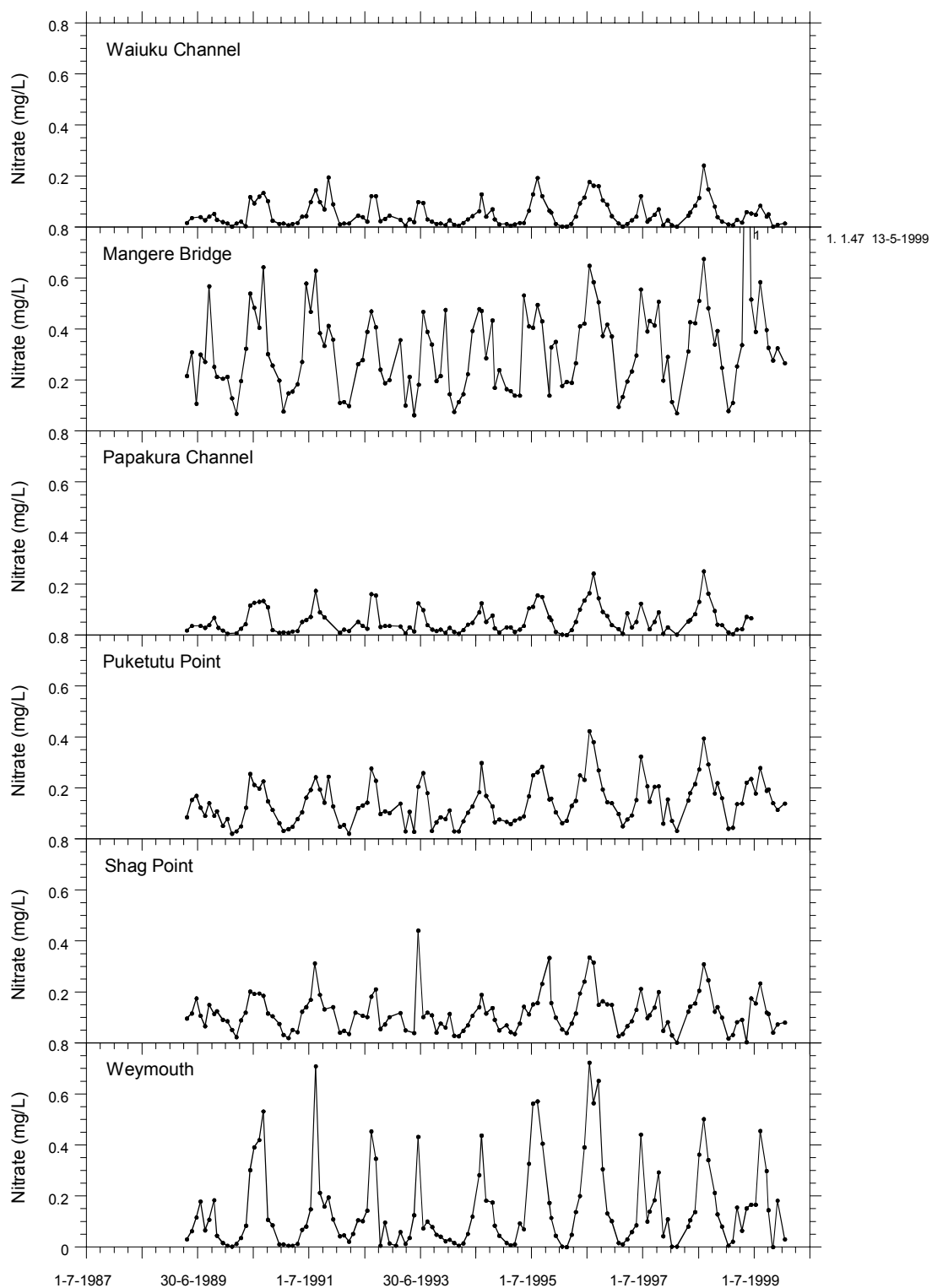




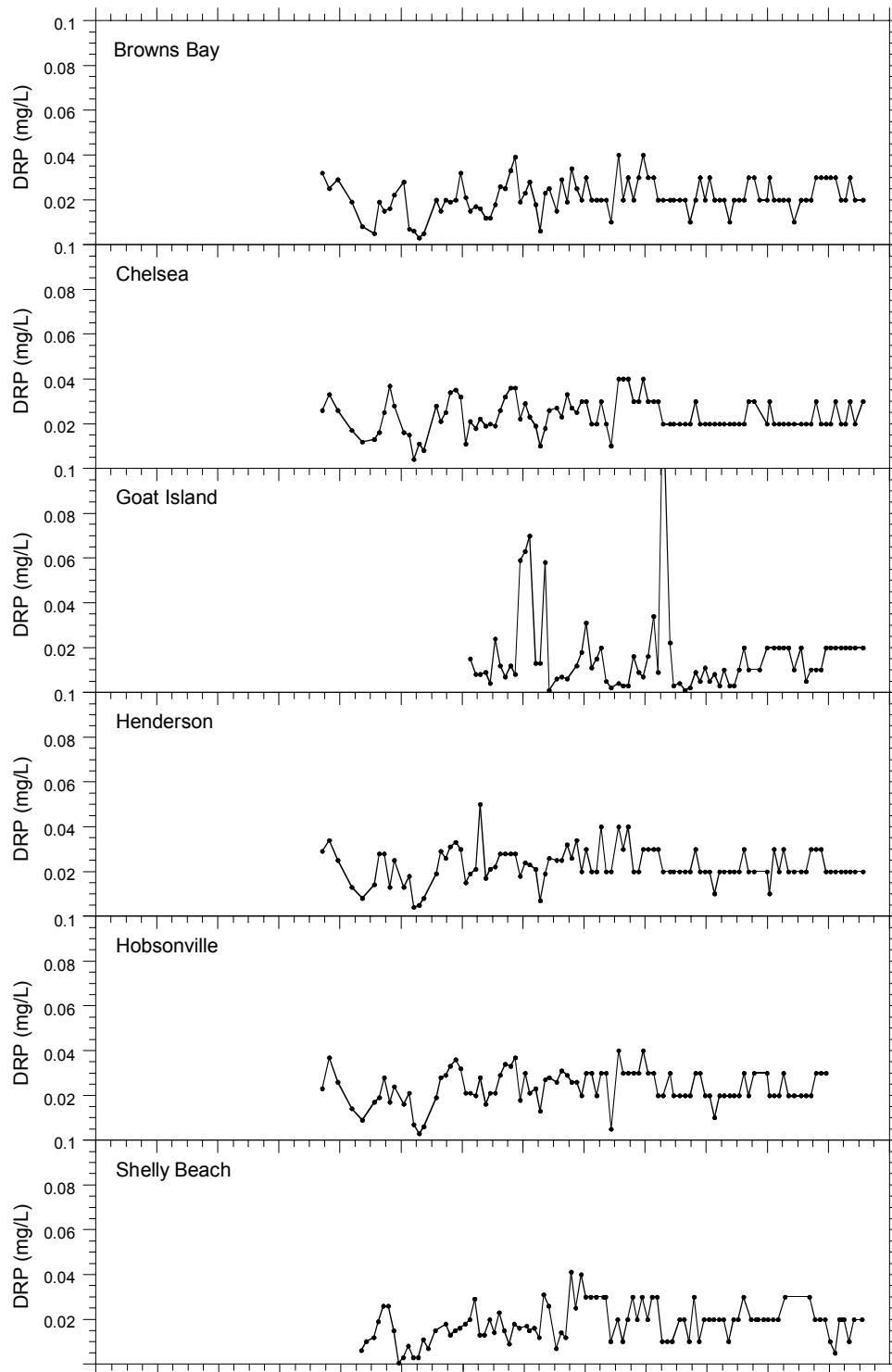
APPENDIX 33: DISSOLVED REACTIVE PHOSPHORUS – SALINE**a) Dissolved reactive phosphorus (mg/L) during January 1999 - December 1999**

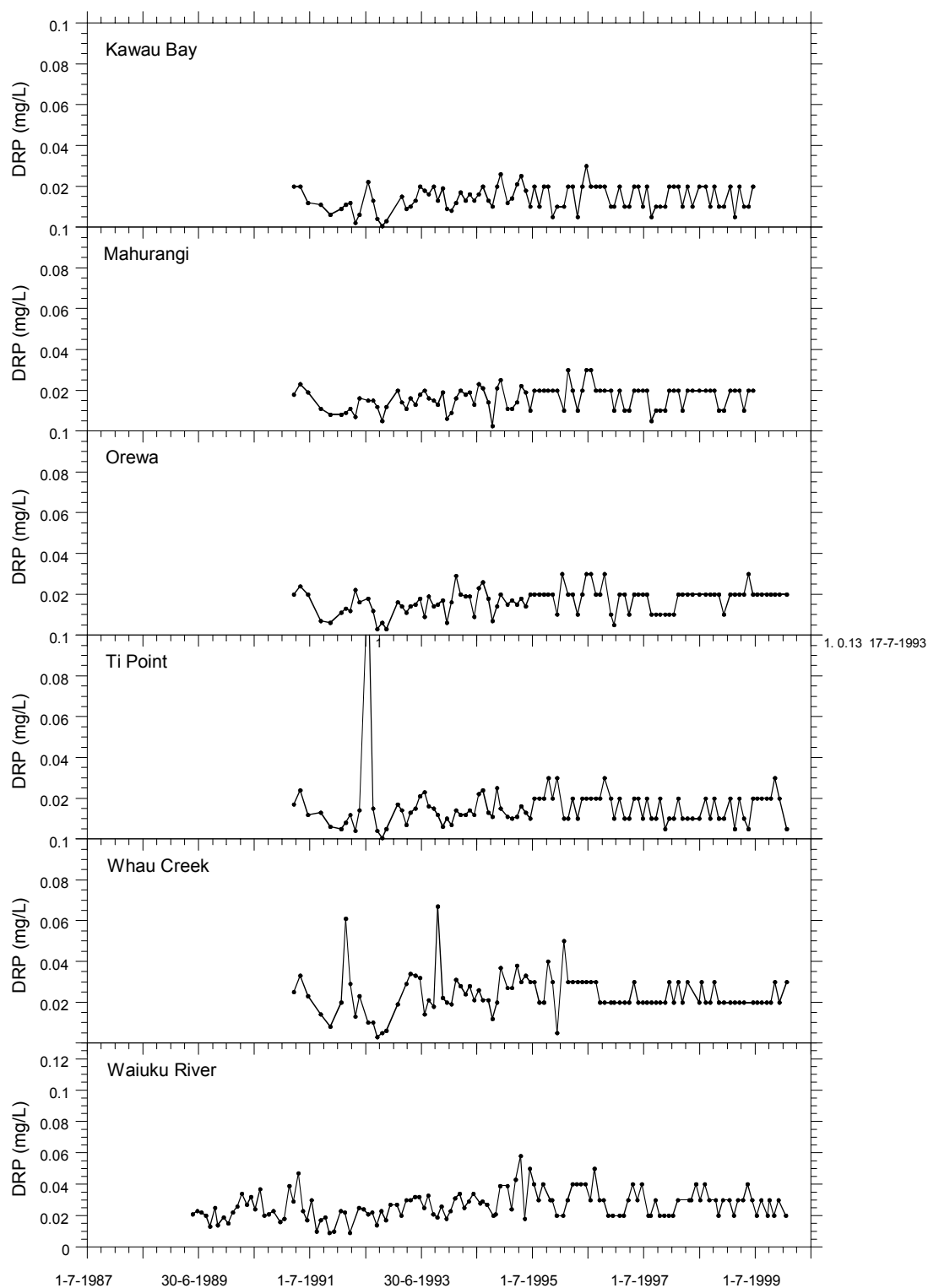
Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	0.02	0.02	0.02	0.02	0.02		0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.18	0.03	0.09	0.07	0.03
Feb-99	0.02	0.02	0.005	0.02	0.02		0.005	0.02	0.02	0.005	0.02	0.02	0.02	0.19	0.03	0.1	0.1	0.03
Mar-99	0.02	0.02	0.01	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.24	0.03	0.23	0.09	0.04
Apr-99	0.03	0.03	0.01	0.03	0.03	0.02	0.01	0.01	0.02	0.01	0.02	0.03	0.02	0.3	0.04	0.23	0.15	0.02
May-99	0.03	0.02	0.01	0.03	0.03	0.02	0.01	0.02	0.03	0.005		0.04	0.03	0.27	0.04	0.21	0.14	0.04
Jun-99	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.28	0.04	0.23	0.04	0.04
Jul-99	0.03	0.02	0.02	0.02		0.01			0.02	0.02	0.02	0.02	0.03	0.3		0.22	0.13	0.03
Aug-99	0.03	0.03	0.02	0.02		0.005			0.02	0.02	0.02	0.03	0.03	0.26		0.21	0.15	0.03
Sep-99	0.02	0.02	0.02	0.02		0.02			0.02	0.02	0.02	0.02	0.03	0.24		0.19	0.1	0.03
Oct-99	0.02	0.02	0.02	0.02		0.02			0.02	0.02	0.02	0.03	0.03	0.2		0.15	0.09	0.03
Nov-99	0.03	0.03	0.02	0.02		0.01			0.02	0.03	0.03	0.02	0.02	0.22		0.12	0.04	0.02
Dec-99	0.02	0.02	0.02	0.02		0.02			0.02	0.02	0.02	0.03	0.02	0.19		0.2	0.09	0.02
median	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.24	0.04	0.21	0.10	0.03
IQR/median (%)	33	13	50	13	40	25	67	0	0	13	0	33	33	31	25	39	50	17

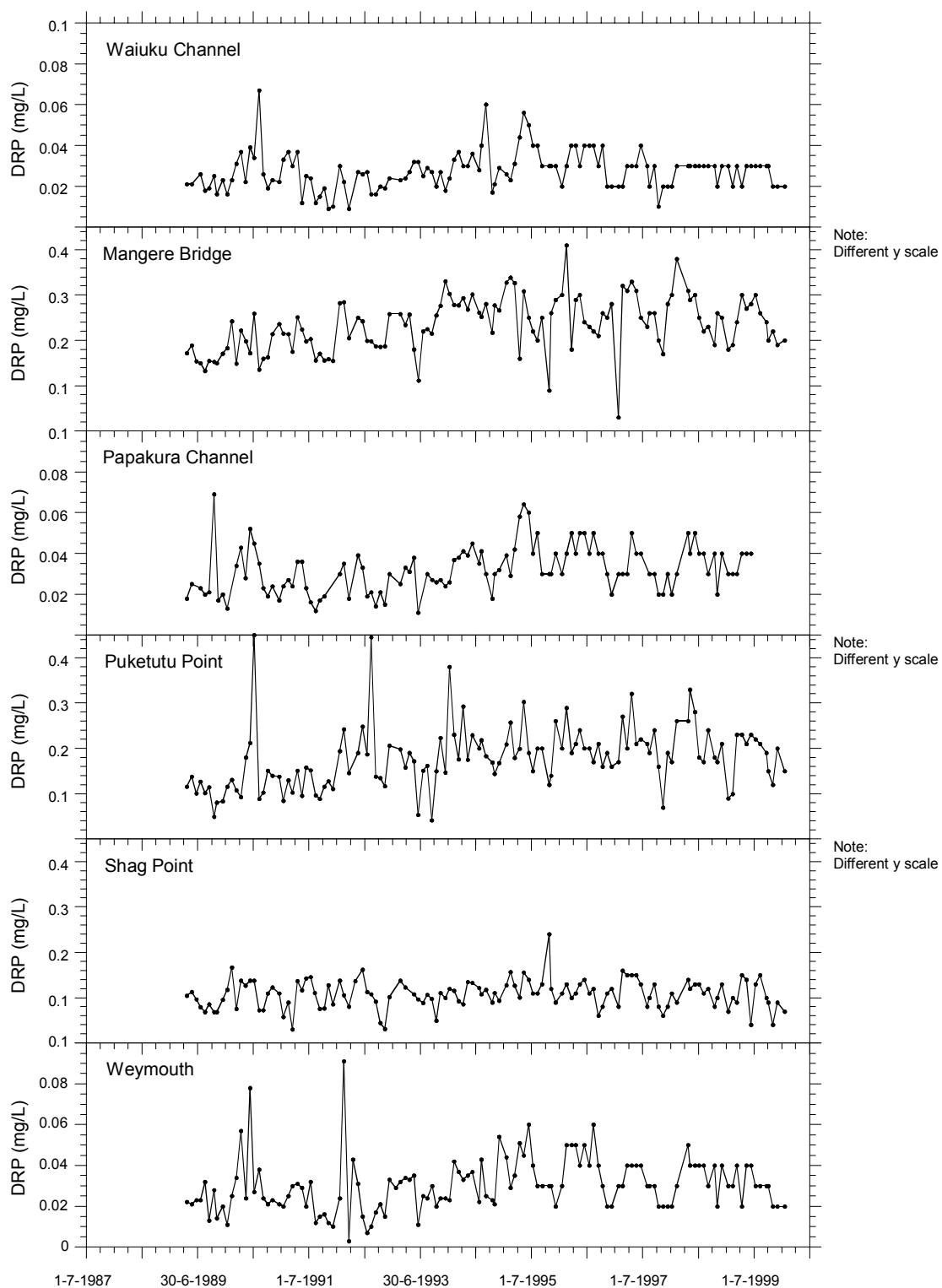
b) Statistical summary for all data to January 2000: Dissolved reactive phosphorus (mg/L)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	100	99	75	99	92	95	91	92	99	99	97	127	126	127	114	127	126	129
Median	0.020	0.020	0.010	0.020	0.020	0.020	0.013	0.019	0.020	0.014	0.020	0.026	0.028	0.236	0.030	0.176	0.110	0.030
Normality	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N
Seasonality	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Trend	95%	NS	80%	NS	NS	99%	80%	95%	99%	NS	NS	95%	95%	95%	95%	95%	80%	95%
Slope	0	–	0.001	–	–	0.001	0	0	0	–	–	0.001	0	0.010	0.001	0.010	0.001	0.001

c) The graphs on the following page show all dissolved reactive phosphorus measurements up to January 2000 (where data are available)







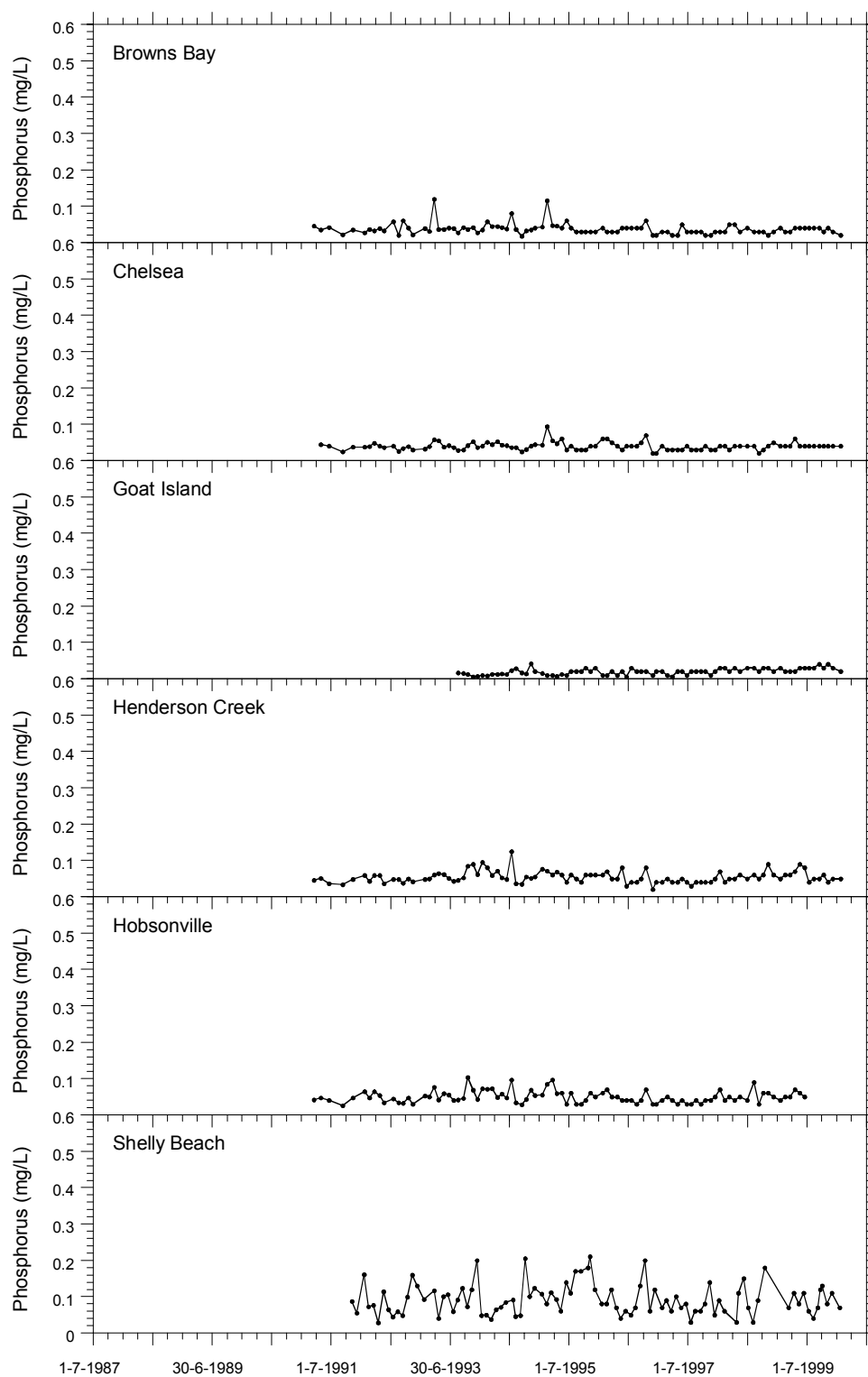
APPENDIX 34: TOTAL PHOSPHORUS – SALINE**a) Total phosphorus (mg/L) during January 1999 - December 1999**

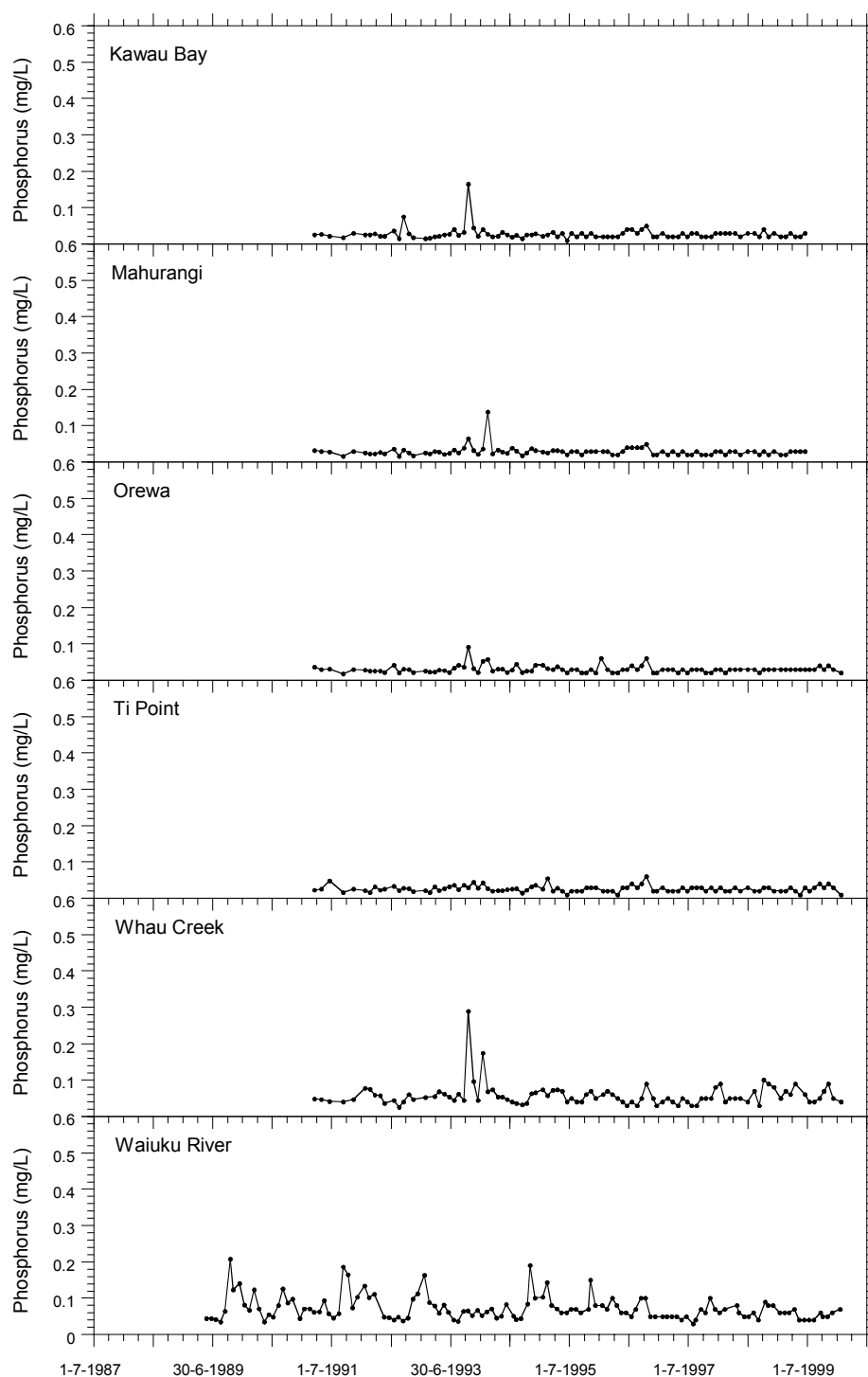
Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	0.04	0.04	0.03	0.05	0.04		0.02	0.02	0.03	0.02	0.05	0.06	0.05	0.3	0.05	0.15	0.1	0.06
Feb-99	0.03	0.04	0.02	0.06	0.05		0.02	0.02	0.03	0.02	0.07	0.06	0.05	0.31	0.05	0.21	0.17	0.07
Mar-99	0.03	0.04	0.02	0.06	0.05	0.07	0.03	0.03	0.03	0.03	0.06	0.06	0.04	0.32	0.05	0.3	0.14	0.07
Apr-99	0.04	0.06	0.02	0.07	0.07	0.11	0.02	0.03	0.03	0.02	0.09	0.07	0.07	0.44	0.08	0.33	0.2	0.09
May-99	0.04	0.04	0.03	0.09	0.06	0.08	0.02	0.03	0.03	0.01		0.04	0.04	0.33	0.07	0.24	0.16	0.06
Jun-99	0.04	0.04	0.03	0.08	0.05	0.11	0.03	0.03	0.03	0.03	0.06	0.04	0.04	0.33	0.05	0.24	0.13	0.05
Jul-99	0.04	0.04	0.03	0.04		0.06			0.03	0.02	0.04	0.04	0.04	0.35		0.23	0.14	0.05
Aug-99	0.04	0.04	0.03	0.05		0.04			0.03	0.03	0.04	0.04	0.04	0.31		0.26	0.19	0.06
Sep-99	0.04	0.04	0.04	0.05		0.07			0.04	0.04	0.05	0.06	0.04	0.38		0.34	0.16	0.08
Oct-99	0.03	0.04	0.03	0.06		0.13			0.03	0.03	0.07	0.05	0.03	0.3		0.22	0.12	0.07
Nov-99	0.04	0.04	0.04	0.04		0.08			0.04	0.04	0.09	0.05	0.05	0.23		0.16	0.07	0.05
Dec-99	0.03	0.04	0.03	0.05		0.11			0.03	0.03	0.05	0.06	0.04	0.42		0.32	0.2	0.09
median	0.04	0.04	0.03	0.06	0.05	0.08	0.02	0.03	0.03	0.03	0.06	0.06	0.04	0.33	0.05	0.24	0.15	0.07
IQR/median (%)	25	0	8	23	15	50	38	25	0	33	33	36	25	31	40	36	32	23

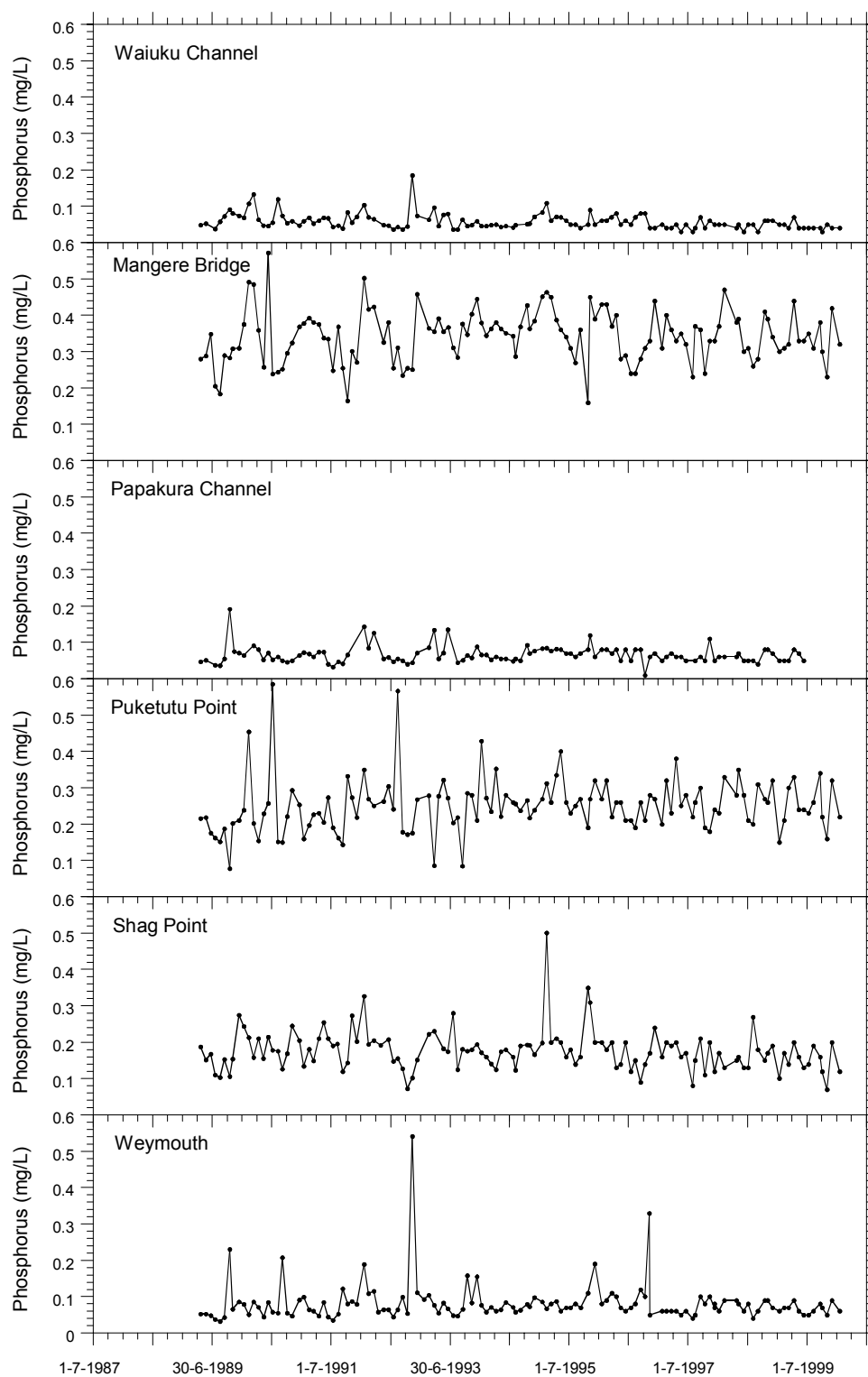
b) Statistical summary for all data to January 2000: Total phosphorus (mg/L)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	99	98	77	99	92	94	92	92	99	99	97	127	125	127	114	127	126	129
Median	0.036	0.040	0.020	0.050	0.047	0.080	0.025	0.030	0.030	0.026	0.050	0.063	0.050	0.344	0.060	0.250	0.171	0.070
Normality	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
Seasonality	Y	Y	N	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y
Trend	80%	NS	99%	NS	NS	NS	NS	NS	NS	NS	NS	95%	95%	NS	NS	99%	95%	NS
Slope	0	–	0.003	–	–	–	–	–	–	–	–	-0.001	-0.002	–	–	0.005	-0.003	–

c) The graphs on the following page show all total phosphorus measurements up to January 2000 (where data are available)







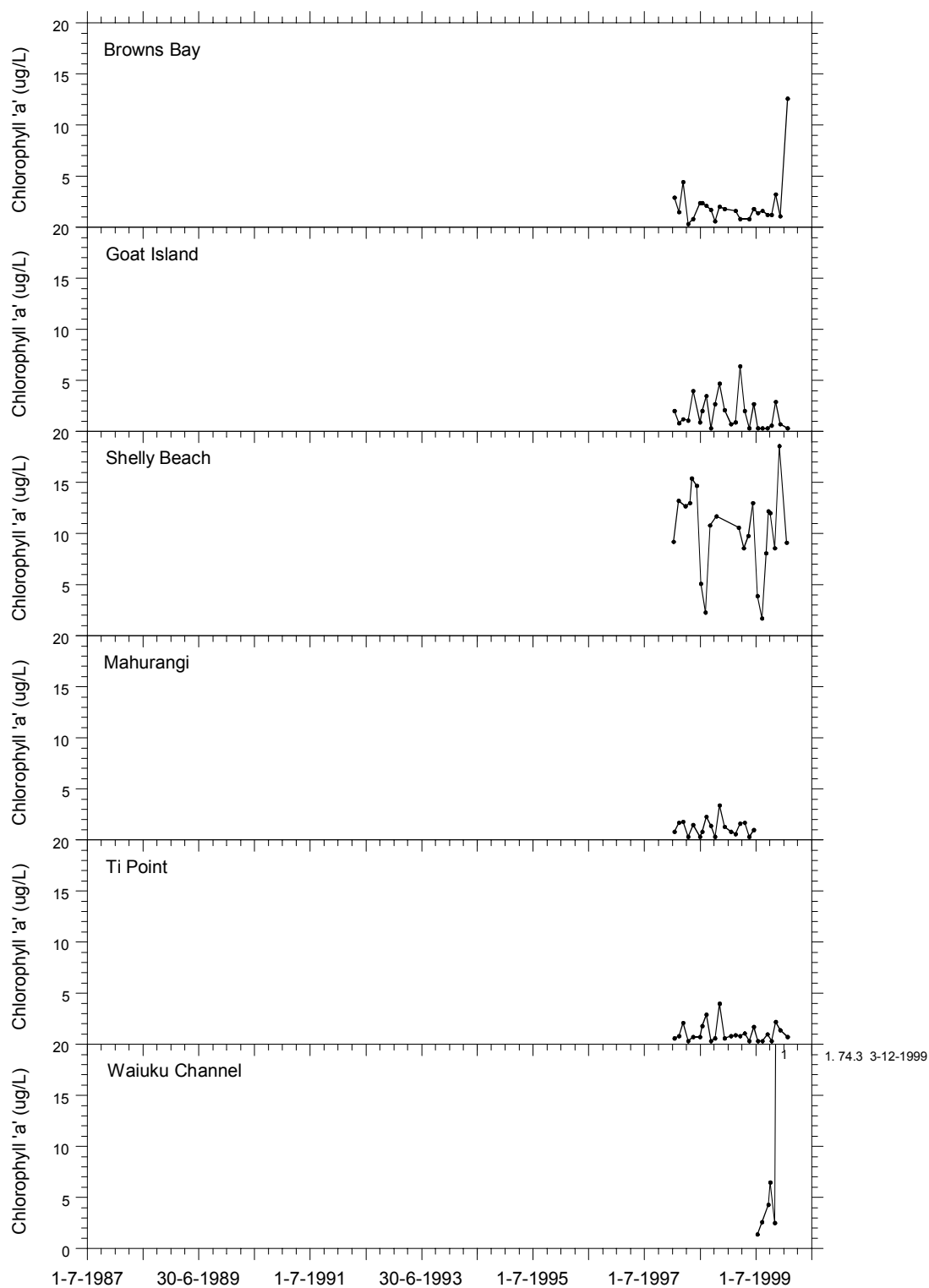
APPENDIX 35: CHLOROPHYLL *A* – SALINE**a) Chlorophyll *a* (µg/L) during January 1999 - December 1999**

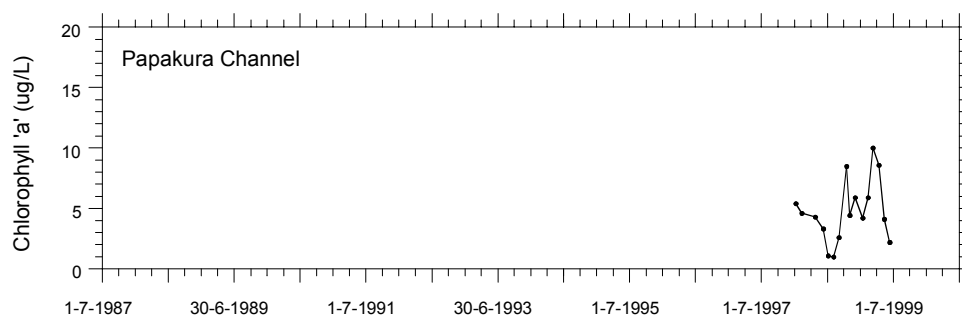
Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99			0.7					0.8		0.8					4.2			
Feb-99	1.6		0.9					0.6		0.9					5.9			
Mar-99	0.8		6.4			10.6		1.6		0.8					10			
Apr-99			2			8.6		1.7		1.1					8.6			
May-99	0.8		0.3			9.8		0.3		0.3					4.1			
Jun-99	1.8		2.7			13		1		1.7					2.2			
Jul-99	1.4		0.3			3.9				0.3			1.4					
Aug-99	1.6		0.3			1.7				0.3			2.6					
Sep-99	1.2		0.3			8.1				1			4.3					
Oct-99	1.2		0.6			12				0.3			6.5					
Nov-99	3.2		2.9			8.6				2.2			2.5					
Dec-99	1.1		0.7			18.6				1.4			74.3					
median	1.3	–	0.7	–	–	9.8	–	0.9	–	0.85	–	–	3.5	–	5.1	–	–	–
IQR/median (%)	37	–	268	–	–	38	–	89	–	103	–	–	99	–	75	–	–	–

b) Statistical summary for all data to January 2000: Chlorophyll *a* (µg/L)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	23	0	25	0	0	22	0	18	0	25	0	0	6	0	16	1	0	0
Median	1.6	–	1.1	–	–	10.7	–	1.2	–	0.8	–	–	3.5	–	4.4	9.5	–	–
Normality	N	–	N	–	–	Y	–	Y	–	N	–	–	–	–	Y	–	–	–
Seasonality	N	–	N	–	–	N	–	N	–	N	–	–	–	–	Y	–	–	–
Trend	NS	–	80%	–	–	80%	–	NS	–	NS	–	–	–	–	NS	–	–	–
Slope	-0.35	–	-0.42	–	–	-2.18	–	–	–	–	–	–	–	–	1.03	–	–	–

c) The graphs on the following page show all chlorophyll *a* measurements up to January 2000 (where data are available)





APPENDIX 36: PRESUMPTIVE COLIFORM – SALINE**a) Presumptive coliform (MPN/100 mL) during January 1999 - December 1999**

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	1	30	1	7	22		1	1	1	2	8	1	1	4	1	7	1	1
Feb-99	1	17	1	1	1		1	1	1	1	17	0.5	0.5	4	0.5	130	0.5	0.5
Mar-99	1	13	1	8	17	4	1	1	1	2	11	1	2	50	1	1300	4	11
Apr-99	2	4	1	50	50	1	1	1	14	1	110	1	1	700	1	700	2	8
May-99	13	500	1	1100	2	2	11	2	8	4		2	2	230	1	12	4	80
Jun-99	17	300	2	3000	300	2	4	26	11	2	1	2	8	130	1	130	130	50
Jul-99	1	17	1	8		1			50	2	4	1	1	1300		1300	80	1
Aug-99	4	80	1	1300		50			33	2	300	50	8	300		1300	130	130
Sep-99	80	300	4	800		4			30	30	23	7	2	800		3000	17	80
Oct-99	17	80	1300	800		2			4	11	80	1	2	13		50	2	1
Nov-99	7	50	13	300		1			17	4	80	1	1	2		30	2	6
Dec-99	1	30	1	21		4			1	4	1	2	4	230		16000	500	140
median	3	40	1	175	19.5	2	1	1	10	2	17	1	2	180	1	415	4	10
IQR/median (%)	430	295	150	495	190	250	225	75	200	100	435	100	75	220	0	300	230	830

b) Statistical summary for all data to January 2000: Presumptive coliform (MPN/100 mL)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	99	99	77	99	92	93	92	93	100	99	98	115	111	117	93	118	116	115
Median	4	33	1	79	20	5	1	1	1	2	19	115	1	117	93	490	116	9
Normality	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Seasonality	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Trend	NS	95%	80%	95%	NS	95%	NS	NS	90%	NS	NS	95%	90%	95%	95%	NS	95%	NS
Slope	–	5.1	0	4.0	–	-0.2	–	–	0	–	–	0	0	-17.5	0	0	-2.8	–

c) The graphs on the following page show all presumptive coliform measurements up to January 2000 (where data are available)

