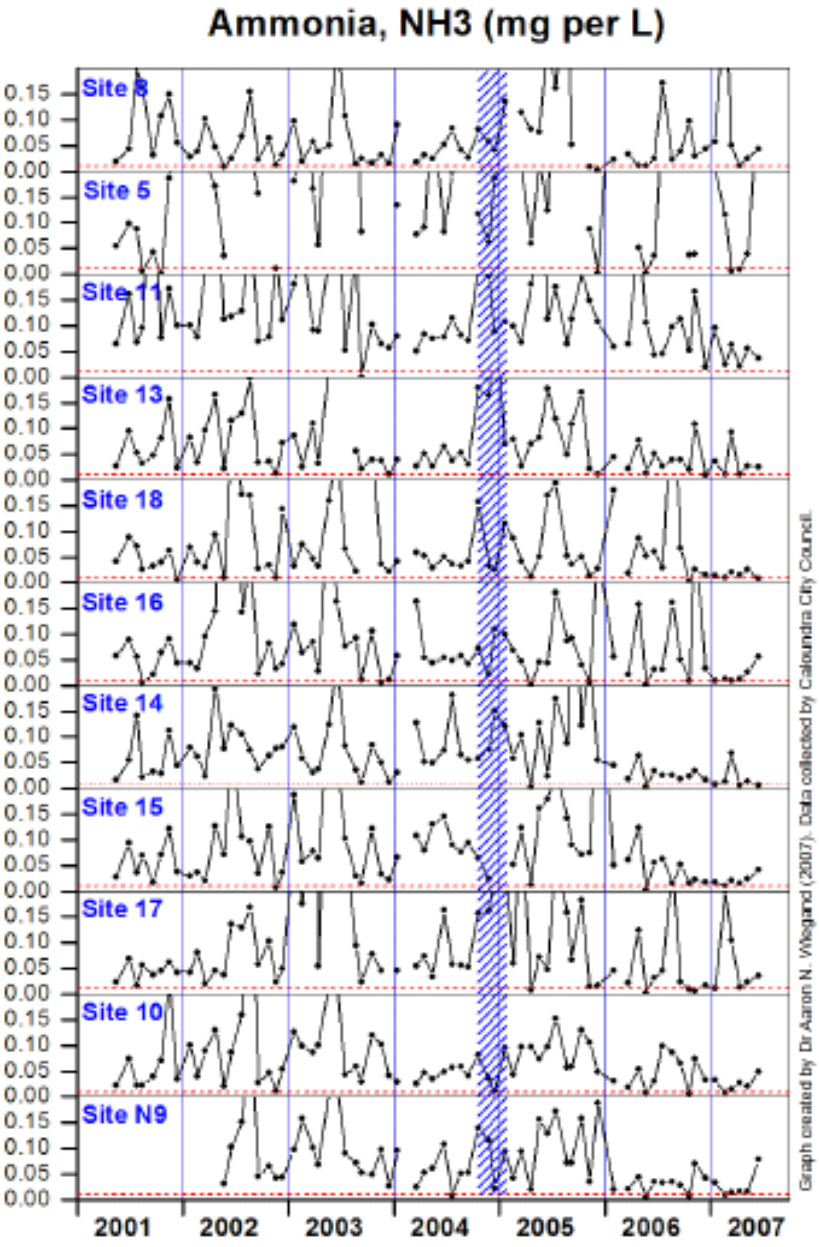

pH (--)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
8
7
6
5
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.

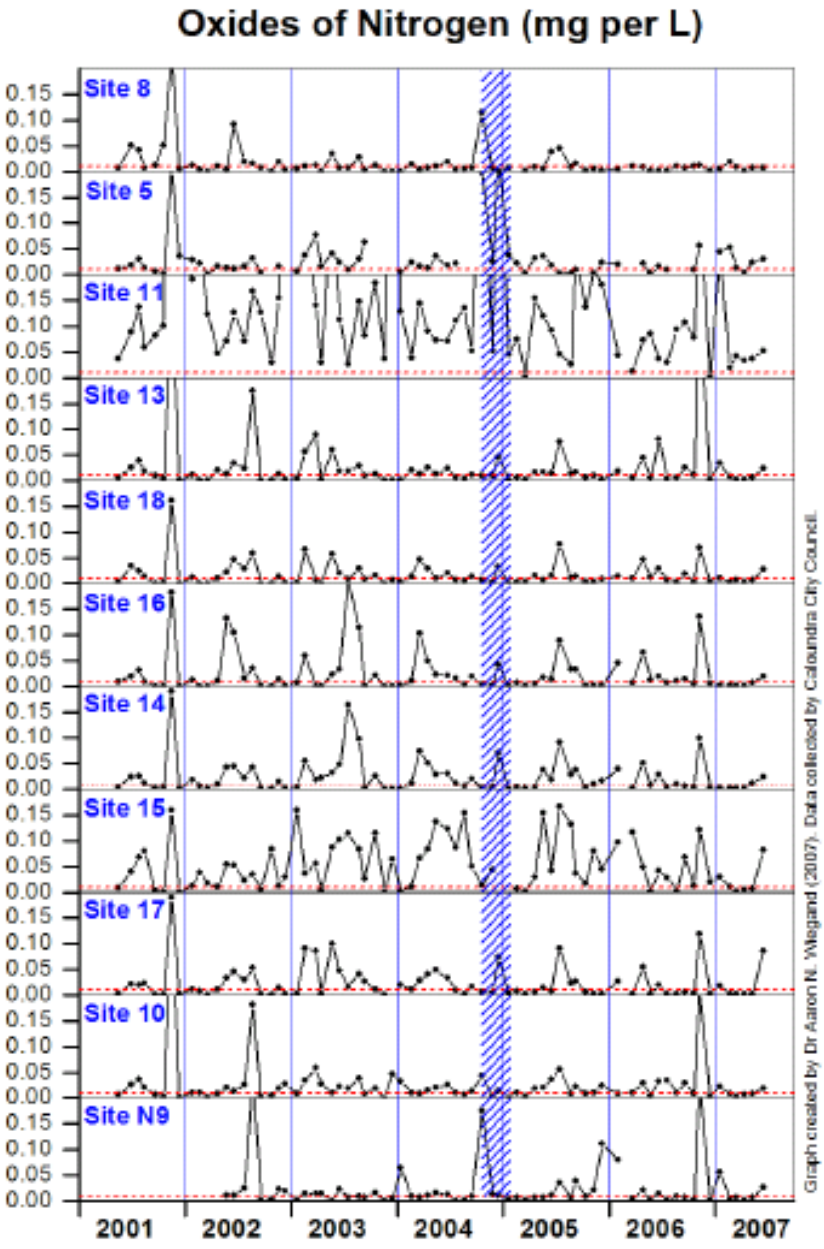

Turbidity (NTU)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
18
12
6
0
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wegand (2007). Data collected by Caloundra City Council.

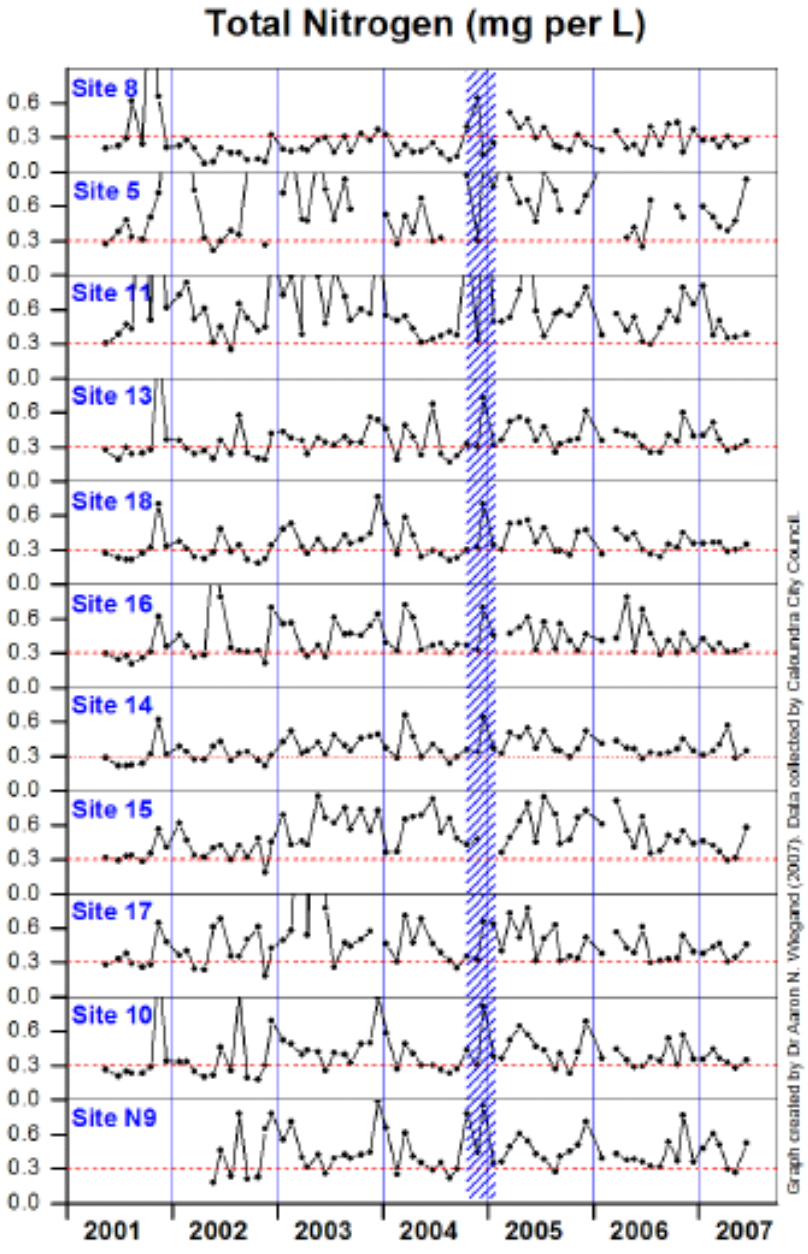

Dissolved Oxygen (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0
3
6
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Viegand (2007). Data collected by Caloundra City Council.

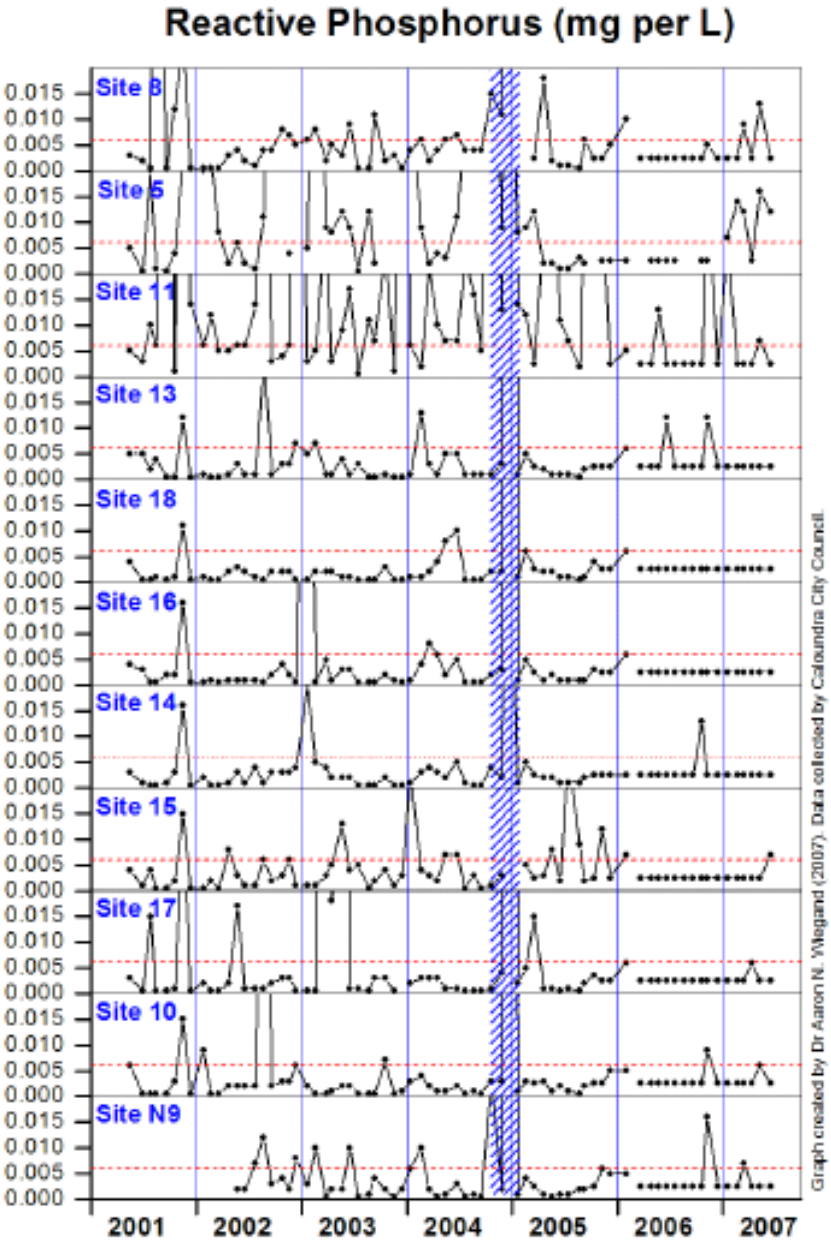

Dissolved Oxygen (%)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
100
75
50
25
0
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.

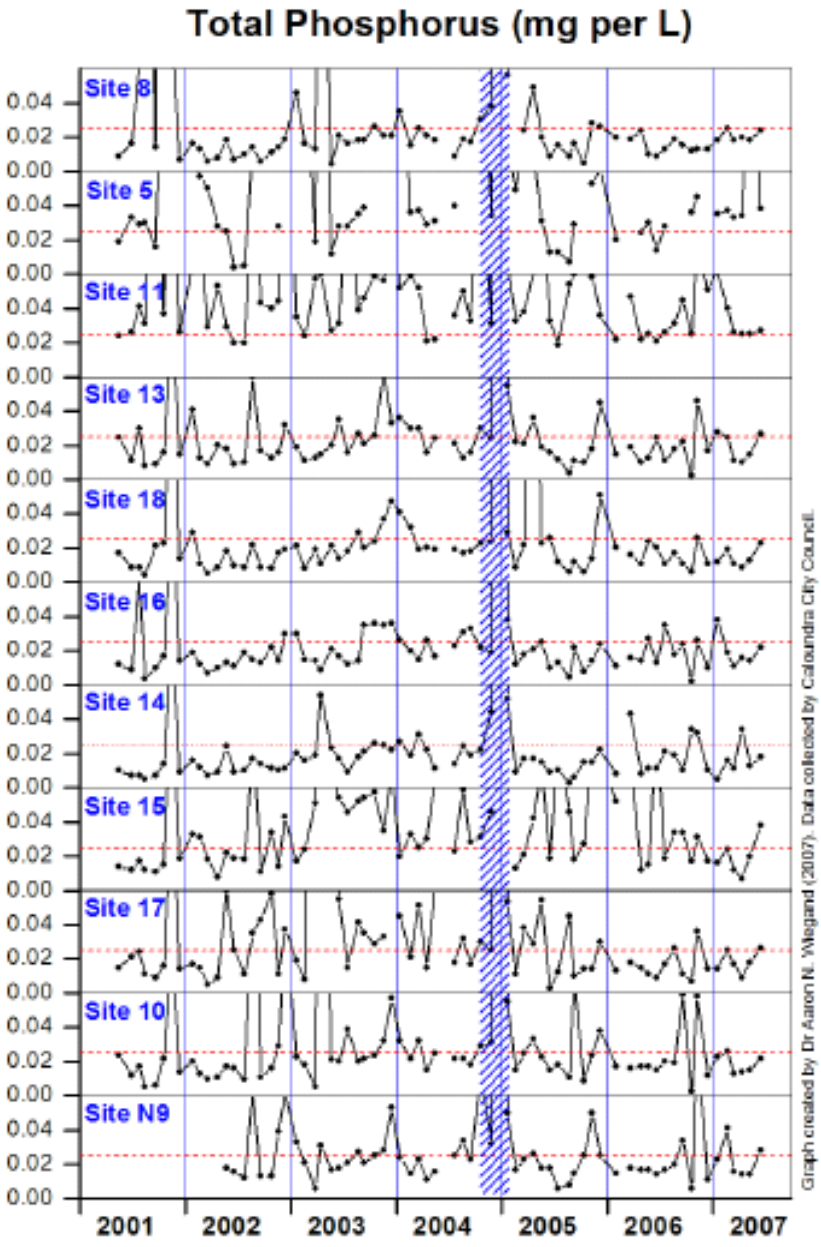

Faecal Coliforms (# per 100mL)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
1000
500
0
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.

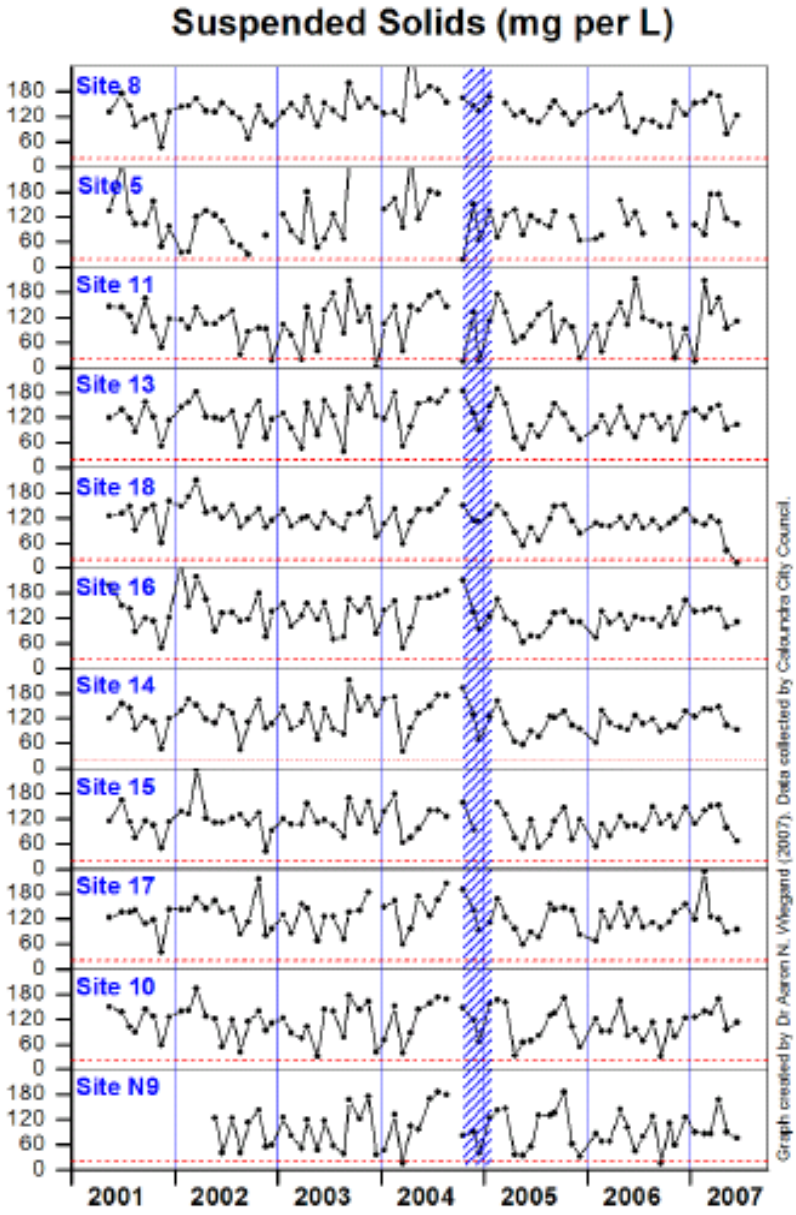

Ammonia, NH3 (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0.15
0.10
0.05
0.00
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.


Oxides of Nitrogen (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0.15
0.10
0.05
0.00
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.


Total Nitrogen (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0.0
0.3
0.6
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.


Reactive Phosphorus (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0.015
0.010
0.005
0.000
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.


Total Phosphorus (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
0.04
0.02
0.00
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Wiegand (2007). Data collected by Caloundra City Council.


Suspended Solids (mg per L)
Site 8
Site 5
Site 11
Site 13
Site 18
Site 16
Site 14
Site 15
Site 17
Site 10
Site N9
180
120
60
0
2001
2002
2003
2004
2005
2006
2007
Graph created by Dr Aaron N. Viegand (2007). Data collected by Caloundra City Council.

Appendix 7.3 Bulk statistics for the suite of water quality indicators measured during the Council monitoring program

Temperature (ºC)

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	21.8	4.6	0.7	22.3	12	28.9	nov	nov			
	After Jan2005:	26	22	3.6	0.7	21.9	14.4	27.4	nov	nov	1	0.835	-1
Site 5	Before Jan2005:	37	20.8	4.3	0.7	20.4	10	27	nov	nov			
	After Jan2005:	22	21.6	3.4	0.73	21.2	16.9	30.9	nov	nov	4	0.4439	4
Site 11	Before Jan2005:	44	22.9	4.3	0.64	22.8	13	30	nov	nov			
	After Jan2005:	27	25.3	7.2	1.39	23.5	18.9	57.6	nov	nov	11	0.0793	3
Site 13	Before Jan2005:	44	22.1	4.9	0.73	22.7	13.5	29.9	nov	nov			
	After Jan2005:	27	22.9	4.2	0.8	22.4	15.5	30.6	nov	nov	3	0.5285	-1
Site 18	Before Jan2005:	44	22.7	4.8	0.72	23.4	13.5	29.7	nov	nov			
	After Jan2005:	27	23.4	3.7	0.7	23.1	16.2	28.8	nov	nov	3	0.5107	-1
Site 16	Before Jan2005:	44	22.6	4.9	0.74	23.6	14	30.1	nov	nov			
	After Jan2005:	26	22.7	3.9	0.76	22.6	15.7	29.5	nov	nov	1	0.9137	-5
Site 14	Before Jan2005:	44	22.7	4.7	0.71	23.4	13.8	29.7	nov	nov			
	After Jan2005:	26	22.6	4.1	0.8	22.4	16.3	29.1	nov	nov	-1	0.8943	-4
Site 15	Before Jan2005:	43	21.4	4.8	0.74	22.5	11.8	30	nov	nov			
	After Jan2005:	26	22.4	3.8	0.74	22.9	14	28.5	nov	nov	5	0.3817	2
Site 17	Before Jan2005:	43	22.1	5	0.77	23	12	29	nov	nov			
	After Jan2005:	26	23.5	6.9	1.36	22.9	15.3	50.5	nov	nov	6	0.3335	0
Site 10	Before Jan2005:	44	22.5	4.8	0.72	23.3	13	30	nov	nov			
	After Jan2005:	27	23.5	3.9	0.75	23	15.7	28.8	nov	nov	4	0.3656	-1
Site New9	Before Jan2005:	32	21.7	5.2	0.91	22.1	12	29.8	nov	nov			
	After Jan2005:	27	23.3	4.3	0.83	22.8	15.9	30.1	nov	nov	7	0.2011	3

Conductivity (mS cm^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	57.8	9.6	1.4	61.5	15.2	66.5	nov	nov			
	After Jan2005:	28	48.1	6.7	1.3	50	32.1	56	nov	nov	-17	0	-19
Site 5	Before Jan2005:	37	40.6	19.6	3.2	47.7	0.3	65.1	nov	nov			
	After Jan2005:	24	39.1	10.4	2.1	40	19	54.8	nov	nov	-4	0.7209	-16
Site 11	Before Jan2005:	44	41.2	19.1	2.9	48	0.3	60.9	nov	nov			
	After Jan2005:	29	40.4	12.2	2.3	43.5	6.5	52.4	nov	nov	-2	0.8497	-9
Site 13	Before Jan2005:	44	47.8	16	2.4	54	8.2	63	nov	nov			
	After Jan2005:	29	39.5	10.9	2	40.5	14.1	53.6	nov	nov	-17	0.017	-25
Site 18	Before Jan2005:	44	49.1	13.5	2	54.4	14.9	63.2	nov	nov			
	After Jan2005:	29	41.9	8.3	1.5	42.7	23.1	53.2	nov	nov	-15	0.0132	-21
Site 16	Before Jan2005:	44	47.7	14.3	2.2	53.5	12.1	62.7	nov	nov			
	After Jan2005:	28	39.8	8.3	1.6	40.8	21.2	54.3	nov	nov	-17	0.0092	-24
Site 14	Before Jan2005:	44	47.9	13.1	2	52.1	12.9	61.4	nov	nov			
	After Jan2005:	28	39.7	8.1	1.5	41	21.4	53.1	nov	nov	-17	0.0042	-21
Site 15	Before Jan2005:	43	44.5	12.3	1.9	45.7	17.2	70.2	nov	nov			
	After Jan2005:	28	36.8	9.2	1.7	38	19.3	51	nov	nov	-17	0.006	-17
Site 17	Before Jan2005:	43	47.7	15.4	2.3	51	11.1	89.6	nov	nov			
	After Jan2005:	28	40.2	8.1	1.5	40.8	20.6	52.7	nov	nov	-16	0.021	-20
Site 10	Before Jan2005:	44	43	19.5	2.9	49.5	0.8	66.3	nov	nov			
	After Jan2005:	29	39.7	11.6	2.1	41	7.4	53.1	nov	nov	-8	0.4202	-17
Site New9	Before Jan2005:	32	33.9	23.6	4.2	36.5	0.8	63.5	nov	nov			
	After Jan2005:	29	36.7	13.8	2.6	43	6.1	53.1	nov	nov	8	0.5848	18

Salinity (ppt)

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	0		15.7		0			nov	nov			
	After Jan2005:	26	30.9	5	1	32.2	20	37.2	nov	nov			
Site 5	Before Jan2005:	0		5		0			nov	nov			
	After Jan2005:	21	26.1	7.2	1.6	26.4	11.2	36.4	nov	nov			
Site 11	Before Jan2005:	0		7.2		0			nov	nov			
	After Jan2005:	26	27.1	6.9	1.3	28.6	7.41	34.4	nov	nov			
Site 13	Before Jan2005:	0		6.9		0			nov	nov			
	After Jan2005:	26	25.7	7.2	1.4	26	8.2	35.1	nov	nov			
Site 18	Before Jan2005:	0		7.2		0			nov	nov			
	After Jan2005:	26	28.5	10.5	2.1	27.3	13.9	71	nov	nov			
Site 16	Before Jan2005:	0		10.5		0			nov	nov			
	After Jan2005:	25	25.2	5.4	1.1	26	12.7	34.3	nov	nov			
Site 14	Before Jan2005:	0		5.4		0			nov	nov			
	After Jan2005:	25	25.5	5.3	1.1	26.3	12.8	34.3	nov	nov			
Site 15	Before Jan2005:	0		5.3		0			nov	nov			
	After Jan2005:	26	23.6	5.9	1.2	24.1	11.4	33.6	nov	nov			
Site 17	Before Jan2005:	0		5.9		0			nov	nov			
	After Jan2005:	25	26.1	5.4	1.1	26.2	12.2	34.8	nov	nov			
Site 10	Before Jan2005:	0		5.4		0			nov	nov			
	After Jan2005:	26	26.3	6.4	1.3	26.2	10.3	35	nov	nov			
Site New9	Before Jan2005:	0		6.4		0			nov	nov			
	After Jan2005:	26	24.2	8.5	1.7	26.9	3.4	35	nov	nov			

pH

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	7.99	0.18	0.03	8.05	7.34	8.23	0 (0%)	0 (0%)			
	After Jan2005:	28	7.99	0.3	0.06	7.99	7.36	8.9	0 (0%)	1 (4%)	0	0.9236	-1
Site 5	Before Jan2005:	37	7.04	0.59	0.1	7.13	5.91	7.94	17 (46%)	0 (0%)			
	After Jan2005:	24	6.96	0.73	0.15	7.04	5.25	7.96	11 (46%)	0 (0%)	-1	0.6555	-1
Site 11	Before Jan2005:	44	7.5	0.29	0.04	7.54	6.85	7.89	3 (7%)	0 (0%)			
	After Jan2005:	29	7.54	0.34	0.06	7.6	6.57	8.14	1 (3%)	0 (0%)	1	0.5791	1
Site 13	Before Jan2005:	44	7.71	0.33	0.05	7.83	6.68	8.03	4 (9%)	0 (0%)			
	After Jan2005:	29	7.72	0.24	0.04	7.73	7.21	8.1	0 (0%)	0 (0%)	0	0.8415	-1
Site 18	Before Jan2005:	44	7.72	0.27	0.04	7.8	6.79	8.07	1 (2%)	0 (0%)			
	After Jan2005:	29	7.78	0.17	0.03	7.75	7.45	8.06	0 (0%)	0 (0%)	1	0.3171	-1
Site 16	Before Jan2005:	44	7.62	0.26	0.04	7.69	6.75	7.97	1 (2%)	0 (0%)			
	After Jan2005:	28	7.65	0.19	0.04	7.66	7.17	8	0 (0%)	0 (0%)	0	0.5863	0
Site 14	Before Jan2005:	44	7.65	0.3	0.05	7.75	6.72	8.02	3 (7%)	0 (0%)			
	After Jan2005:	28	7.62	0.2	0.04	7.67	7.07	7.91	0 (0%)	0 (0%)	0	0.6302	-1
Site 15	Before Jan2005:	43	7.56	0.26	0.04	7.58	7.12	8.02	0 (0%)	0 (0%)			
	After Jan2005:	28	7.53	0.29	0.05	7.57	6.76	7.96	2 (7%)	0 (0%)	0	0.6198	0
Site 17	Before Jan2005:	43	7.6	0.3	0.05	7.63	6.75	8.07	2 (5%)	0 (0%)			
	After Jan2005:	28	7.61	0.21	0.04	7.63	7.1	8.01	0 (0%)	0 (0%)	0	0.8262	0
Site 10	Before Jan2005:	44	7.42	0.55	0.08	7.64	5.84	7.97	12 (27%)	0 (0%)			
	After Jan2005:	29	7.54	0.29	0.05	7.61	6.73	7.95	2 (7%)	0 (0%)	2	0.2926	0
Site New9	Before Jan2005:	32	7.21	0.66	0.12	7.27	5.8	7.97	13 (41%)	0 (0%)			
	After Jan2005:	29	7.43	0.35	0.07	7.48	6.51	7.93	3 (10%)	0 (0%)	3	0.1262	3

Turbidity (NTU)

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	2.8	2.3	0.3	2.1	0.6	9.9	nov	3 (7%)			
	After Jan2005:	26	8.6	22.4	4.4	2.1	0	100	nov	2 (8%)	203	0.0955	-2
Site 5	Before Jan2005:	37	11.5	10.1	1.7	8.6	0.9	45.9	nov	20 (54%)			
	After Jan2005:	24	13.9	12.5	2.5	11	0.1	57	nov	18 (75%)	22	0.3984	28
Site 11	Before Jan2005:	44	6.6	8.2	1.2	4	1.4	48.1	nov	7 (16%)			
	After Jan2005:	28	5.8	7.4	1.4	4	0	38.5	nov	7 (25%)	-12	0.6702	0
Site 13	Before Jan2005:	44	9.7	13.2	2	5	1.8	74.9	nov	14 (32%)			
	After Jan2005:	28	6.6	5.9	1.1	5.6	0	21.2	nov	10 (36%)	-32	0.2445	11
Site 18	Before Jan2005:	44	7.5	11.5	1.7	4.2	1.1	72.5	nov	7 (16%)			
	After Jan2005:	28	8.4	19.1	3.6	3.2	0	96.3	nov	5 (18%)	13	0.7962	-24
Site 16	Before Jan2005:	44	8.2	11	1.7	5.6	1.4	75.1	nov	11 (25%)			
	After Jan2005:	27	9.2	15.3	3	3.8	0	72.5	nov	8 (30%)	12	0.7552	-32
Site 14	Before Jan2005:	44	5.9	6.2	0.9	4.5	1.4	40.8	nov	3 (7%)			
	After Jan2005:	26	4.4	5.9	1.2	2.8	0	29	nov	5 (19%)	-25	0.3426	-39
Site 15	Before Jan2005:	43	7.7	4.4	0.7	7.1	2.7	25.7	nov	12 (28%)			
	After Jan2005:	27	7	6.1	1.2	4.6	0.1	19.7	nov	10 (37%)	-10	0.5553	-35
Site 17	Before Jan2005:	43	11.5	11.7	1.8	7.4	2.3	61	nov	19 (44%)			
	After Jan2005:	27	11.5	15.2	2.9	5.7	0	54.5	nov	9 (33%)	-1	0.9803	-23
Site 10	Before Jan2005:	44	14.6	24.3	3.7	5.1	1.8	121	nov	16 (36%)			
	After Jan2005:	28	7.6	7.9	1.5	4.7	0	24.8	nov	12 (43%)	-48	0.1485	-9
Site New9	Before Jan2005:	32	20.4	29.1	5.1	10.2	2.2	138	nov	19 (59%)			
	After Jan2005:	28	12.4	15.7	3	4.2	0.1	65.5	nov	11 (39%)	-39	0.1983	-59

Dissolved Oxygen (mg L^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	5.9	1.03	0.155	5.22	3.5	7.9	nov	nov			
	After Jan2005:	26	6.14	1.18	0.231	6.55	2.56	7.6	nov	nov	16	0.0023	25
Site 5	Before Jan2005:	37	2.88	1.55	0.255	3.17	0.6	5.6	nov	nov			
	After Jan2005:	22	3.04	1.86	0.397	3.24	0.1	6.5	nov	nov	5	0.7392	2
Site 11	Before Jan2005:	44	3.96	1.18	0.178	3.85	2.25	6.6	nov	nov			
	After Jan2005:	27	4.1	1.36	0.263	3.92	1.6	6.91	nov	nov	3	0.6526	2
Site 13	Before Jan2005:	44	4.86	1.05	0.159	4.71	3.05	7.3	nov	nov			
	After Jan2005:	27	6.01	1.25	0.24	6.3	3.35	8.1	nov	nov	24	0.0001	34
Site 18	Before Jan2005:	44	4.85	0.99	0.15	4.8	3.2	7	nov	nov			
	After Jan2005:	27	6.21	1.05	0.201	6.38	4	7.9	nov	nov	28	0.0000	33
Site 16	Before Jan2005:	44	5.04	1.04	0.156	4.93	2.55	6.95	nov	nov			
	After Jan2005:	26	6.6	1.13	0.221	7.11	4	8.2	nov	nov	31	0.0000	44
Site 14	Before Jan2005:	44	5.01	0.98	0.148	4.9	2.9	6.8	nov	nov			
	After Jan2005:	26	6.78	1.05	0.206	7.04	4.15	8.1	nov	nov	35	0.0000	44
Site 15	Before Jan2005:	43	5.01	1.1	0.168	4.8	2.7	7.4	nov	nov			
	After Jan2005:	26	6.39	1.42	0.279	6.74	3.1	8.85	nov	nov	28	0.0000	40
Site 17	Before Jan2005:	43	4.98	1.1	0.167	5.15	3.1	6.95	nov	nov			
	After Jan2005:	26	6.38	1.14	0.224	6.75	3.5	8.21	nov	nov	28	0.0000	31
Site 10	Before Jan2005:	44	4.46	0.97	0.146	4.25	2.95	6.6	nov	nov			
	After Jan2005:	27	5.27	1.15	0.221	5.49	2.9	7.6	nov	nov	18	0.0022	29
Site New9	Before Jan2005:	32	4.41	0.92	0.163	4.27	3	6.4	nov	nov			
	After Jan2005:	27	5.2	1.31	0.253	5.26	2.85	7.42	nov	nov	18	0.0092	23

Dissolved Oxygen (% saturation)

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	59.3	9	1.35	58.8	42.6	79.9	44 (100%)	0 (0%)			
	After Jan2005:	26	69.7	12.9	2.53	73.1	25	82.1	26 (100%)	0 (0%)	18	0.0002	24
Site 5	Before Jan2005:	37	31.5	16.1	2.65	35.9	7.43	58.3	37 (100%)	0 (0%)			
	After Jan2005:	22	34.6	21.3	4.54	36.6	1.08	68	22 (100%)	0 (0%)	10	0.5209	2
Site 11	Before Jan2005:	44	45.3	12.8	1.93	41.7	27.2	84.5	44 (100%)	0 (0%)			
	After Jan2005:	27	48.5	14.8	2.85	48.7	20.4	80.6	27 (100%)	0 (0%)	7	0.3306	17
Site 13	Before Jan2005:	44	54.7	9.2	1.39	54	37.2	75.3	44 (100%)	0 (0%)			
	After Jan2005:	27	68.5	11.4	2.19	70.3	41.9	85.1	26 (96%)	0 (0%)	25	0.0000	30
Site 18	Before Jan2005:	44	55.1	8.7	1.32	54.6	39.2	74.3	44 (100%)	0 (0%)			
	After Jan2005:	27	71.9	10.1	1.94	72.9	50.1	85.6	26 (96%)	0 (0%)	31	0.0000	34
Site 16	Before Jan2005:	44	57.2	9.8	1.48	57.1	29.1	74.1	44 (100%)	0 (0%)			
	After Jan2005:	26	75.3	10.7	2.09	78.5	48.1	87.6	23 (88%)	0 (0%)	32	0.0000	37
Site 14	Before Jan2005:	44	57.1	9.2	1.38	56.3	37.2	73.7	44 (100%)	0 (0%)			
	After Jan2005:	26	77.2	9.7	1.91	79.2	49.2	88.4	21 (81%)	0 (0%)	35	0.0000	41
Site 15	Before Jan2005:	43	55.8	11.4	1.73	54.9	31	79.5	43 (100%)	0 (0%)			
	After Jan2005:	26	72.4	14.3	2.81	76	39.4	92.4	23 (88%)	0 (0%)	30	0.0000	38
Site 17	Before Jan2005:	43	55.9	10	1.53	56.3	38.1	74.1	43 (100%)	0 (0%)			
	After Jan2005:	26	73.9	14.1	2.77	76.7	41.2	117	24 (92%)	1 (4%)	32	0.0000	36
Site 10	Before Jan2005:	44	50.5	9	1.36	49.5	35.3	71.3	44 (100%)	0 (0%)			
	After Jan2005:	27	61	12.2	2.34	61.4	36.1	82.4	27 (100%)	0 (0%)	21	0.0001	24
Site New9	Before Jan2005:	32	49.3	8.8	1.56	47.3	36.4	72.2	32 (100%)	0 (0%)			
	After Jan2005:	27	60	14.3	2.76	61.6	33	85.9	26 (96%)	0 (0%)	22	0.0008	30

Faecal Coliforms (# per 100ml)

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	65	108	16	17	0	600	nov	0 (0%)			
	After Jan2005:	27	101	306	59	20	0	1600	nov	1 (4%)	57	0.4669	21
Site 5	Before Jan2005:	36	3166	10183	1697	280	8	60000	nov	11 (31%)			
	After Jan2005:	24	1292	2197	449	265	1	8200	nov	8 (33%)	-59	0.3812	-5
Site 11	Before Jan2005:	43	2111	5033	768	150	2	23000	nov	10 (23%)			
	After Jan2005:	28	3992	15896	3004	185	10	84000	nov	7 (25%)	89	0.4713	23
Site 13	Before Jan2005:	44	417	1032	156	44	0	5400	nov	6 (14%)			
	After Jan2005:	29	326	703	131	48	1	3000	nov	3 (10%)	-22	0.6768	10
Site 18	Before Jan2005:	44	199	492	74	29	1	3000	nov	2 (5%)			
	After Jan2005:	29	153	471	88	20	1	2500	nov	1 (3%)	-23	0.6871	-31
Site 16	Before Jan2005:	44	251	666	100	24	0	3900	nov	4 (9%)			
	After Jan2005:	29	224	641	119	20	2	3300	nov	2 (7%)	-11	0.8611	-17
Site 14	Before Jan2005:	44	191	760	115	20	0	5000	nov	1 (2%)			
	After Jan2005:	29	93	209	39	20	1	800	nov	0 (0%)	-51	0.4995	0
Site 15	Before Jan2005:	43	725	1457	222	114	1	7000	nov	6 (14%)			
	After Jan2005:	27	1046	2015	388	114	1	9000	nov	7 (26%)	44	0.4438	0
Site 17	Before Jan2005:	42	441	908	140	91	2	4700	nov	5 (12%)			
	After Jan2005:	29	327	538	100	140	2	2200	nov	3 (10%)	-26	0.5477	54
Site 10	Before Jan2005:	44	353	669	101	56	1	2920	nov	5 (11%)			
	After Jan2005:	29	528	1321	245	60	6	6500	nov	3 (10%)	49	0.4581	7
Site New9	Before Jan2005:	32	342	636	112	46	1	3200	nov	3 (9%)			
	After Jan2005:	29	755	1837	341	80	4	7200	nov	5 (17%)	121	0.2368	74

NH3, Ammonia (mg L^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	43	0.062	0.055	0.008	0.042	0.009	0.261	nov	42 (98%)			
	After Jan2005:	26	0.084	0.104	0.02	0.043	0.003	0.414	nov	23 (88%)	36	0.2441	4
Site 5	Before Jan2005:	35	0.224	0.212	0.036	0.165	0.001	0.736	nov	33 (94%)			
	After Jan2005:	23	0.188	0.199	0.042	0.115	0.003	0.601	nov	19 (83%)	-16	0.5281	-30
Site 11	Before Jan2005:	43	0.141	0.103	0.016	0.1	0.001	0.475	nov	42 (98%)			
	After Jan2005:	28	0.12	0.136	0.026	0.096	0.019	0.735	nov	28 (100%)	-15	0.4605	-4
Site 13	Before Jan2005:	42	0.082	0.075	0.012	0.052	0.011	0.354	nov	42 (100%)			
	After Jan2005:	28	0.056	0.047	0.009	0.04	0.009	0.178	nov	27 (96%)	-32	0.11	-24
Site 18	Before Jan2005:	42	0.073	0.072	0.011	0.041	0.007	0.306	nov	39 (93%)			
	After Jan2005:	28	0.064	0.086	0.016	0.034	0.004	0.418	nov	26 (93%)	-12	0.6436	-18
Site 16	Before Jan2005:	43	0.104	0.141	0.021	0.057	0.006	0.785	nov	41 (95%)			
	After Jan2005:	28	0.067	0.078	0.015	0.042	0.002	0.297	nov	22 (79%)	-36	0.2085	-25
Site 14	Before Jan2005:	43	0.076	0.052	0.008	0.064	0.012	0.252	nov	43 (100%)			
	After Jan2005:	28	0.076	0.132	0.025	0.03	0.002	0.68	nov	23 (82%)	0	0.992	-53
Site 15	Before Jan2005:	42	0.068	0.074	0.011	0.072	0.008	0.351	nov	41 (98%)			
	After Jan2005:	27	0.081	0.103	0.02	0.053	0.003	0.503	nov	25 (93%)	-7	0.7726	-26
Site 17	Before Jan2005:	42	0.179	0.469	0.072	0.058	0.017	3.043	nov	42 (100%)			
	After Jan2005:	28	0.079	0.093	0.018	0.04	0.003	0.353	nov	24 (86%)	-56	0.2702	-30
Site 10	Before Jan2005:	43	0.081	0.084	0.013	0.053	0.012	0.493	nov	43 (100%)			
	After Jan2005:	28	0.058	0.039	0.007	0.051	0.007	0.153	nov	25 (89%)	-29	0.178	-4
Site New9	Before Jan2005:	31	0.09	0.068	0.012	0.069	0.008	0.328	nov	30 (97%)			
	After Jan2005:	28	0.059	0.054	0.01	0.036	0.005	0.188	nov	25 (89%)	-35	0.059	-48

Oxides of Nitrogen (mg L^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	0.021	0.039	0.006	0.008	0.001	0.224	nov	18 (41%)			
	After Jan2005:	27	0.01	0.01	0.002	0.007	0.003	0.045	nov	6 (22%)	-54	0.1518	-13
Site 5	Before Jan2005:	37	0.037	0.055	0.009	0.018	0.001	0.23	nov	30 (81%)			
	After Jan2005:	23	0.02	0.016	0.003	0.019	0.002	0.057	nov	14 (61%)	-46	0.1491	6
Site 11	Before Jan2005:	44	0.178	0.188	0.028	0.125	0.026	0.923	nov	44 (100%)			
	After Jan2005:	28	0.093	0.084	0.016	0.074	0.003	0.342	nov	26 (93%)	-48	0.0281	-41
Site 13	Before Jan2005:	44	0.028	0.059	0.009	0.013	0.001	0.361	nov	25 (57%)			
	After Jan2005:	28	0.029	0.063	0.012	0.011	0.003	0.336	nov	14 (50%)	1	0.9786	-15
Site 18	Before Jan2005:	44	0.019	0.028	0.004	0.011	0.001	0.16	nov	23 (52%)			
	After Jan2005:	28	0.015	0.019	0.004	0.009	0.003	0.076	nov	12 (43%)	-20	0.5226	-14
Site 16	Before Jan2005:	44	0.031	0.049	0.007	0.012	0.001	0.211	nov	24 (55%)			
	After Jan2005:	28	0.021	0.031	0.006	0.007	0.003	0.135	nov	13 (46%)	-33	0.3223	-39
Site 14	Before Jan2005:	44	0.029	0.04	0.006	0.017	0.001	0.19	nov	26 (59%)			
	After Jan2005:	28	0.02	0.025	0.005	0.009	0.003	0.099	nov	12 (43%)	-30	0.3081	-48
Site 15	Before Jan2005:	43	0.055	0.047	0.007	0.043	0.001	0.16	nov	35 (81%)			
	After Jan2005:	27	0.052	0.05	0.01	0.036	0.003	0.166	nov	21 (78%)	-5	0.8141	-16
Site 17	Before Jan2005:	43	0.028	0.036	0.005	0.017	0.001	0.189	nov	27 (63%)			
	After Jan2005:	28	0.019	0.031	0.006	0.005	0.002	0.118	nov	10 (36%)	-30	0.321	-68
Site 10	Before Jan2005:	44	0.029	0.057	0.009	0.015	0.001	0.353	nov	29 (66%)			
	After Jan2005:	28	0.024	0.038	0.007	0.011	0.003	0.207	nov	16 (57%)	-18	0.6757	-27
Site New9	Before Jan2005:	32	0.024	0.049	0.009	0.011	0.001	0.232	nov	18 (56%)			
	After Jan2005:	28	0.027	0.047	0.009	0.008	0.003	0.229	nov	11 (39%)	9	0.8662	-27

Total Nitrogen (mg L^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	0.272	0.255	0.038	0.203	0.073	1.683	nov	10 (23%)			
	After Jan2005:	27	0.295	0.097	0.019	0.274	0.154	0.519	nov	11 (41%)	8	0.6556	35
Site 5	Before Jan2005:	37	0.602	0.345	0.057	0.491	0.214	1.669	nov	31 (84%)			
	After Jan2005:	23	0.606	0.202	0.042	0.524	0.249	0.997	nov	22 (96%)	1	0.9613	21
Site 11	Before Jan2005:	44	0.733	0.603	0.091	0.52	0.248	3.49	nov	43 (98%)			
	After Jan2005:	28	0.551	0.214	0.04	0.53	0.297	1.346	nov	27 (96%)	-25	0.129	2
Site 13	Before Jan2005:	44	0.356	0.177	0.027	0.322	0.17	1.145	nov	24 (55%)			
	After Jan2005:	28	0.395	0.102	0.019	0.371	0.254	0.614	nov	22 (79%)	11	0.2838	15
Site 18	Before Jan2005:	44	0.35	0.139	0.021	0.305	0.189	0.761	nov	25 (57%)			
	After Jan2005:	28	0.373	0.099	0.018	0.358	0.241	0.557	nov	21 (75%)	7	0.44	17
Site 16	Before Jan2005:	44	0.43	0.194	0.029	0.364	0.207	1.221	nov	34 (77%)			
	After Jan2005:	27	0.432	0.126	0.024	0.409	0.288	0.798	nov	26 (96%)	0	0.9756	12
Site 14	Before Jan2005:	44	0.362	0.111	0.017	0.339	0.214	0.663	nov	30 (68%)			
	After Jan2005:	28	0.388	0.082	0.016	0.361	0.277	0.569	nov	25 (89%)	7	0.287	7
Site 15	Before Jan2005:	43	0.493	0.164	0.025	0.458	0.188	0.854	nov	39 (91%)			
	After Jan2005:	27	0.531	0.154	0.03	0.49	0.289	0.843	nov	26 (96%)	8	0.3356	7
Site 17	Before Jan2005:	43	0.553	0.557	0.085	0.443	0.18	3.305	nov	34 (79%)			
	After Jan2005:	28	0.441	0.129	0.024	0.4	0.302	0.776	nov	28 (100%)	-20	0.3039	-10
Site 10	Before Jan2005:	44	0.398	0.211	0.032	0.331	0.182	1.131	nov	26 (59%)			
	After Jan2005:	28	0.406	0.114	0.022	0.368	0.23	0.687	nov	23 (82%)	2	0.8575	11
Site New9	Before Jan2005:	32	0.459	0.207	0.037	0.413	0.181	0.894	nov	23 (72%)			
	After Jan2005:	28	0.446	0.124	0.023	0.419	0.27	0.768	nov	26 (93%)	-3	0.7646	1

Reactive Phosphorus (mg L^{-1})

		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	44	0.01	0.024	0.004	0.004	0.001	0.116	nov	12 (27%)			
	After Jan2005:	27	0.004	0.004	0.001	0.003	0.001	0.018	nov	4 (15%)	-58	0.2198	-38
Site 5	Before Jan2005:	37	0.019	0.028	0.005	0.009	0.001	0.113	nov	21 (57%)			
	After Jan2005:	23	0.005	0.005	0.001	0.003	0.001	0.016	nov	7 (30%)	-73	0.022	-72
Site 11	Before Jan2005:	44	0.036	0.084	0.013	0.007	0.001	0.416	nov	24 (55%)			
	After Jan2005:	28	0.012	0.015	0.003	0.003	0.002	0.052	nov	12 (43%)	-65	0.1528	-64
Site 13	Before Jan2005:	44	0.01	0.045	0.007	0.001	0.001	0.3	nov	6 (14%)			
	After Jan2005:	28	0.003	0.003	0.001	0.003	0.001	0.012	nov	2 (7%)	-68	0.4298	150
Site 18	Before Jan2005:	44	0.009	0.047	0.007	0.001	0.001	0.314	nov	4 (9%)			
	After Jan2005:	28	0.003	0.001	0	0.003	0.001	0.006	nov	0 (0%)	-72	0.4722	150
Site 16	Before Jan2005:	44	0.009	0.036	0.005	0.001	0.001	0.226	nov	4 (9%)			
	After Jan2005:	28	0.002	0.001	0	0.003	0.001	0.006	nov	0 (0%)	-74	0.3179	150
Site 14	Before Jan2005:	44	0.004	0.012	0.002	0.002	0.001	0.077	nov	3 (7%)			
	After Jan2005:	28	0.003	0.002	0	0.003	0.001	0.013	nov	1 (4%)	-38	0.4644	25
Site 15	Before Jan2005:	43	0.004	0.004	0.001	0.003	0.001	0.023	nov	6 (14%)			
	After Jan2005:	27	0.004	0.005	0.001	0.003	0.002	0.026	nov	6 (22%)	22	0.479	-17
Site 17	Before Jan2005:	43	0.028	0.101	0.015	0.001	0.001	0.591	nov	7 (16%)			
	After Jan2005:	28	0.003	0.003	0.001	0.003	0.001	0.015	nov	1 (4%)	-89	0.2006	150
Site 10	Before Jan2005:	44	0.008	0.029	0.004	0.002	0.001	0.17	nov	5 (11%)			
	After Jan2005:	28	0.003	0.002	0	0.003	0.001	0.009	nov	1 (4%)	-66	0.3242	25
Site New9	Before Jan2005:	32	0.013	0.049	0.009	0.002	0.001	0.282	nov	8 (25%)			
	After Jan2005:	28	0.003	0.003	0.001	0.003	0.001	0.016	nov	2 (7%)	-75	0.3114	25

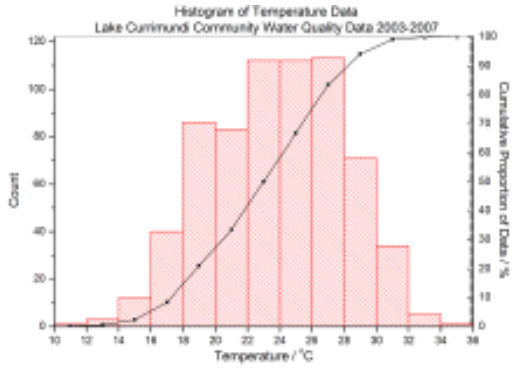
Total Phosphorus (mg L^{-1})

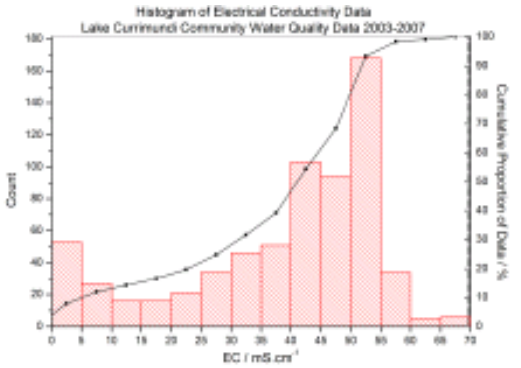
		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	43	0.09944	0.404	0.062	0.018	0.004	2.646	nov	11 (26%)			
	After Jan2005:	27	0.01819	0.009	0.002	0.018	0.005	0.049	nov	3 (11%)	-82	0.3012	0
Site 5	Before Jan2005:	36	0.06717	0.069	0.012	0.036	0.004	0.277	nov	29 (81%)			
	After Jan2005:	23	0.04074	0.031	0.007	0.034	0.007	0.159	nov	17 (74%)	-39	0.0921	-4
Site 11	Before Jan2005:	43	0.14833	0.516	0.079	0.043	0.02	3.371	nov	37 (86%)			
	After Jan2005:	28	0.04211	0.022	0.004	0.035	0.019	0.117	nov	20 (71%)	-72	0.2815	-20
Site 13	Before Jan2005:	43	0.03786	0.093	0.014	0.02	0.008	0.621	nov	15 (35%)			
	After Jan2005:	28	0.01888	0.011	0.002	0.018	0.003	0.046	nov	5 (18%)	-50	0.2845	-12
Site 18	Before Jan2005:	43	0.0406	0.127	0.019	0.019	0.004	0.846	nov	8 (19%)			
	After Jan2005:	28	0.02718	0.058	0.011	0.014	0.006	0.32	nov	4 (14%)	-33	0.6029	-29
Site 16	Before Jan2005:	43	0.03514	0.087	0.013	0.017	0.004	0.584	nov	13 (30%)			
	After Jan2005:	28	0.01745	0.008	0.002	0.016	0.003	0.038	nov	4 (14%)	-50	0.2902	-6
Site 14	Before Jan2005:	43	0.02633	0.05	0.008	0.017	0.005	0.33	nov	7 (16%)			
	After Jan2005:	28	0.01579	0.01	0.002	0.014	0.003	0.043	nov	4 (14%)	-40	0.2719	-18
Site 15	Before Jan2005:	42	0.0371	0.026	0.004	0.03	0.008	0.118	nov	23 (55%)			
	After Jan2005:	27	0.03759	0.027	0.005	0.027	0.007	0.097	nov	14 (52%)	1	0.9397	-11
Site 17	Before Jan2005:	42	0.15305	0.601	0.093	0.025	0.005	3.856	nov	20 (48%)			
	After Jan2005:	28	0.0195	0.012	0.002	0.014	0.003	0.054	nov	8 (29%)	-87	0.2447	-42
Site 10	Before Jan2005:	43	0.04419	0.082	0.013	0.022	0.005	0.452	nov	13 (30%)			
	After Jan2005:	28	0.02305	0.016	0.003	0.018	0.003	0.069	nov	6 (21%)	-48	0.1851	-20
Site New9	Before Jan2005:	31	0.04787	0.117	0.021	0.023	0.006	0.672	nov	12 (39%)			
	After Jan2005:	28	0.02239	0.017	0.003	0.018	0.006	0.091	nov	6 (21%)	-53	0.2583	-24

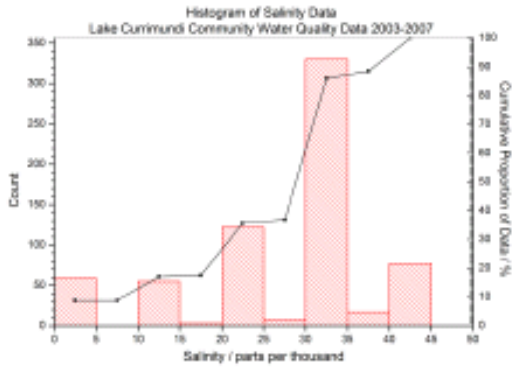
Suspended Solids (mg L^{-1})

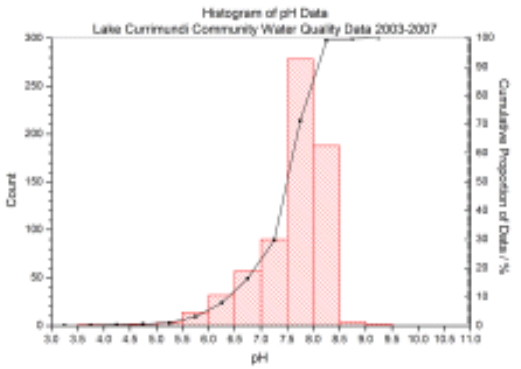
		N data	Mean	StdDev	StdErr	Median	Min	Max	N low (EPA)	N high (EPA)	ΔMean %	p (T-test)	ΔMedian %
Site 8	Before Jan2005:	43	140	39	6	135	45	296	nov	43 (100%)			
	After Jan2005:	28	128	27	5	127	80	175	nov	28 (100%)	-8	0.1674	-6
Site 5	Before Jan2005:	37	113	62	10	110	17	265	nov	36 (97%)			
	After Jan2005:	24	110	31	6	107	63	174	nov	24 (100%)	-2	0.8405	-3
Site 11	Before Jan2005:	43	105	51	8	111	3	208	nov	38 (88%)			
	After Jan2005:	29	107	50	9	103	14	213	nov	28 (97%)	1	0.9027	-7
Site 13	Before Jan2005:	43	126	42	6	123	38	197	nov	43 (100%)			
	After Jan2005:	29	111	33	6	119	46	189	nov	29 (100%)	-11	0.1238	-3
Site 18	Before Jan2005:	43	127	30	5	131	57	209	nov	43 (100%)			
	After Jan2005:	29	104	31	6	108	13	149	nov	28 (97%)	-18	0.0027	-18
Site 16	Before Jan2005:	43	136	45	7	135	48	258	nov	43 (100%)			
	After Jan2005:	29	117	25	5	117	63	165	nov	29 (100%)	-14	0.0417	-13
Site 14	Before Jan2005:	43	126	39	6	128	41	211	nov	43 (100%)			
	After Jan2005:	29	109	27	5	107	57	162	nov	29 (100%)	-14	0.0409	-16
Site 15	Before Jan2005:	42	118	36	6	114	41	240	nov	42 (100%)			
	After Jan2005:	28	106	31	6	108	51	151	nov	28 (100%)	-10	0.1415	-5
Site 17	Before Jan2005:	42	131	38	6	135	40	215	nov	42 (100%)			
	After Jan2005:	29	120	36	7	120	60	233	nov	29 (100%)	-8	0.2382	-11
Site 10	Before Jan2005:	43	115	41	6	123	31	193	nov	43 (100%)			
	After Jan2005:	29	107	39	7	111	31	170	nov	29 (100%)	-7	0.4107	-10
Site New9	Before Jan2005:	31	96	50	9	96	15	186	nov	30 (97%)			
	After Jan2005:	29	94	44	8	86	16	186	nov	28 (97%)	-2	0.8553	-10

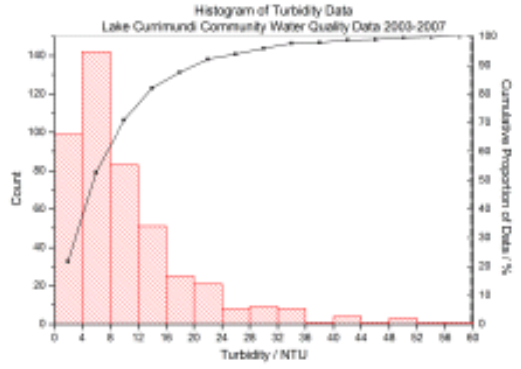
Appendix 7.4 Histograms of water quality data measured during the Community monitoring program

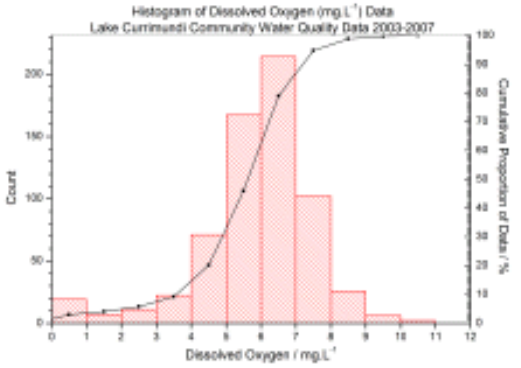


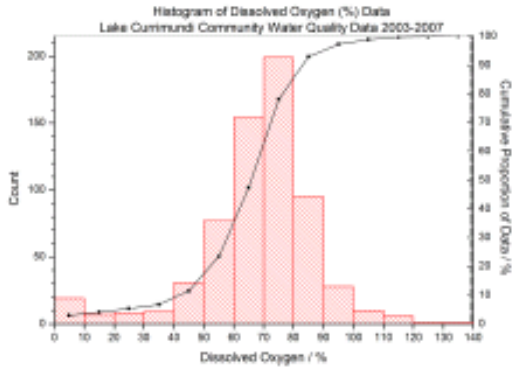




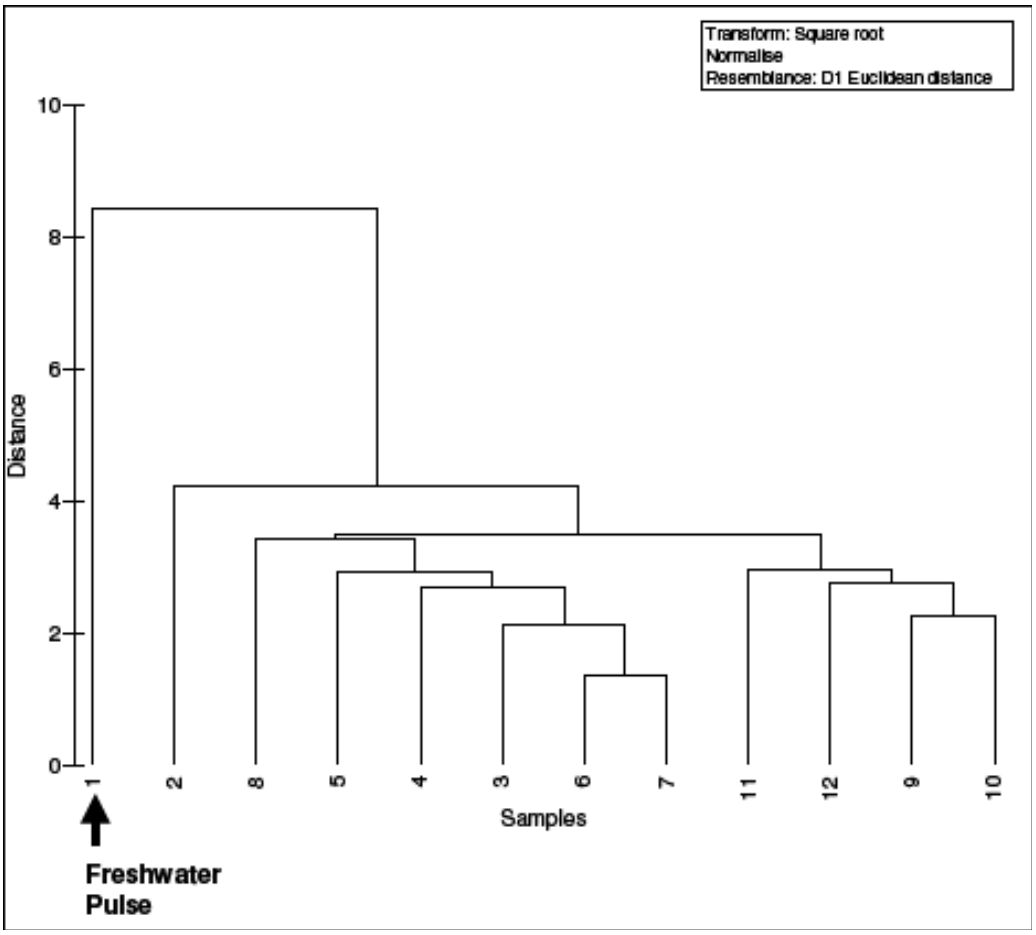




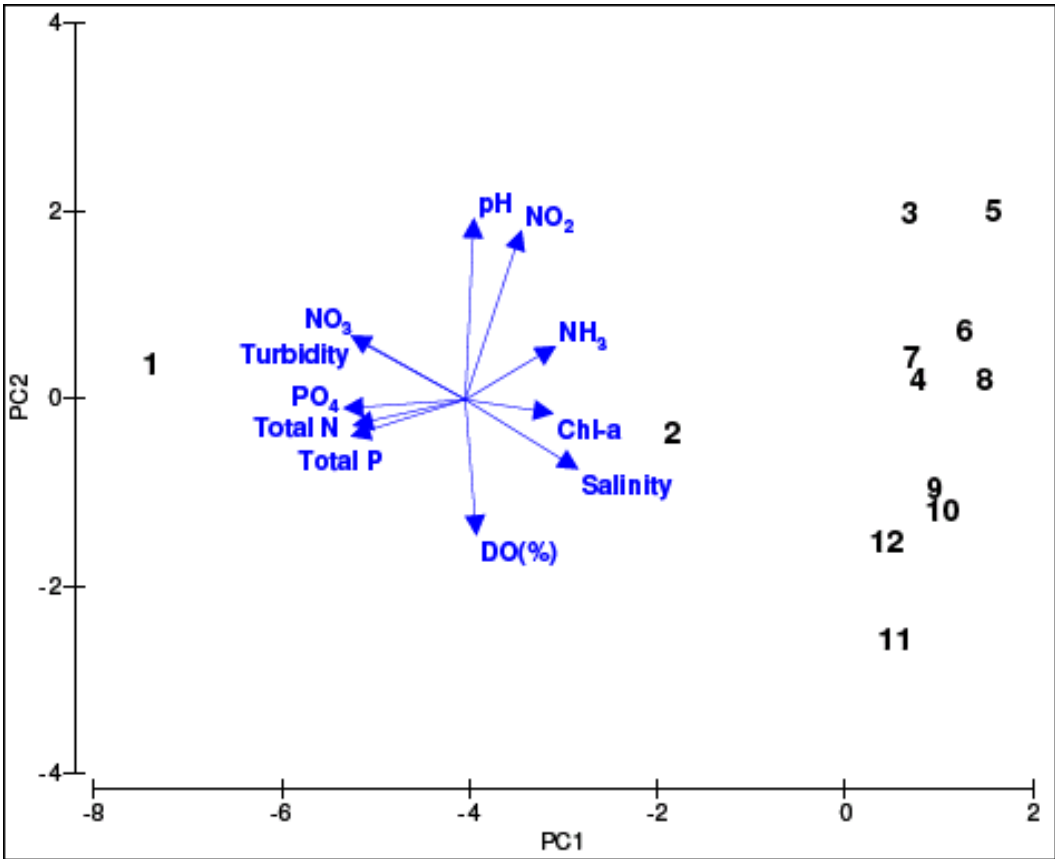




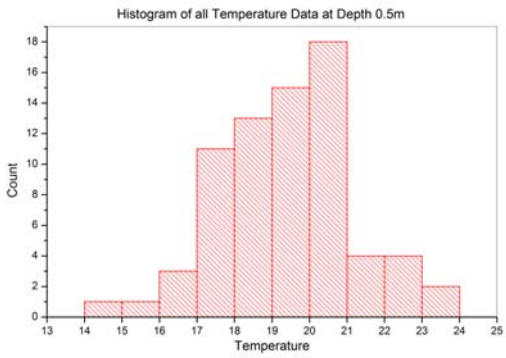
Appendix 7.5 Dendrogram derived from group-average clustering of sampling trips, based on similarity in water quality variables.

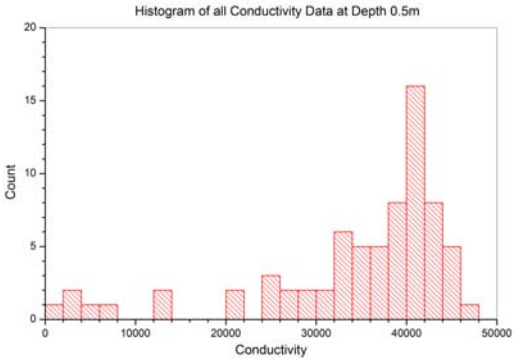


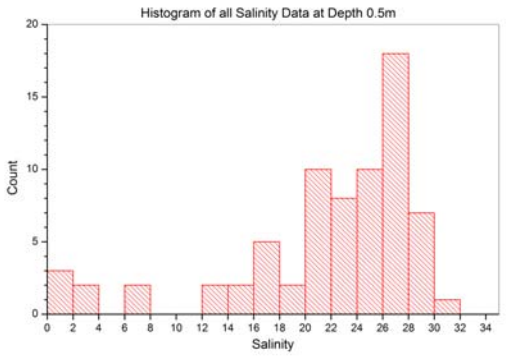
Appendix 7.6 Principal Component Analysis (PCA) ordination of sample times based on similarity in water quality (WQ) variables. Times are recorded here by the trip number. (WQ measurements at 0.5 m depth were averaged across all 7 sites for each time 1 to 12; data were square-root transformed and normalised prior to PCA)

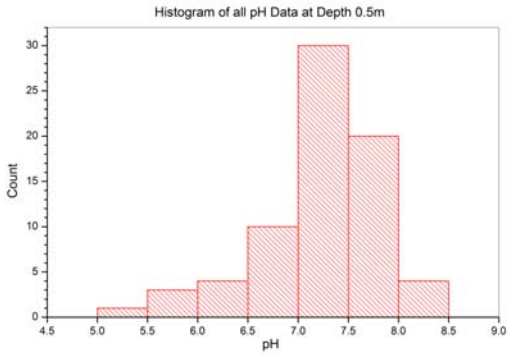


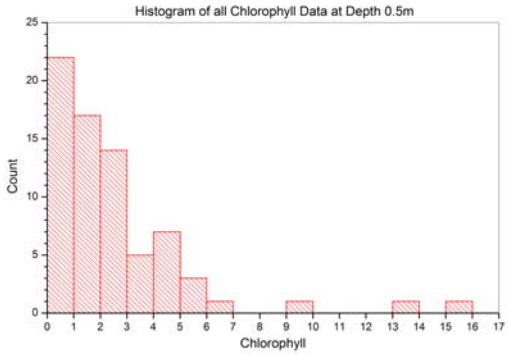
Appendix 7.7 Histogram of water quality indicators data (depth = 0.5m).

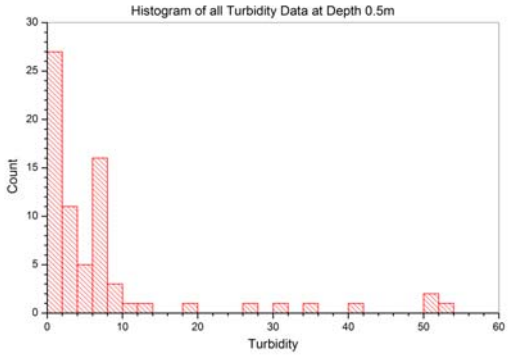


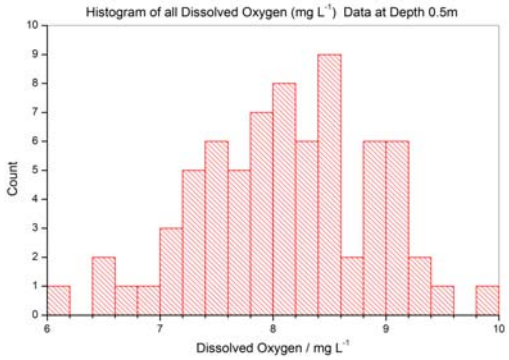


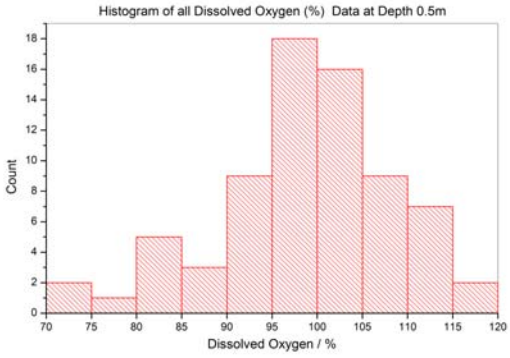


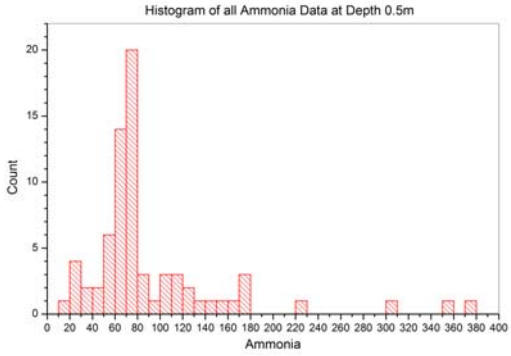


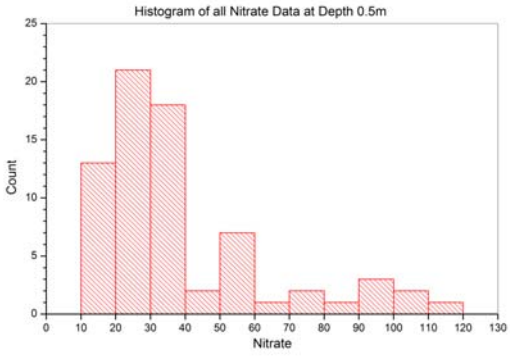


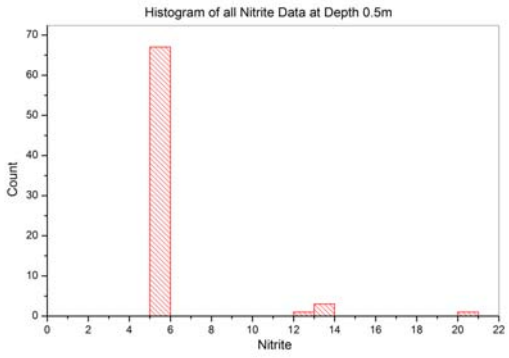


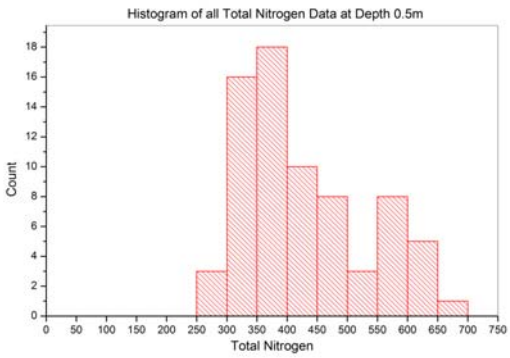

Histogram of all Dissolved Oxygen (mg L-1) Data at Depth 0.5m
Count
Dissolved Oxygen / mg L-1

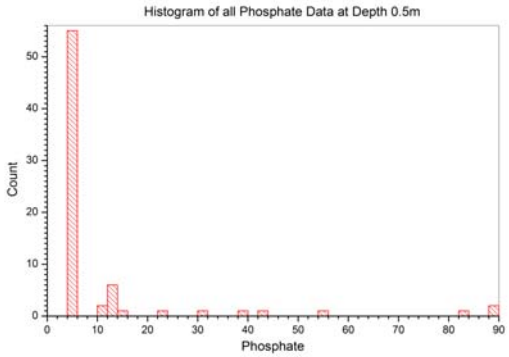

Histogram of all Dissolved Oxygen (%) Data at Depth 0.5m
Count
Dissolved Oxygen / %

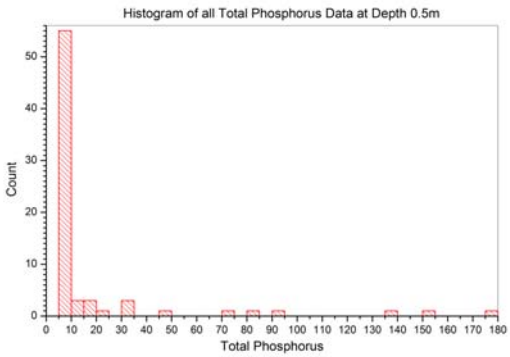

Histogram of all Ammonia Data at Depth 0.5m
Count
Ammonia


Histogram of all Nitrate Data at Depth 0.5m
Count
Nitrate

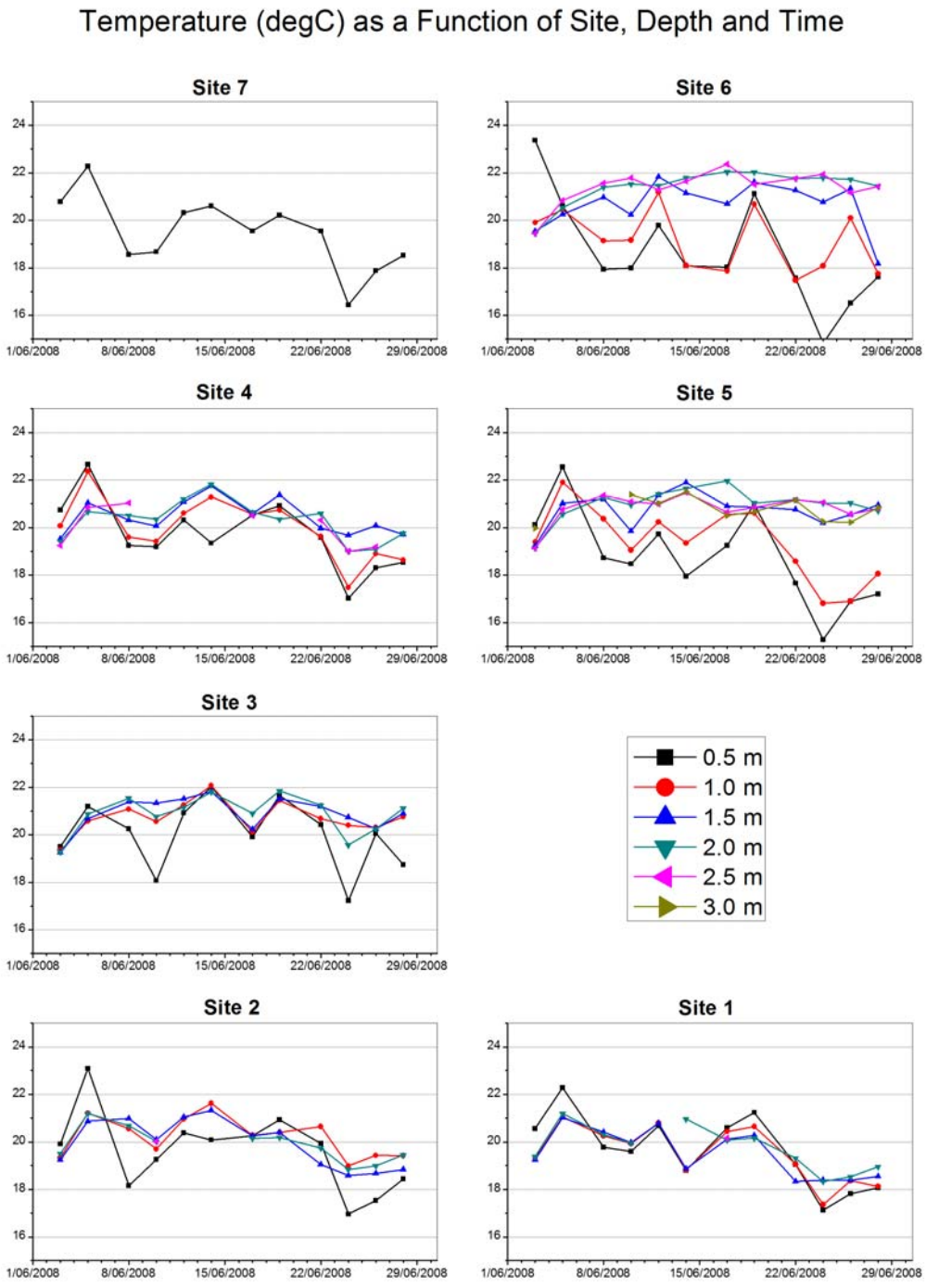

Histogram of all Nitrite Data at Depth 0.5m
Count
Nitrite


Histogram of all Total Nitrogen Data at Depth 0.5m
Count
Total Nitrogen

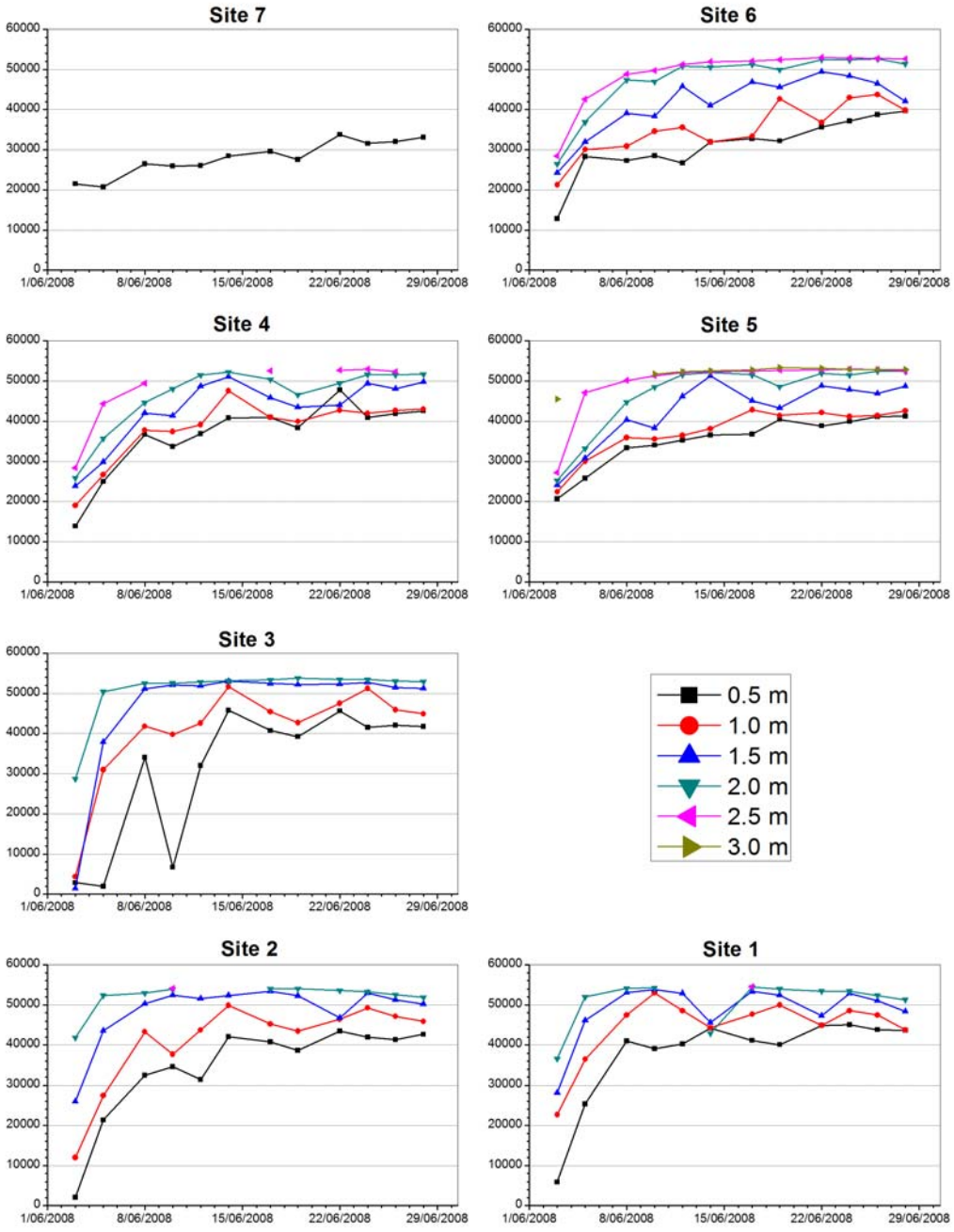

Histogram of all Phosphate Data at Depth 0.5m
Count
Phosphate


Histogram of all Total Phosphorus Data at Depth 0.5m
Count
Total Phosphorus

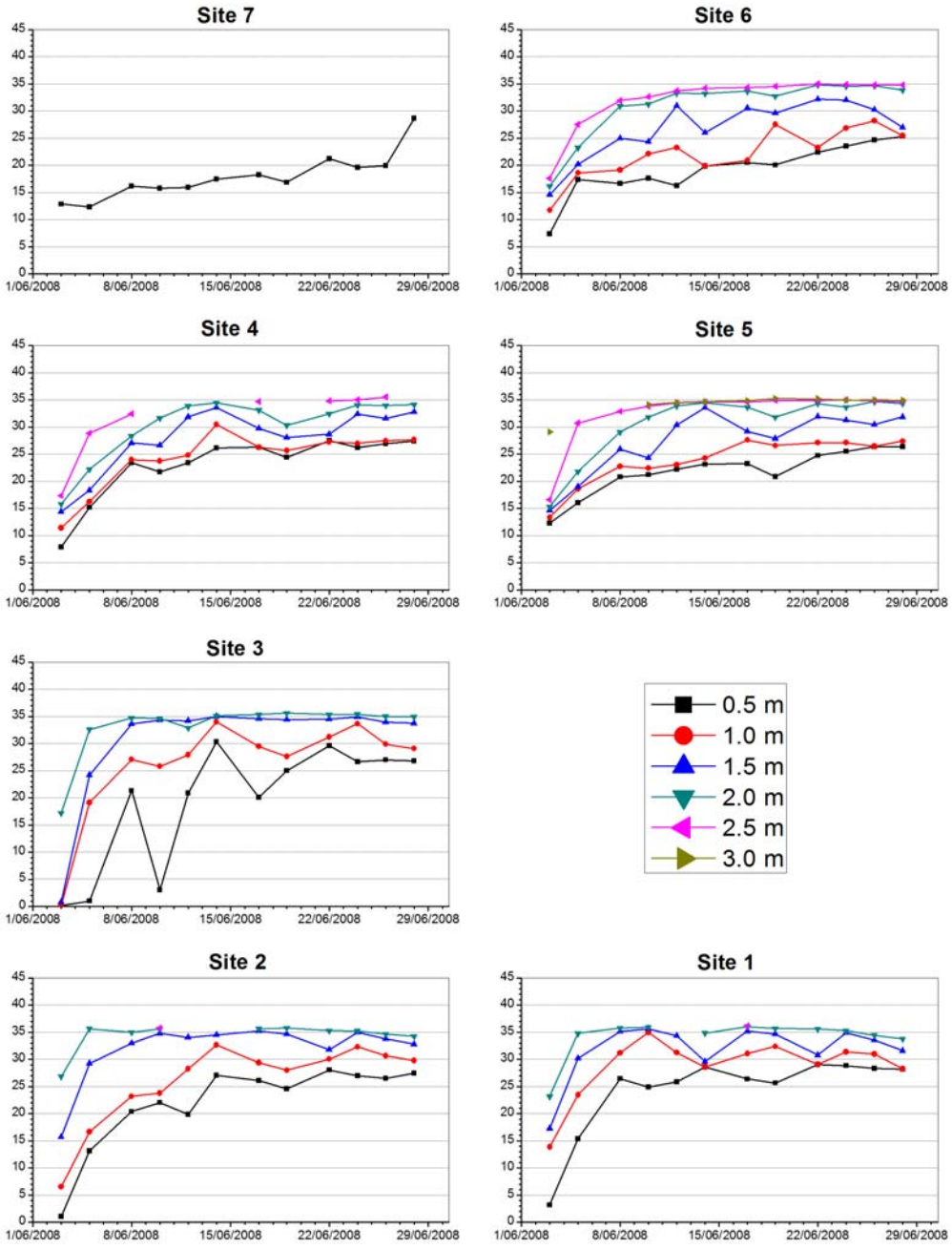
Appendix 7.8 Time series of water quality indicators.



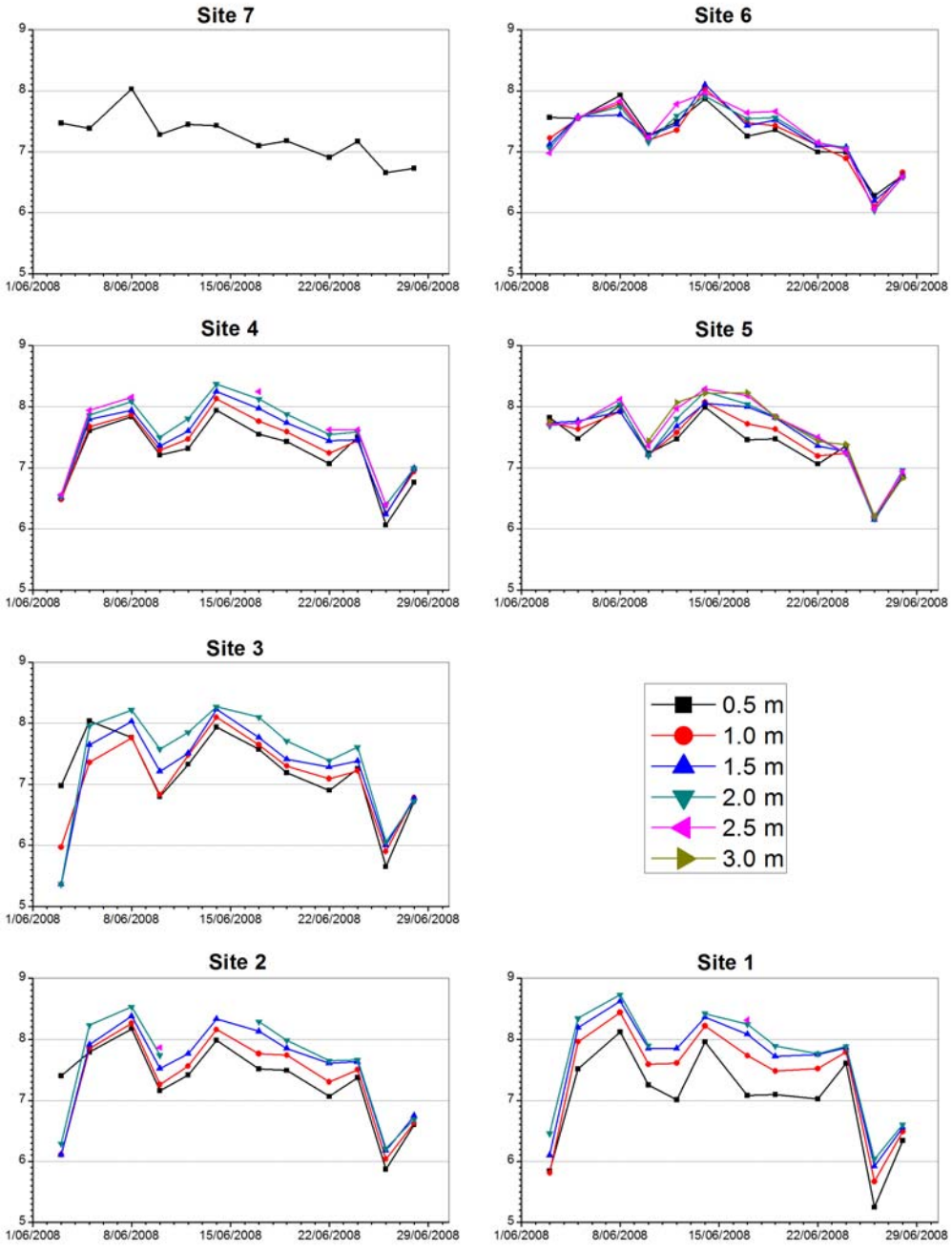
Conductivity (uS/cm) as a Function of Site, Depth and Time

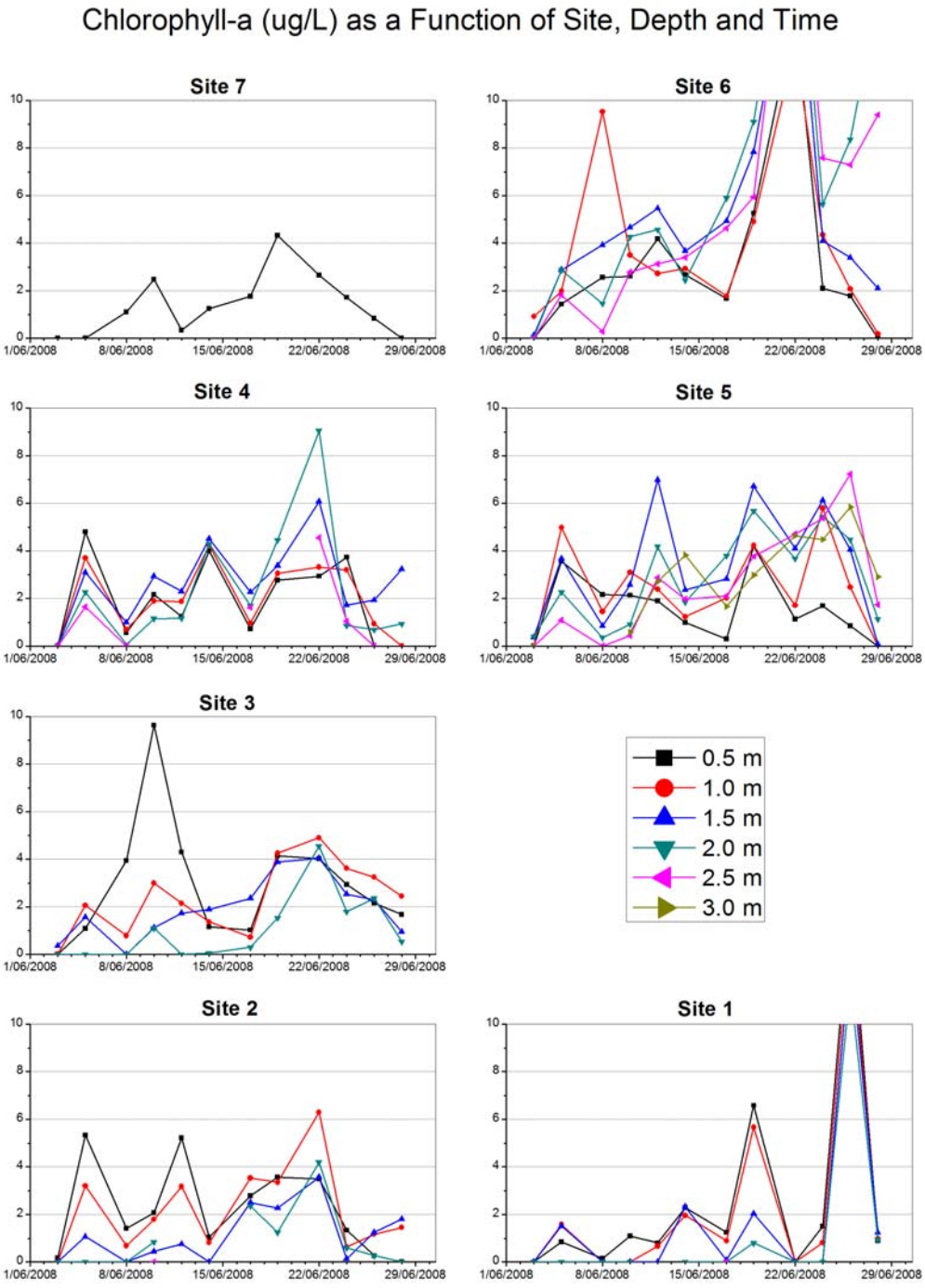


Salinity (ppt) as a Function of Site, Depth and Time

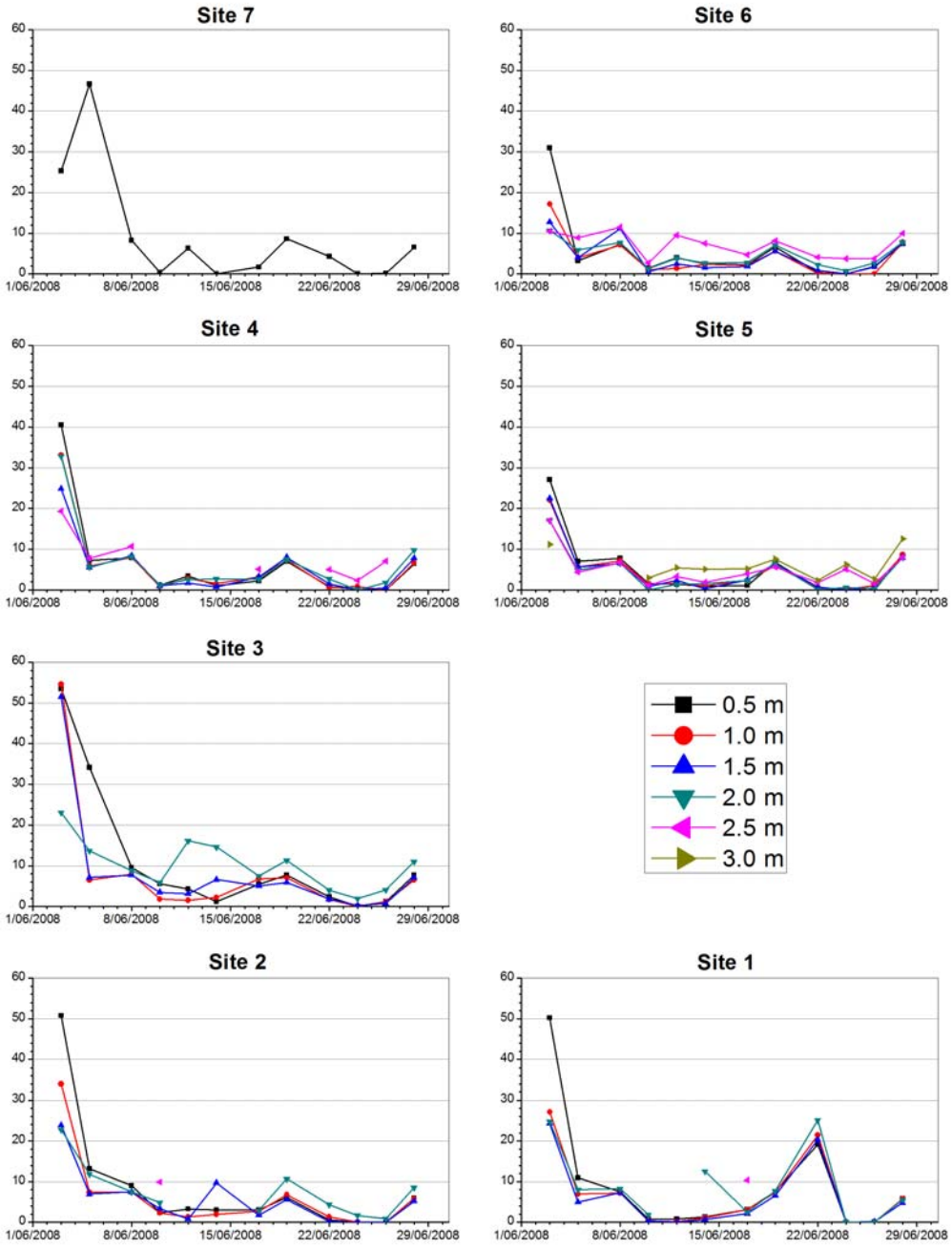


pH as a Function of Site, Depth and Time

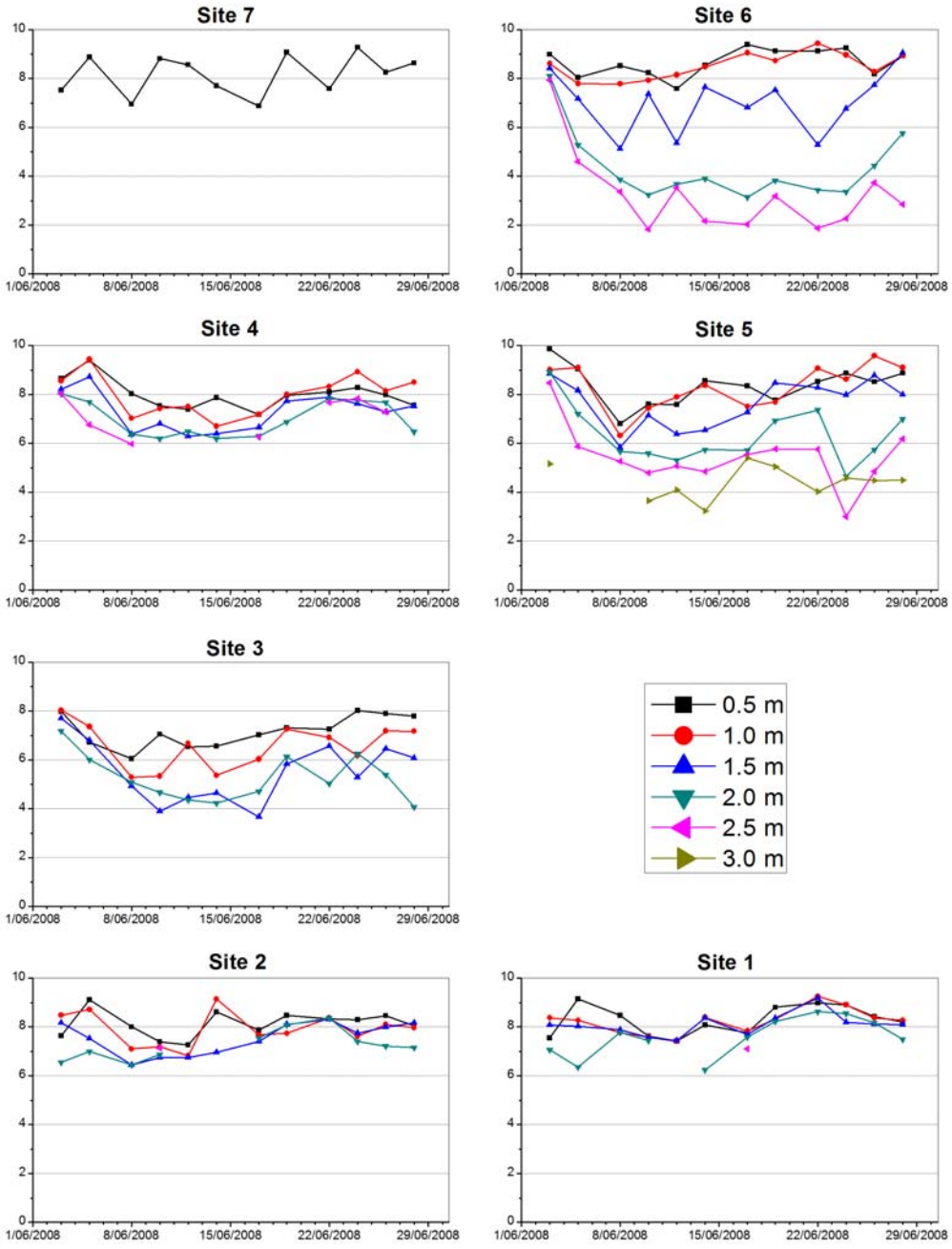



Chlorophyll-a (ug/L) as a Function of Site, Depth and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
0.5 m
1.0 m
1.5 m
2.0 m
2.5 m
3.0 m
1/06/2008
8/06/2008
15/06/2008
22/06/2008
29/06/2008

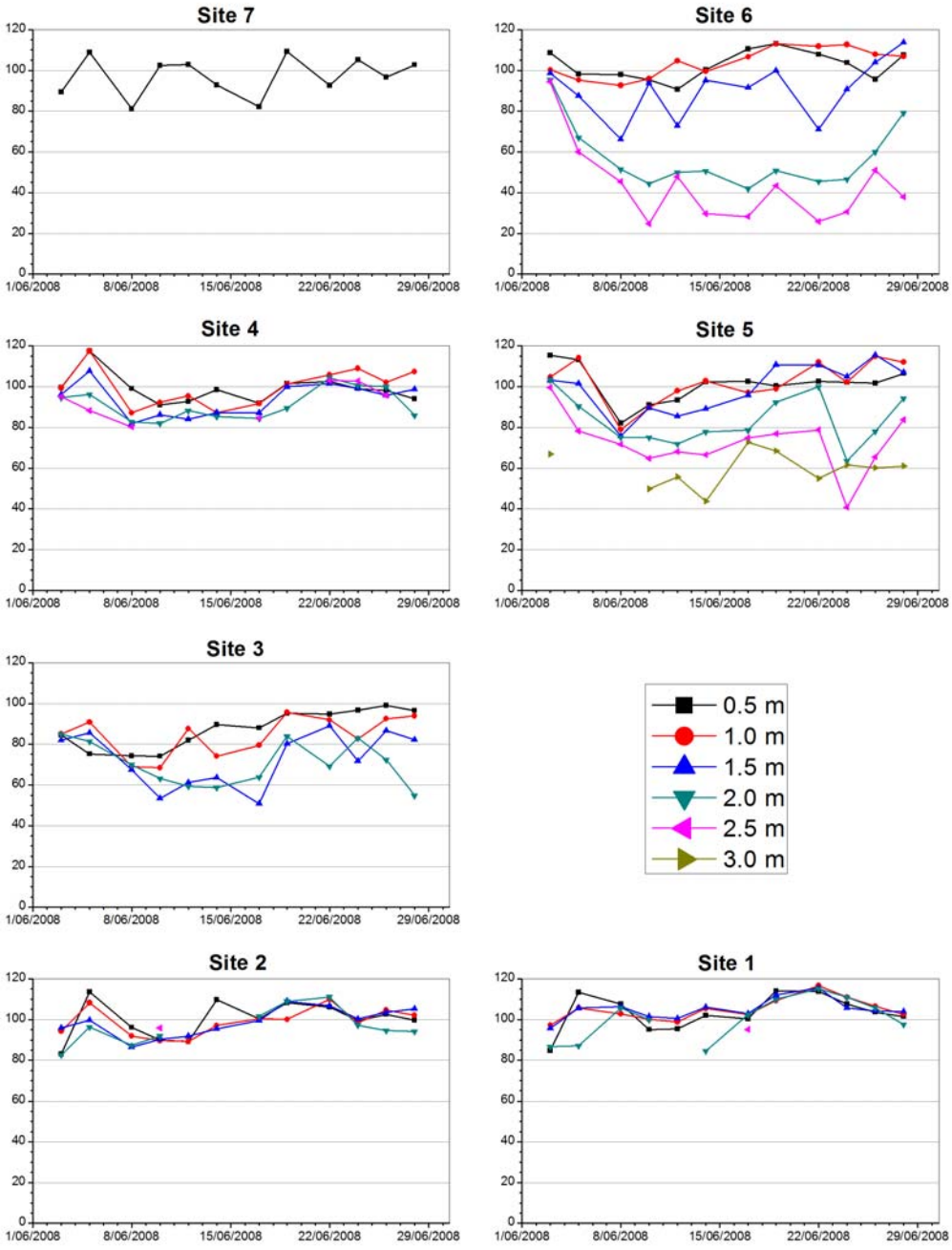
Turbidity (NTU) as a Function of Site, Depth and Time

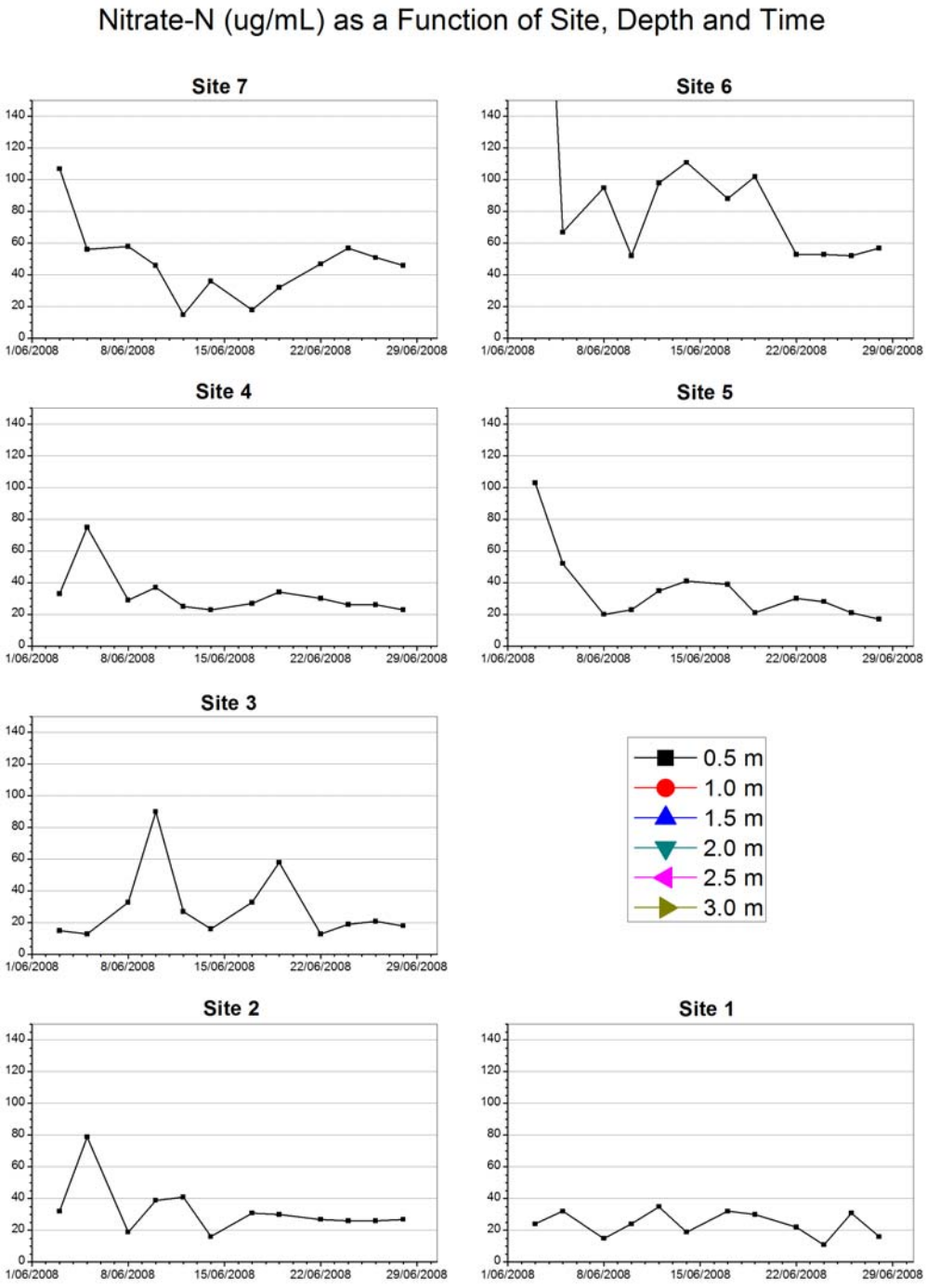


Dissolved Oxygen (mg/L) as a Function of Site, Depth and Time

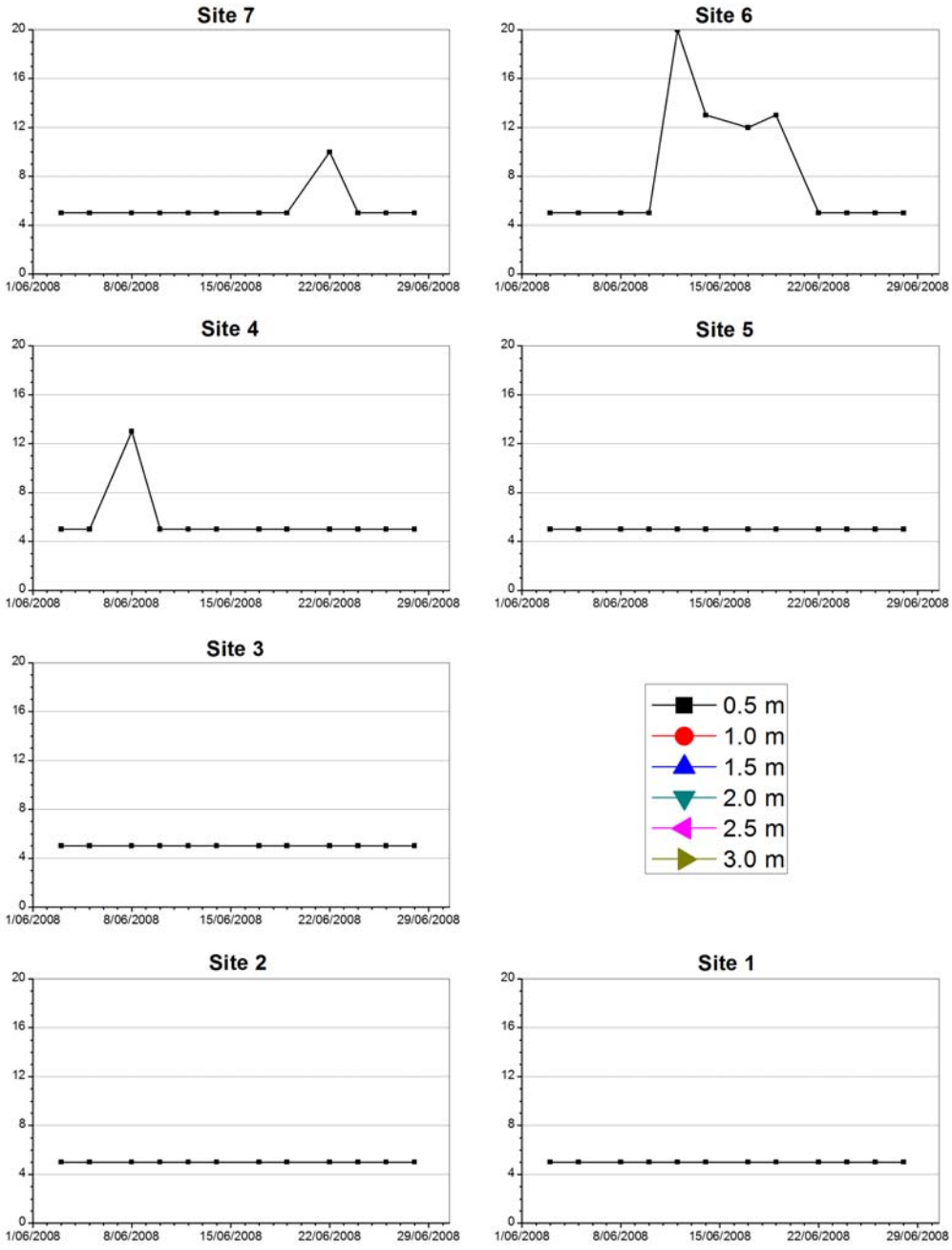


Dissolved Oxygen (%) as a Function of Site, Depth and Time

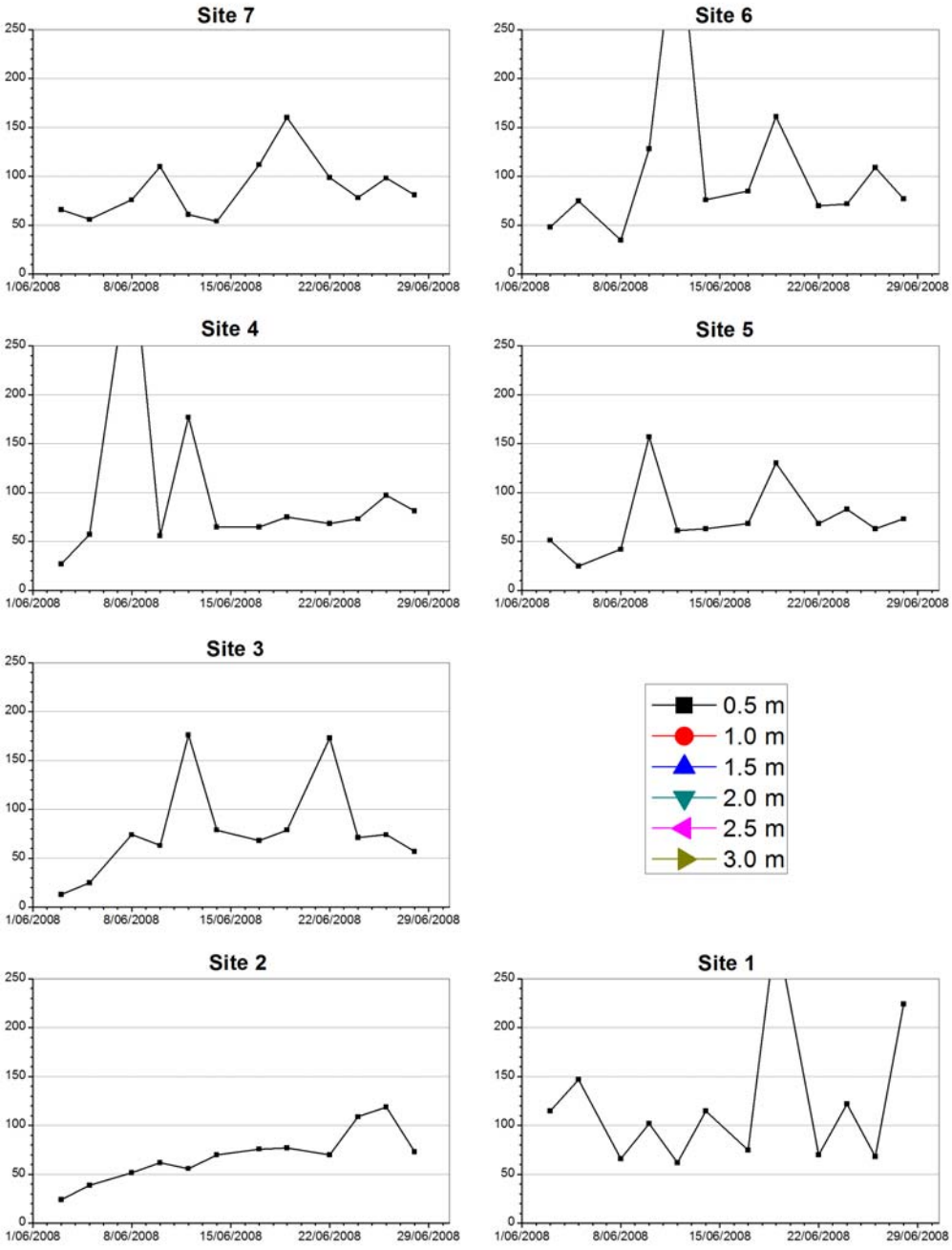



Nitrate-N (ug/mL) as a Function of Site, Depth and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
0.5 m
1.0 m
1.5 m
2.0 m
2.5 m
3.0 m
0
20
40
60
80
100
120
140
1/06/2008
8/06/2008
15/06/2008
22/06/2008
29/06/2008

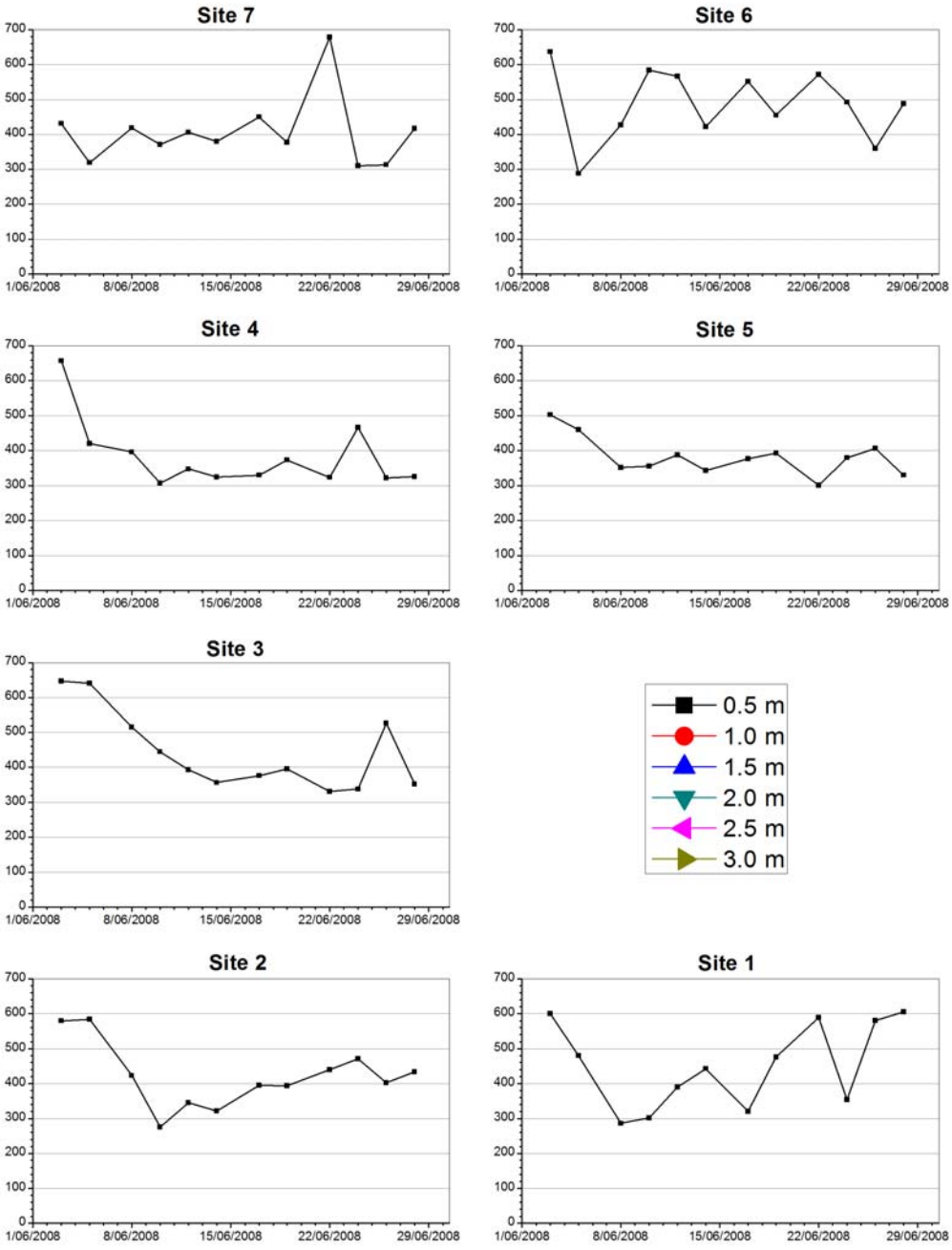
Nitrite-N (ug/mL) as a Function of Site, Depth and Time



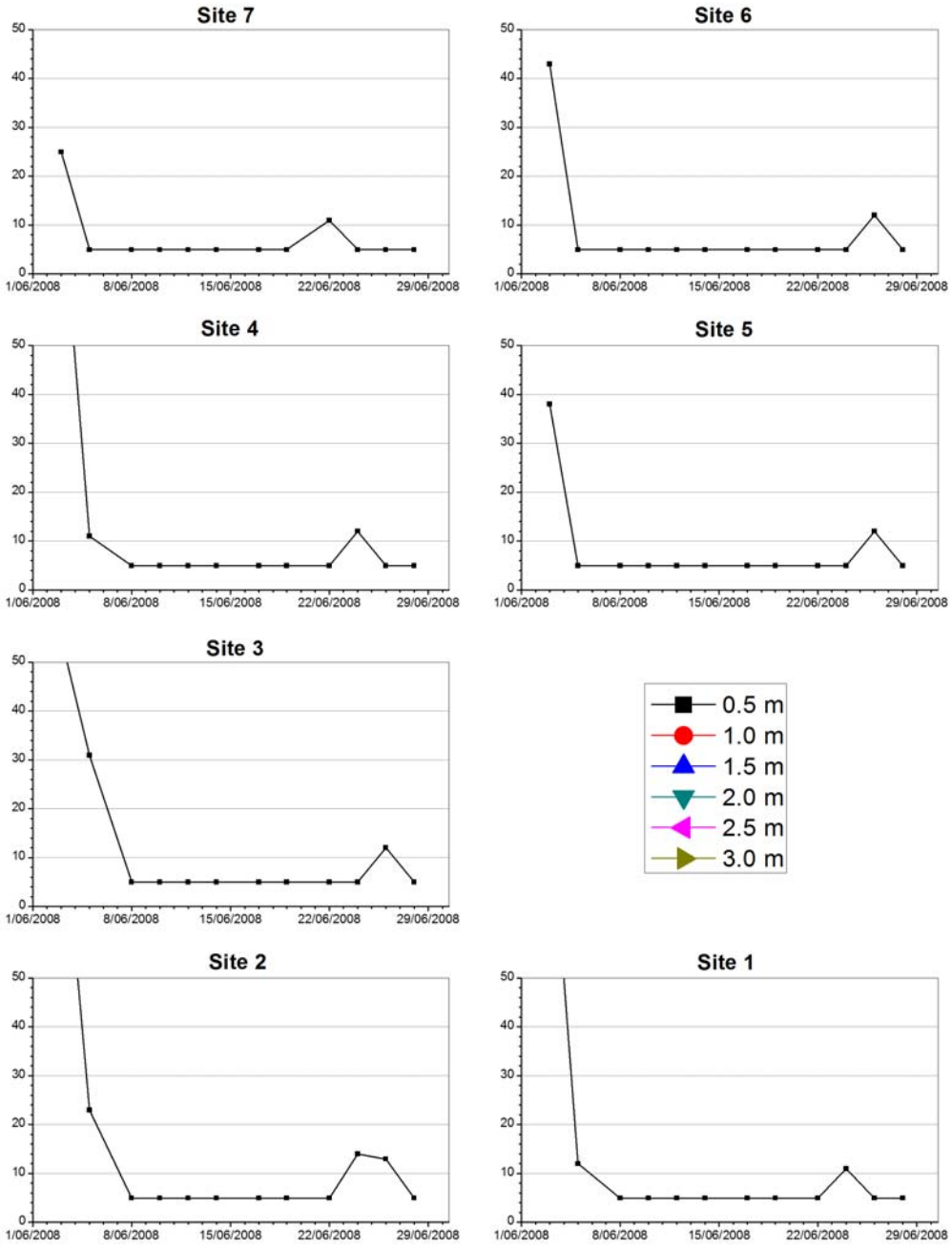
Ammonia-N (ug/mL) as a Function of Site, Depth and Time



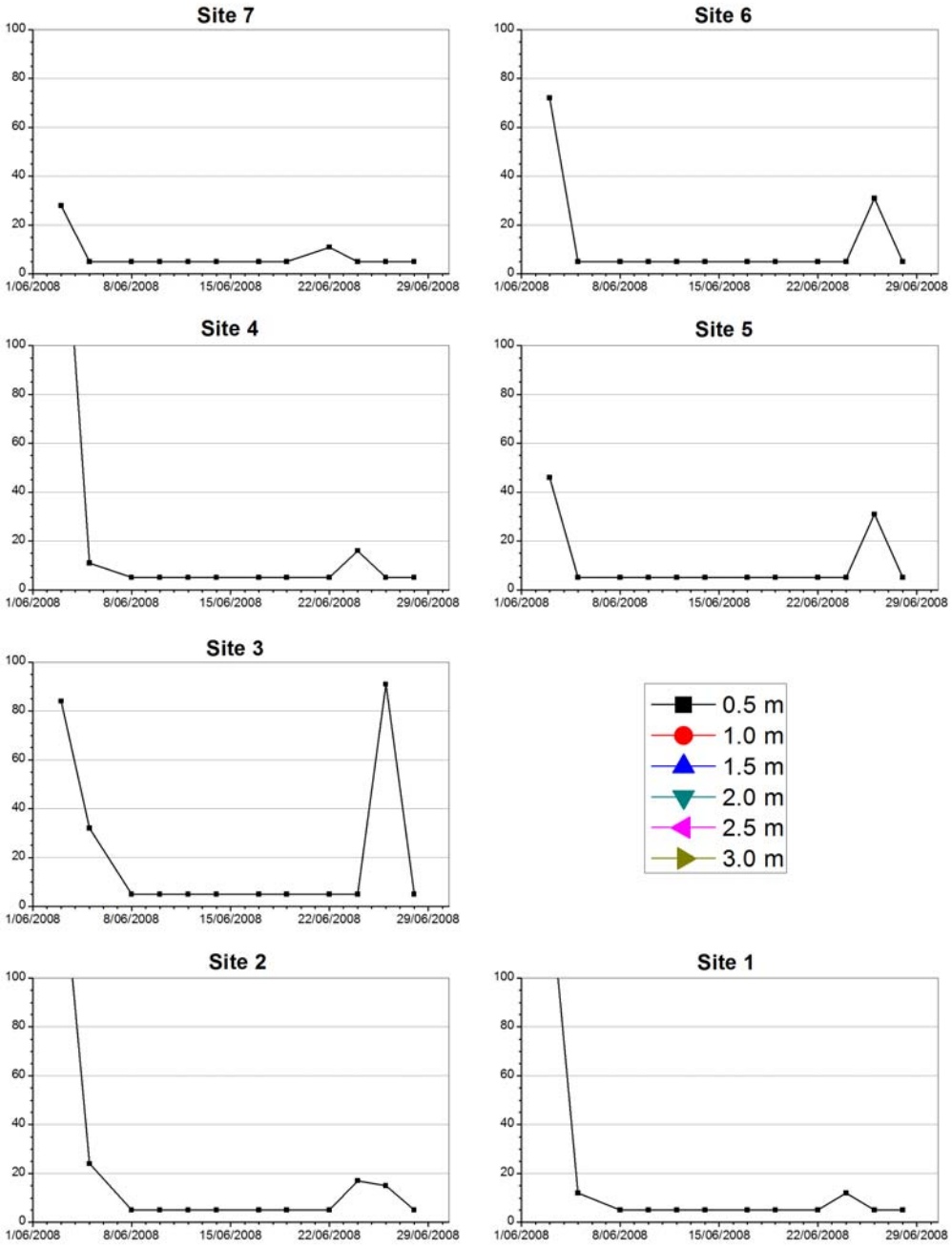
Total N (ug/mL) as a Function of Site, Depth and Time



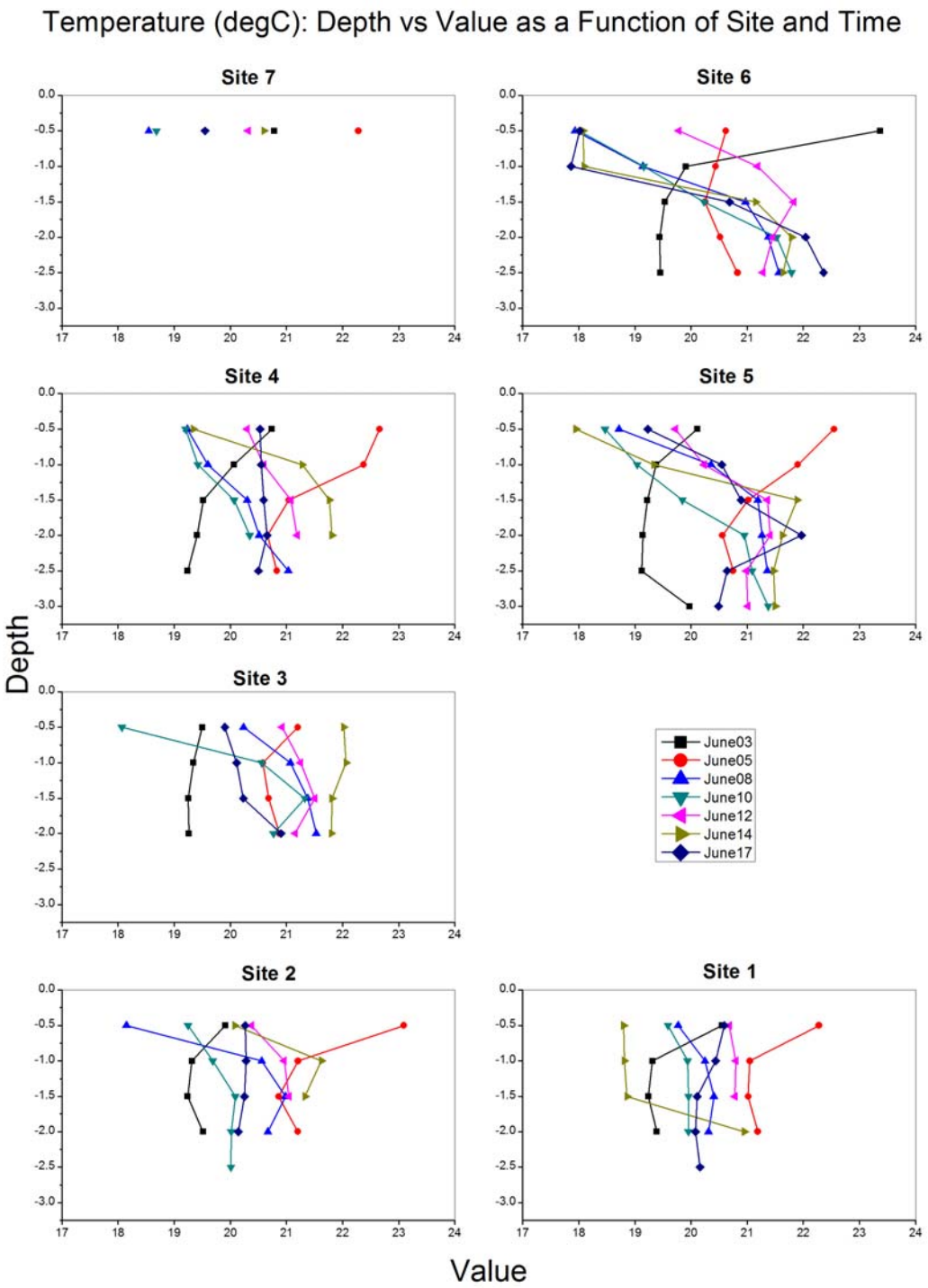
Phosphate-P (ug/mL) as a Function of Site, Depth and Time

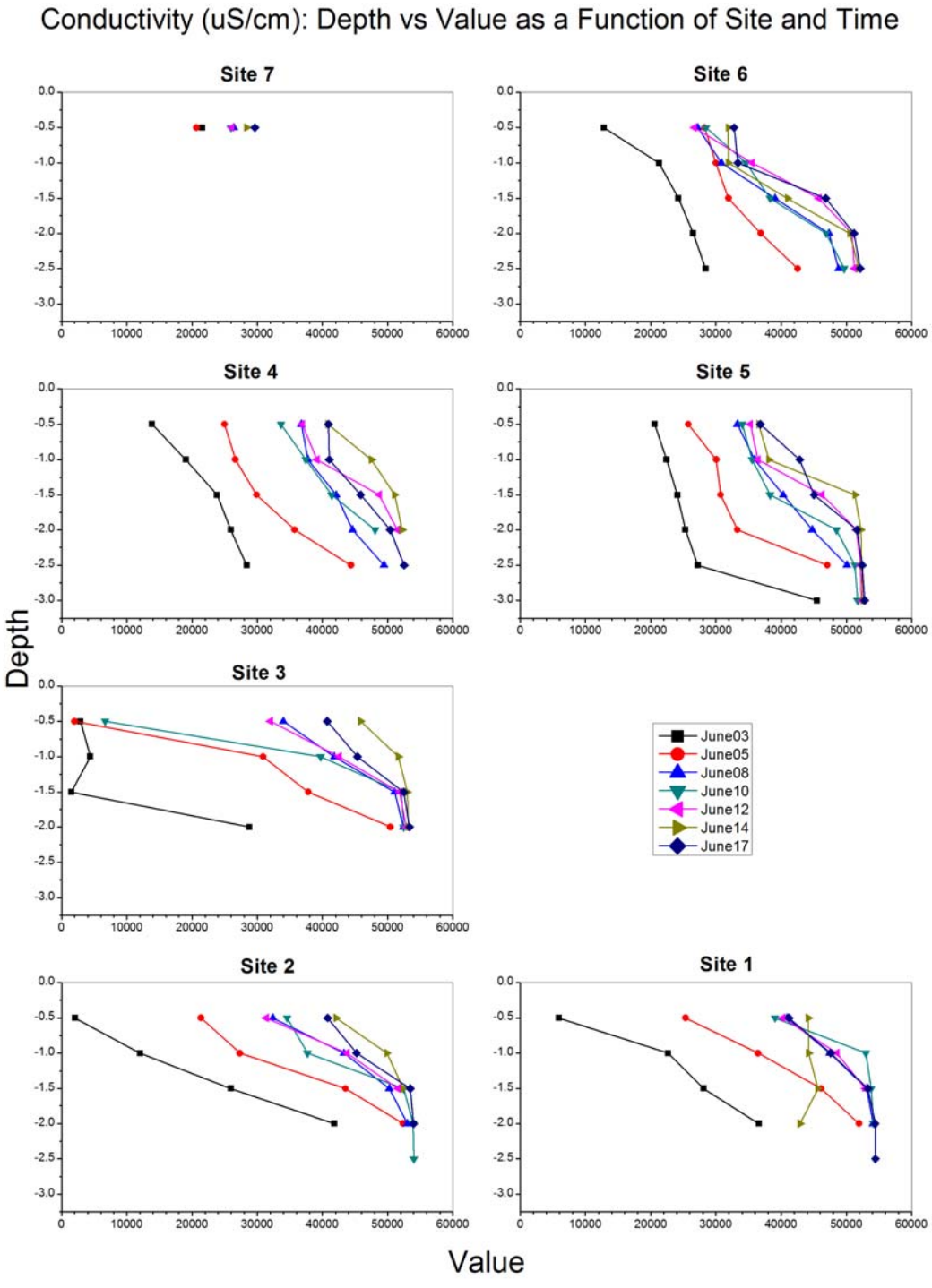


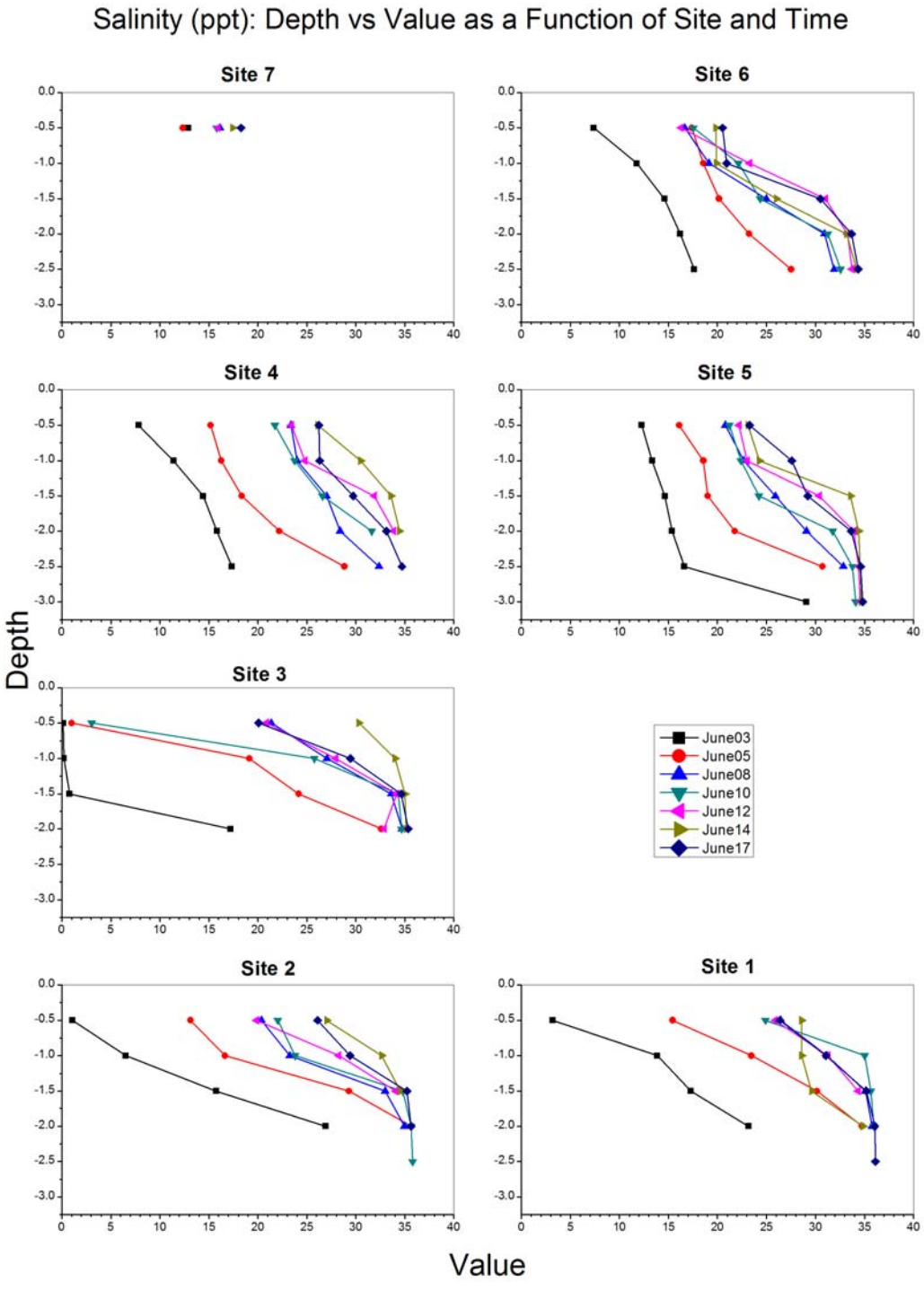
Total P (ug/mL) as a Function of Site, Depth and Time

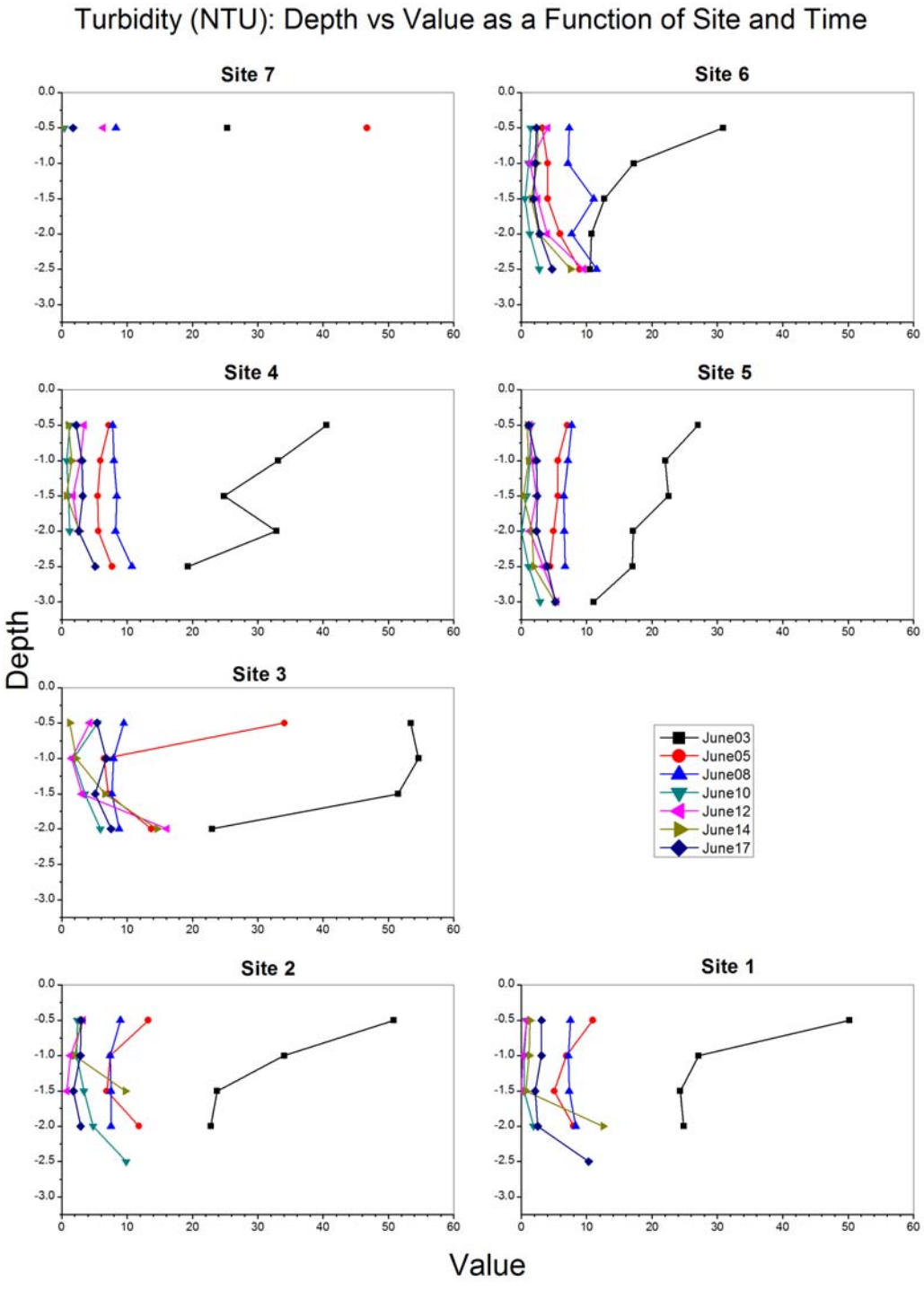


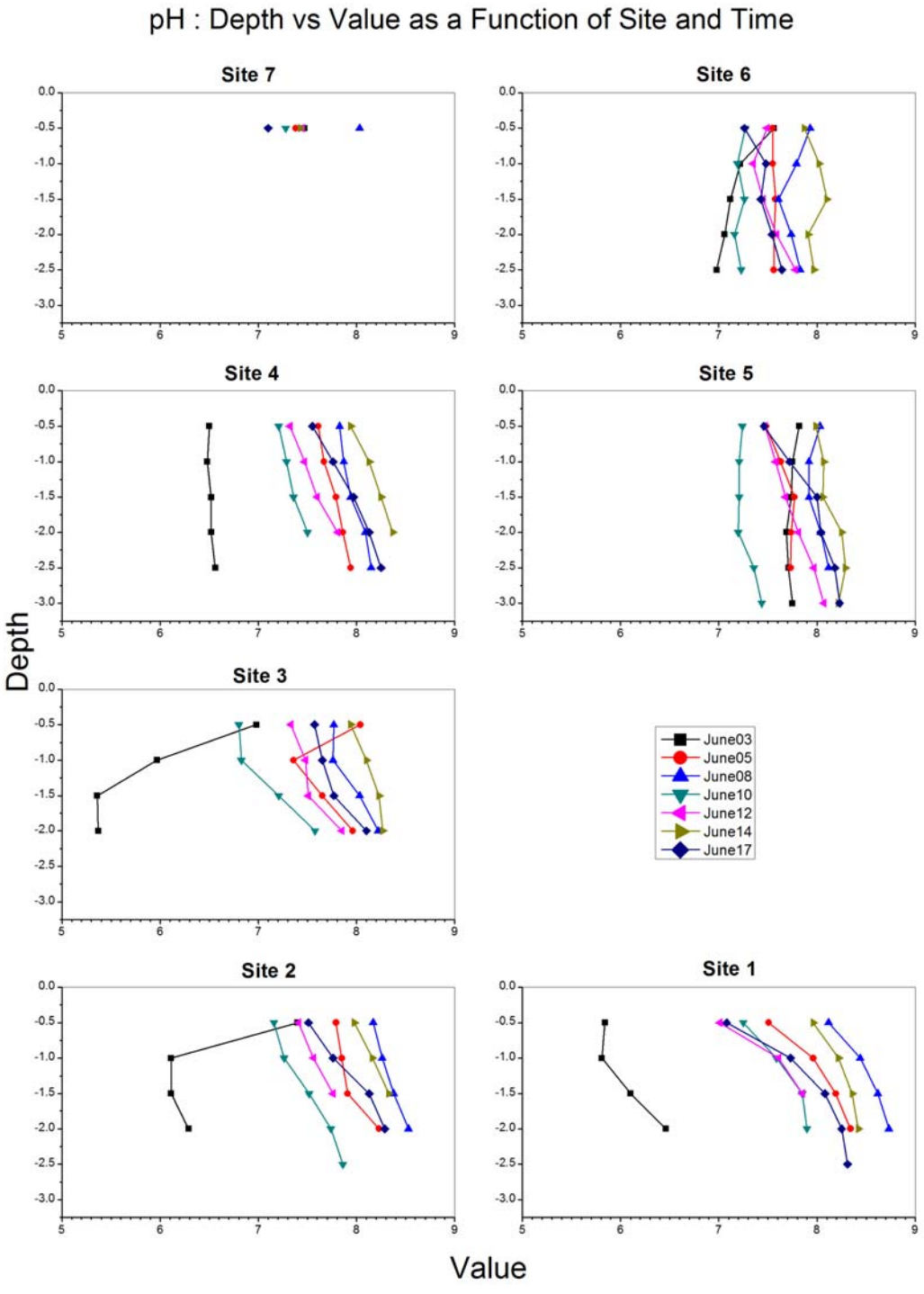
Appendix 7.9 Vertical profiles of water quality indicators from each trip.

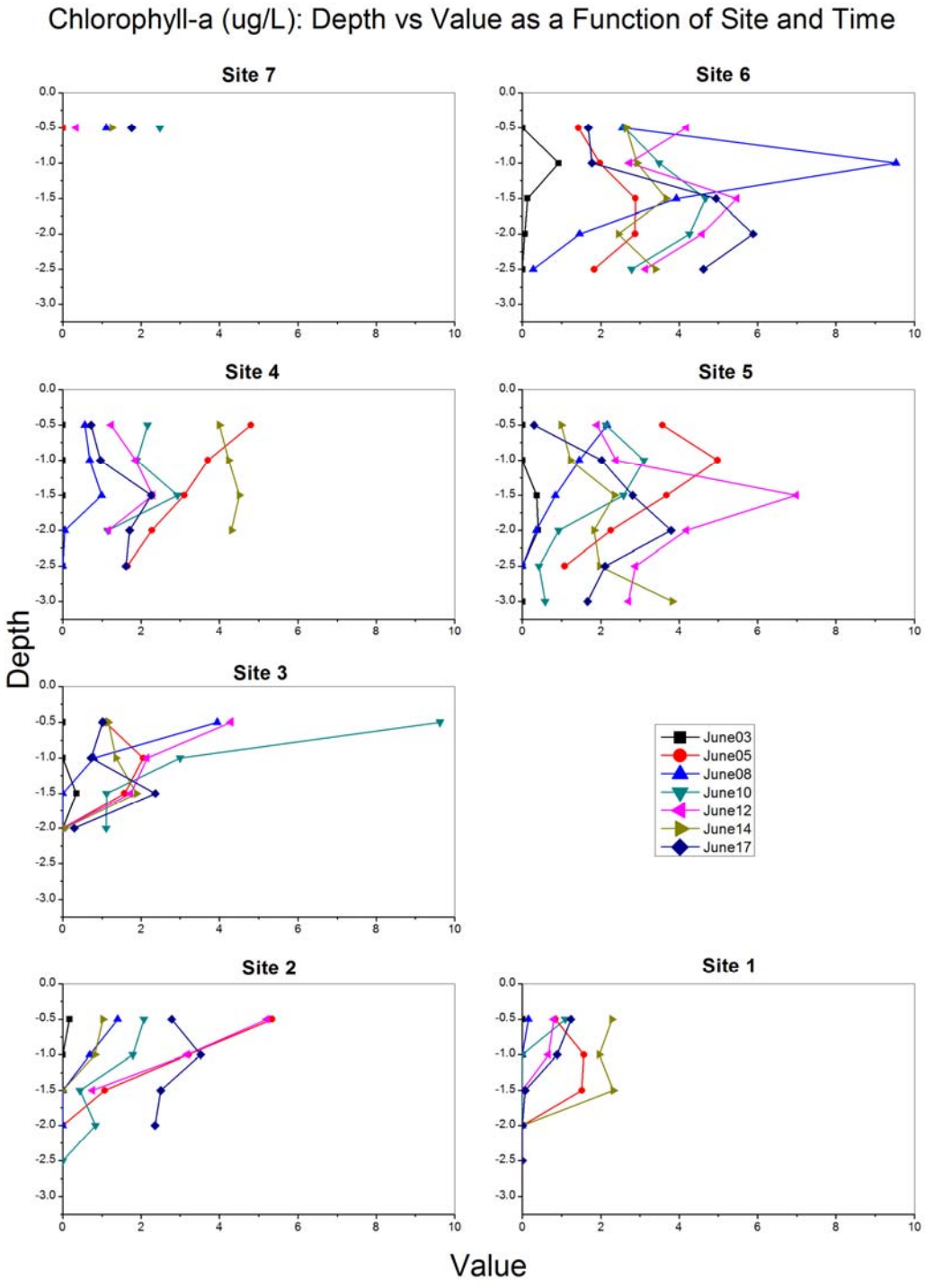


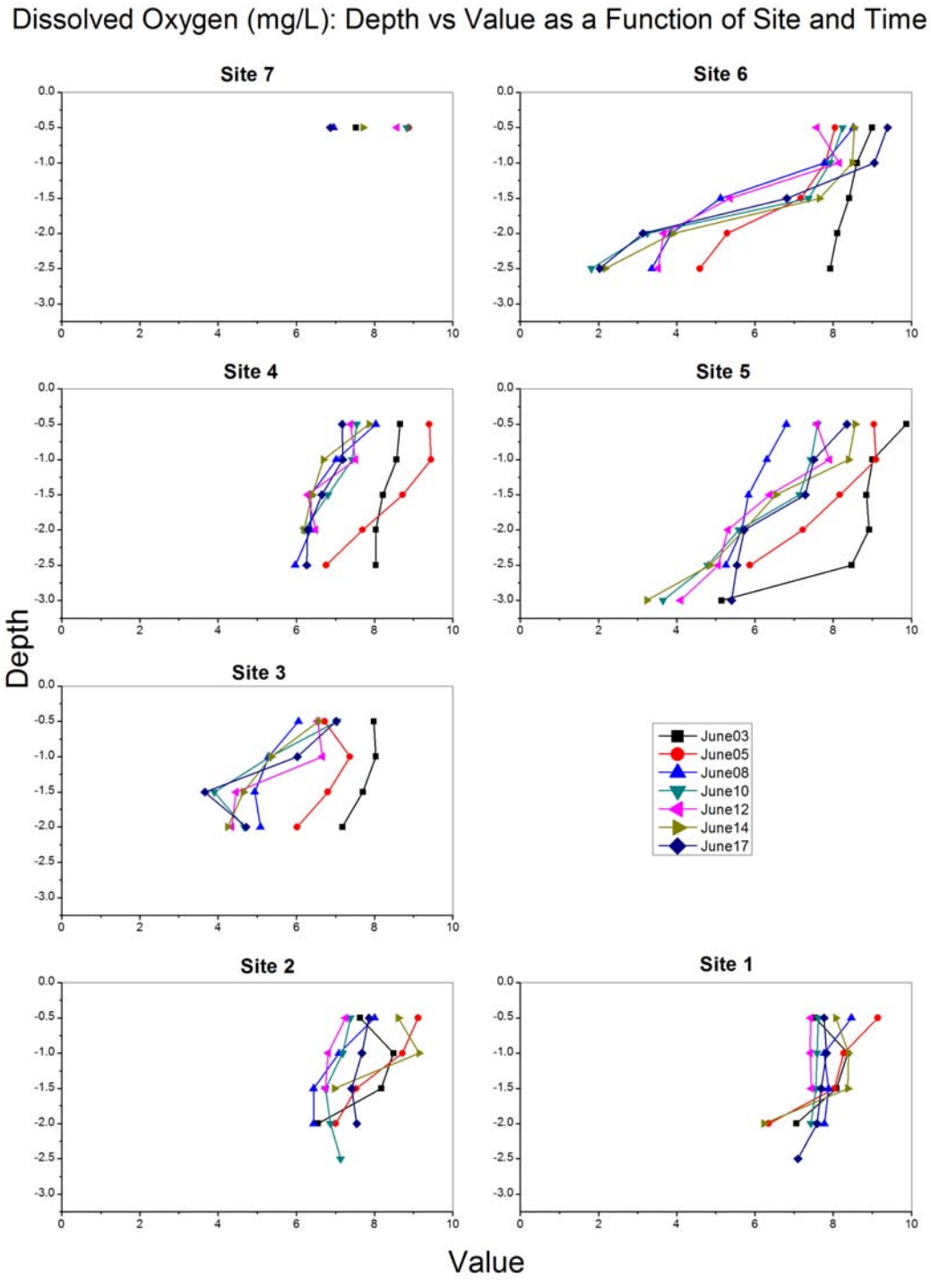

Conductivity (uS/cm): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

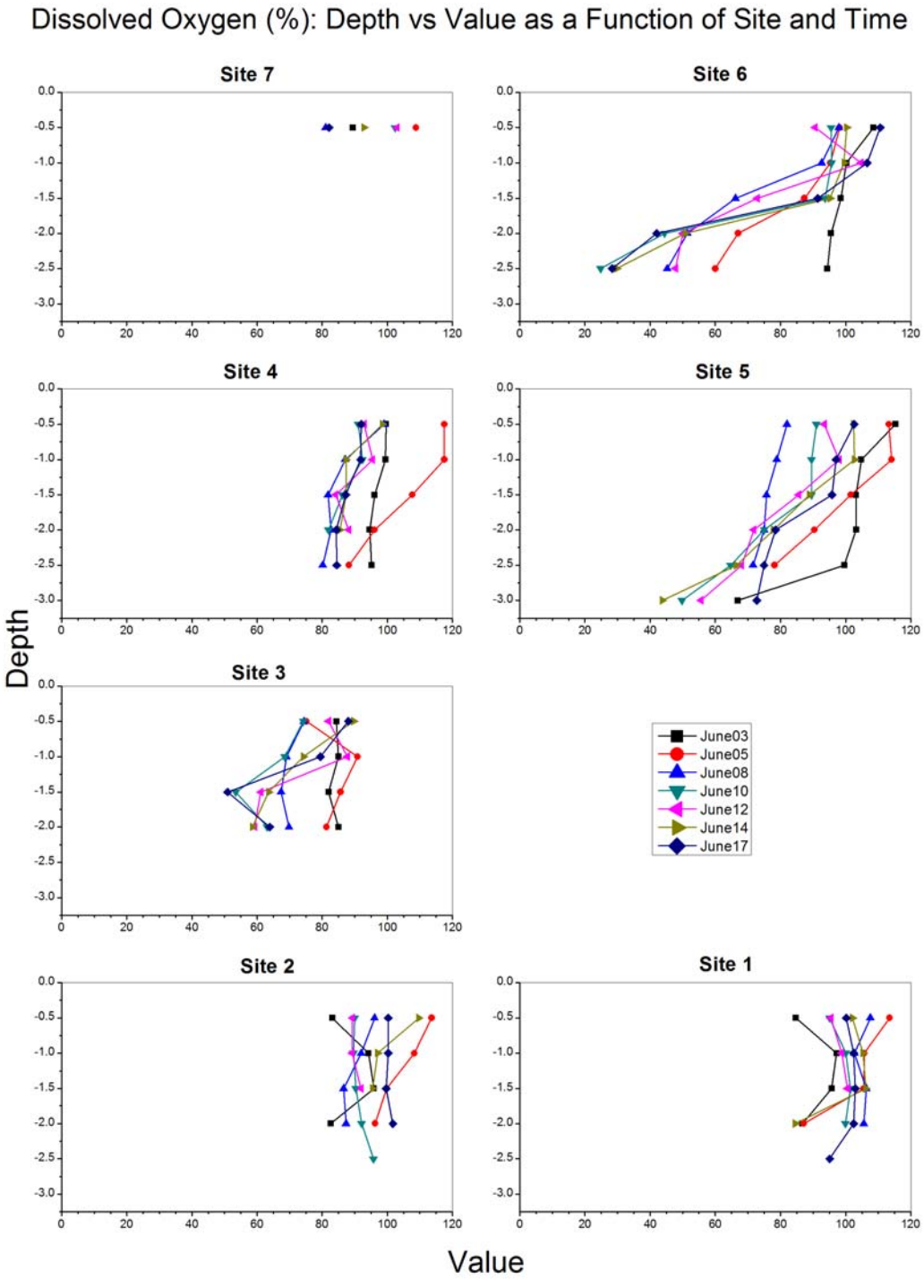

Salinity (ppt): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

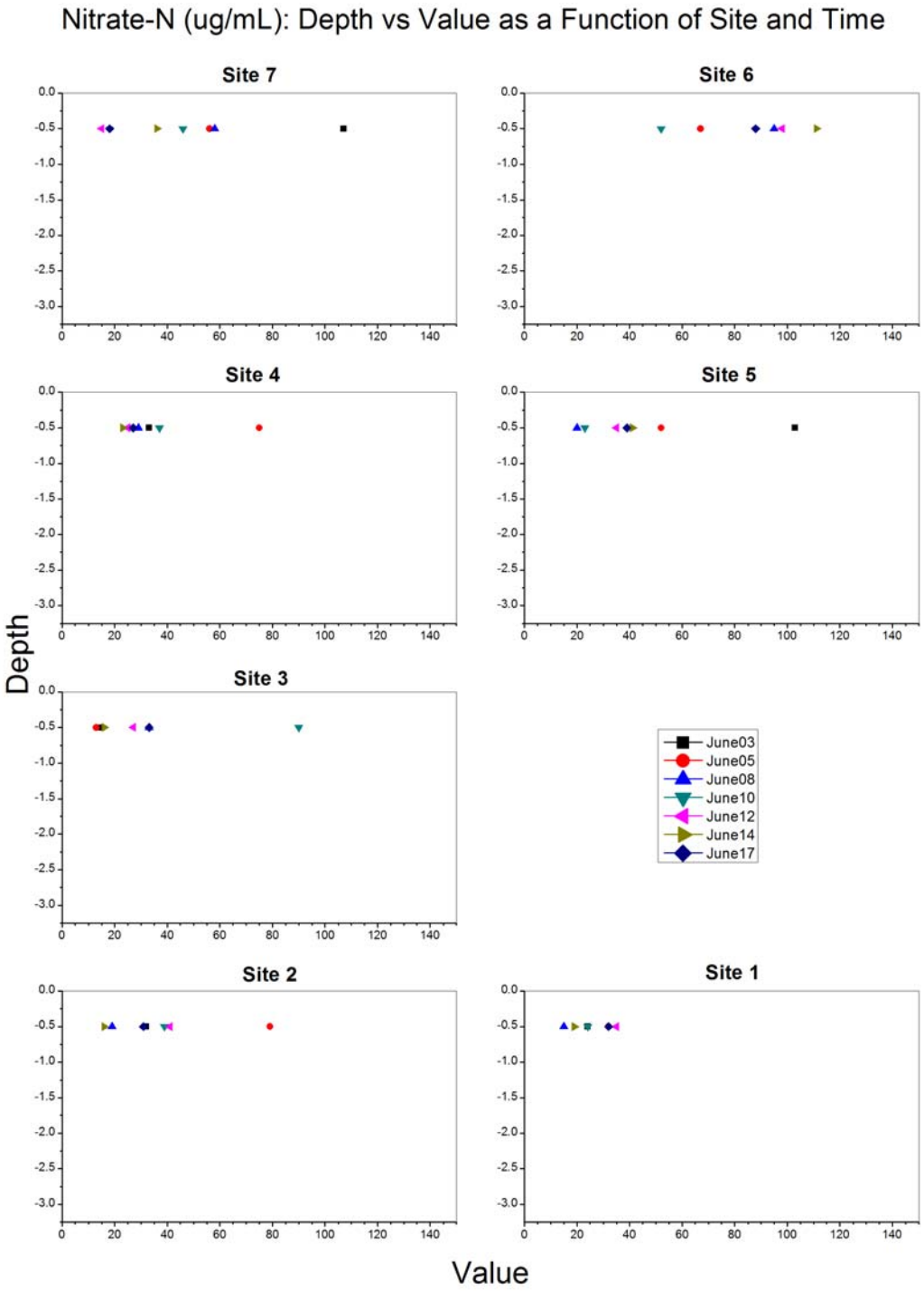

Turbidity (NTU): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

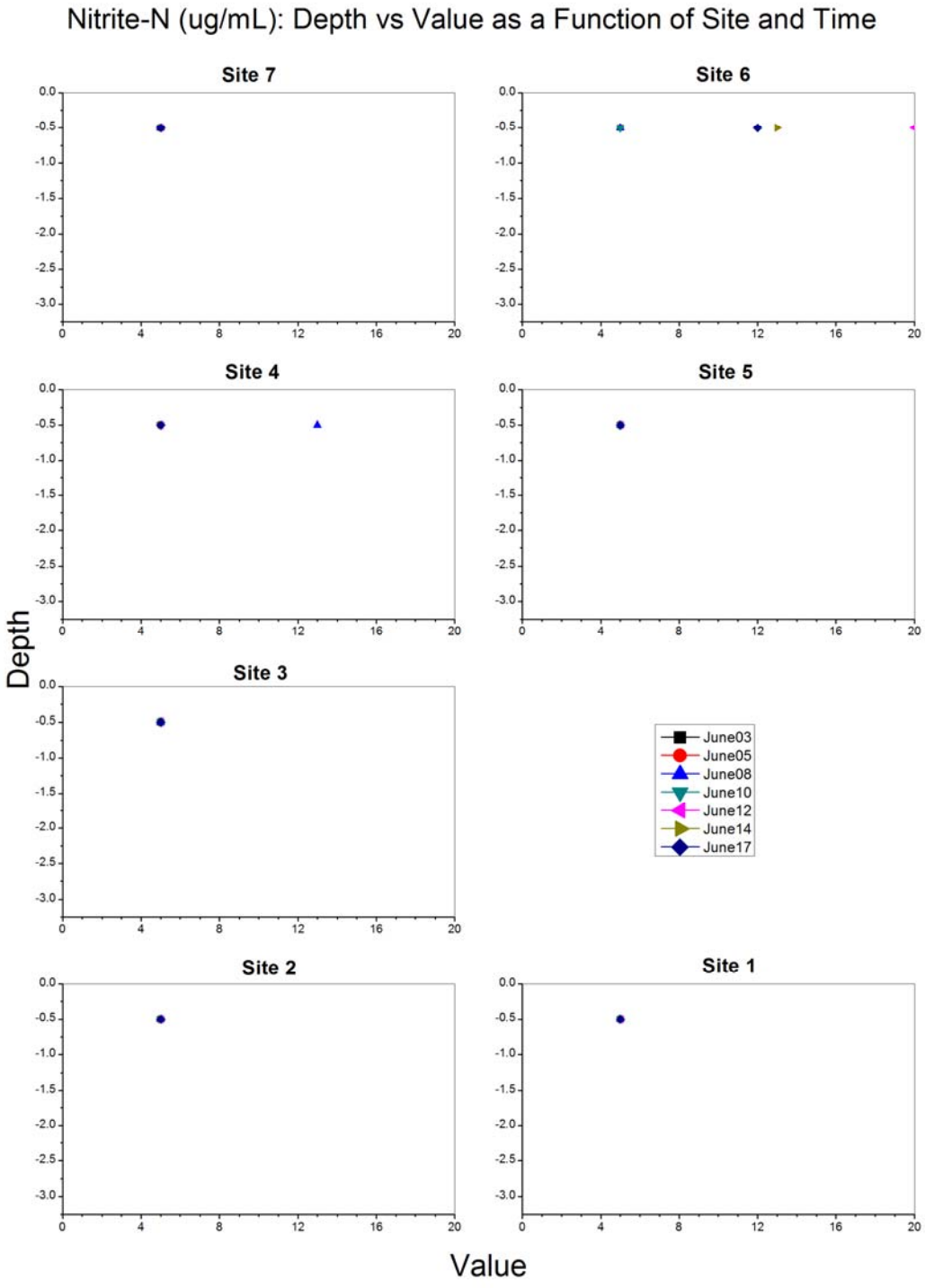

pH : Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

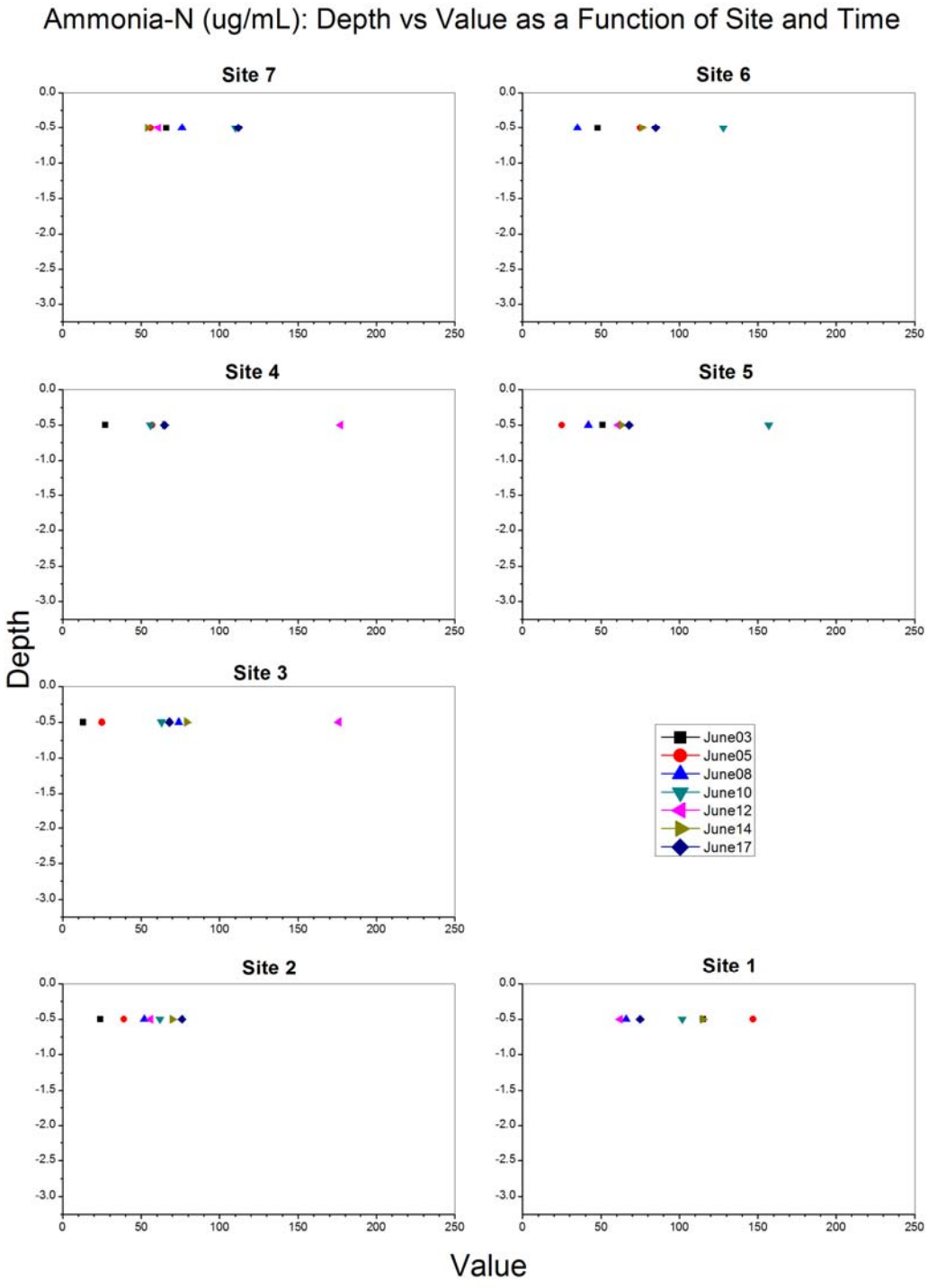

Chlorophyll-a (ug/L): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

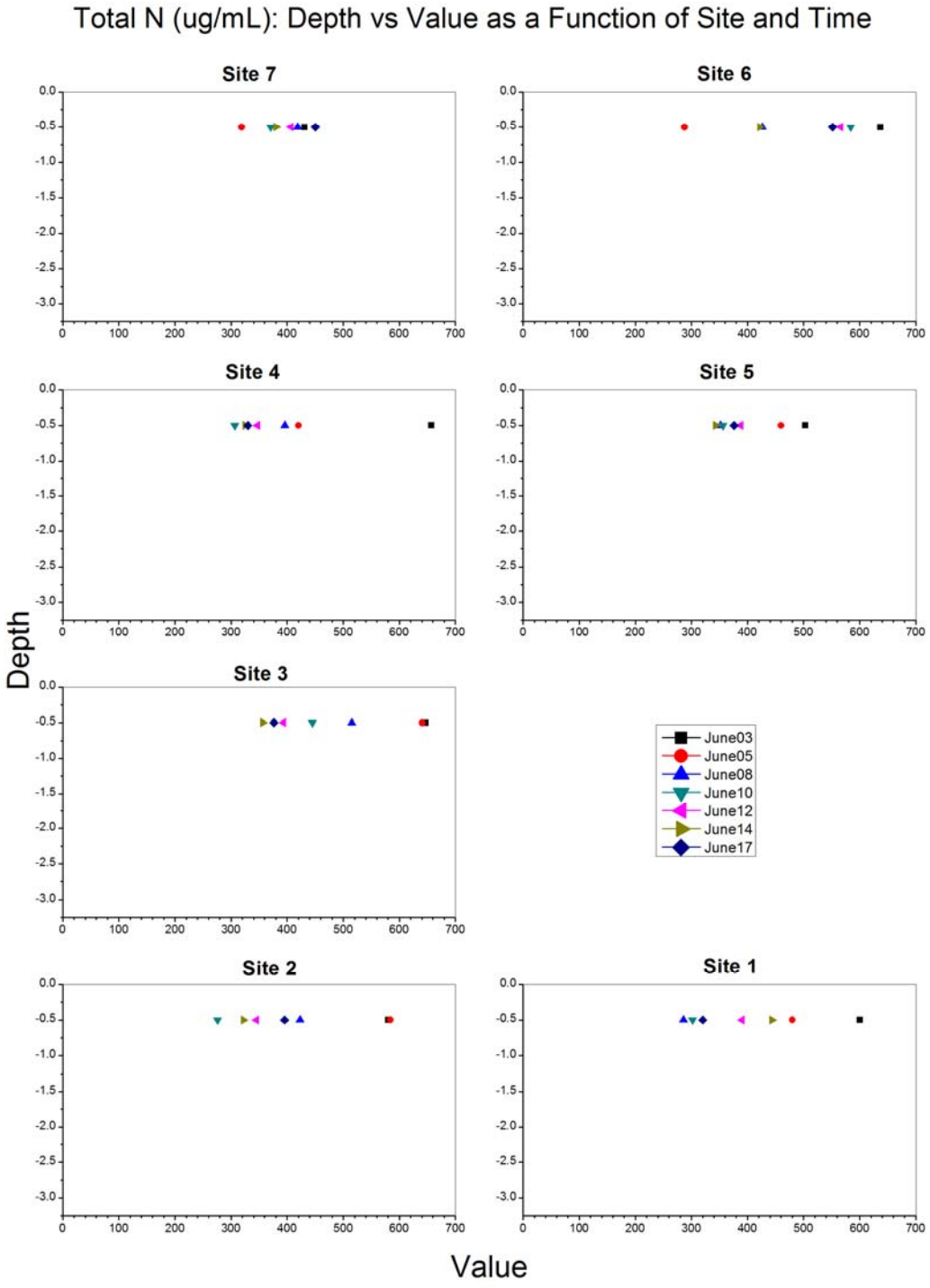

Dissolved Oxygen (mg/L): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

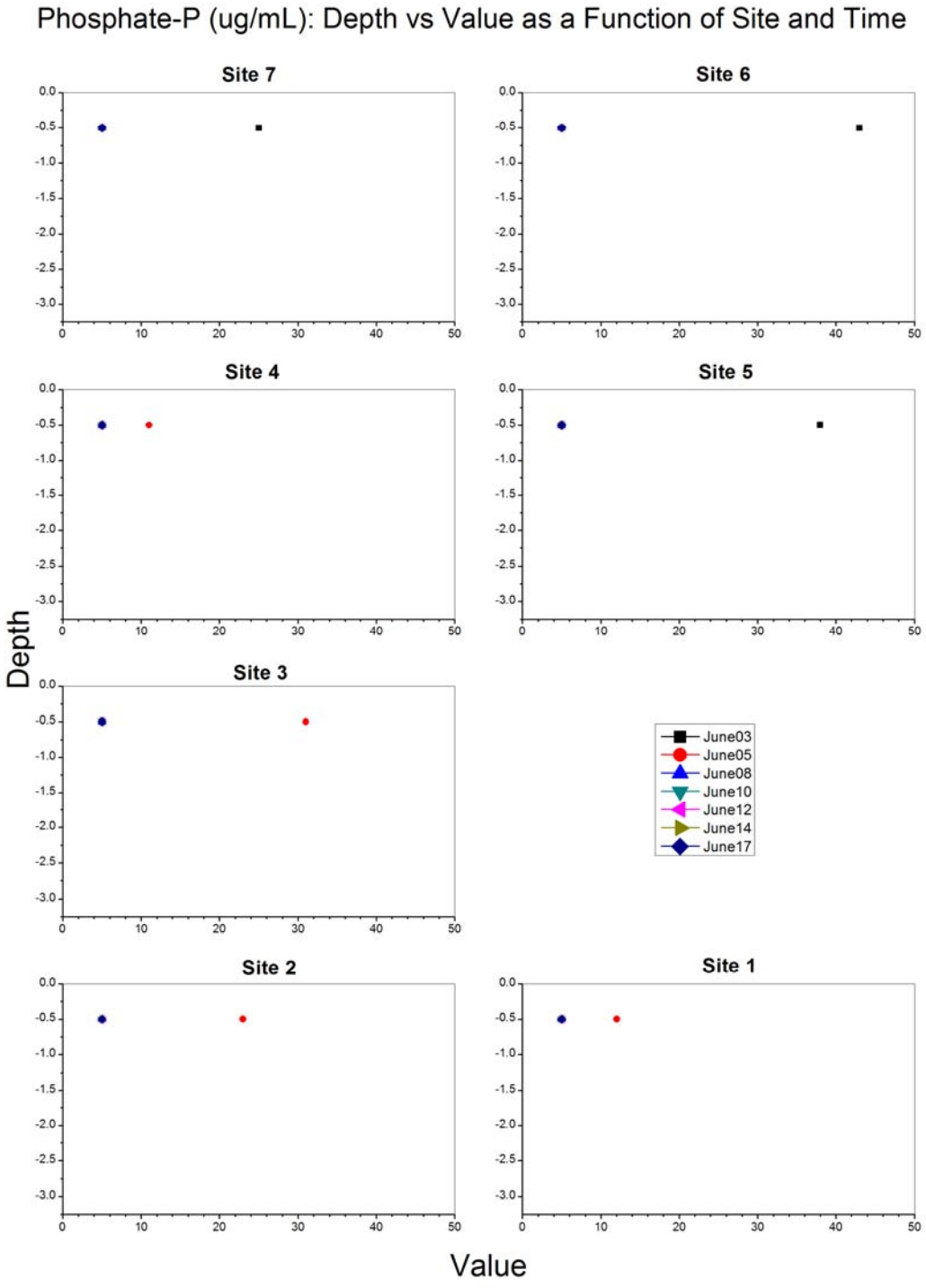

Dissolved Oxygen (%): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

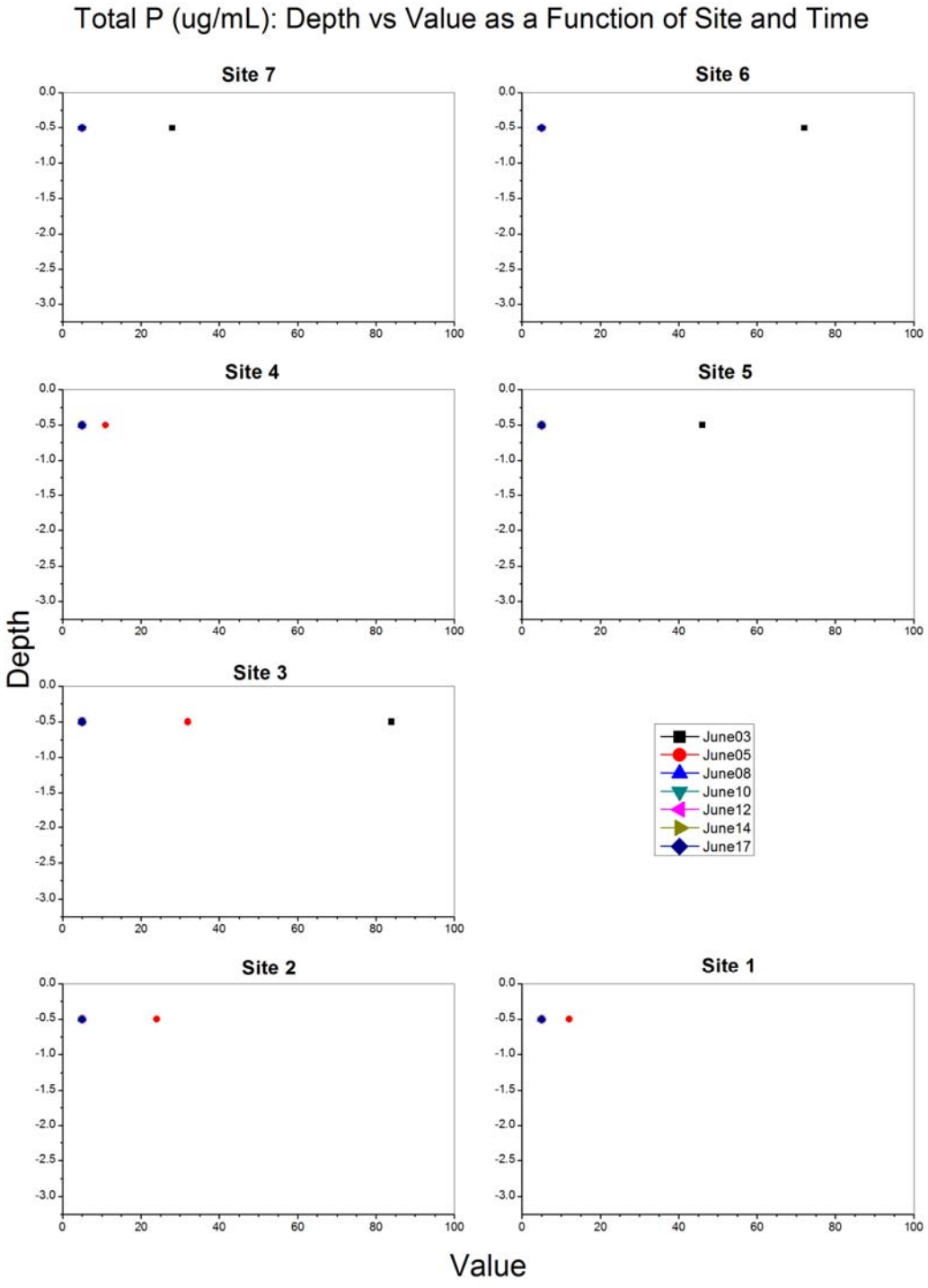

Nitrate-N (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17


Nitrite-N (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

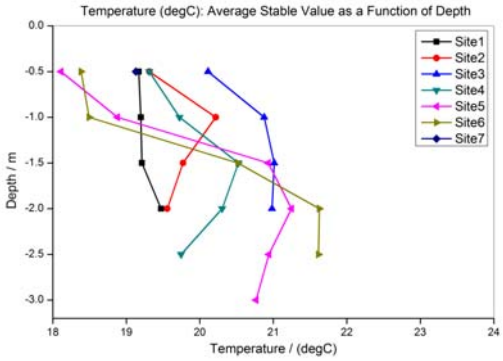

Ammonia-N (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

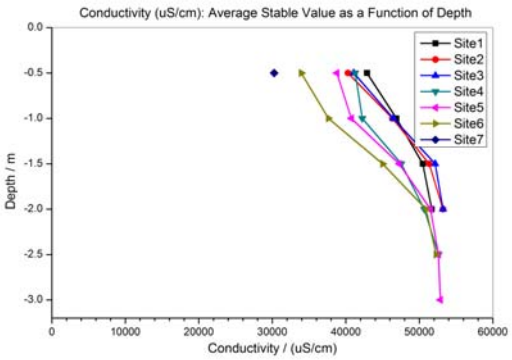

Total N (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

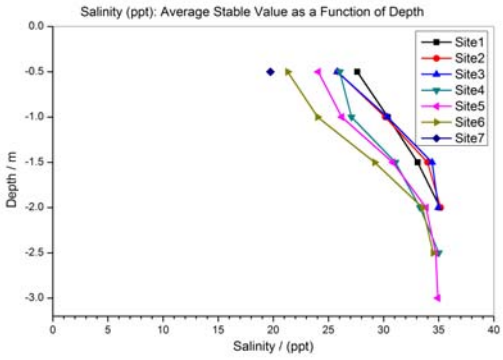

Phosphate-P (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

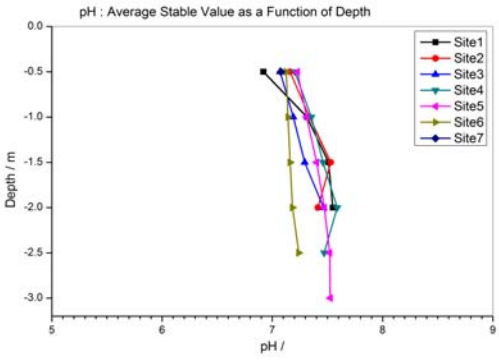

Total P (ug/mL): Depth vs Value as a Function of Site and Time
Site 7
Site 6
Site 4
Site 5
Site 3
Site 2
Site 1
Depth
Value
June03
June05
June08
June10
June12
June14
June17

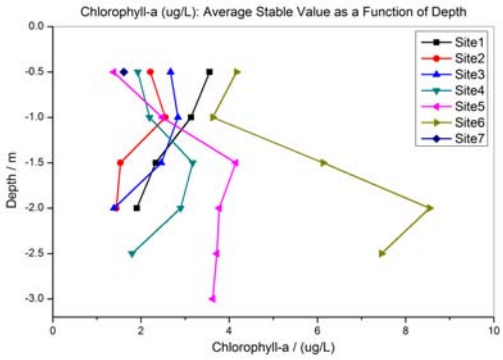
Appendix 7.10 Average depth profiles of water quality indicators.

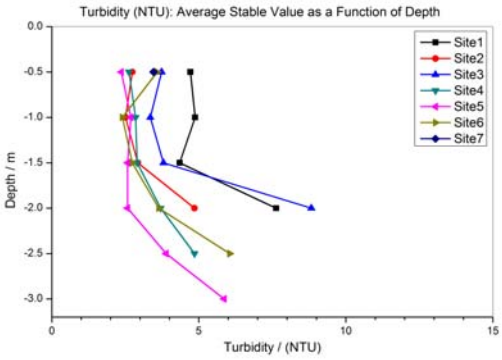


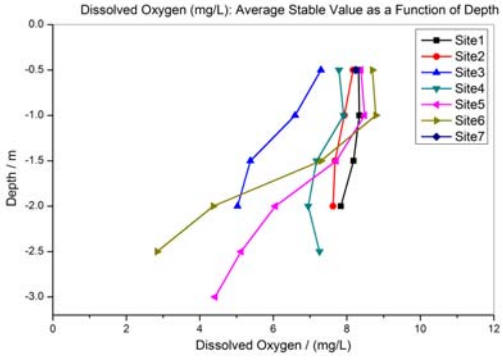


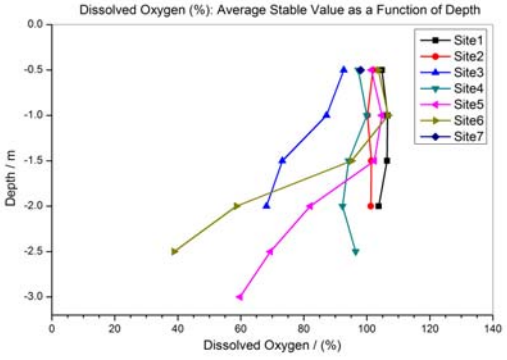


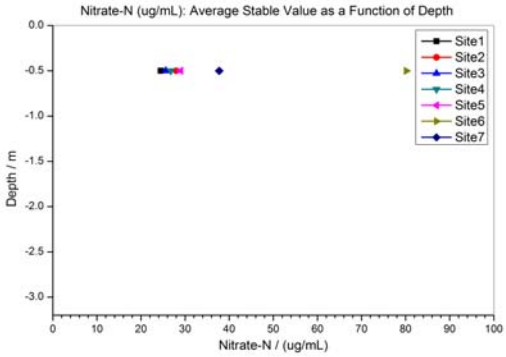


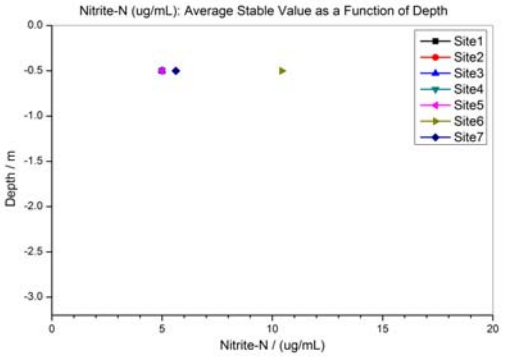


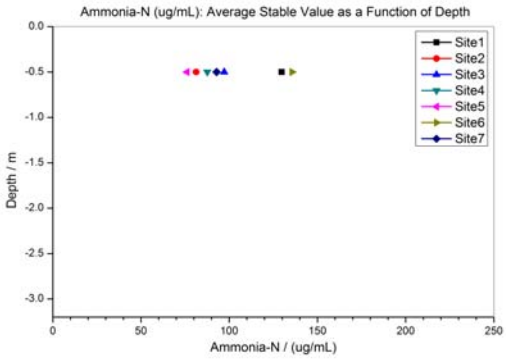


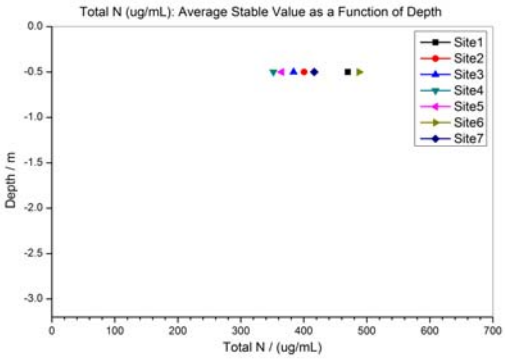


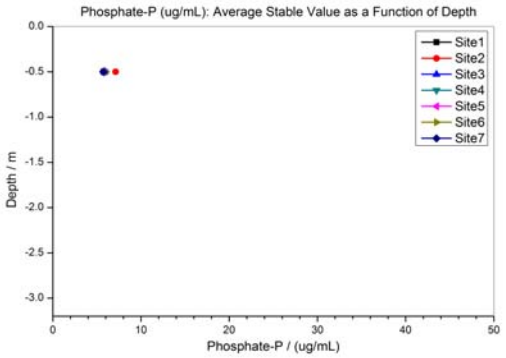


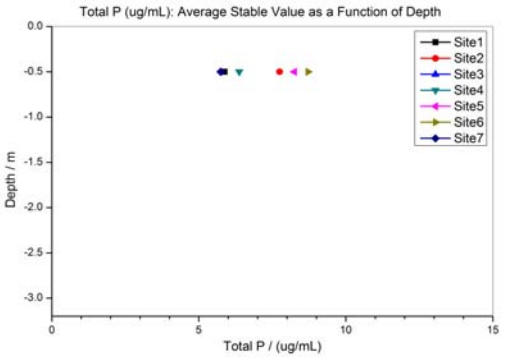

Nitrate-N (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Nitrate-N / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7


Nitrite-N (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Nitrite-N / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7


Ammonia-N (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Ammonia-N / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7

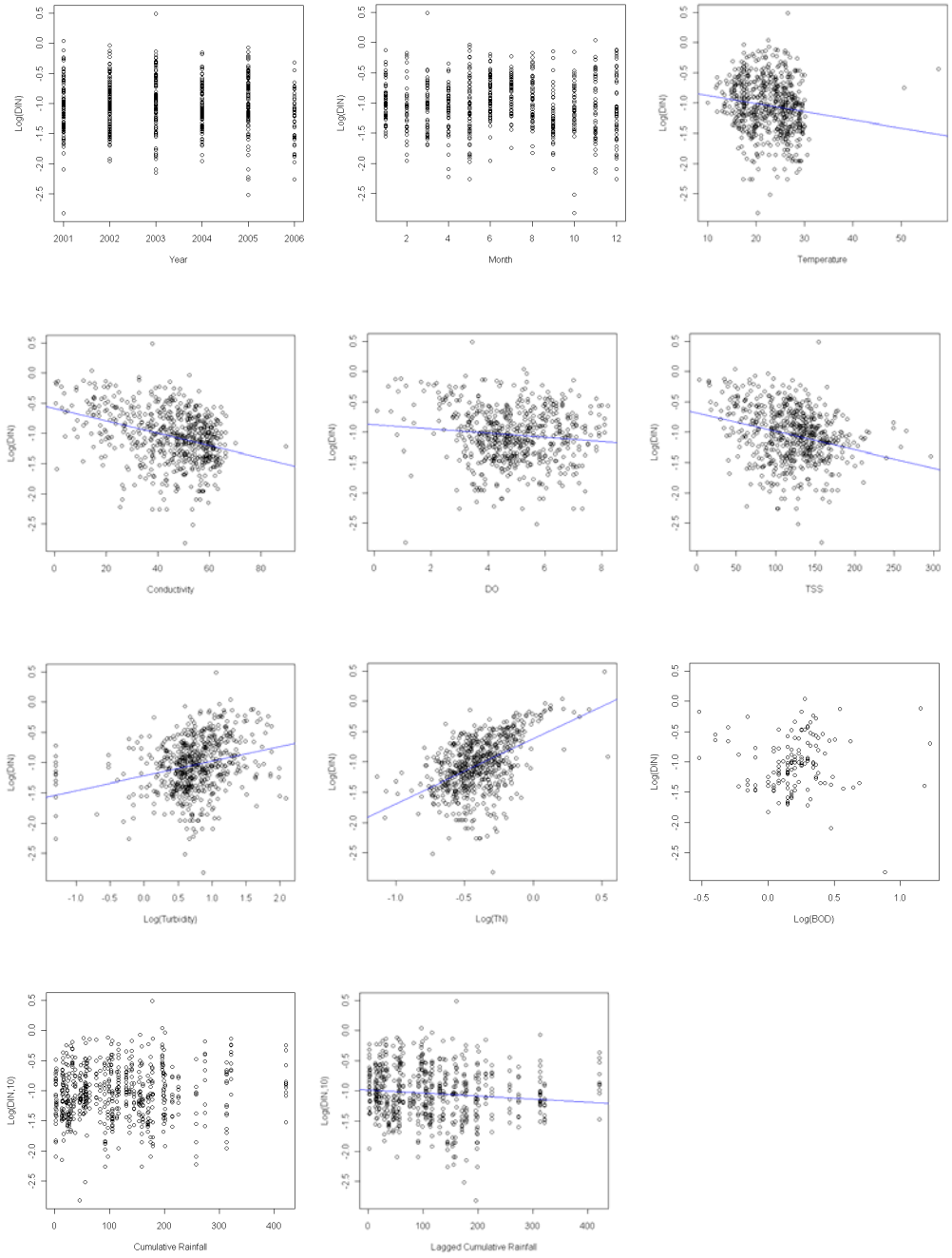

Total N (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Total N / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7


Phosphate-P (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Phosphate-P / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7

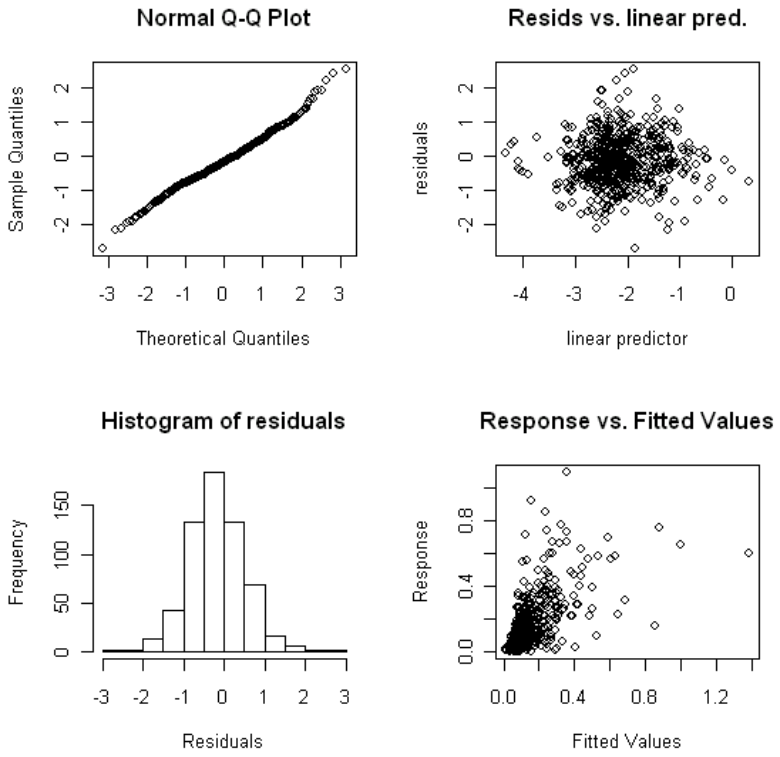

Total P (ug/mL): Average Stable Value as a Function of Depth
Depth / m
Total P / (ug/mL)
Site1
Site2
Site3
Site4
Site5
Site6
Site7

APPENDIX 8 - WATER QUALITY DYNAMICS

Appendix 8.1 Basic plots of DIN (NH_3 + NO_x) against various covariates. Where trendlines are shown, significant ($p<0.05$) fitting was achieved.

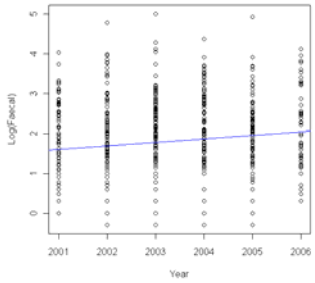


Appendix 8.2 Diagnostic check of selected model highlighting assumptions of independence (top right panel), normality (left-hand panels) and constant variance (right-hand panels) upheld.

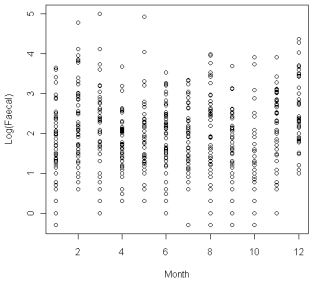


Appendix 8.3 Basic plots of log_{10} transformed faecal coliform count against (a) Year; (b) Month; (c) Water Temperature; (d) Conductivity; (e) DO; (f) log_{10} transformed TSS; (g) log_{10} transformed Turbidity; (h) DIN; (i) log_{10} transformed BOD; (j) Monthly cumulative rain; (k) Lagged (1 month) monthly cumulative rain. Where trendlines are shown, significant ($p<0.05$) fitting was achieved.

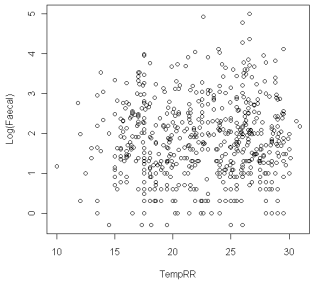
(a.)



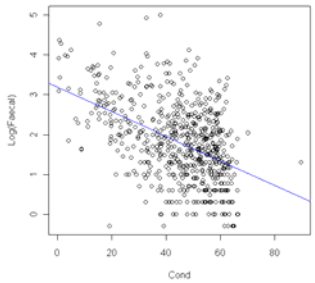
(b.)



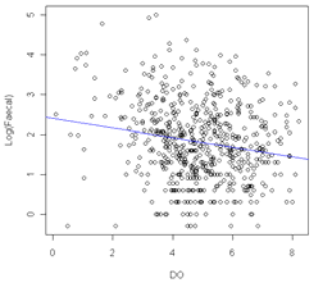
(c.)



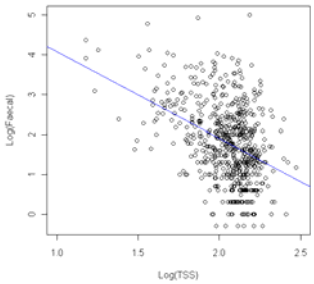
(d.)



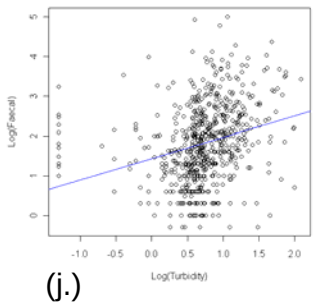
(e.)



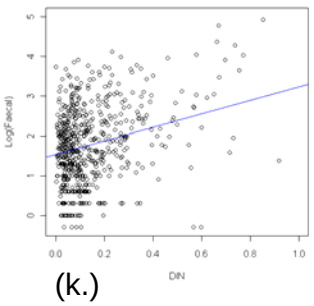
(f.)



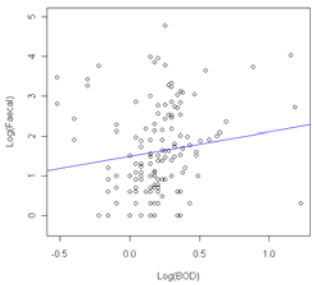
(g.)



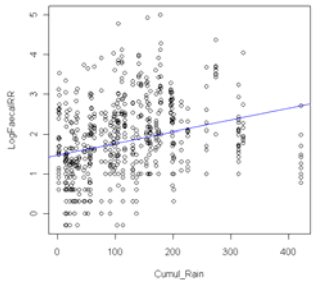
(h.)



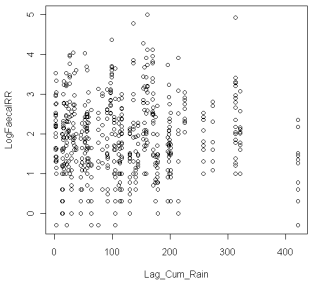
(i.)



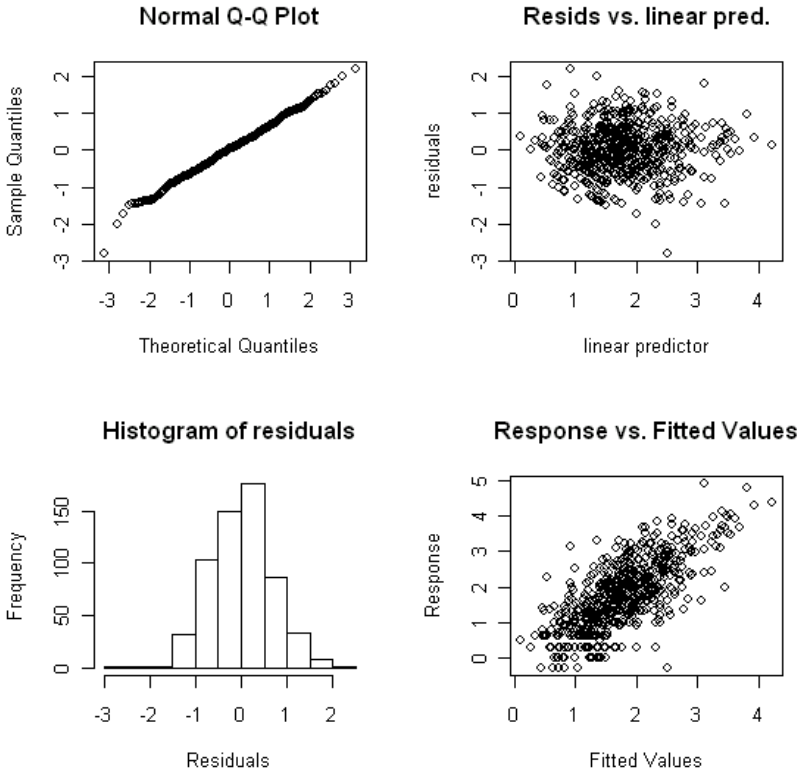
(j.)



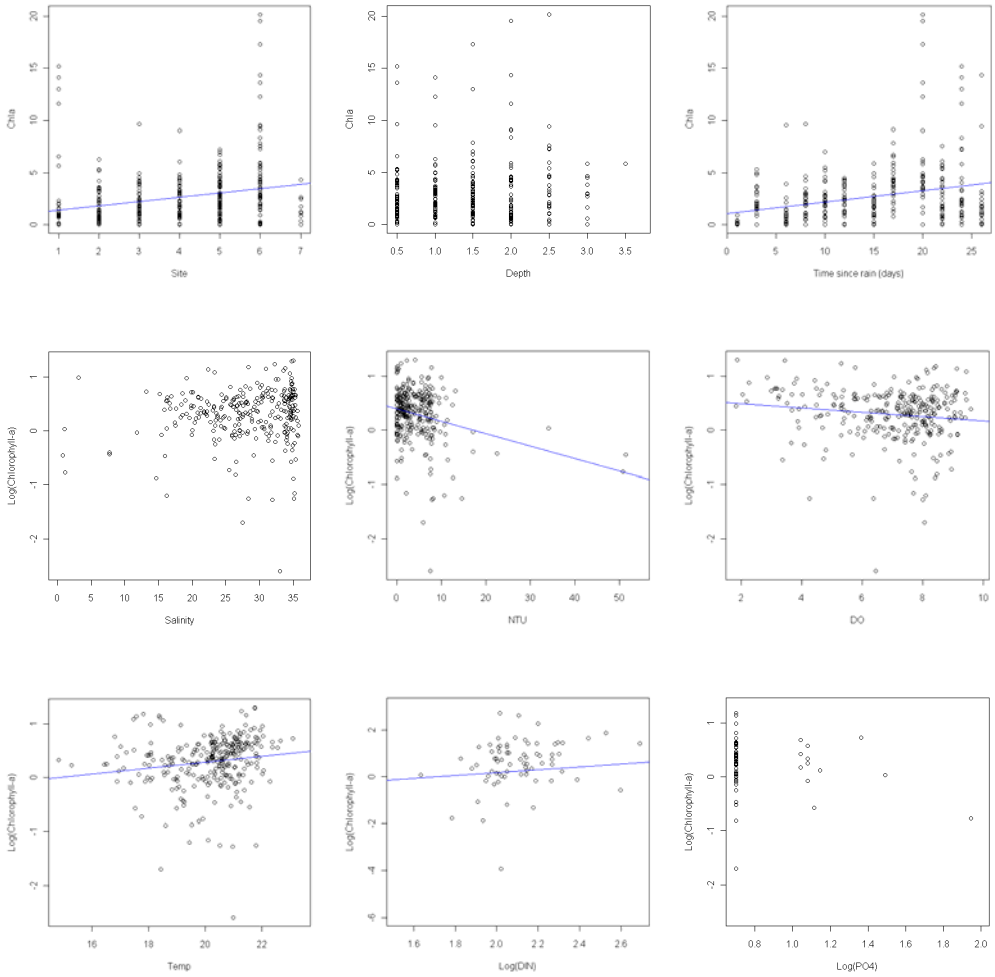
(k.)



Appendix 8.4 Diagnostic check of selected model (coliform GAM) highlighting assumptions of normality (left-hand panels), independence (top right panel) and constant variance (right-hand panels) upheld.



Appendix 6.5 Basic plots of chlorophyll-*a* concentration against (a) Site; (b) Depth; (c) Time since rain; (d) Salinity; (e) Turbidity; (f) DO; (g) Temperature; (h) log_{10} transformed DIN; (i) log_{10} transformed PO_4. Where trendlines are shown, significant ($p<0.05$) fitting was achieved.



Appendix 6.6 Model diagnostics for the chlorophyll (intensive monitoring data) GAM indicating normality (left-hand panels), constant variance (right-hand panels) and independence (top right panel) achieved.