

# Regional rivers water quality monitoring programme: Data report 2013

Prepared by:  
Asaeli Tulagi

For:  
Waikato Regional Council  
Private Bag 3038  
Waikato Mail Centre  
HAMILTON 3240

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Peer reviewed by:  
Bill Vant

Date June 2014

Approved for release by:  
Chris McKinnon

Date June 2014

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# 1 Introduction

## 1.1 Background

To effectively manage water quality, the regional rivers monitoring programme addresses the following questions:

1. What is the quality of the water now?
2. Why is the water of the observed level of quality?
3. Is water quality getting better or worse? If so - what makes it change?
4. How can we improve the quality, ecological health and integrity of the region's rivers and streams?

The monitoring information allows Waikato Regional Council to:

- determine compliance with classification standards
- assess the suitability of the resource for various beneficial uses and values of the water
- monitor the impact of major discrete point source discharges on water quality
- monitor the impacts of diffuse discharges on water quality
- provide a basis for evaluating the effectiveness of resource management measures.

This dataset is invaluable for the evaluation of the region's rivers: their state, the pressures on them and our response to these pressures. We need to continue to gather comprehensive, reliable and good quality data on the region's rivers to protect and enhance their values into the future.

This report is the 18<sup>th</sup> since the implementation of the regional rivers monitoring programme (RERIMP) in 1993<sup>1</sup> and follows the format of the previous data report (Tulagi, 2013). Copies of reports as described in the list of references (page 30) can be obtained by contacting Waikato Regional Council (the Library) on 0800 800 401, or in electronic format from the publications page of the Waikato Regional Council website: [www.waikatoregion.govt.nz/publications](http://www.waikatoregion.govt.nz/publications) or email: [inforeq@waikatoregion.govt.nz](mailto:inforeq@waikatoregion.govt.nz)

## 1.2 Report content

The report provides information on the routine monthly monitoring of water quality at 100 locations across the Waikato region, and includes:

- year 2013 summary statistics tabulated by parameter and reported together
- spatial contour plots for four water quality parameters using spatial interpolation of the median of the previous 5 years
- summary tables identifying the number of samples meeting 'satisfactory' and 'excellent' water quality guidelines and standards.

## 1.3 Water quality guidelines and standards

Table 1 lists the physical, chemical (physico-chemical) and microbiological water quality guidelines and standards used to assess the condition of the region's rivers in 2013. The standards relate to either the protection of the ecological health of rivers and streams or to the suitability for direct-contact water-based recreation (for example swimming).

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<sup>1</sup> Waikato River reported separately — see Tulagi, 2014.

**Table 1: Guidelines and standards for physico-chemical water quality for ecological health and for human uses of water. See Appendix I for a description of the guidelines and standards used.**

Water quality measure	Relevance <sup>1</sup>	Satisfactory	Excellent
<b>Ecological health</b>			
Dissolved oxygen (% of saturation)	aquatic life (breathing)	>80	>90
pH	aquatic life (acidity)	6.5–9	7–8
Turbidity (NTU)	plant growth (clarity)	<5	<2
Ammoniacal-N (g N/m <sup>3</sup> )	aquatic life (toxicity)	<0.88	<0.1
Temperature (°C)	fish (spawning)	<12	<10
	(May-Sep)	<20	<16
	(Oct-Apr)	<20	<16
Total phosphorus (g/m <sup>3</sup> )	nuisance plant growth	<0.04	<0.01
Total nitrogen (g/m <sup>3</sup> )	nuisance plant growth	<0.5	<0.1
<b>Human uses—recreation</b>			
Baseflow water clarity (m)	visibility	>1.6	>4
<i>Escherichia coli</i> (no./100 mL)	human health	<550	<55
Median <i>E. coli</i> (no./100 mL)	human health	<126	<23

<sup>1</sup> Refer to Appendix II for further information. These guidelines and standards are also described on the Waikato Regional Council Internet site [www.waikatoregion.govt.nz](http://www.waikatoregion.govt.nz)

In each case two values are shown. The less stringent values define water that is “satisfactory” for the desired use; these are mostly based on existing national and other guidelines and standards (Appendix I). The more stringent values identify “excellent” water, and reflect expert opinion.

## 2 Regional rivers monitoring design

### 2.1 Sampling locations

Routine water quality monitoring locations of the regional rivers monitoring programme are summarised in *Table 2* and illustrated in *Figure 1*. One hundred sites were sampled monthly by Waikato Regional Council. A further five locations form part of NIWA’s National Rivers Water Quality Network, whose data can be found on the NIWA website ([www.niwa.co.nz](http://www.niwa.co.nz)).

The sampling locations are reasonably evenly distributed across the Waikato region (*Figure 1*). To assist assessment of water quality, sites in the region were divided into 7 water quality zones. This division is based on expert opinion, and reflects river catchments and some broad ecological features, including geology, altitude, winter temperatures, vegetation cover and land use. The boundaries of these water quality zones are shown on *Figure 1*.

**Table 2: Waikato Regional Council's sampling locations**

Map No.	Location	Location Id	Map Ref.
<b>Coromandel</b>			
1	Hikutaia River at Old Maratoto Rd	169.2	T12:471-312
2	Kauaeranga River at Smiths Cableway/Recorder	234.11	T12:404-461
9	Ohinemuri River at Queens Head	619.19	T13:576-170
8	Ohinemuri River at SH25 Bridge	619.20	T13:641-213
6	Tairua River at Morrisons Bridge Hikuia	940.10	T12:567-548
3	Tapu River at Tapu-Coroglen Rd	954.5	T11:332-658
4	Waiau River at E309 Rd Ford	1105.3	T11:357-866
10	Waitekauri River at U/S Ohinemuri Confluence	1239.32	T13:566-168
5	Waiwawa River at SH25 Coroglen	1257.3	T11:503-717
7	Wharekawa River at SH25	1312.3	T12:628-478
<b>Hauraki</b>			
12	Mangawhero Stm (Kaihere) at Mangawara Rd	489.2	S13:249-195
20	Oraka Stm at Lake Rd	669.6	T15:536-607
15	Piako River at Kiwitahi	749.10	T14:398-856
13	Piako River at Paeroa-Tahuna Rd Bridge	749.15	T13:318-068
17	Piakonui Stm at Piakonui Rd	753.4	T14:417-719
18	Waihou River at Okauia	1122.18	T14:602-756
21	Waihou River at Whites Rd	1122.41	T15:572-500
22	Waiohotu Stm at Waiohotu Rd (Off SH5)	1173.2	T15:665-513
19	Waiomou Stm at Matamata-Tauranga Rd	1174.4	T15:623-683
11	Waitakaruru River (Hauraki Plains) at Coxhead Rd Bridge	1230.1	S12:194-339
16	Waitoa River at Landsdowne Rd Bridge	1249.15	T14:517-783
14	Waitoa River at Mellon Rd Recorder	1249.18	T13:426-047
<b>Tributaries to the lower Waikato River</b>			
23	Awaroa River (Waiuku) at Otaua Rd Bridge opp Moseley Rd	41.9	R12:662-319
34	Awaroa Stm (Rotowaro) at Sansons Bridge–Rotowaro-Huntly	39.11	S14:948-997
44	Karapiro Stm at Hickey Rd Bridge	230.5	T15:331-639
37	Kirikiroa Stm at Tauhara Drive	253.4	S14:095-817
36	Komakorau Stm at Henry Rd	258.4	S14:091-949
45	Little Waipa Stm at Arapuni – Putaruru Rd	335.1	T15:489-462
39	Mangakotukutuku Stm (Rukuhia) at Peacock Rd	398.1	S14:127-743
47	Mangamingi Stm (Tokoroa) at Paraonui Rd Bridge	407.1	T16:588-302
40	Mangaone Stm at Annebrooke Rd Bridge	417.7	S14:159-744
41	Mangaonua Stm at Hoeka Rd	421.10	S14:205-776
42	Mangaonua Stm at Te Miro Rd	421.16	T14:314-731
28	Mangatangi River at SH2 Maramarua	453.6	S12:042-372
27	Mangatawhiri River at Lyons Rd at Buckingsham Bridge	459.6	S12:997-427
35	Mangawara Stm at Rutherford Rd Bridge	481.7	S13:084-023
43	Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	488.1	S15:217-653
33	Matahuru Stm at Waiterimu Rd Br	516.5	S13:083-109
25	Ohaeroa Stm at SH22 Bridge	612.9	R12:834-303
24	Opuatia Stm at Ponganui Rd	665.5	R13:773-245
46	Pokaiwhenua Stm at Arapuni-Putaruru Rd	786.2	T15:491-458
31	Waerenga Stm at Taniwha Rd	1098.1	S13:131-217
38	Waitawhiriwhiri Stm at Edgecumbe Street	1236.2	S14:102-787
26	Whakapipi Stm at SH22 Bridge	1282.8	R12:812-365
48	Whakauru Stm at U/S SH1 Bridge	1287.7	T16:614-282
29	Whangamarino River at Island Block Rd	1293.7	S12:954-308
30	Whangamarino River at Jefferies Rd Bridge	1293.9	S13:084-273
32	Whangape Stm at Rangiriri-Glen Murray Rd	1302.1	S13:950-154

Map No.	Location	Location Id	Map Ref.
<b>Waipa River and tributaries</b>			
50	Kaniwhaniwha Stm at Wright Rd	222.16	S15:985-680
56	Mangaohoi Stm at South Branch Maru Rd	411.9	T15:329-471
61	Mangaokewa Stm at Lawrence St Bridge	414.6	S16:998-162
51	Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	438.3	S15:093-560
58	Mangapu River at Otorohanga	443.3	S16:033-318
55	Mangatutu Stm (Waikeria) at Walker Rd Bridge	476.7	S15:203-422
52	Mangauika Stm at Te Awamutu Borough Water Supply Intake	477.10	S15:980-504
49	Ohote Stm at Whatawhata/Horotiu Rd	624.5	S14:997-794
54	Puniu River at Bartons Corner Rd Bridge	818.2	S15:115-500
62	Waipa River at Mangaokewa Rd	1191.5	S17:233-028
53	Waipa River at Pirongia-Ngutunui Rd Bridge	1191.10	S15:037-529
59	Waipa River at SH3 Otorohanga	1191.12	S16:036-322
57	Waitomo Stm at SH31 Otorohanga	1253.5	S16:022-335
60	Waitomo Stm at Tumutumu Rd	1253.7	S16:938-249
<b>Tributaries to the upper Waikato River</b>			
69	Kawaunui Stm at SH5 Bridge	240.5	U17:021-081
65	Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	359.1	U16:733-129
71	Mangakara Stm (Reporoa) at SH5	380.2	U17:996-003
63	Mangakino River (Whakamaru) at Sandel Rd	388.1	T17:486-013
67	Otamakokore Stm at Hossack Rd	683.4	U16:955-166
74	Pueto Stm at Broadlands Rd Bridge	802.1	U17:938-827
66	Tahunaatara Stm at Ohakuri Rd	934.1	U16:785-138
73	Torepatutahi Stm at Vaile Rd Bridge	1057.6	U17:985-965
70	Waiotapu Stm at Campbell Rd Bridge	1186.2	U17:024-082
72	Waiotapu Stm at Homestead Rd Bridge	1186.4	U17:003-000
64	Waipapa Stm (Mokai) at Tirohanga Rd Bridge	1202.7	T17:685-047
68	Whirinaki Stm at Corbett Rd	1323.1	U16:957-171
<b>West coast</b>			
84	Awakino River at Gribbon Rd	33.6	R17:702-918
82	Awakino River at SH3 Awakau Rd Junction	33.9	R18:588-799
81	Manganui River at Off Manganui Rd	410.4	R17:554-831
85	Mangaotaki River at SH3 Bridge	428.3	R17:764-963
79	Marokopa River at Speedies Rd (Off Te Anga Rd)	513.3	R16:708-256
83	Mokau River at Awakau Rd	556.2	R18:601-785
88	Mokau River at Mangaokewa Rd (Off SH30)	556.5	S17:096-017
86	Mokau River at Totoro Rd Recorder	556.9	R17:759-907
87	Mokauiti Stm at Three Way Point – Aria	557.5	R17:828-929
77	Ohautira River at Waingaro - Te Uku Rd	616.1	R14:842-803
78	Oparau River at Langdon Rd (Off Okupata Rd)	658.1	R15:799-494
80	Tawarau River at Off Speedies Rd	976.1	R16:718-249
75	Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	1167.4	R14:837-837
76	Waitetuna River at Te Uku-Waingaro Rd	1247.2	R14:842-742
<b>Inflows to Lake Taupo</b>			
91	Hinemaiaia River at SH1	171.5	U18:722-567
96	Kuratau River at Te Rae Street	282.5	T18:502-536
95	Kuratau River at SH41 Moerangi	282.4	T18:356-537
89	Mapara Stm at Off Mapara Rd (Whakaipo Reserve)	504.2	T18:681-750
92	Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	971.5	T18:614-506
94	Tokaanu Power Station Tailrace Canal at SH41 Bridge	1491.1	T19:504-435
93	Tokaanu Stm at Off SH41 Turangi	1045.3	T19:517-423
99	Waihaha River at SH32	1106.4	T18:434-747
90	Waitahanui River at Blake Rd	1226.1	U18:781-627
100	Whangamata Stm (Kinloch) at Whangamata Rd	1300.1	T17:649-804
98	Whanganui Stream at Lakeside Lake Taupo	1301.1	T18:473-653
97	Whareroa Stream at Lakeside Lake Taupo	1318.4	T18:515-568

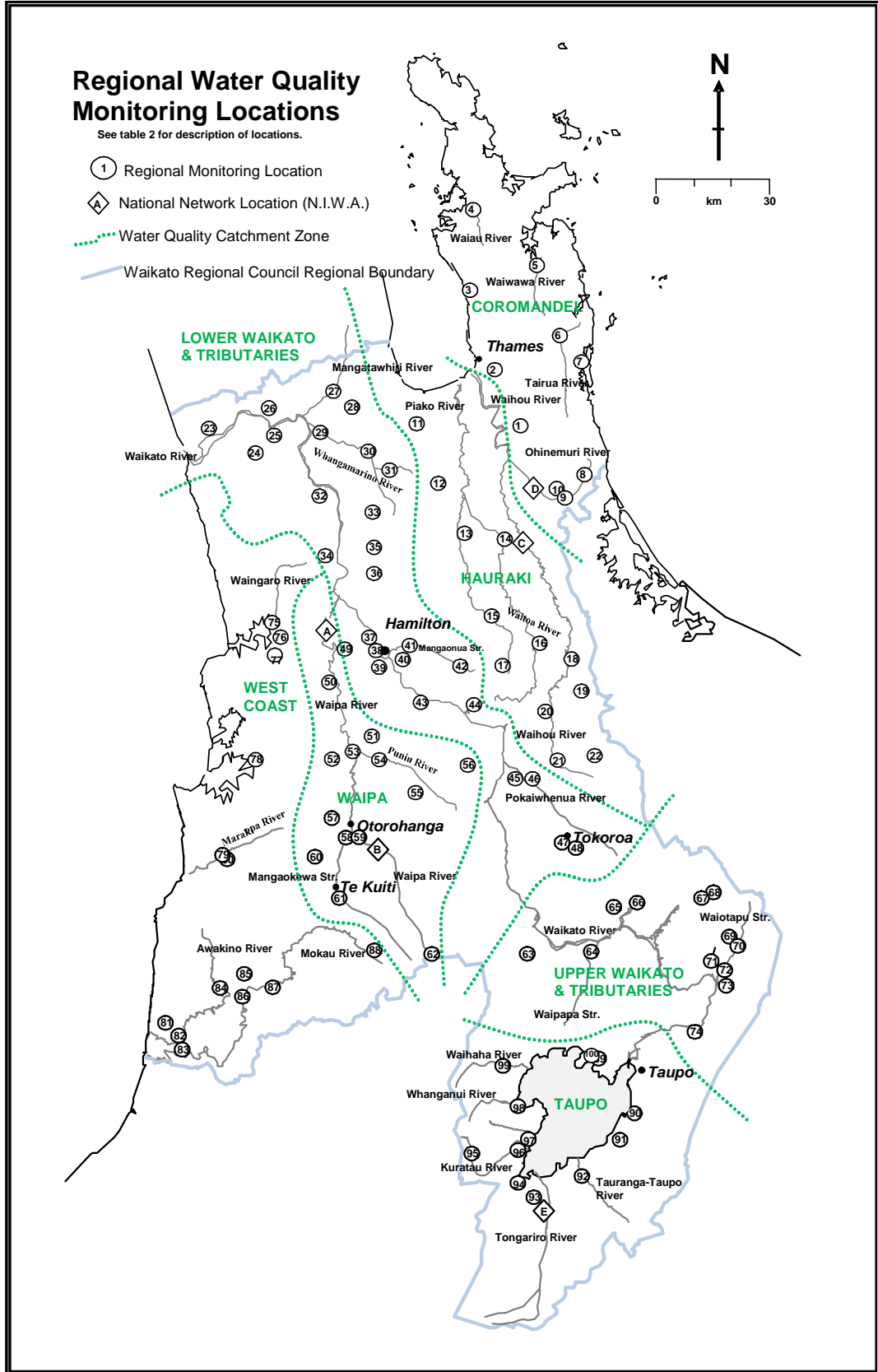


Figure 1: Monitoring locations

## 2.2 Sample collection

Sample collection occurs monthly. The 100 locations sampled by Waikato Regional Council staff are divided between 7 sampling runs. The runs are sampled in the same order each month, and by the same group of field staff. Sampling is assigned to either the second, third or fourth week of each month. A similar time of sampling ( $\pm 1$  hour) is maintained for subsequent visits to a location to minimise the effect of any diurnal variation on water quality parameters, thereby increasing long term trend detection power.

## 2.3 Water quality parameters

Water quality of the region's rivers is assessed by measuring up to 32 parameters (16 routinely). Seventy-four locations were measured quarterly for enterococci, *E. coli* and faecal coliform bacteria until February 2013. All 100 sites are now sampled routinely. Some parameters are measured in the field, but most are analysed by laboratories using standard analytical methods. Details of field measurements and analytical methods are given in *Appendix II*.

## 2.4 Quality control, data storage and analysis

Quality control measures are undertaken in accordance with Waikato Regional Council's ISO 9001:2008 standards including procedures for the collection, transport and storage of samples, and methods for data verification and quality assurance to ensure the consistency of data across the programme. Samples are sent to IANZ registered laboratories for analysis. Back-up samples are held for two months until results have been verified by routine quality assurance procedures. All data from field measurements and laboratory analyses are stored in Waikato Regional Council's new database called WISKI.

Data analysis was performed using Data Desk (version 6.0.1). For the purpose of data analysis, non-detect results (i.e. results with "less than" values) were assumed to be equal to half the corresponding limit of detection (i.e.  $<x = x/2$ ), and results greater than the value reported were taken as equal to the value reported (i.e.  $>x = x$ ).

The water quality spatial contour plots were created using Surfer (version 8). To present the spatial contour plots the kriging spatial interpolation procedure was used to estimate the variable at unsampled locations, using weighted sums of the variable at neighbouring sample points. The procedure is designed to minimize the variance of the estimation errors. In some cases artificial sites were used at points downstream of lowland sample sites to show a catchment flow-through effect.

## 2.5 Reports

A report on Regional Water Quality Trends (Vant 2013) summarises the trends and patterns in regional water quality during 1993 to 2012. Waikato Regional Council's State of the Environment Report briefly summarises the state of the rivers in the region, and common pressures (Waikato Regional Council, 1999).

The data contained in these regional rivers reports is updated to the Waikato Regional Council website, which also provides a link to details of the water quality guidelines and standards used to assess the condition of the region's rivers, as well as other information relating to lakes, rivers and wetlands. View this information at

<http://www.waikatoregion.govt.nz/fresh-water-quality>

## **3 Results**

The results are divided into two sections. Section 3.1 has a statistical summary of routine monitoring of the region's rivers in 2013 and provides the spatial contour plots using water quality data from four parameters, based on median values for the last five years. Section 3.2 compares the results with water quality guidelines and standards for compliance.

### **3.1 Regional rivers monitoring programme summary statistics**

Absorbance of filtered sample at 340 nm (units: cm<sup>-1</sup>)

Location	Count	Mean	Median	Min	Max	IQR	Skew	09-13
								Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.017	0.014	0.010	0.047	0.006	2.37	0.015
Kauaeranga River at Smiths Cableway/Recorder	12	0.020	0.012	0.007	0.109	0.009	2.88	0.012
Ohinemuri River at Queens Head	12	0.013	0.012	0.008	0.026	0.004	1.53	0.014
Ohinemuri River at SH25 Br	12	0.015	0.013	0.006	0.063	0.006	2.75	0.012
Tairua River at Morrisons Br Hikuai	12	0.019	0.014	0.010	0.077	0.002	2.90	0.015
Tapu River at Tapu-Coroglen Rd	12	0.016	0.010	0.006	0.098	0.004	2.99	0.010
Waiau River at E309 Rd Ford	12	0.020	0.013	0.011	0.097	0.003	2.99	0.014
Waitekauri River at U/S Ohinemuri Conflu	12	0.013	0.010	0.006	0.049	0.003	2.87	0.011
Waiwawa River at SH25 Coroglen	12	0.026	0.018	0.010	0.109	0.005	2.67	0.019
Wharekawa River at SH25	12	0.021	0.017	0.011	0.066	0.007	2.57	0.016
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.030	0.020	0.014	0.104	0.009	<u>2.14</u>	0.018
Oraka Stm at Lake Rd	12	0.015	0.014	0.007	0.027	0.012	0.70	0.012
Piako River at Kiwitahi	12	0.046	0.043	0.032	0.065	0.014	0.57	0.045
Piako River at Paeroa-Tahuna Rd Br	12	0.071	0.063	0.056	0.092	0.023	0.59	0.074
Piakonui Stm at Piakonui Rd	12	0.030	0.030	0.021	0.036	0.006	-0.43	0.028
Waihou River at Okauia	12	0.014	0.013	0.006	0.024	0.010	0.58	0.013
Waihou River at Whites Rd	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Waihotu Stm at Waihotu Rd (Off SH5)	12	0.037	0.034	0.028	0.056	0.008	1.26	0.037
Waiomou Stm at Matamata-Tauranga Rd	12	0.018	0.017	0.010	0.034	0.007	1.11	0.017
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.069	0.065	0.040	0.107	0.037	0.40	0.060
Waitoa River at Landsdowne Rd Br	12	0.042	0.042	0.024	0.057	0.021	-0.04	0.043
Waitoa River at Mellon Rd Recorder	12	0.043	0.042	0.032	0.056	0.018	0.19	0.042
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	0.038	0.038	0.021	0.061	0.021	0.31	0.042
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.024	0.024	0.013	0.046	0.009	1.40	0.023
Karapiro Stm at Hickey Rd Bridge	12	0.049	0.048	0.035	0.066	0.014	0.34	0.046
Kirikiri Stm at Tauhara Dr	12	0.053	0.053	0.045	0.063	0.011	0.18	0.056
Komakorau Stm at Henry Rd	12	0.129	0.118	0.072	0.230	0.056	0.92	0.108
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.013	0.010	0.002	0.032	0.015	0.81	0.010
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.266	0.255	0.062	0.600	0.333	0.41	0.270
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.030	0.023	0.018	0.065	0.017	1.29	0.025
Mangaone Stm at Annebrooke Rd Br	12	0.047	0.047	0.037	0.066	0.009	0.78	0.050
Mangaonua Stm at Hoeka Rd	12	0.034	0.033	0.024	0.050	0.011	0.54	0.034
Mangaonua Stm at Te Miro Rd	12	0.032	0.027	0.023	0.059	0.013	1.28	0.028
Mangatangi River at SH2 Maramara	12	0.050	0.049	0.033	0.086	0.022	0.92	0.050
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.033	0.027	0.020	0.088	0.011	<u>2.52</u>	0.024
Mangawara Stm at Rutherford Rd Br	12	0.126	0.138	0.054	0.210	0.070	-0.09	0.127
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.123	0.094	0.053	0.330	0.097	1.67	0.097
Matahuru Stm at Waiterimu Road Below Confluence	12	0.092	0.105	0.047	0.134	0.071	-0.22	0.082
Ohaeroa Stm at SH22 Br	12	0.031	0.026	0.020	0.053	0.016	0.92	0.025
Opuatia Stm at Ponganui Rd	12	0.033	0.031	0.019	0.060	0.014	0.99	0.028
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.020	0.014	0.008	0.054	0.016	1.40	0.014
Waerenga Stm at Taniwha Rd	12	0.033	0.031	0.022	0.062	0.012	1.43	0.028
Waitawhiriwhiri Stm at Edgecumbe Street	12	0.169	0.137	0.038	0.360	0.160	0.62	0.133
Whakapipi Stm at SH22 Br	12	0.038	0.035	0.030	0.052	0.007	1.07	0.037
Whakauru Stm at U/S SH1 Br	12	0.025	0.022	0.014	0.052	0.011	1.42	0.023
Whangamarino River at Island Block Rd	12	0.101	0.112	0.033	0.143	0.059	-0.55	0.107
Whangamarino River at Jefferies Rd Br	12	0.047	0.047	0.034	0.061	0.007	0.39	0.044
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.067	0.066	0.035	0.102	0.024	0.22	0.067

Absorbance of filtered sample at 440 nm (units: cm<sup>-1</sup>)

Count	Mean	Median	Min	Max	IQR	Skew	09-13
							Median
12	0.003	0.003	0.001	0.010	0.003	<u>1.74</u>	0.003
12	0.004	0.002	0.001	0.021	0.003	<u>2.71</u>	0.002
12	0.002	0.001	0.001	0.005	0.002	1.44	0.003
12	0.003	0.002	0.001	0.013	0.002	<u>2.63</u>	0.002
12	0.004	0.003	0.001	0.015	0.001	<u>2.71</u>	0.003
12	0.003	0.001	0.001	0.019	0.001	<u>2.99</u>	0.002
12	0.003	0.002	0.001	0.017	0.001	<u>2.89</u>	0.002
12	0.002	0.001	0.001	0.010	0.001	<u>2.48</u>	0.002
12	0.005	0.004	0.001	0.021	0.002	<u>2.51</u>	0.004
12	0.004	0.004	0.001	0.014	0.003	<u>2.04</u>	0.003
12	0.006	0.004	0.003	0.021	0.003	<u>2.05</u>	0.004
12	0.002	0.002	0.001	0.005	0.002	0.99	0.002
12	0.007	0.007	0.005	0.011	0.003	0.84	0.008
12	0.012	0.010	0.009	0.016	0.004	0.66	0.012
12	0.006	0.006	0.003	0.007	0.001	-0.72	0.006
12	0.002	0.002	0.001	0.005	0.003	0.51	0.002
12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
12	0.007	0.007	0.004	0.010	0.002	0.55	0.007
12	0.003	0.003	0.001	0.006	0.001	0.74	0.003
12	0.012	0.012	0.007	0.018	0.007	0.30	0.011
12	0.007	0.006	0.004	0.010	0.004	0.40	0.007
12	0.006	0.007	0.003	0.009	0.004	-0.07	0.007
12	0.006	0.006	0.002	0.011	0.005	0.39	0.007
12	0.003	0.003	0.001	0.007	0.003	0.52	0.004
12	0.008	0.008	0.006	0.012	0.003	0.79	0.008
12	0.008	0.008	0.006	0.012	0.004	0.43	0.009
12	0.019	0.018	0.009	0.030	0.007	0.24	0.016
12	0.002	0.002	0.001	0.008	0.003	1.67	0.002
12	0.045	0.048	0.010	0.091	0.052	0.10	0.048
12	0.006	0.004	0.004	0.013	0.004	1.25	0.005
12	0.008	0.008	0.006	0.011	0.002	0.81	0.009
12	0.005	0.006	0.003	0.008	0.002	0.03	0.005
12	0.005	0.005	0.001	0.011	0.002	0.83	0.005
12	0.009	0.008	0.006	0.015	0.003	1.13	0.009
12	0.007	0.005	0.004	0.018	0.003	<u>2.40</u>	0.005
12	0.019	0.021	0.008	0.029	0.009	-0.39	0.020
12	0.019	0.017	0.009	0.047	0.015	1.41	0.017
12	0.015	0.016	0.008	0.021	0.009	-0.12	0.013
12	0.006	0.005	0.003	0.011	0.003	1.01	0.004
12	0.005	0.005	0.001	0.011	0.004	0.76	0.005
12	0.003	0.003	0.001	0.011	0.004	1.38	0.003
12	0.006	0.006	0.003	0.013	0.004	1.05	0.005
12	0.026	0.019	0.007	0.060	0.025	0.92	0.021
12	0.006	0.006	0.005	0.010	0.003	0.85	0.007
12	0.005	0.004	0.003	0.010	0.003	1.37	0.004
12	0.018	0.021	0.006	0.026	0.010	-0.51	0.020
12	0.008	0.008	0.006	0.011	0.003	0.35	0.007
12	0.011	0.010	0.006	0.018	0.004	0.79	0.011

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions



Waipa River and Tributaries																
Kaniwhaniwha Stm at Wright Rd	12	0.028	0.023	0.014	0.059	0.020	0.85	0.027	12	0.005	0.004	0.001	0.012	0.005	0.79	0.005
Mangaohoi Stm at South Branch Maru Rd	12	0.008	0.007	0.001	0.026	0.005	<u>1.78</u>	0.007	12	0.002	0.001	0.001	0.005	0.002	1.34	0.001
Mangaokewa Stm at Lawrence St Bridge	12	0.038	0.037	0.024	0.051	0.011	-0.21	0.033	12	0.007	0.007	0.004	0.011	0.003	0.35	0.006
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.075	0.065	0.042	0.142	0.027	1.40	0.074	12	0.013	0.012	0.008	0.025	0.004	1.67	0.013
Mangapu River at Otorohanga	12	0.030	0.029	0.019	0.044	0.008	0.46	0.028	12	0.005	0.005	0.003	0.008	0.003	0.11	0.005
Mangatutu Stm (Waikeria) at Walker Rd Br	11	0.019	0.015	0.009	0.040	0.008	1.40	0.018	11	0.003	0.002	0.001	0.008	0.003	1.30	0.004
Mangauika Stm at Te Awamutu Borough W/S Intake	11	0.013	0.005	0.003	0.057	0.004	<u>1.84</u>	0.006	11	0.003	0.001	0.001	0.013	0.001	<u>1.81</u>	0.001
Ohote Stm at Whatawhata/Horotiu Rd	12	0.144	0.154	0.077	0.192	0.065	-0.47	0.169	12	0.023	0.024	0.011	0.031	0.011	-0.48	0.027
Puniu River at Bartons Corner Rd Br	12	0.029	0.025	0.014	0.068	0.011	<u>2.04</u>	0.027	12	0.005	0.005	0.003	0.013	0.003	<u>1.83</u>	0.005
Waipa River at Mangaokewa Rd	12	0.062	0.057	0.035	0.104	0.032	0.57	0.046	12	0.012	0.011	0.006	0.019	0.007	0.35	0.008
Waipa River at Pirongia-Ngutunui Rd Br	12	0.029	0.028	0.019	0.042	0.005	0.69	0.028	12	0.005	0.005	0.003	0.008	0.002	0.53	0.005
Waipa River at SH3 Otorohanga	12	0.029	0.026	0.018	0.048	0.014	0.68	0.026	12	0.005	0.006	0.003	0.008	0.004	0.09	0.005
Waitomo Stm at SH31 Otorohanga	12	0.018	0.019	0.012	0.024	0.007	-0.15	0.019	12	0.003	0.003	0.001	0.004	0.002	-0.05	0.003
Waitomo Stm at Tumutumumu Rd	12	0.015	0.012	0.007	0.041	0.008	<u>2.04</u>	0.012	12	0.002	0.001	0.001	0.009	0.002	<u>1.81</u>	0.002
Tributaries to the upper Waikato River																
Kawaunui Stm at SH5 Br	12	0.021	0.021	0.010	0.037	0.014	0.33	0.025	12	0.003	0.003	0.001	0.007	0.003	0.42	0.004
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.028	0.027	0.017	0.040	0.017	0.13	0.025	12	0.005	0.004	0.003	0.009	0.003	0.49	0.004
Mangakara Stm (Reporoa) at SH5	12	0.018	0.018	0.012	0.027	0.008	0.51	0.016	12	0.003	0.003	0.001	0.005	0.002	0.27	0.003
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.013	0.011	0.005	0.029	0.011	0.88	0.011	12	0.003	0.001	0.001	0.011	0.003	<u>2.22</u>	0.001
Otamakokore Stm at Hossack Rd	12	0.037	0.030	0.013	0.087	0.032	0.96	0.031	12	0.008	0.007	0.003	0.019	0.006	1.11	0.007
Pueto Stm at Broadlands Rd Br	12	0.010	0.010	0.007	0.013	0.002	0.43	0.010	12	0.001	0.001	0.001	0.002	0.000	<u>1.79</u>	0.001
Tahunaatara Stm at Ohakuri Rd	12	0.034	0.029	0.017	0.066	0.022	0.92	0.030	12	0.006	0.005	0.003	0.013	0.005	1.01	0.006
Torepatutahi Stm at Vaile Rd Br	12	0.011	0.010	0.007	0.020	0.005	0.98	0.013	12	0.002	0.001	0.001	0.003	0.001	0.93	0.002
Waiotapu Stm at Campbell Rd Br	12	0.004	0.004	0.002	0.008	0.002	0.95	0.005	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Waiotapu Stm at Homestead Rd Br	12	0.017	0.016	0.012	0.027	0.006	0.94	0.021	12	0.002	0.002	0.001	0.004	0.002	0.56	0.003
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.012	0.010	0.009	0.019	0.007	0.83	0.012	12	0.002	0.001	0.001	0.004	0.002	1.00	0.002
Whirinaki Stm at Corbett Rd	12	0.001	0.001	0.001	0.004	0.000	<u>1.97</u>	0.001	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
West Coast																
Awakino River at Gribbon Rd	12	0.012	0.009	0.003	0.028	0.015	0.73	0.006	12	0.002	0.002	0.001	0.005	0.003	0.36	0.001
Awakino River at SH3 Awakau Rd Junction	12	0.020	0.015	0.007	0.053	0.015	1.34	0.012	12	0.003	0.003	0.001	0.011	0.004	1.42	0.002
Manganui River at Off Manganui Rd	12	0.011	0.008	0.006	0.025	0.007	1.32	0.008	12	0.002	0.001	0.001	0.005	0.002	1.17	0.001
Mangaotaki River at SH3 Br	12	0.022	0.018	0.010	0.052	0.016	1.25	0.016	12	0.004	0.004	0.001	0.010	0.002	1.17	0.003
Marokopa River at Speedies Rd (Off Te Angra Rd)	12	0.023	0.018	0.011	0.045	0.019	0.56	0.015	12	0.004	0.004	0.001	0.009	0.005	0.41	0.003
Mokau River at Awakau Rd	12	0.040	0.035	0.023	0.092	0.015	<u>1.80</u>	0.033	12	0.008	0.007	0.004	0.020	0.004	<u>2.09</u>	0.006
Mokau River at Mangaokewa Rd (Off SH30)	12	0.056	0.050	0.033	0.093	0.027	0.58	0.044	12	0.011	0.010	0.006	0.021	0.005	0.89	0.008
Mokau River at Totoro Rd Recorder	12	0.032	0.034	0.018	0.046	0.009	-0.06	0.030	12	0.006	0.006	0.003	0.009	0.002	0.14	0.005
Mokauti Stm at Three Way Point - Aria	12	0.052	0.046	0.030	0.086	0.024	0.79	0.052	12	0.009	0.008	0.004	0.015	0.004	0.58	0.009
Ohautira Stm at Waingaro Te Uku Rd	12	0.028	0.020	0.010	0.057	0.029	0.68	0.019	12	0.005	0.004	0.001	0.012	0.006	0.63	0.004
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.023	0.017	0.009	0.066	0.014	<u>1.77</u>	0.018	12	0.004	0.003	0.001	0.013	0.003	<u>1.74</u>	0.004
Tawarau River at Off Speedies Rd	12	0.022	0.018	0.011	0.043	0.016	0.68	0.015	12	0.004	0.004	0.001	0.008	0.004	0.33	0.003
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.036	0.036	0.017	0.069	0.019	0.72	0.035	12	0.006	0.006	0.001	0.014	0.005	0.73	0.006
Waitetuna River at Te Uku-Waingaro Rd	12	0.027	0.025	0.012	0.051	0.016	0.80	0.024	12	0.005	0.005	0.001	0.011	0.004	0.36	0.004
Inflows to Lake Taupo																
Hinemaiaia River at SH1	12	0.013	0.012	0.009	0.025	0.005	<u>1.69</u>	0.012	12	0.002	0.002	0.001	0.005	0.002	1.30	0.002
Kuratau River at SH41 Moerangi	12	0.019	0.016	0.013	0.036	0.007	1.40	0.016	12	0.003	0.002	0.001	0.007	0.002	1.09	0.003
Kuratau River at 43 Te Rae Street	12	0.023	0.023	0.016	0.035	0.008	0.74	0.018	12	0.004	0.004	0.002	0.007	0.002	0.69	0.003
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.041	0.038	0.027	0.060	0.022	0.46	0.038	12	0.008	0.008	0.005	0.012	0.005	0.45	0.007
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	0.006	0.005	0.004	0.010	0.002	1.22	0.005	12	0.001	0.001	0.001	0.005	0.000	<u>3.02</u>	0.001
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.005	0.005	0.002	0.009	0.002	0.29	0.004	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Tokaanu Stm at Off SH41 Turangi	12	0.002	0.001	0.001	0.006	0.001	<u>1.95</u>	0.001	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Waihaha River at SH32	12	0.011	0.008	0.006	0.028	0.006	<u>1.69</u>	0.007	12	0.002	0.001	0.001	0.006	0.003	1.04	0.001
Waitahanui River at Blake Rd	12	0.002	0.001	0.001	0.007	0.002	<u>1.82</u>	0.001	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.005	0.005	0.002	0.009	0.004	0.37	0.005	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
Whanganui Stm at Lakeside Lake Taupo	12	0.015	0.012	0.010	0.041	0.003	<u>2.43</u>	0.013	12	0.003	0.002	0.001	0.008	0.002	1.64	0.002
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.017	0.015	0.013	0.031	0.005	1.59	0.015	12	0.003	0.003	0.001	0.006	0.002	0.47	0.003

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

## Black Disk (m)

Location	Black Disk (m)							09-13
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	2.91	3.08	1.22	4.50	1.48	-0.28	2.16
Kauaeranga River at Smiths Cableway/Recorder	12	3.44	3.57	0.93	5.10	1.63	-0.52	2.91
Ohinemuri River at Queens Head	12	2.34	2.45	0.92	3.86	1.53	-0.07	2.50
Ohinemuri River at SH25 Br	12	2.63	3.06	0.23	4.11	1.58	-0.56	2.30
Tairua River at Morrisons Br Hikuaui	-	-	-	-	-	-	-	-
Tapu River at Tapu-Coroglen Rd	12	3.38	3.45	0.09	5.37	2.00	-0.69	3.31
Waiau River at E309 Rd Ford	12	2.11	2.22	0.13	2.99	1.23	-0.92	2.03
Waitekauri River at U/S Ohinemuri Conflu	12	2.93	3.24	0.31	4.50	1.44	-0.78	2.64
Waiwawa River at SH25 Coroglen	12	2.80	2.90	0.12	4.50	0.68	-1.05	2.59
Wharekawa River at SH25	11	2.10	2.05	0.16	4.40	1.07	0.27	1.80
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	1.00	0.82	0.18	2.02	0.87	0.35	0.91
Oraka Stm at Lake Rd	12	1.06	1.03	0.53	1.67	0.28	0.29	0.93
Piako River at Kiwitahi	12	1.94	1.73	1.34	3.06	0.78	0.88	1.23
Piako River at Paeroa-Tahuna Rd Br	11	1.18	0.97	0.60	1.73	0.66	0.30	0.63
Piakonui Stm at Piakonui Rd	12	1.42	1.51	0.88	1.90	0.51	-0.41	1.20
Waihou River at Okauia	10	1.15	1.16	0.77	1.59	0.32	0.19	1.03
Waihou River at Whites Rd	11	5.27	4.99	3.92	8.07	1.63	0.98	4.83
Waihotu Stm at Waihotu Rd (Off SH5)	-	-	-	-	-	-	-	-
Waiomou Stm at Matamata-Tauranga Rd	12	1.23	1.26	0.92	1.50	0.41	-0.19	1.06
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	10	0.70	0.68	0.34	1.14	0.41	0.29	0.60
Waitoa River at Landsdowne Rd Br	9	1.30	1.35	0.48	1.77	0.55	-0.82	1.09
Waitoa River at Mellon Rd Recorder	12	1.22	1.27	0.73	1.71	0.25	-0.09	0.86
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	11	0.44	0.31	0.19	1.36	0.25	<u>2.16</u>	0.31
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.95	0.97	0.16	1.63	0.44	-0.16	0.81
Karapiro Stm at Hickey Rd Bridge	7	0.92	1.05	0.51	1.16	0.43	-0.76	0.90
Kirikiri Stm at Tauhara Dr	12	0.45	0.46	0.18	0.71	0.22	0.08	0.40
Komakorau Stm at Henry Rd	12	0.20	0.20	0.02	0.35	0.10	-0.16	0.17
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.63	1.76	0.61	2.20	0.60	-0.84	1.51
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.47	0.46	0.26	0.66	0.19	0.13	0.37
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.86	0.79	0.31	1.54	0.46	0.55	0.85
Mangaone Stm at Annebrooke Rd Br	12	1.01	1.02	0.53	1.37	0.30	-0.53	0.84
Mangaonua Stm at Hoeka Rd	12	0.97	0.97	0.57	1.45	0.33	0.37	0.72
Mangaonua Stm at Te Miro Rd	8	1.32	1.33	0.80	1.61	0.44	-0.58	1.07
Mangatangi River at SH2 Maramara	11	0.46	0.49	0.20	0.76	0.22	0.01	0.45
Mangatawhiri River at Lyons Rd At Buckingham Br	12	1.45	1.57	0.19	1.88	0.24	<u>-2.12</u>	1.57
Mangawara Stm at Rutherford Rd Br	12	0.31	0.30	0.17	0.51	0.17	0.67	0.22
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	11	0.28	0.25	0.17	0.43	0.14	0.41	0.24
Matahuru Stm at Waiterimu Road Below Confluence	11	0.34	0.31	0.16	0.66	0.18	1.01	0.26
Ohaeroa Stm at SH22 Br	10	0.78	0.68	0.33	1.31	0.41	0.36	0.70
Opuatia Stm at Ponganui Rd	12	0.48	0.45	0.18	0.87	0.13	0.80	0.51
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.43	1.47	0.60	2.24	0.59	-0.22	1.26
Waerenga Stm at Taniwha Rd	12	0.73	0.72	0.42	1.10	0.28	0.35	0.72
Waitawhirihiri Stm at Edgcumbe Street	12	0.46	0.46	0.32	0.62	0.16	0.29	0.33
Whakapipi Stm at SH22 Br	11	1.17	1.23	0.60	1.77	0.63	-0.18	1.05
Whakauru Stm at U/S SH1 Br	11	0.83	0.90	0.55	1.10	0.34	-0.17	0.73
Whangamarino River at Island Block Rd	12	0.21	0.21	0.12	0.31	0.10	0.20	0.19
Whangamarino River at Jefferies Rd Br	12	0.51	0.52	0.23	0.96	0.19	0.67	0.38
Whangape Stm at Rangiri-Glen Murray Rd	12	0.21	0.20	0.06	0.37	0.21	-0.06	0.16

Conductivity at 25 °C (mS m<sup>-1</sup>)

Location	Conductivity at 25 °C (mS m <sup>-1</sup> )							09-13
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	8.4	8.4	6.6	9.6	1.0	-0.44	8.2
Kauaeranga River at Smiths Cableway/Recorder	12	8.0	8.1	4.0	9.5	0.9	<u>-1.89</u>	8.1
Ohinemuri River at Queens Head	12	29.0	22.5	12.2	59.0	23.5	0.86	21.7
Ohinemuri River at SH25 Br	12	7.5	7.5	5.1	8.6	0.7	-1.33	7.5
Tairua River at Morrisons Br Hikuaui	12	6.0	6.0	3.8	6.9	0.9	-1.44	6.0
Tapu River at Tapu-Coroglen Rd	12	10.3	10.5	5.2	12.0	1.5	<u>-2.01</u>	10.2
Waiau River at E309 Rd Ford	12	9.4	9.8	5.2	10.4	0.9	<u>-2.42</u>	9.3
Waitekauri River at U/S Ohinemuri Conflu	12	11.7	11.5	8.5	16.6	3.3	0.59	10.9
Waiwawa River at SH25 Coroglen	12	6.6	6.8	3.4	8.0	1.2	-1.56	6.6
Wharekawa River at SH25	12	7.4	7.3	5.6	8.8	0.8	-0.44	7.3
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	11.6	11.4	9.9	13.7	1.4	0.45	11.3
Oraka Stm at Lake Rd	12	14.6	12.8	10.2	23.2	6.5	0.86	12.2
Piako River at Kiwitahi	12	15.4	15.1	13.3	19.1	1.4	1.13	14.5
Piako River at Paeroa-Tahuna Rd Br	12	23.8	23.3	20.1	29.7	5.1	0.56	21.0
Piakonui Stm at Piakonui Rd	12	8.2	7.7	6.4	10.6	2.9	0.44	7.2
Waihou River at Okauia	12	10.3	10.0	9.6	11.4	1.0	0.67	10.1
Waihou River at Whites Rd	12	8.2	8.2	8.1	8.3	0.1	0.63	8.1
Waihotu Stm at Waihotu Rd (Off SH5)	12	5.5	5.6	5.0	5.7	0.5	-0.52	5.5
Waiomou Stm at Matamata-Tauranga Rd	12	6.9	7.0	6.3	7.5	0.8	-0.11	6.9
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	18.4	16.7	14.7	26.3	5.5	0.90	17.1
Waitoa River at Landsdowne Rd Br	12	17.1	16.9	13.8	20.8	4.7	0.11	15.9
Waitoa River at Mellon Rd Recorder	12	30.5	30.6	22.9	35.0	5.7	-0.54	27.2
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	27.6	27.1	23.7	31.8	3.8	0.32	25.7
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	68.4	71.2	26.9	100.9	33.1	-0.27	68.4
Karapiro Stm at Hickey Rd Bridge	12	14.4	14.9	11.4	18.0	4.7	0.01	13.4
Kirikiri Stm at Tauhara Dr	12	19.7	21.0	7.4	22.0	1.4	<u>-2.63</u>	21.1
Komakorau Stm at Henry Rd	12	27.2	26.4	23.0	33.7	4.9	0.69	25.3
Little Waipa Stm at Arapuni - Putaruru Rd	12	10.3	10.3	9.8	10.7	0.5	0.05	10.2
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	19.0	19.2	7.8	26.9	1.5	-0.89	18.6
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	13.8	13.9	12.3	15.3	1.6	0.05	14.0
Mangaone Stm at Annebrooke Rd Br	12	26.6	27.0	23.3	27.6	0.5	<u>-2.40</u>	27.0
Mangaonua Stm at Hoeka Rd	12	20.8	21.0	16.3	22.5	1.4	<u>-1.90</u>	20.5
Mangaonua Stm at Te Miro Rd	12	10.4	10.4	8.5	12.5	2.5	0.14	9.8
Mangatangi River at SH2 Maramara	12	12.9	12.9	10.4	15.7	1.1	0.34	12.8
Mangatawhiri River at Lyons Rd At Buckingham Br	12	12.0	11.6	9.5	13.6	1.7	-0.41	11.8
Mangawara Stm at Rutherford Rd Br	12	23.1	21.9	18.8	28.1	4.0	0.51	21.7
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	22.7	22.6	21.1	24.7	1.9	0.41	22.2
Matahuru Stm at Waiterimu Road Below Confluence	12	14.6	14.2	12.9	18.9	1.8	1.60	13.6
Ohaeroa Stm at SH22 Br	12	16.7	15.3	13.1	21.6	5.5	0.49	15.4
Opuatia Stm at Ponganui Rd	12	20.1	17.1	15.4	38.6	2.7	<u>1.90</u>	16.8
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	10.7	10.6	9.3	11.8	0.7	-0.54	10.8
Waerenga Stm at Taniwha Rd	12	12.8	12.2	11.8	16.1	1.3	<u>1.72</u>	11.8
Waitawhirihiri Stm at Edgcumbe Street	12	20.0	20.2	4.6	29.4	3.5	-1.40	20.2
Whakapipi Stm at SH22 Br	12	20.4	19.3	15.1	27.2	7.1	0.47	18.2
Whakauru Stm at U/S SH1 Br	12	7.2	7.2	7.1	7.3	0.1	0.00	7.1
Whangamarino River at Island Block Rd	12	17.6	17.1	14.2	26.4	1.6	<u>2.04</u>	15.8
Whangamarino River at Jefferies Rd Br	12	16.4	15.9	14.5	20.1	2.2	1.00	15.2
Whangape Stm at Rangiri-Glen Murray Rd	12	22.6	21.0	13.1	34.7	9.1	0.41	19.8

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

**Waipa River and Tributaries**

Kaniwhaniwha Stm at Wright Rd	11	0.75	0.90	0.18	1.13	0.55	-0.48	0.80	12	9.6	9.6	7.5	11.6	1.4	-0.03	9.7
Mangaohoi Stm at South Branch Maru Rd	12	1.74	1.68	0.81	2.71	0.76	0.11	1.55	12	8.4	8.6	6.6	9.6	1.4	-0.55	8.1
Mangaokewa Stm at Lawrence St Bridge	12	1.00	0.97	0.11	2.14	0.73	0.29	0.97	12	15.8	14.9	9.8	22.5	6.1	0.11	14.9
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	10	0.86	0.69	0.13	2.41	0.34	<u>1.88</u>	0.57	12	20.6	19.6	15.6	27.4	3.8	0.73	18.1
Mangapu River at Otorohanga	12	0.88	0.89	0.16	1.70	0.96	0.10	0.55	12	19.8	18.2	14.1	26.5	5.7	0.49	17.8
Mangatutu Stm (Waikeria) at Walker Rd Br	11	1.63	1.79	0.60	2.92	0.53	0.12	1.35	11	6.8	6.9	5.7	7.9	0.6	-0.17	6.7
Mangauika Stm at Te Awamutu Borough W/S Intake	11	3.63	3.70	0.35	5.86	1.77	-0.47	3.31	11	6.4	6.2	5.2	7.4	1.1	0.05	6.4
Ohote Stm at Whatawhata/Horotiu Rd	11	0.64	0.53	0.39	1.27	0.22	1.39	0.51	12	18.0	18.1	14.7	23.2	2.9	0.64	16.8
Puniu River at Bartons Corner Rd Br	-	-	-	-	-	-	-	-	12	8.4	8.5	7.0	9.3	0.9	-0.74	8.3
Waipa River at Mangaokewa Rd	12	1.43	1.51	0.44	2.73	0.79	0.26	1.31	12	4.9	4.8	4.0	6.6	1.0	0.94	5.0
Waipa River at Pirongia-Ngutunui Rd Br	-	-	-	-	-	-	-	-	12	11.8	11.8	10.1	13.3	1.5	0.00	11.8
Waipa River at SH3 Otorohanga	12	1.40	1.07	0.14	3.60	1.38	0.88	1.02	12	8.6	8.3	6.8	11.2	1.3	0.58	8.3
Waitomo Stm at SH31 Otorohanga	12	0.94	0.66	0.12	2.09	0.98	0.46	0.53	12	20.0	19.2	13.8	24.9	6.2	-0.05	18.2
Waitomo Stm at Tumutumu Rd	11	0.92	1.00	0.21	1.74	1.09	0.21	0.72	12	19.6	19.3	16.0	23.2	2.9	0.16	18.7

**Tributaries to the upper Waikato River**

Kawaunui Stm at SH5 Br	12	1.83	1.73	1.09	3.41	0.59	1.37	1.23	12	14.1	13.9	12.8	15.7	2.1	0.30	13.4
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	1.02	1.04	0.63	1.34	0.25	-0.23	1.03	12	9.0	8.9	8.7	9.6	0.4	1.21	8.9
Mangakara Stm (Reporoa) at SH5	12	1.10	0.94	0.61	1.66	0.41	0.54	0.83	12	10.1	10.1	9.6	10.6	0.6	-0.07	9.8
Mangakino Stm (Whakamaru) at Sandel Rd	12	1.70	1.75	0.60	2.33	0.69	-0.70	1.58	12	6.6	6.6	5.5	7.4	0.9	-0.28	6.6
Otamakokore Stm at Hossack Rd	12	1.41	1.57	0.90	1.78	0.69	-0.35	1.10	12	39.9	39.9	36.8	42.0	2.1	-0.51	37.6
Pueto Stm at Broadlands Rd Br	10	1.97	2.11	0.82	3.26	0.89	0.08	1.56	12	11.6	11.6	11.4	11.9	0.3	0.25	11.5
Tahunaatara Stm at Ohakuri Rd	12	1.60	1.75	0.81	2.09	0.71	-0.56	1.22	12	7.7	7.6	7.5	7.9	0.1	0.72	7.6
Torepatutahi Stm at Vaile Rd Br	-	-	-	-	-	-	-	-	12	9.4	9.5	8.9	10.3	0.5	0.52	9.8
Waiotapu Stm at Campbell Rd Br	12	1.29	1.14	0.92	2.09	0.61	0.93	1.16	12	71.7	72.0	66.2	75.0	2.4	-0.96	68.5
Waiotapu Stm at Homestead Rd Br	-	-	-	-	-	-	-	-	12	51.1	50.8	47.2	55.5	3.0	0.19	46.3
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	1.29	1.30	0.73	1.80	0.55	-0.13	1.03	12	42.0	42.5	38.5	44.6	2.5	-0.46	39.6
Whirinaki Stm at Corbett Rd	-	-	-	-	-	-	-	-	12	6.8	6.8	6.7	7.0	0.0	1.05	6.8

**West Coast**

Awakino River at Gribbon Rd	12	2.23	1.69	0.40	5.82	2.88	0.65	1.67	12	6.9	7.1	5.9	8.1	0.9	0.11	6.9
Awakino River at SH3 Awakau Rd Junction	12	1.27	1.03	0.20	3.50	1.90	0.73	0.99	12	13.0	12.5	9.3	19.7	4.8	0.69	12.3
Manganui River at Off Manganui Rd	12	1.01	0.85	0.10	2.09	1.17	0.19	1.07	12	10.8	10.7	8.2	14.0	1.6	0.46	10.5
Mangaotaki River at SH3 Br	12	0.96	0.72	0.13	2.70	1.17	0.90	0.82	12	13.3	13.4	11.2	15.6	2.1	0.09	13.2
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.93	1.02	0.18	1.61	0.95	-0.04	0.88	12	14.1	14.3	10.6	16.8	2.2	-0.42	13.6
Mokau River at Awakau Rd	12	0.55	0.27	0.08	1.35	0.76	0.67	0.46	12	14.2	13.1	9.6	23.4	5.6	0.93	12.6
Mokau River at Mangaokewa Rd (Off SH30)	-	-	-	-	-	-	-	-	12	6.9	6.9	5.7	8.8	1.6	0.61	6.5
Mokau River at Totoro Rd Recorder	12	0.83	0.58	0.15	2.32	0.55	1.32	0.61	12	12.6	12.1	9.9	16.3	2.4	0.63	11.8
Mokauiti Stm at Three Way Point - Aria	12	0.79	0.82	0.11	1.74	0.68	0.43	0.55	12	12.6	11.4	9.4	18.4	4.3	0.73	10.4
Ohautira Stm at Waingaro Te Uku Rd	12	0.73	0.69	0.05	1.80	0.90	0.39	0.73	12	12.9	12.9	10.0	15.7	2.6	-0.17	13.4
Oparau River at Langdon Rd (Off Okupata Rd)	12	1.14	0.92	0.29	2.32	1.30	0.43	1.34	12	8.3	8.3	6.2	10.5	1.1	-0.02	8.2
Tawarau River at Off Speedies Rd	12	1.12	1.17	0.14	2.42	1.10	0.27	1.00	12	13.3	13.5	9.7	15.9	2.3	-0.64	13.3
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.69	0.64	0.06	1.56	0.53	0.39	0.62	12	14.7	13.6	11.3	18.7	4.2	0.49	14.3
Waitetuna River at Te Uku-Waingaro Rd	12	0.69	0.65	0.00	1.57	0.62	0.29	0.60	12	10.1	9.7	7.9	12.4	2.3	0.18	9.9

**Inflows to Lake Taupo**

Hinemaiaia River at SH1	12	2.39	2.55	1.38	3.26	1.25	-0.40	2.16	12	6.2	6.5	4.4	7.2	1.4	-0.66	6.1
Kuratau River at SH41 Moerangi	12	2.38	2.50	1.02	3.90	1.35	-0.03	2.13	12	4.5	4.4	3.8	5.6	0.9	0.76	4.3
Kuratau River at 43 Te Rae Street	-	-	-	-	-	-	-	-	12	6.5	6.5	5.2	7.9	1.2	0.18	6.7
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	1.40	1.39	0.96	1.99	0.54	0.27	1.36	12	12.4	12.5	12.2	12.6	0.2	-0.42	12.4
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	3.20	3.50	0.86	5.02	2.28	-0.30	2.90	12	5.0	5.1	3.5	6.3	1.2	-0.04	4.8
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	-	-	-	-	-	-	-	-	12	13.6	13.3	10.8	18.5	2.6	0.99	12.6
Tokaanu Stm at Off SH41 Turangi	-	-	-	-	-	-	-	-	12	10.0	10.0	9.7	10.1	0.1	-1.68	10.0
Waihaha River at SH32	12	3.09	3.39	1.12	5.10	1.83	0.05	2.96	12	4.8	4.7	4.0	6.0	1.0	0.54	4.8
Waitahanui River at Blake Rd	12	3.19	3.09	1.93	4.86	0.83	0.48	2.74	12	7.5	7.6	7.1	7.8	0.3	-0.40	7.4
Whangamata Stm (Kinloch) at Whangamata Rd	-	-	-	-	-	-	-	-	12	8.8	8.8	8.7	9.0	0.1	0.38	8.8
Whanganui Stm at Lakeside Lake Taupo	-	-	-	-	-	-	-	-	12	5.7	5.4	4.6	7.5	1.5	0.76	5.7
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	-	-	-	-	-	-	-	-	12	7.6	7.6	6.6	8.5	0.9	0.00	7.9

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

## Dissolved Oxygen (% Saturation)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	94.1	94.1	86.0	103.1	8.1	0.31	96.0
Kauaeranga River at Smiths Cableway/Recorder	12	98.4	97.9	90.1	113.3	8.7	0.81	99.7
Ohinemuri River at Queens Head	12	105.6	103.9	93.6	124.1	9.2	0.74	103.0
Ohinemuri River at SH25 Br	12	106.1	107.4	86.9	119.7	8.1	-0.82	104.8
Tairua River at Morrisons Br Hikuai	12	98.9	95.5	86.6	133.5	8.4	<u>2.14</u>	97.3
Tapu River at Tapu-Coroglen Rd	12	99.6	100.3	91.0	108.4	6.2	-0.10	102.0
Waiiau River at E309 Rd Ford	12	100.5	99.8	94.3	111.0	7.4	0.66	101.1
Waitekauri River at U/S Ohinemuri Conflu	12	101.4	101.1	94.1	108.6	9.1	-0.02	102.9
Waiwawa River at SH25 Coroglen	12	99.9	100.3	92.8	106.6	7.6	-0.11	101.2
Wharekawa River at SH25	12	93.3	92.9	77.9	108.8	10.5	0.15	98.0
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	93.9	93.3	90.2	99.0	2.8	0.36	97.9
Oraka Stm at Lake Rd	12	90.8	91.3	80.4	98.9	3.4	-0.47	93.2
Piako River at Kiwitahi	12	81.8	86.4	48.0	107.8	32.5	-0.57	90.4
Piako River at Paeroa-Tahuna Rd Br	12	83.8	84.0	73.0	95.2	3.4	0.15	85.8
Piakonui Stm at Piakonui Rd	11	96.2	95.8	90.2	103.0	6.2	-0.03	98.5
Waihou River at Okauia	12	92.7	91.8	87.9	99.4	2.1	0.91	93.7
Waihou River at Whites Rd	12	99.1	98.0	95.1	105.6	5.1	0.67	100.8
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	93.6	93.0	89.4	99.9	2.1	0.97	92.4
Waiomou Stm at Matamata-Tauranga Rd	12	94.3	93.9	90.7	101.1	2.9	1.10	96.2
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	93.9	91.1	84.8	113.4	11.5	1.02	95.0
Waitoa River at Landsdowne Rd Br	11	86.8	86.8	73.3	101.2	11.2	0.13	88.5
Waitoa River at Mellon Rd Recorder	12	73.4	72.0	64.7	84.8	7.9	0.66	78.0
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	90.0	83.5	75.0	127.8	14.7	1.45	91.9
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	80.8	83.1	70.0	90.1	14.8	-0.23	84.9
Karapiro Stm at Hickey Rd Bridge	12	90.8	89.5	84.2	100.2	6.8	0.66	93.7
Kirikiri River at Tauhara Dr	12	69.6	71.8	56.8	77.9	8.7	-0.64	69.8
Komakorau Stm at Henry Rd	12	55.2	57.6	2.7	76.0	22.5	-1.61	60.2
Little Waipa Stm at Arapuni - Putaruru Rd	12	99.4	98.8	92.6	108.0	7.6	0.22	101.8
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	89.1	88.3	82.8	100.1	5.0	1.00	89.8
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	99.6	100.1	93.6	105.4	6.5	-0.15	102.1
Mangaone Stm at Annebrooke Rd Br	12	77.3	77.8	72.8	81.0	5.4	-0.30	80.7
Mangaonua Stm at Hoeka Rd	12	79.1	80.5	69.6	83.9	3.7	-1.09	83.6
Mangaonua Stm at Te Miro Rd	12	96.5	97.1	91.3	99.4	3.5	-0.82	98.1
Mangatangi River at SH2 Maramarua	12	87.4	89.5	72.0	102.7	10.7	-0.12	87.1
Mangatawhiri River at Lyons Rd At Buckingham Br	12	113.3	116.6	91.7	124.4	8.4	-1.16	109.2
Mangawara Stm at Rutherford Rd Br	12	74.1	74.6	60.8	89.0	8.5	0.19	77.8
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	83.0	82.6	79.3	87.7	3.2	0.40	85.3
Matahuru Stm at Waiterimu Road Below Confluence	12	83.3	84.8	75.9	89.2	4.8	-0.76	87.1
Ohaeroa Stm at SH22 Br	12	92.4	92.3	87.9	102.2	4.1	1.25	99.0
Opuatia Stm at Ponganui Rd	12	92.1	92.7	83.8	98.1	3.7	-0.56	95.9
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	101.1	101.8	93.5	109.7	7.8	0.06	102.5
Waerenga Stm at Taniwha Rd	12	93.3	92.6	86.5	98.6	5.0	-0.08	99.1
Waitawhiriwhiri Stm at Edgecumbe Street	12	84.8	83.7	76.8	108.2	7.4	<u>1.76</u>	83.9
Whakapipi Stm at SH22 Br	12	87.0	87.3	71.2	99.0	5.4	-0.70	89.9
Whakauru Stm at U/S SH1 Br	12	97.6	98.1	94.0	100.9	3.9	-0.21	99.1
Whangamarino River at Island Block Rd	12	67.0	64.8	45.8	88.9	20.3	0.06	62.3
Whangamarino River at Jefferies Rd Br	12	72.2	71.0	62.6	82.4	15.1	0.23	80.3
Whangape Stm at Rangiriri-Glen Murray Rd	12	78.3	87.7	10.1	112.1	22.5	-1.26	92.2

Dissolved Oxygen (g m<sup>-3</sup>)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	9.5	9.6	8.1	11.0	1.3	-0.08	9.8
Kauaeranga River at Smiths Cableway/Recorder	12	9.8	9.9	8.7	11.0	1.3	-0.13	10.0
Ohinemuri River at Queens Head	12	10.2	10.0	9.0	13.0	1.4	1.15	10.4
Ohinemuri River at SH25 Br	12	10.3	10.4	8.8	11.6	1.2	-0.45	10.2
Tairua River at Morrisons Br Hikuai	12	9.8	9.7	7.8	14.0	1.6	1.38	9.7
Tapu River at Tapu-Coroglen Rd	12	10.1	10.1	9.2	11.2	1.1	0.13	10.3
Waiiau River at E309 Rd Ford	12	10.2	10.3	9.2	11.8	1.4	0.29	10.3
Waitekauri River at U/S Ohinemuri Conflu	12	10.0	10.1	9.0	11.0	0.8	-0.15	10.1
Waiwawa River at SH25 Coroglen	12	9.8	10.1	8.4	11.1	1.4	-0.25	10.0
Wharekawa River at SH25	12	9.3	9.3	7.4	10.9	1.2	-0.26	9.7
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	9.6	9.4	8.8	11.3	0.9	1.11	10.0
Oraka Stm at Lake Rd	12	9.4	9.3	7.7	10.8	1.1	-0.31	9.6
Piako River at Kiwitahi	12	8.2	8.7	4.1	11.4	4.3	-0.51	9.3
Piako River at Paeroa-Tahuna Rd Br	12	8.5	8.2	7.4	10.5	1.5	0.72	8.8
Piakonui Stm at Piakonui Rd	11	9.9	10.0	7.9	10.8	1.1	-1.06	10.3
Waihou River at Okauia	12	9.5	9.4	8.4	10.8	0.9	0.11	9.7
Waihou River at Whites Rd	12	10.3	10.3	9.8	10.9	0.4	0.40	10.5
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	10.0	9.9	8.9	11.6	1.1	0.38	9.8
Waiomou Stm at Matamata-Tauranga Rd	12	9.8	9.6	8.6	11.3	0.9	0.49	9.9
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	9.2	9.1	8.0	11.1	1.4	0.66	9.6
Waitoa River at Landsdowne Rd Br	11	8.7	8.8	7.2	10.0	1.5	-0.23	9.0
Waitoa River at Mellon Rd Recorder	12	7.4	7.5	6.4	8.8	1.2	0.25	7.8
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	8.6	8.6	7.4	11.0	1.3	1.00	9.0
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	8.3	8.5	6.6	10.1	2.4	0.03	8.9
Karapiro Stm at Hickey Rd Bridge	12	9.1	8.9	7.8	10.4	1.8	0.09	9.5
Kirikiri River at Tauhara Dr	12	7.0	7.1	5.2	8.1	1.6	-0.32	7.0
Komakorau Stm at Henry Rd	12	5.6	6.1	0.3	8.1	2.8	-1.11	6.1
Little Waipa Stm at Arapuni - Putaruru Rd	12	10.2	10.2	9.5	11.0	0.5	0.19	10.5
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	9.0	9.1	7.9	9.7	0.8	-0.48	9.1
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	10.1	10.0	9.5	10.8	1.0	0.47	10.2
Mangaone Stm at Annebrooke Rd Br	12	8.1	8.1	7.0	9.1	1.3	0.01	8.5
Mangaonua Stm at Hoeka Rd	12	8.2	8.1	7.3	9.1	1.0	0.09	8.7
Mangaonua Stm at Te Miro Rd	12	9.8	9.9	8.9	10.7	1.3	-0.10	10.3
Mangatangi River at SH2 Maramarua	12	8.5	8.3	7.1	10.7	1.9	0.52	8.6
Mangatawhiri River at Lyons Rd At Buckingham Br	12	11.0	11.0	8.8	14.1	1.7	0.69	10.5
Mangawara Stm at Rutherford Rd Br	12	7.3	7.1	5.5	9.6	1.1	0.63	7.8
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	8.5	8.5	7.6	9.4	0.9	-0.06	8.7
Matahuru Stm at Waiterimu Road Below Confluence	12	8.4	7.9	7.6	10.6	1.2	1.25	8.7
Ohaeroa Stm at SH22 Br	12	9.3	9.1	8.4	11.5	0.9	1.45	10.2
Opuatia Stm at Ponganui Rd	12	9.2	9.0	8.3	11.4	1.2	1.12	9.7
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	10.3	10.6	9.4	11.0	1.1	-0.25	10.5
Waerenga Stm at Taniwha Rd	12	9.5	9.3	8.0	11.8	1.3	0.89	10.2
Waitawhiriwhiri Stm at Edgecumbe Street	12	8.2	8.2	7.0	9.2	1.0	-0.24	8.1
Whakapipi Stm at SH22 Br	12	8.7	8.6	6.5	11.1	1.3	0.15	8.9
Whakauru Stm at U/S SH1 Br	12	10.2	10.2	9.5	11.0	1.0	0.18	10.3
Whangamarino River at Island Block Rd	12	6.3	6.2	4.6	7.8	1.6	-0.07	6.2
Whangamarino River at Jefferies Rd Br	12	7.3	6.9	5.7	10.3	2.1	0.88	8.0
Whangape Stm at Rangiriri-Glen Murray Rd	12	7.7	8.5	0.9	11.0	3.4	-1.08	9.4

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

**Waipa River and Tributaries**

Kaniwhaniwha Stm at Wright Rd	12	84.6	83.8	75.4	106.9	6.8	<u>1.85</u>	86.5
Mangaohoi Stm at South Branch Maru Rd	12	97.8	98.2	91.2	101.2	2.6	-1.02	100.0
Mangaokewa Stm at Lawrence St Bridge	12	91.5	91.5	84.6	95.7	4.0	-0.68	95.5
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	100.8	98.9	77.6	141.7	25.6	0.82	94.1
Mangapu River at Otorohanga	12	94.1	93.0	83.3	111.4	9.0	0.92	93.2
Mangatutu Stm (Waikeria) at Walker Rd Br	11	93.8	94.5	87.0	98.3	3.0	-0.71	95.4
Manguaika Stm at Te Awamutu Borough W/S Intake	11	97.1	97.0	92.1	103.0	4.2	0.21	98.2
Ohote Stm at Whatawhata/Horotiu Rd	12	45.8	55.6	2.8	72.3	44.2	-0.61	51.3
Puniu River at Bartons Corner Rd Br	12	92.2	90.7	83.5	112.0	8.0	1.23	93.6
Waipa River at Mangaokewa Rd	12	99.3	98.9	93.2	106.1	3.6	0.44	100.8
Waipa River at Pirongia-Ngutunui Rd Br	12	88.5	88.6	76.9	93.5	4.6	-1.41	90.9
Waipa River at SH3 Otorohanga	12	99.9	97.0	89.9	115.4	12.3	0.83	99.5
Waitomo Stm at SH31 Otorohanga	12	95.7	94.5	82.5	114.3	9.2	0.71	97.1
Waitomo Stm at Tumutumu Rd	12	100.8	97.7	90.9	117.5	13.4	0.79	99.4

	12	8.6	8.1	7.2	11.7	1.9	1.01	9.0
	12	9.7	9.7	8.9	10.6	0.8	-0.01	10.1
	12	9.5	9.6	7.9	10.9	1.4	-0.33	10.2
	12	9.7	9.6	7.9	12.4	1.8	0.65	9.5
	12	9.3	9.2	8.2	11.0	1.6	0.49	9.4
	11	9.5	9.5	8.2	10.8	1.0	0.02	9.6
	11	10.1	10.3	9.4	10.8	0.9	-0.11	10.4
	12	4.5	5.0	0.3	7.4	5.1	-0.28	5.1
	12	9.2	9.2	7.5	10.3	0.9	-0.52	9.3
	12	9.9	10.3	8.5	11.1	1.6	-0.25	10.1
	12	8.9	8.5	7.9	10.4	1.4	0.58	9.2
	12	9.9	10.0	9.2	10.6	0.8	-0.28	10.2
	12	9.5	9.6	8.5	10.5	1.0	-0.10	9.8
	12	10.3	10.3	9.3	11.5	0.6	0.28	10.3

**Tributaries to the upper Waikato River**

Kawaunui Stm at SH5 Br	12	85.1	85.7	81.9	88.7	3.4	-0.06	86.2
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	93.0	92.7	90.9	95.8	3.8	0.34	94.4
Mangakara Stm (Reporoa) at SH5	12	91.5	91.3	89.3	96.2	1.7	1.23	91.7
Mangakino Stm (Whakamaru) at Sandel Rd	12	101.4	101.6	95.0	106.6	4.1	-0.19	102.5
Otamakokore Stm at Hossack Rd	12	99.1	98.6	83.4	114.0	16.3	-0.01	98.5
Pueto Stm at Broadlands Rd Br	12	92.8	92.5	90.4	95.8	2.5	0.35	94.1
Tahunaatara Stm at Ohakuri Rd	12	102.3	102.2	96.7	107.6	6.5	0.00	103.6
Torepatutahi Stm at Vaile Rd Br	12	97.4	99.1	88.6	104.0	8.7	-0.30	100.8
Waiotapu Stm at Campbell Rd Br	12	86.4	85.5	83.5	89.4	3.7	0.37	88.1
Waiotapu Stm at Homestead Rd Br	12	91.3	88.8	79.9	112.4	10.8	0.98	89.6
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	98.5	98.8	95.8	102.3	2.4	0.37	100.0
Whirinaki Stm at Corbett Rd	12	96.2	96.1	93.7	99.6	1.5	0.59	97.6

	12	8.9	9.0	7.5	10.0	1.3	-0.51	8.4
	12	9.9	10.2	7.8	11.0	1.1	-0.93	9.6
	12	9.7	9.9	8.2	10.8	1.4	-0.62	9.3
	12	11.2	11.3	8.9	13.2	2.2	-0.26	10.7
	12	8.7	8.9	7.4	9.9	1.7	-0.26	8.6
	12	9.6	9.9	8.2	10.6	1.6	-0.46	9.5
	12	10.7	10.9	8.9	11.9	1.3	-0.74	10.4
	12	10.4	10.3	8.2	12.4	1.2	-0.30	10.1
	12	7.0	7.1	5.9	7.7	1.1	-0.53	6.7
	12	8.4	8.3	7.4	9.7	1.0	0.29	8.2
	12	8.8	8.9	7.7	9.6	0.9	-0.55	8.4
	12	10.4	10.7	9.2	11.4	1.2	-0.58	10.0

**West Coast**

Awakino River at Gribbon Rd	12	99.5	99.6	93.3	106.0	4.9	0.24	100.5
Awakino River at SH3 Awakau Rd Junction	12	103.2	101.5	90.4	121.9	15.8	0.64	104.1
Manganui River at Off Manganui Rd	12	99.2	99.3	91.9	107.0	8.2	0.08	100.8
Mangaotaki River at SH3 Br	12	99.7	98.9	94.5	107.2	5.3	0.57	101.3
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	101.7	100.2	94.1	111.0	9.7	0.55	103.5
Mokau River at Awakau Rd	12	92.3	91.5	86.9	101.5	3.3	1.16	94.4
Mokau River at Mangaokewa Rd (Off SH30)	12	96.8	97.4	92.1	100.6	3.6	-0.35	98.1
Mokau River at Totoro Rd Recorder	12	100.2	100.3	95.4	104.7	4.2	0.05	102.0
Mokauiti Stm at Three Way Point - Aria	12	88.2	88.3	77.5	99.1	11.4	-0.10	94.2
Ohautira Stm at Waingaro Te Uku Rd	12	91.7	90.8	88.9	96.2	4.2	0.53	94.2
Oparau River at Langdon Rd (Off Okupata Rd)	12	101.7	100.4	93.0	110.8	8.9	0.32	104.9
Tawarau River at Off Speedies Rd	12	100.9	99.8	95.0	108.5	6.8	0.54	101.8
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	89.6	91.0	80.2	94.4	7.3	-0.79	94.9
Waitetuna River at Te Uku-Waingaro Rd	12	93.1	93.2	88.5	99.0	6.3	0.07	96.2

	11	10.8	11.2	9.4	11.9	1.7	-0.13	10.5
	12	11.2	11.3	9.0	13.9	0.8	0.21	10.8
	12	11.1	11.1	8.8	15.3	2.4	0.86	10.4
	12	11.0	11.2	9.3	12.3	2.0	-0.41	10.5
	12	11.3	11.3	10.1	12.4	1.4	-0.10	10.6
	12	10.2	10.4	8.3	13.0	2.6	0.15	9.6
	12	10.8	11.1	9.0	12.1	1.9	-0.48	10.1
	12	10.8	10.8	9.0	12.6	2.6	-0.06	10.3
	12	9.9	10.4	7.2	11.4	2.0	-0.89	9.6
	12	10.7	10.8	8.1	13.3	1.8	-0.20	10.2
	12	11.5	11.5	9.4	12.9	1.7	-0.30	10.6
	12	11.2	11.2	9.5	12.3	1.8	-0.25	10.6
	12	10.4	10.8	7.7	12.6	1.3	-0.59	9.8
	12	10.7	10.7	8.3	13.5	2.1	0.13	10.2

**Inflows to Lake Taupo**

Hinemaiaia River at SH1	12	99.5	98.5	95.7	106.4	4.7	0.73	99.8
Kuratau River at SH41 Moerangi	12	92.9	92.4	89.1	99.1	2.5	1.16	93.9
Kuratau River at 43 Te Rae Street	12	101.5	102.1	95.0	110.0	8.5	0.09	101.9
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	87.0	86.7	82.8	91.7	2.4	0.37	87.7
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	97.8	97.6	93.1	104.3	4.2	0.51	98.9
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	102.6	103.6	95.7	109.4	8.2	-0.03	102.9
Tokaanu Stm at Off SH41 Turangi	12	81.7	81.9	77.8	84.8	3.1	-0.47	83.5
Waihaha River at SH32	12	101.7	101.8	94.8	108.9	7.1	0.02	102.7
Waitahanui River at Blake Rd	12	98.4	97.5	94.2	101.7	4.5	0.10	99.1
Whangamata Stm (Kinloch) at Whangamata Rd	12	94.5	94.3	90.4	99.5	2.0	0.65	95.7
Whanganui Stm at Lakeside Lake Taupo	12	98.9	102.3	82.3	104.9	8.6	-1.22	102.0
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	95.2	94.9	90.6	99.8	4.0	0.15	96.1

	12	11.1	11.5	9.1	12.5	1.9	-0.55	10.6
	12	10.5	10.7	8.6	11.8	2.0	-0.40	9.9
	12	10.8	11.1	8.9	12.6	2.0	-0.33	10.4
	12	9.8	9.9	8.2	11.1	1.3	-0.51	9.3
	12	11.1	11.1	8.7	12.9	1.8	-0.46	10.7
	12	11.2	11.7	7.4	14.0	3.0	-0.47	10.4
	12	9.0	9.2	7.7	10.0	1.1	-0.48	8.5
	12	11.0	10.9	9.3	12.8	2.0	0.19	10.6
	12	11.0	11.2	9.2	12.0	1.6	-0.63	10.5
	12	10.8	10.8	9.3	12.3	1.5	-0.07	10.3
	12	11.0	11.0	8.9	12.8	2.3	-0.09	10.6
	12	10.6	10.8	8.8	12.2	1.9	-0.29	10.1

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Dissolved Reactive Phosphorus (g m<sup>-3</sup>)

Location	Count	Mean	Median	Min	Max	IQR	Skew	09-13
								Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.003	0.002	0.002	0.005	0.000	<u>1.79</u>	0.002
Kauaeeranga River at Smiths Cableway/Recorder	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Ohinemuri River at Queens Head	12	0.003	0.002	0.002	0.007	0.000	<u>2.42</u>	0.002
Ohinemuri River at SH25 Br	12	0.006	0.002	0.002	0.031	0.005	<u>2.51</u>	0.005
Tairua River at Morrisons Br Hikuai	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Tapu River at Tapu-Coroglen Rd	12	0.002	0.002	0.002	0.005	0.000	<u>3.02</u>	0.002
Waiau River at E309 Rd Ford	12	0.002	0.002	0.002	0.004	0.000	<u>3.02</u>	0.002
Waitekauri River at U/S Ohinemuri Conflu	12	0.003	0.002	0.002	0.006	0.000	<u>2.22</u>	0.002
Waiwawa River at SH25 Coroglen	12	0.003	0.002	0.002	0.013	0.000	<u>2.69</u>	0.002
Wharekawa River at SH25	12	0.002	0.002	0.002	0.005	0.000	<u>1.97</u>	0.002
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.040	0.040	0.029	0.048	0.007	-0.18	0.036
Oraka Stm at Lake Rd	12	0.091	0.087	0.062	0.176	0.041	1.43	0.087
Piako River at Kiwitahi	12	0.042	0.041	0.019	0.066	0.013	0.22	0.047
Piako River at Paeroa-Tahuna Rd Br	12	0.230	0.206	0.043	0.450	0.323	0.11	0.163
Piakonui Stm at Piakonui Rd	12	0.013	0.012	0.009	0.019	0.005	0.55	0.010
Waihou River at Okauia	12	0.060	0.059	0.052	0.075	0.007	0.76	0.063
Waihou River at Whites Rd	12	0.074	0.074	0.067	0.078	0.004	-0.56	0.074
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.013	0.012	0.010	0.018	0.004	0.61	0.012
Waiomou Stm at Matamata-Tauranga Rd	12	0.019	0.019	0.014	0.024	0.005	0.22	0.021
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.026	0.020	0.012	0.055	0.021	0.94	0.025
Waitoa River at Landsdowne Rd Br	12	0.023	0.022	0.007	0.050	0.021	0.58	0.025
Waitoa River at Mellon Rd Recorder	12	0.072	0.077	0.028	0.110	0.050	-0.21	0.050
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.005	0.005	0.002	0.019	0.005	<u>2.04</u>	0.004
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Karapiro Stm at Hickey Rd Bridge	12	0.049	0.044	0.015	0.085	0.032	0.22	0.040
Kirikiriua Stm at Tauhara Dr	12	0.013	0.014	0.009	0.016	0.004	-0.46	0.015
Komakorau Stm at Henry Rd	12	0.011	0.010	0.002	0.021	0.013	0.33	0.010
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.051	0.053	0.032	0.072	0.015	-0.09	0.050
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	0.308	0.180	0.054	1.200	0.362	<u>1.70</u>	0.230
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.260	0.230	0.170	0.420	0.113	0.82	0.290
Mangaone Stm at Annebrooke Rd Br	12	0.063	0.062	0.051	0.076	0.011	-0.01	0.062
Mangaonua Stm at Hoeka Rd	12	0.012	0.010	0.006	0.022	0.010	0.54	0.012
Mangaonua Stm at Te Miro Rd	12	0.018	0.018	0.006	0.031	0.009	0.16	0.013
Mangatangi River at SH2 Maramarua	12	0.024	0.020	0.015	0.041	0.013	0.94	0.023
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.012	0.013	0.005	0.015	0.005	-0.74	0.011
Mangawara Stm at Rutherford Rd Br	12	0.054	0.062	0.012	0.122	0.048	0.41	0.046
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.064	0.044	0.018	0.220	0.058	<u>1.78</u>	0.052
Matahuru Stm at Waiterimu Road Below Confluence	12	0.025	0.023	0.020	0.038	0.008	1.03	0.024
Ohaeroa Stm at SH22 Br	12	0.010	0.009	0.006	0.017	0.005	0.92	0.008
Opuatia Stm at Ponganui Rd	12	0.006	0.007	0.002	0.009	0.002	-0.87	0.006
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.085	0.085	0.068	0.100	0.009	-0.17	0.086
Waerenga Stm at Taniwha Rd	12	0.031	0.025	0.010	0.092	0.021	<u>1.86</u>	0.019
Waitawhiriwhiri Stm at Edgcombe Street	12	0.047	0.029	0.010	0.127	0.051	1.05	0.036
Whakapipi Stm at SH22 Br	12	0.062	0.052	0.016	0.132	0.062	0.38	0.022
Whakauru Stm at U/S SH1 Br	12	0.022	0.022	0.018	0.027	0.007	0.30	0.018
Whangamarino River at Island Block Rd	12	0.006	0.006	0.002	0.013	0.006	0.59	0.006
Whangamarino River at Jefferies Rd Br	12	0.042	0.035	0.019	0.153	0.013	<u>2.72</u>	0.031
Whangape Stm at Rangiriiri-Glen Murray Rd	12	0.005	0.002	0.002	0.022	0.000	<u>1.80</u>	0.002

Total Phosphorus (g m<sup>-3</sup>)

Count	Mean	Median	Min	Max	IQR	Skew	09-13	
							Median	
12	0.007	0.007	0.002	0.018	0.005	0.96	0.007	
12	0.009	0.008	0.002	0.016	0.006	0.09	0.005	
12	0.010	0.008	0.005	0.027	0.006	<u>1.81</u>	0.012	
12	0.022	0.011	0.002	0.162	0.007	<u>2.94</u>	0.012	
12	0.008	0.006	0.002	0.035	0.007	<u>2.32</u>	0.002	
12	0.023	0.003	0.002	0.230	0.004	<u>3.01</u>	0.002	
12	0.017	0.007	0.002	0.132	0.004	<u>2.97</u>	0.005	
12	0.009	0.005	0.002	0.057	0.006	<u>2.79</u>	0.006	
12	0.021	0.008	0.002	0.109	0.013	<u>1.85</u>	0.003	
12	0.013	0.007	0.002	0.092	0.008	<u>2.91</u>	0.005	
<b>Hauraki</b>								
12	0.056	0.053	0.040	0.103	0.015	<u>1.78</u>	0.047	
12	0.113	0.106	0.066	0.210	0.036	1.53	0.119	
12	0.070	0.061	0.037	0.173	0.021	<u>2.37</u>	0.078	
12	0.281	0.247	0.096	0.510	0.288	0.16	0.255	
12	0.021	0.021	0.016	0.029	0.007	0.43	0.020	
12	0.072	0.073	0.058	0.080	0.010	-0.70	0.084	
12	0.083	0.077	0.069	0.140	0.013	<u>2.49</u>	0.074	
12	0.024	0.023	0.018	0.035	0.007	0.91	0.024	
12	0.032	0.033	0.023	0.043	0.011	0.29	0.040	
12	0.062	0.062	0.028	0.097	0.042	-0.09	0.067	
12	0.052	0.045	0.010	0.106	0.036	0.44	0.065	
12	0.119	0.128	0.040	0.194	0.085	-0.26	0.114	
<b>Tributaries to the lower Waikato River</b>								
12	0.047	0.048	0.024	0.097	0.027	1.00	0.052	
12	0.013	0.009	0.002	0.067	0.006	<u>2.80</u>	0.012	
12	0.079	0.079	0.052	0.115	0.041	0.30	0.084	
12	0.057	0.059	0.034	0.088	0.017	0.35	0.067	
12	0.080	0.081	0.053	0.106	0.016	0.11	0.094	
12	0.066	0.062	0.039	0.095	0.028	0.37	0.066	
12	0.434	0.330	0.160	1.360	0.387	1.62	0.380	
12	0.288	0.250	0.200	0.410	0.080	0.68	0.330	
12	0.111	0.112	0.092	0.132	0.017	0.14	0.125	
12	0.052	0.055	0.015	0.096	0.030	0.33	0.054	
12	0.030	0.028	0.021	0.057	0.011	<u>1.69</u>	0.028	
12	0.067	0.064	0.042	0.126	0.041	0.90	0.078	
12	0.026	0.025	0.013	0.061	0.010	<u>1.89</u>	0.024	
12	0.180	0.184	0.100	0.260	0.056	-0.16	0.220	
12	0.179	0.143	0.110	0.540	0.036	<u>2.66</u>	0.161	
12	0.090	0.088	0.057	0.134	0.021	0.65	0.100	
12	0.037	0.026	0.017	0.132	0.015	<u>2.45</u>	0.029	
12	0.050	0.036	0.023	0.112	0.048	0.93	0.032	
12	0.099	0.098	0.075	0.136	0.017	0.55	0.106	
12	0.058	0.057	0.025	0.128	0.026	1.47	0.046	
12	0.104	0.094	0.051	0.184	0.047	0.80	0.097	
12	0.098	0.098	0.036	0.175	0.076	0.30	0.053	
12	0.038	0.037	0.028	0.050	0.011	0.14	0.041	
12	0.126	0.123	0.058	0.186	0.058	-0.01	0.160	
12	0.093	0.080	0.048	0.260	0.024	<u>2.48</u>	0.092	
12	0.129	0.112	0.039	0.250	0.108	0.40	0.122	

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions.

**Waipa River and Tributaries**

Kaniwhaniwha Stm at Wright Rd	12	0.008	0.007	0.002	0.017	0.005	0.96	0.007
Mangaohoi Stm at South Branch Maru Rd	12	0.046	0.047	0.023	0.064	0.023	-0.21	0.040
Mangaokewa Stm at Lawrence St Bridge	12	0.017	0.016	0.010	0.027	0.005	0.94	0.014
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.135	0.107	0.034	0.410	0.134	1.39	0.118
Mangapu River at Otorohanga	12	0.027	0.024	0.013	0.057	0.009	1.42	0.023
Mangatutu Stm (Waikeria) at Walker Rd Br	11	0.008	0.008	0.004	0.014	0.004	0.55	0.009
Mangauika Stm at Te Awamutu Borough W/S Intake	11	0.003	0.002	0.002	0.006	0.002	1.12	0.002
Ohote Stm at Whatawhata/Horotiu Rd	12	0.022	0.020	0.006	0.040	0.016	0.50	0.020
Puniu River at Bartons Corner Rd Br	12	0.023	0.024	0.014	0.033	0.009	0.22	0.022
Waipa River at Mangaokewa Rd	12	0.007	0.006	0.002	0.017	0.005	1.10	0.005
Waipa River at Pirongia-Ngutu Rd Br	12	0.015	0.016	0.011	0.021	0.007	0.05	0.016
Waipa River at SH3 Otorohanga	12	0.011	0.009	0.004	0.031	0.005	<u>1.72</u>	0.008
Waitomo Stm at SH31 Otorohanga	12	0.005	0.005	0.002	0.010	0.001	0.34	0.006
Waitomo Stm at Tumutumu Rd	12	0.011	0.010	0.006	0.021	0.002	<u>1.82</u>	0.010

12	0.029	0.025	0.013	0.057	0.015	1.02	0.031
12	0.061	0.056	0.028	0.119	0.019	1.16	0.051
12	0.050	0.038	0.022	0.200	0.022	<u>2.74</u>	0.036
12	0.213	0.188	0.091	0.510	0.132	1.42	0.260
12	0.062	0.050	0.030	0.173	0.028	<u>1.92</u>	0.074
11	0.022	0.019	0.010	0.059	0.006	<u>1.82</u>	0.021
11	0.008	0.005	0.002	0.025	0.009	1.33	0.008
12	0.077	0.075	0.025	0.135	0.056	0.05	0.077
12	0.056	0.046	0.028	0.113	0.036	0.95	0.049
12	0.023	0.024	0.006	0.053	0.019	0.72	0.017
12	0.040	0.034	0.025	0.081	0.017	1.58	0.052
12	0.047	0.022	0.005	0.280	0.022	<u>2.65</u>	0.025
12	0.026	0.022	0.007	0.064	0.018	1.16	0.036
12	0.021	0.015	0.009	0.047	0.012	1.22	0.023

**Tributaries to the upper Waikato River**

Kawaunui Stm at SH5 Br	12	0.046	0.045	0.026	0.076	0.020	0.56	0.056
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.032	0.031	0.025	0.042	0.005	0.96	0.033
Mangakara Stm (Reporoa) at SH5	12	0.054	0.051	0.042	0.100	0.010	<u>2.41</u>	0.048
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.040	0.041	0.023	0.056	0.013	-0.10	0.040
Otamakokore Stm at Hossack Rd	12	0.151	0.147	0.135	0.184	0.011	1.22	0.153
Pueto Stm at Broadlands Rd Br	12	0.071	0.070	0.066	0.075	0.004	0.35	0.075
Tahunaatara Stm at Ohakuri Rd	12	0.032	0.032	0.029	0.038	0.004	0.76	0.031
Torepatutahi Stm at Vaile Rd Br	12	0.085	0.085	0.077	0.097	0.011	0.35	0.083
Waiotapu Stm at Campbell Rd Br	12	0.003	0.002	0.002	0.006	0.000	<u>2.22</u>	0.002
Waiotapu Stm at Homestead Rd Br	12	0.027	0.030	0.005	0.048	0.032	-0.19	0.035
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.104	0.086	0.079	0.230	0.027	<u>2.37</u>	0.086
Whirinaki Stm at Corbett Rd	12	0.061	0.061	0.056	0.067	0.004	0.23	0.061

12	0.063	0.061	0.039	0.096	0.014	0.64	0.088
12	0.063	0.045	0.034	0.270	0.009	<u>2.96</u>	0.049
12	0.076	0.072	0.054	0.119	0.008	1.49	0.077
12	0.046	0.047	0.034	0.060	0.015	0.08	0.047
12	0.143	0.141	0.12	0.187	0.02	1.11	0.144
12	0.081	0.081	0.066	0.096	0.009	-0.03	0.096
12	0.044	0.044	0.032	0.059	0.009	0.44	0.047
12	0.202	0.097	0.086	1.350	0.020	<u>3.01</u>	0.098
12	0.051	0.051	0.019	0.075	0.037	-0.09	0.075
12	0.079	0.066	0.043	0.147	0.041	0.86	0.104
12	0.098	0.085	0.075	0.21	0.028	2.38	0.090
12	0.062	0.063	0.055	0.070	0.006	-0.06	0.063

**West Coast**

Awakino River at Gribbon Rd	12	0.013	0.013	0.008	0.016	0.003	-0.27	0.012
Awakino River at SH3 Awakau Rd Junction	12	0.008	0.009	0.002	0.015	0.003	-0.05	0.008
Manganui River at Off Manganui Rd	12	0.012	0.012	0.006	0.022	0.004	1.37	0.012
Mangaotaki River at SH3 Br	12	0.011	0.013	0.002	0.017	0.005	-0.74	0.011
Marokopa River at Speedies Rd (Off Te Anka Rd)	12	0.019	0.014	0.010	0.074	0.005	<u>2.83</u>	0.013
Mokau River at Awakau Rd	12	0.006	0.006	0.002	0.015	0.006	0.74	0.007
Mokau River at Mangaokewa Rd (Off SH30)	12	0.020	0.017	0.008	0.033	0.014	0.45	0.013
Mokau River at Totoro Rd Recorder	12	0.011	0.010	0.004	0.020	0.004	0.76	0.010
Mokauiti Stm at Three Way Point - Aria	12	0.013	0.007	0.002	0.083	0.006	<u>2.91</u>	0.008
Ohautira Stm at Waingaro Te Uku Rd	12	0.020	0.019	0.009	0.040	0.008	1.05	0.019
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.007	0.008	0.002	0.013	0.003	0.20	0.006
Tawarau River at Off Speedies Rd	12	0.023	0.014	0.011	0.100	0.009	<u>2.81</u>	0.014
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.010	0.009	0.002	0.017	0.003	-0.04	0.009
Waitetuna River at Te Uku-Waingaro Rd	12	0.012	0.011	0.006	0.022	0.004	1.04	0.012

12	0.026	0.019	0.009	0.067	0.016	1.36	0.017
12	0.037	0.016	0.006	0.148	0.051	1.55	0.020
12	0.058	0.021	0.009	0.280	0.028	<u>1.85</u>	0.023
12	0.043	0.022	0.008	0.230	0.032	<u>2.62</u>	0.027
12	0.034	0.023	0.009	0.091	0.031	1.31	0.024
12	0.044	0.028	0.008	0.129	0.039	1.27	0.043
12	0.044	0.040	0.020	0.085	0.027	0.74	0.034
12	0.039	0.029	0.008	0.135	0.034	<u>1.73</u>	0.031
12	0.050	0.030	0.012	0.146	0.062	1.10	0.042
12	0.052	0.031	0.022	0.160	0.041	<u>1.90</u>	0.038
12	0.016	0.015	0.005	0.032	0.012	0.59	0.013
12	0.038	0.027	0.010	0.117	0.033	<u>1.71</u>	0.026
12	0.058	0.031	0.012	0.280	0.023	<u>2.51</u>	0.033
12	0.041	0.023	0.020	0.136	0.016	<u>1.85</u>	0.035

**Inflows to Lake Taupo**

Hinemaiaia River at SH1	12	0.029	0.029	0.019	0.038	0.009	-0.11	0.026
Kuratau River at SH41 Moerangi	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Kuratau River at 43 Te Rae Street	12	0.003	0.002	0.002	0.005	0.001	1.34	0.002
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.120	0.120	0.105	0.138	0.011	0.30	0.125
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	0.014	0.014	0.010	0.019	0.003	0.33	0.012
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.003	0.002	0.002	0.005	0.002	1.15	0.002
Tokaanu Stm at Off SH41 Turangi	12	0.076	0.077	0.071	0.083	0.004	0.34	0.076
Waihaha River at SH32	12	0.020	0.019	0.009	0.034	0.011	0.58	0.020
Waitahanui River at Blake Rd	12	0.045	0.044	0.040	0.051	0.004	0.65	0.043
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.065	0.066	0.058	0.071	0.004	-0.25	0.065
Whanganui Stm at Lakeside Lake Taupo	12	0.010	0.009	0.004	0.021	0.006	0.93	0.010
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.020	0.021	0.012	0.026	0.007	-0.48	0.020

12	0.036	0.037	0.025	0.050	0.011	-0.02	0.034
12	0.006	0.005	0.002	0.017	0.006	1.20	0.004
12	0.013	0.014	0.007	0.022	0.006	0.42	0.013
12	0.133	0.132	0.122	0.148	0.011	0.40	0.149
12	0.019	0.018	0.014	0.028	0.006	0.94	0.015
12	0.015	0.012	0.007	0.034	0.006	1.60	0.013
12	0.077	0.077	0.069	0.084	0.008	-0.16	0.076
12	0.025	0.025	0.016	0.038	0.010	0.27	0.023
12	0.047	0.047	0.044	0.054	0.004	0.93	0.045
12	0.070	0.068	0.062	0.086	0.008	1.01	0.071
12	0.015	0.014	0.008	0.024	0.008	0.47	0.014
12	0.030	0.029	0.020	0.041	0.008	0.19	0.032

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions.

Ammoniacal Nitrogen (g N m<sup>-3</sup>)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.01	0.01	0.01	0.02	0.01	1.16	0.005
Kauaeranga River at Smiths Cableway/Recorder	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Ohinemuri River at Queens Head	12	0.07	0.04	0.01	0.19	0.12	0.60	0.042
Ohinemuri River at SH25 Br	12	0.01	0.01	0.01	0.05	0.00	<u>2.91</u>	0.005
Tairua River at Morrisons Br Hikuai	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Tapu River at Tapu-Coroglen Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005
Waiau River at E309 Rd Ford	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Waitekauri River at U/S Ohinemuri Conflu	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.005
Waiwawa River at SH25 Coroglen	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005
Wharekawa River at SH25	12	0.01	0.01	0.01	0.01	0.00	<u>1.79</u>	0.005
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.01	0.01	0.01	0.01	0.00	<u>1.86</u>	0.005
Oraka Stm at Lake Rd	12	0.09	0.04	0.02	0.35	0.09	<u>1.88</u>	0.029
Piako River at Kiwitahi	12	0.01	0.01	0.01	0.05	0.00	<u>2.01</u>	0.013
Piako River at Paeroa-Tahuna Rd Br	12	0.03	0.02	0.01	0.14	0.04	<u>1.69</u>	0.036
Piakonui Stm at Piakonui Rd	12	0.01	0.01	0.01	0.04	0.00	<u>2.82</u>	0.005
Waihou River at Okauia	12	0.01	0.01	0.01	0.02	0.01	0.50	0.008
Waihou River at Whites Rd	12	0.01	0.01	0.01	0.03	0.00	<u>3.02</u>	0.005
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Waiomou Stm at Matamata-Tauranga Rd	12	0.01	0.01	0.01	0.03	0.01	1.03	0.011
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.03	0.02	0.01	0.10	0.04	1.32	0.021
Waitoa River at Landsdowne Rd Br	12	0.01	0.01	0.01	0.06	0.01	<u>2.32</u>	0.011
Waitoa River at Mellon Rd Recorder	12	0.12	0.07	0.01	0.39	0.20	0.98	0.043
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	0.06	0.05	0.01	0.16	0.09	0.75	0.051
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.04	0.04	0.01	0.07	0.04	0.02	0.035
Karapiro Stm at Hickey Rd Bridge	12	0.02	0.02	0.01	0.04	0.02	0.66	0.017
Kirikiriua Stm at Tauhara Dr	12	0.25	0.22	0.04	0.47	0.19	0.37	0.240
Komakorau Stm at Henry Rd	12	0.64	0.69	0.14	1.20	0.67	-0.08	0.665
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.01	0.01	0.01	0.04	0.00	<u>2.01</u>	0.005
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.16	0.16	0.04	0.33	0.18	0.21	0.184
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.31	0.29	0.04	0.71	0.36	0.41	0.160
Mangaone Stm at Annebrooke Rd Br	12	0.02	0.02	0.01	0.03	0.01	0.00	0.020
Mangaonua Stm at Hoeka Rd	12	0.09	0.09	0.02	0.12	0.04	-0.99	0.091
Mangaonua Stm at Te Miro Rd	12	0.01	0.01	0.01	0.01	0.00	<u>1.83</u>	0.005
Mangatangi River at SH2 Maramaru	12	0.02	0.02	0.01	0.11	0.02	<u>2.43</u>	0.012
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005
Mangawara Stm at Rutherford Rd Br	12	0.24	0.30	0.13	0.35	0.16	-0.31	0.295
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.10	0.09	0.05	0.20	0.05	0.82	0.103
Matahuru Stm at Waiterimu Road Below Confluence	12	0.05	0.04	0.01	0.11	0.04	0.70	0.036
Ohaeroa Stm at SH22 Br	12	0.01	0.01	0.01	0.02	0.01	0.31	0.005
Opuatia Stm at Ponganui Rd	12	0.01	0.02	0.01	0.03	0.01	0.42	0.005
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.01	0.01	0.01	0.05	0.01	1.53	0.005
Waerenga Stm at Taniwha Rd	12	0.02	0.01	0.01	0.05	0.01	1.04	0.011
Waitawhiriwhiri Stm at Edgcombe Street	12	0.54	0.59	0.09	0.76	0.11	-1.40	0.590
Whakapipi Stm at SH22 Br	12	0.02	0.02	0.01	0.05	0.02	1.27	0.012
Whakauru Stm at U/S SH1 Br	12	0.01	0.01	0.01	0.02	0.01	0.72	0.005
Whangamarino River at Island Block Rd	12	0.05	0.02	0.01	0.19	0.07	1.43	0.030
Whangamarino River at Jefferies Rd Br	12	0.04	0.03	0.01	0.12	0.03	1.34	0.023
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.06	0.02	0.01	0.27	0.09	1.38	0.015

Nitrate/Nitrite (g m<sup>-3</sup>)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.051	0.023	0.001	0.270	0.065	<u>2.07</u>	0.026
Kauaeranga River at Smiths Cableway/Recorder	12	0.025	0.016	0.001	0.086	0.035	1.15	0.021
Ohinemuri River at Queens Head	12	0.645	0.720	0.042	1.380	0.848	0.12	0.950
Ohinemuri River at SH25 Br	12	0.385	0.345	0.078	0.960	0.399	0.72	0.485
Tairua River at Morrisons Br Hikuai	12	0.022	0.019	0.001	0.089	0.025	1.45	0.020
Tapu River at Tapu-Coroglen Rd	12	0.004	0.003	0.001	0.013	0.003	<u>1.81</u>	0.003
Waiau River at E309 Rd Ford	12	0.056	0.024	0.006	0.340	0.038	<u>2.61</u>	0.025
Waitekauri River at U/S Ohinemuri Conflu	12	0.102	0.105	0.001	0.300	0.147	0.61	0.119
Waiwawa River at SH25 Coroglen	12	0.010	0.006	0.001	0.037	0.006	<u>1.86</u>	0.009
Wharekawa River at SH25	12	0.062	0.055	0.001	0.230	0.077	1.30	0.063
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.348	0.310	0.220	0.660	0.130	1.52	0.330
Oraka Stm at Lake Rd	12	2.143	2.100	1.830	2.500	0.365	0.29	2.100
Piako River at Kiwitahi	12	0.973	0.660	0.018	3.700	1.350	1.23	0.895
Piako River at Paeroa-Tahuna Rd Br	12	1.590	1.150	0.320	4.500	0.940	1.45	1.400
Piakonui Stm at Piakonui Rd	12	0.201	0.180	0.122	0.390	0.117	1.08	0.220
Waihou River at Okauia	12	1.161	1.130	1.030	1.460	0.115	1.67	1.130
Waihou River at Whites Rd	12	0.728	0.725	0.670	0.770	0.040	-0.35	0.720
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.149	0.137	0.084	0.220	0.061	0.37	0.174
Waiomou Stm at Matamata-Tauranga Rd	12	0.539	0.475	0.320	0.890	0.345	0.55	0.500
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.325	0.229	0.001	1.240	0.487	1.20	0.270
Waitoa River at Landsdowne Rd Br	12	1.522	1.425	1.170	2.800	0.365	<u>2.02</u>	1.495
Waitoa River at Mellon Rd Recorder	12	2.098	2.075	0.900	3.800	1.385	0.38	2.100
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	1.209	1.390	0.001	2.300	1.110	-0.21	1.475
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.575	0.670	0.093	1.010	0.657	-0.28	0.700
Karapiro Stm at Hickey Rd Bridge	12	0.587	0.420	0.198	1.910	0.495	<u>1.80</u>	0.555
Kirikiriua Stm at Tauhara Dr	12	0.874	0.725	0.290	2.600	0.250	<u>2.38</u>	0.825
Komakorau Stm at Henry Rd	12	1.519	1.190	0.790	4.500	0.490	<u>2.43</u>	1.320
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.651	1.565	1.440	2.200	0.290	1.27	1.585
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.990	0.765	0.310	2.500	0.165	1.61	0.840
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	2.362	2.250	1.740	3.300	0.700	0.51	2.800
Mangaone Stm at Annebrooke Rd Br	12	2.675	2.600	2.400	3.400	0.300	1.46	2.700
Mangaonua Stm at Hoeka Rd	12	1.550	1.500	1.270	2.400	0.295	<u>1.94</u>	1.555
Mangaonua Stm at Te Miro Rd	12	0.535	0.425	0.280	1.200	0.340	1.25	0.500
Mangatangi River at SH2 Maramaru	12	0.456	0.265	0.002	2.200	0.673	<u>1.97</u>	0.220
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.106	0.074	0.001	0.410	0.150	1.27	0.017
Mangawara Stm at Rutherford Rd Br	12	1.053	0.725	0.230	3.600	0.600	<u>1.93</u>	0.785
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	2.186	2.150	1.610	3.800	0.570	<u>1.74</u>	2.200
Matahuru Stm at Waiterimu Road Below Confluence	12	0.775	0.775	0.032	2.100	1.007	0.57	0.805
Ohaeroa Stm at SH22 Br	12	1.446	1.395	0.930	1.840	0.385	-0.23	1.525
Opuatia Stm at Ponganui Rd	12	0.675	0.705	0.056	1.050	0.305	-0.75	0.770
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.708	1.630	1.330	2.200	0.420	0.46	1.760
Waerenga Stm at Taniwha Rd	12	0.773	0.865	0.127	1.680	0.580	0.32	0.860
Waitawhiriwhiri Stm at Edgcombe Street	12	0.858	0.795	0.260	1.370	0.475	-0.09	0.890
Whakapipi Stm at SH22 Br	12	3.375	3.450	2.300	4.700	0.850	0.14	3.650
Whakauru Stm at U/S SH1 Br	12	0.288	0.290	0.200	0.400	0.080	0.24	0.230
Whangamarino River at Island Block Rd	12	0.266	0.151	0.001	0.930	0.473	0.86	0.058
Whangamarino River at Jefferies Rd Br	12	0.864	0.635	0.011	2.800	1.383	0.85	0.720
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.206	0.029	0.001	0.820	0.354	1.05	0.022

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions



Waipa River and Tributaries																
Kaniwhaniwha Stm at Wright Rd	12	0.03	0.02	0.01	0.05	0.01	0.16	0.016	12	0.391	0.350	0.009	0.840	0.512	0.23	0.390
Mangaohoi Stm at South Branch Maru Rd	12	0.01	0.01	0.01	0.02	0.01	0.82	0.005	12	0.219	0.225	0.101	0.360	0.093	0.11	0.240
Mangaokewa Stm at Lawrence St Bridge	12	0.01	0.01	0.01	0.03	0.02	0.18	0.005	12	0.559	0.570	0.176	1.260	0.495	0.58	0.560
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.05	0.04	0.01	0.15	0.07	0.91	0.051	12	1.447	1.360	0.520	2.700	1.090	0.54	1.610
Mangapu River at Otorohanga	12	0.03	0.02	0.01	0.06	0.01	1.05	0.029	12	0.841	0.815	0.146	1.700	0.345	0.43	0.930
Mangatutu Stm (Waikeria) at Walker Rd Br	11	0.01	0.01	0.01	0.02	0.01	0.86	0.005	11	0.360	0.380	0.078	0.880	0.324	0.74	0.400
Mangauika Stm at Te Awamutu Borough W/S Intake	11	0.01	0.01	0.01	0.01	0.00	1.00	0.005	11	0.219	0.220	0.149	0.290	0.059	-0.10	0.220
Ohote Stm at Whatawhata/Horotiu Rd	12	0.08	0.07	0.01	0.18	0.04	0.83	0.064	12	0.530	0.380	0.083	1.690	0.640	1.19	0.535
Puniu River at Bartons Corner Rd Br	12	0.02	0.02	0.01	0.04	0.01	0.77	0.017	12	0.688	0.630	0.340	1.330	0.515	0.67	0.650
Waipa River at Mangaokewa Rd	12	0.01	0.01	0.01	0.04	0.01	<u>2.00</u>	0.005	12	0.284	0.275	0.087	0.440	0.189	-0.23	0.380
Waipa River at Pirongia-Ngutu Rd Br	12	0.02	0.02	0.01	0.05	0.01	1.63	0.018	12	0.649	0.610	0.116	1.610	0.700	0.67	0.610
Waipa River at SH3 Otorohanga	12	0.02	0.02	0.01	0.07	0.02	1.07	0.012	12	0.496	0.465	0.068	1.340	0.609	0.71	0.430
Waitomo Stm at SH31 Otorohanga	12	0.01	0.01	0.01	0.04	0.01	1.14	0.013	12	0.491	0.505	0.135	0.860	0.360	-0.02	0.525
Waitomo Stm at Tumutumu Rd	12	0.01	0.01	0.01	0.03	0.00	<u>2.15</u>	0.005	12	0.614	0.620	0.400	0.840	0.175	0.04	0.635
Tributaries to the upper Waikato River																
Kawaunui Stm at SH5 Br	12	0.02	0.02	0.01	0.03	0.01	-0.41	0.015	12	2.717	2.700	2.500	3.000	0.300	0.25	2.600
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.484	0.495	0.370	0.660	0.145	0.38	0.520
Mangakara Stm (Reporoa) at SH5	12	0.06	0.03	0.01	0.51	0.02	<u>3.00</u>	0.018	12	1.269	1.265	1.100	1.410	0.075	-0.16	1.300
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.632	0.645	0.480	0.760	0.085	-0.56	0.640
Otamakokore Stm at Hossack Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.683	0.680	0.470	0.980	0.195	0.52	0.745
Pueto Stm at Broadlands Rd Br	12	0.01	0.01	0.01	0.01	0.01	0.47	0.005	12	0.446	0.445	0.380	0.490	0.050	-0.37	0.450
Tahunaatara Stm at Ohakuri Rd	12	0.01	0.01	0.01	0.01	0.00	1.34	0.005	12	0.560	0.550	0.430	0.780	0.145	0.75	0.555
Torepatutahi Stm at Vaile Rd Br	12	0.01	0.01	0.01	0.02	0.01	1.08	0.005	12	0.456	0.450	0.360	0.560	0.130	0.15	0.515
Waiotapu Stm at Campbell Rd Br	12	0.89	0.90	0.76	1.09	0.13	0.42	0.850	12	1.024	0.985	0.890	1.230	0.145	0.83	0.915
Waiotapu Stm at Homestead Rd Br	12	0.31	0.37	0.04	0.54	0.33	-0.32	0.310	12	1.285	1.265	1.190	1.470	0.125	0.95	1.330
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	1.220	1.090	0.990	2.000	0.285	1.58	1.200
Whirinaki Stm at Corbett Rd	12	0.01	0.01	0.01	0.08	0.00	<u>2.97</u>	0.005	12	0.775	0.770	0.700	0.880	0.040	0.87	0.755
West Coast																
Awakino River at Gribbon Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.100	0.124	0.012	0.210	0.118	-0.05	0.102
Awakino River at SH3 Awakau Rd Junction	12	0.01	0.01	0.01	0.03	0.00	1.61	0.005	12	0.223	0.224	0.004	0.600	0.288	0.50	0.215
Manganui River at Off Manganui Rd	12	0.01	0.01	0.01	0.01	0.00	<u>1.82</u>	0.005	12	0.134	0.132	0.004	0.340	0.223	0.34	0.122
Mangaotaki River at SH3 Br	12	0.01	0.01	0.01	0.01	0.01	0.49	0.005	12	0.653	0.645	0.310	1.120	0.435	0.20	0.610
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.005	12	0.265	0.260	0.125	0.480	0.176	0.37	0.260
Mokau River at Awakau Rd	12	0.02	0.02	0.01	0.05	0.02	1.43	0.013	12	0.394	0.345	0.022	1.010	0.492	0.49	0.430
Mokau River at Mangaokewa Rd (Off SH30)	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.005	12	0.313	0.240	0.166	0.700	0.217	1.21	0.270
Mokau River at Totoro Rd Recorder	12	0.01	0.01	0.01	0.03	0.02	0.76	0.005	12	0.598	0.565	0.194	1.410	0.380	1.03	0.505
Mokauiti Stm at Three Way Point - Aria	12	0.03	0.02	0.01	0.14	0.03	<u>2.36</u>	0.018	12	0.354	0.260	0.008	1.350	0.521	1.38	0.310
Ohautira Stm at Waingaro Te Uku Rd	12	0.01	0.01	0.01	0.02	0.00	1.56	0.005	12	0.341	0.395	0.027	0.600	0.256	-0.49	0.285
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.157	0.122	0.007	0.410	0.259	0.48	0.085
Tawarau River at Off Speedies Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.317	0.310	0.179	0.570	0.140	0.77	0.290
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.01	0.01	0.01	0.03	0.01	<u>1.73</u>	0.005	12	0.471	0.520	0.001	1.050	0.479	-0.14	0.405
Waitetuna River at Te Uku-Waingaro Rd	12	0.01	0.01	0.01	0.02	0.01	0.24	0.011	12	0.357	0.410	0.037	0.730	0.310	-0.05	0.365
Inflows to Lake Taupo																
Hinemaiaia River at SH1	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.071	0.070	0.022	0.130	0.061	0.01	0.066
Kuratau River at SH41 Moerangi	12	0.01	0.01	0.01	0.04	0.00	<u>2.12</u>	0.005	12	0.226	0.235	0.090	0.420	0.156	0.36	0.111
Kuratau River at 43 Te Rae Street	12	0.01	0.01	0.01	0.03	0.01	1.27	0.005	12	0.534	0.515	0.250	0.860	0.310	0.23	0.610
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.01	0.01	0.01	0.01	0.01	-0.43	0.005	12	0.787	0.790	0.670	0.870	0.100	-0.34	0.750
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.066	0.064	0.031	0.096	0.020	-0.25	0.068
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.01	0.01	0.01	0.02	0.00	1.49	0.005	12	0.004	0.003	0.001	0.016	0.004	<u>2.00</u>	0.002
Tokaanu Stm at Off SH41 Turangi	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.427	0.435	0.380	0.480	0.035	0.00	0.450
Waihaha River at SH32	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005	12	0.111	0.107	0.073	0.155	0.025	0.41	0.110
Waitahanui River at Blake Rd	12	0.01	0.01	0.01	0.02	0.00	<u>2.36</u>	0.005	12	0.422	0.420	0.380	0.470	0.030	0.16	0.440
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.01	0.01	0.01	0.02	0.00	1.23	0.005	12	1.665	1.670	1.530	1.770	0.125	-0.37	1.590
Whanganui Stm at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.01	0.85	0.005	12	0.310	0.315	0.220	0.380	0.045	-0.66	0.320
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.669	0.650	0.520	1.000	0.160	1.17	0.720

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Total Kjeldahl Nitrogen (g m<sup>-3</sup>)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.07	0.07	0.03	0.14	0.03	0.68	0.08
Kauaeanga River at Smiths Cableway/Recorder	12	0.08	0.06	0.03	0.21	0.05	1.52	0.08
Ohinemuri River at Queens Head	12	0.27	0.25	0.09	0.46	0.21	0.29	0.27
Ohinemuri River at SH25 Br	12	0.24	0.13	0.07	1.02	0.07	<u>1.95</u>	0.14
Tairua River at Morrisons Br Hikuai	12	0.07	0.06	0.03	0.33	0.04	<u>2.77</u>	0.07
Tapu River at Tapu-Coroglen Rd	12	0.21	0.04	0.03	1.91	0.07	<u>2.97</u>	0.06
Waiau River at E309 Rd Ford	12	0.13	0.06	0.03	0.84	0.06	<u>2.92</u>	0.07
Waitekauri River at U/S Ohinemuri Conflu	12	0.12	0.08	0.03	0.56	0.05	<u>2.85</u>	0.11
Waiwawa River at SH25 Coroglen	12	0.10	0.06	0.03	0.56	0.07	<u>2.74</u>	0.07
Wharekawa River at SH25	12	0.12	0.07	0.05	0.61	0.03	<u>2.94</u>	0.08
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.16	0.11	0.06	0.61	0.07	<u>2.51</u>	0.12
Oraka Stm at Lake Rd	12	0.34	0.31	0.11	0.58	0.19	0.14	0.31
Piako River at Kiwitahi	12	0.34	0.33	0.24	0.48	0.13	0.42	0.38
Piako River at Paeroa-Tahuna Rd Br	12	0.55	0.51	0.38	1.14	0.18	<u>2.03</u>	0.64
Piakonui Stm at Piakonui Rd	12	0.15	0.14	0.09	0.20	0.05	0.03	0.16
Waihou River at Okauia	12	0.17	0.17	0.08	0.29	0.05	0.75	0.22
Waihou River at Whites Rd	12	0.06	0.03	0.03	0.29	0.02	<u>2.53</u>	0.03
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.13	0.12	0.09	0.21	0.04	1.04	0.13
Waiomou Stm at Matamata-Tauranga Rd	12	0.17	0.15	0.09	0.35	0.08	1.23	0.19
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.36	0.36	0.21	0.58	0.20	0.30	0.40
Waitoa River at Landsdowne Rd Br	12	0.37	0.35	0.21	0.75	0.10	<u>1.93</u>	0.42
Waitoa River at Mellon Rd Recorder	12	0.55	0.48	0.27	1.00	0.43	0.53	0.51
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.53	0.53	0.35	0.79	0.19	0.49	0.55
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.29	0.28	0.14	0.52	0.08	0.86	0.31
Karapiro Stm at Hickey Rd Bridge	12	0.27	0.29	0.11	0.39	0.06	-0.80	0.30
Kirikiriira Stm at Tauhara Dr	12	0.55	0.48	0.40	0.82	0.26	0.62	0.66
Komakorau Stm at Henry Rd	12	1.49	1.65	0.72	2.40	0.85	-0.09	1.70
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.18	0.17	0.03	0.35	0.06	0.30	0.19
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	1.04	0.96	0.31	2.20	1.10	0.62	1.10
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.70	0.65	0.35	1.61	0.37	1.41	0.60
Mangaone Stm at Annebrooke Rd Br	12	0.42	0.38	0.22	0.87	0.24	1.12	0.44
Mangaonua Stm at Hoeka Rd	12	0.38	0.36	0.24	0.62	0.11	0.95	0.41
Mangaonua Stm at Te Miro Rd	12	0.24	0.22	0.17	0.51	0.06	<u>2.37</u>	0.22
Mangatangi River at SH2 Maramarua	12	0.40	0.37	0.16	1.22	0.19	<u>2.23</u>	0.36
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.18	0.12	0.11	0.65	0.06	<u>2.80</u>	0.13
Mangawara Stm at Rutherford Rd Br	12	1.00	0.92	0.53	1.95	0.47	1.07	1.14
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.80	0.71	0.44	2.00	0.35	<u>2.04</u>	0.83
Matahuru Stm at Waiterimu Road Below Confluence	12	0.60	0.58	0.24	1.06	0.38	0.27	0.58
Ohaeroa Stm at SH22 Br	12	0.35	0.28	0.22	0.70	0.21	1.12	0.30
Opuatia Stm at Ponganui Rd	12	0.41	0.36	0.24	0.67	0.26	0.44	0.32
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.21	0.19	0.10	0.38	0.13	0.73	0.23
Waerenga Stm at Taniwha Rd	12	0.30	0.28	0.21	0.46	0.07	1.28	0.27
Waitawhiriwhiri Stm at Edgumbe Street	12	1.15	1.19	0.40	1.53	0.33	-1.18	1.25
Whakapipi Stm at SH22 Br	12	0.41	0.38	0.28	0.82	0.14	<u>1.78</u>	0.42
Whakauru Stm at U/S SH1 Br	12	0.18	0.18	0.11	0.23	0.06	-0.31	0.19
Whangamarino River at Island Block Rd	12	1.51	1.36	0.51	2.30	0.79	-0.02	1.63
Whangamarino River at Jefferies Rd Br	12	0.47	0.38	0.24	1.13	0.20	<u>1.79</u>	0.47
Whangape Stm at Rangiriiri-Glen Murray Rd	12	2.69	1.77	0.44	6.80	<b>3.67</b>	0.89	1.93

Total Nitrogen (g m<sup>-3</sup>)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	0.13	0.10	0.05	0.34	0.08	1.45	0.11
Kauaeanga River at Smiths Cableway/Recorder	12	0.10	0.08	0.05	0.30	0.05	<u>2.21</u>	0.11
Ohinemuri River at Queens Head	12	0.91	0.97	0.13	1.80	1.09	0.08	1.33
Ohinemuri River at SH25 Br	12	0.62	0.58	0.20	1.29	0.55	0.44	0.65
Tairua River at Morrisons Br Hikuai	12	0.09	0.07	0.03	0.36	0.05	<u>2.57</u>	0.09
Tapu River at Tapu-Coroglen Rd	12	0.22	0.04	0.03	1.92	0.06	<u>2.97</u>	0.06
Waiau River at E309 Rd Ford	12	0.18	0.08	0.05	1.18	0.06	<u>2.91</u>	0.10
Waitekauri River at U/S Ohinemuri Conflu	12	0.22	0.16	0.06	0.65	0.15	1.59	0.24
Waiwawa River at SH25 Coroglen	12	0.11	0.06	0.03	0.60	0.06	<u>2.78</u>	0.08
Wharekawa River at SH25	12	0.18	0.11	0.07	0.71	0.09	<u>2.30</u>	0.13
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.51	0.46	0.30	1.27	0.13	<u>2.55</u>	0.45
Oraka Stm at Lake Rd	12	2.48	2.42	2.18	3.08	0.43	0.88	2.42
Piako River at Kiwitahi	12	1.31	1.00	0.27	4.16	1.48	1.18	1.34
Piako River at Paeroa-Tahuna Rd Br	12	2.14	1.65	0.83	5.54	1.01	1.51	2.07
Piakonui Stm at Piakonui Rd	12	0.35	0.33	0.24	0.53	0.09	0.72	0.40
Waihou River at Okauia	12	1.33	1.28	1.17	1.63	0.20	0.79	1.38
Waihou River at Whites Rd	12	0.79	0.76	0.70	1.01	0.07	<u>1.69</u>	0.77
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.28	0.28	0.17	0.36	0.08	-0.13	0.32
Waiomou Stm at Matamata-Tauranga Rd	12	0.71	0.64	0.43	1.16	0.43	0.55	0.71
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.69	0.66	0.21	1.82	0.63	0.97	0.69
Waitoa River at Landsdowne Rd Br	12	1.89	1.79	1.42	3.55	0.32	<u>2.27</u>	1.85
Waitoa River at Mellon Rd Recorder	12	2.65	2.68	1.27	4.80	1.67	0.44	2.72
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	1.74	1.98	0.35	2.89	1.15	-0.23	2.11
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.86	1.05	0.31	1.31	0.69	-0.52	1.02
Karapiro Stm at Hickey Rd Bridge	12	0.85	0.69	0.39	2.30	0.53	<u>1.74</u>	0.89
Kirikiriira Stm at Tauhara Dr	12	1.42	1.24	0.69	3.28	0.45	<u>1.91</u>	1.52
Komakorau Stm at Henry Rd	12	3.01	2.77	1.72	6.90	0.77	<u>2.16</u>	2.96
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.83	1.75	1.51	2.41	0.33	0.96	1.78
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	2.03	1.70	0.71	4.60	1.09	1.22	1.91
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	3.06	3.04	2.15	3.80	1.00	-0.09	3.38
Mangaone Stm at Annebrooke Rd Br	12	3.10	2.98	2.71	4.01	0.59	1.10	3.12
Mangaonua Stm at Hoeka Rd	12	1.93	1.84	1.64	3.02	0.21	<u>2.37</u>	1.97
Mangaonua Stm at Te Miro Rd	12	0.77	0.67	0.50	1.42	0.37	1.12	0.72
Mangatangi River at SH2 Maramarua	12	0.86	0.64	0.17	3.42	0.82	<u>2.12</u>	0.60
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.29	0.20	0.11	0.82	0.15	1.63	0.18
Mangawara Stm at Rutherford Rd Br	12	2.05	1.61	0.90	5.55	1.24	<u>1.76</u>	2.03
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	2.99	2.84	2.19	5.80	0.32	<u>2.62</u>	2.95
Matahuru Stm at Waiterimu Road Below Confluence	12	1.37	1.39	0.34	3.16	1.37	0.52	1.33
Ohaeroa Stm at SH22 Br	12	1.79	1.79	1.40	2.19	0.47	0.07	1.82
Opuatia Stm at Ponganui Rd	12	1.08	1.21	0.52	1.40	0.36	-0.90	1.11
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.92	1.85	1.62	2.43	0.46	0.46	2.03
Waerenga Stm at Taniwha Rd	12	1.07	1.14	0.42	1.95	0.44	0.41	1.16
Waitawhiriwhiri Stm at Edgumbe Street	12	2.01	2.09	0.66	2.63	0.32	-1.45	2.14
Whakapipi Stm at SH22 Br	12	3.79	3.79	2.87	4.98	0.70	0.43	4.04
Whakauru Stm at U/S SH1 Br	12	0.47	0.48	0.31	0.63	0.10	-0.14	0.44
Whangamarino River at Island Block Rd	12	1.77	1.90	0.51	2.60	1.03	-0.51	1.93
Whangamarino River at Jefferies Rd Br	12	1.33	1.07	0.32	3.93	1.61	1.05	1.15
Whangape Stm at Rangiriiri-Glen Murray Rd	12	2.90	1.91	1.01	6.80	3.40	0.98	2.04

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries																	
Kaniwhaniwha Stm at Wright Rd	12	0.22	0.20	0.13	0.34	0.12	0.61	0.23	12	0.61	0.59	0.14	1.18	0.44	0.25	0.60	
Mangaohoi Stm at South Branch Maru Rd	12	0.14	0.11	0.05	0.41	0.09	1.53	0.13	12	0.36	0.35	0.17	0.63	0.17	0.48	0.38	
Mangaokewa Stm at Lawrence St Bridge	12	0.29	0.23	0.15	0.64	0.11	1.52	0.25	12	0.84	0.86	0.38	1.78	0.52	0.93	0.83	
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.59	0.51	0.32	1.34	0.29	1.39	0.62	12	2.04	1.89	1.04	3.87	1.65	0.57	2.25	
Mangapu River at Otorohanga	12	0.35	0.27	0.15	0.82	0.30	1.09	0.36	12	1.19	1.17	0.32	2.32	0.52	0.50	1.28	
Mangatutu Stm (Waikeria) at Walker Rd Br	11	0.15	0.13	0.03	0.36	0.06	1.30	0.16	11	0.51	0.51	0.17	1.01	0.35	0.57	0.56	
Mangauika Stm at Te Awamutu Borough W/S Intake	11	0.09	0.07	0.03	0.31	0.10	1.47	0.07	11	0.31	0.29	0.22	0.46	0.09	0.82	0.28	
Ohote Stm at Whatawhata/Horotiu Rd	12	0.80	0.72	0.41	2.20	0.21	<u>2.44</u>	0.80	12	1.33	1.11	0.53	2.43	0.93	0.48	1.36	
Puniu River at Bartons Corner Rd Br	12	0.27	0.22	0.12	0.64	0.17	1.29	0.27	12	0.96	0.82	0.52	1.76	0.67	0.80	0.94	
Waipa River at Mangaokewa Rd	12	0.22	0.18	0.10	0.44	0.11	1.10	0.21	12	0.50	0.46	0.31	0.72	0.20	0.11	0.61	
Waipa River at Pirongia-Ngutunui Rd Br	12	0.26	0.22	0.15	0.58	0.09	<u>1.78</u>	0.27	12	0.91	0.85	0.27	2.19	0.68	0.99	0.93	
Waipa River at SH3 Otorohanga	12	0.29	0.17	0.08	1.25	0.08	<u>2.31</u>	0.21	12	0.78	0.66	0.15	1.96	0.70	0.95	0.73	
Waitomo Stm at SH31 Otorohanga	12	0.21	0.20	0.10	0.60	0.12	<u>2.04</u>	0.24	12	0.70	0.74	0.25	1.46	0.38	0.72	0.80	
Waitomo Stm at Tumutumu Rd	12	0.14	0.12	0.06	0.31	0.10	0.98	0.13	12	0.75	0.72	0.55	1.15	0.16	1.32	0.78	
Tributaries to the upper Waikato River																	
Kawaunui Stm at SH5 Br	12	0.26	0.22	0.13	0.45	0.22	0.55	0.32	12	2.98	3.01	2.74	3.13	0.14	-0.68	2.98	
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.16	0.17	0.10	0.20	0.06	-0.23	0.16	12	0.64	0.67	0.48	0.84	0.21	0.09	0.68	
Mangakara Stm (Reporoa) at SH5	12	0.39	0.19	0.13	2.40	0.09	<u>2.95</u>	0.24	12	1.66	1.47	1.26	3.66	0.14	<u>2.80</u>	1.59	
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.13	0.10	0.08	0.28	0.10	1.09	0.10	12	0.76	0.74	0.66	0.97	0.09	1.10	0.76	
Otamakokore Stm at Hossack Rd	12	0.22	0.23	0.11	0.38	0.12	0.38	0.23	12	0.90	0.93	0.60	1.36	0.35	0.45	1.00	
Pueto Stm at Broadlands Rd Br	12	0.08	0.08	0.03	0.14	0.06	-0.01	0.09	12	0.53	0.54	0.41	0.60	0.08	-0.72	0.54	
Tahunaatara Stm at Ohakuri Rd	12	0.20	0.17	0.12	0.48	0.10	<u>1.71</u>	0.19	12	0.76	0.72	0.56	1.10	0.31	0.54	0.77	
Torepatutahi Stm at Vaile Rd Br	12	0.11	0.11	0.06	0.21	0.05	1.04	0.11	12	0.57	0.56	0.43	0.77	0.13	0.52	0.65	
Waiotapu Stm at Campbell Rd Br	12	1.04	1.03	0.80	1.33	0.19	0.20	1.01	12	2.06	2.05	1.85	2.39	0.09	1.11	1.94	
Waiotapu Stm at Homestead Rd Br	12	0.58	0.68	0.18	0.96	0.44	-0.33	0.62	12	1.87	1.94	1.64	2.22	0.34	0.13	1.92	
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.15	0.15	0.10	0.27	0.08	0.92	0.16	12	1.37	1.26	1.09	2.12	0.37	1.31	1.35	
Whirinaki Stm at Corbett Rd	12	0.03	0.03	0.03	0.09	0.01	<u>2.03</u>	0.03	12	0.81	0.81	0.73	0.93	0.06	0.81	0.81	
West Coast																	
Awakino River at Gribbon Rd	12	0.08	0.06	0.03	0.22	0.07	1.16	0.07	12	0.18	0.19	0.04	0.43	0.15	0.64	0.17	
Awakino River at SH3 Awakau Rd Junction	12	0.20	0.14	0.07	0.64	0.16	1.50	0.14	12	0.43	0.34	0.09	1.24	0.34	1.31	0.38	
Manganui River at Off Manganui Rd	12	0.18	0.09	0.03	0.99	0.18	<u>2.39</u>	0.10	12	0.32	0.22	0.03	1.33	0.31	<u>1.93</u>	0.22	
Mangaotaki River at SH3 Br	12	0.28	0.20	0.09	0.98	0.23	<u>2.01</u>	0.19	12	0.94	0.90	0.43	1.65	0.40	0.57	0.91	
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.15	0.13	0.07	0.31	0.08	1.00	0.13	12	0.42	0.41	0.21	0.79	0.18	1.03	0.43	
Mokau River at Awakau Rd	12	0.28	0.20	0.14	0.79	0.14	<u>1.97</u>	0.27	12	0.68	0.59	0.21	1.80	0.45	1.36	0.75	
Mokau River at Mangaokewa Rd (Off SH30)	12	0.25	0.22	0.11	0.53	0.10	1.34	0.21	12	0.56	0.49	0.31	1.23	0.31	1.42	0.52	
Mokau River at Totoro Rd Recorder	12	0.31	0.24	0.14	0.72	0.19	1.20	0.26	12	0.90	0.81	0.33	2.01	0.53	1.04	0.86	
Mokauti Stm at Three Way Point - Aria	12	0.37	0.35	0.17	0.73	0.18	0.91	0.34	12	0.73	0.58	0.30	2.08	0.58	1.59	0.66	
Ohautira Stm at Waingaro Te Uku Rd	12	0.24	0.16	0.09	0.66	0.26	1.11	0.16	12	0.58	0.52	0.13	1.26	0.33	0.55	0.50	
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.12	0.11	0.05	0.23	0.06	0.94	0.10	12	0.27	0.26	0.11	0.57	0.20	0.73	0.22	
Tawarau River at Off Speedies Rd	12	0.15	0.15	0.06	0.30	0.06	1.05	0.14	12	0.47	0.44	0.29	0.81	0.17	1.01	0.45	
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.35	0.23	0.17	1.31	0.14	<u>2.34</u>	0.27	12	0.82	0.81	0.18	1.86	0.53	0.76	0.69	
Waitetuna River at Te Uku-Waingaro Rd	12	0.21	0.17	0.11	0.51	0.14	1.34	0.19	12	0.57	0.59	0.17	1.24	0.34	0.64	0.58	
Inflows to Lake Taupo																	
Hinemaiaia River at SH1	12	0.11	0.07	0.03	0.34	0.11	1.26	0.07	12	0.18	0.13	0.08	0.47	0.14	1.40	0.13	
Kuratau River at SH41 Moerangi	12	0.10	0.10	0.03	0.19	0.07	0.08	0.08	12	0.33	0.33	0.19	0.53	0.17	0.31	0.20	
Kuratau River at 43 Te Rae Street	12	0.17	0.16	0.08	0.28	0.08	0.23	0.15	12	0.70	0.63	0.41	1.14	0.31	0.64	0.77	
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.19	0.20	0.12	0.25	0.03	-0.70	0.20	12	0.98	0.98	0.86	1.11	0.13	0.11	0.97	
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	0.06	0.06	0.03	0.17	0.06	1.48	0.05	12	0.13	0.12	0.07	0.23	0.05	0.98	0.11	
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.08	0.07	0.05	0.21	0.03	<u>2.30</u>	0.09	12	0.09	0.07	0.05	0.21	0.03	<u>2.20</u>	0.10	
Tokaanu Stm at Off SH41 Turangi	12	0.03	0.03	0.03	0.03	0.00	1.00	0.03	12	0.45	0.46	0.41	0.51	0.04	0.00	0.48	
Waihaha River at SH32	12	0.05	0.04	0.03	0.12	0.05	0.80	0.06	12	0.16	0.15	0.12	0.28	0.04	<u>1.72</u>	0.17	
Waitahanui River at Blake Rd	12	0.07	0.07	0.03	0.17	0.07	0.83	0.06	12	0.49	0.49	0.42	0.60	0.06	0.48	0.51	
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.14	0.14	0.07	0.25	0.09	0.44	0.15	12	1.81	1.83	1.61	1.95	0.22	-0.34	1.74	
Whanganui Stm at Lakeside Lake Taupo	12	0.09	0.09	0.03	0.17	0.03	0.30	0.09	12	0.40	0.41	0.31	0.55	0.08	0.73	0.43	
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.15	0.14	0.07	0.28	0.07	0.85	0.15	12	0.82	0.77	0.63	1.28	0.21	1.34	0.87	

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Turbidity (NTU)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	1.6	1.2	0.6	4.8	0.8	1.59	1.4
Kauaeranga River at Smiths Cableway/Recorder	12	1.1	0.9	0.3	2.8	1.1	1.02	1.2
Ohinemuri River at Queens Head	12	1.4	1.2	0.4	3.3	1.0	0.86	1.2
Ohinemuri River at SH25 Br	12	4.4	0.9	0.6	41.0	0.9	<u>3.00</u>	1.1
Tairua River at Morrisons Br Hikuai	12	2.7	0.9	0.5	22.0	0.7	<u>3.00</u>	1.2
Tapu River at Tapu-Coroglen Rd	12	11.7	0.7	0.3	130.0	1.4	<u>3.01</u>	1.1
Waiau River at E309 Rd Ford	12	11.5	2.0	1.0	115.0	1.4	<u>3.01</u>	2.6
Waitekauri River at U/S Ohinemuri Conflu	12	2.4	0.7	0.3	21.0	0.5	<u>3.00</u>	0.8
Waiwawa River at SH25 Coroglen	12	9.6	1.0	0.5	104.0	0.9	<u>3.01</u>	1.3
Wharekawa River at SH25	12	5.5	2.2	0.9	42.0	2.0	<u>2.97</u>	2.5
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	14.1	8.9	5.7	58.0	4.7	<u>2.48</u>	8.1
Oraka Stm at Lake Rd	12	5.0	4.5	1.9	10.6	3.4	0.93	5.3
Piako River at Kiwitahi	12	3.1	3.0	1.2	7.8	2.6	1.07	4.5
Piako River at Paeroa-Tahuna Rd Br	12	8.1	7.4	2.6	24.0	5.9	<u>1.71</u>	9.4
Piakonui Stm at Piakonui Rd	12	3.8	3.9	2.5	4.8	1.3	-0.35	4.0
Waihou River at Okauia	12	4.2	4.1	2.2	7.4	2.0	0.71	4.8
Waihou River at Whites Rd	12	1.7	0.5	0.2	14.6	0.3	<u>3.00</u>	0.5
Waihotu Stm at Waihotu Rd (Off SH5)	12	4.6	4.6	3.5	6.1	1.4	0.23	4.8
Waiomou Stm at Matamata-Tauranga Rd	12	5.0	4.6	2.0	11.7	4.3	1.01	4.5
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	9.2	7.7	1.5	26.0	7.6	1.14	9.1
Waitoa River at Landsdowne Rd Br	12	5.4	3.9	1.6	22.0	3.8	<u>2.41</u>	5.0
Waitoa River at Mellon Rd Recorder	12	6.4	5.9	2.9	18.4	2.9	<u>2.24</u>	7.5
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	15.8	15.7	6.2	33.0	6.3	1.03	16.0
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	10.0	5.8	3.3	51.0	4.4	<u>2.84</u>	7.1
Karapiro Stm at Hickey Rd Bridge	12	6.3	4.7	2.4	17.4	3.1	1.60	6.4
Kirikiri Stm at Tauhara Dr	12	23.8	26.5	11.8	37.0	11.8	-0.01	28.0
Komakorau Stm at Henry Rd	12	64.0	63.0	15.3	107.0	40.0	-0.14	72.0
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.7	1.4	0.6	4.6	1.1	1.65	1.4
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	18.5	18.6	7.7	28.0	8.4	-0.41	22.0
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	8.0	5.6	2.3	37.0	4.0	<u>2.75</u>	4.6
Mangaone Stm at Annebrooke Rd Br	12	8.5	8.3	5.0	13.0	3.3	0.61	9.6
Mangaonua Stm at Hoeka Rd	12	12.4	10.7	4.2	23.0	6.5	0.69	14.5
Mangaonua Stm at Te Miro Rd	12	5.9	3.9	2.2	24.0	2.6	<u>2.52</u>	4.4
Mangatangi River at SH2 Maramarua	12	15.8	12.6	8.5	36.0	7.8	1.37	15.1
Mangatawhiri River at Lyons Rd At Buckingham Br	12	8.5	3.8	1.3	58.0	2.9	<u>2.89</u>	3.9
Mangawara Stm at Rutherford Rd Br	12	36.5	36.0	18.4	58.0	13.5	0.41	42.5
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	49.5	46.5	28.0	96.0	19.0	1.26	50.0
Matahuru Stm at Waiterimu Road Below Confluence	12	31.7	31.0	14.8	43.0	13.5	-0.28	36.5
Ohaeroa Stm at SH22 Br	12	12.8	9.1	3.4	58.0	5.3	<u>2.73</u>	9.0
Opuatia Stm at Ponganui Rd	12	26.7	17.0	8.8	71.0	24.2	1.20	15.4
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	3.1	2.4	0.9	9.9	2.4	<u>1.69</u>	2.8
Waerenga Stm at Taniwha Rd	12	7.7	7.5	3.0	12.4	3.5	0.04	8.3
Waitawhiriwhiri Stm at Edgecumbe Street	12	26.4	28.0	11.3	37.0	10.5	-0.65	31.0
Whakapipi Stm at SH22 Br	12	8.1	6.1	2.4	31.0	4.1	<u>2.42</u>	6.1
Whakauru Stm at U/S SH1 Br	12	5.4	5.6	3.5	7.2	2.4	-0.18	5.9
Whangamarino River at Island Block Rd	12	38.6	39.0	24.0	57.0	16.5	0.42	41.5
Whangamarino River at Jefferies Rd Br	12	17.5	18.1	7.2	28.0	9.8	-0.23	21.0
Whangape Stm at Rangiri-Glen Murray Rd	12	62.1	59.5	14.5	114.0	55.5	0.12	58.0

pH (pH units)

Location	09-13							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
<b>Coromandel</b>								
Hikutaia River at Old Maratoto Rd	12	7.2	7.3	6.7	7.6	0.4	-0.55	7.2
Kauaeranga River at Smiths Cableway/Recorder	12	7.2	7.3	6.9	7.4	0.4	-0.63	7.2
Ohinemuri River at Queens Head	12	7.2	7.2	6.7	7.9	0.6	0.43	7.1
Ohinemuri River at SH25 Br	12	7.2	7.2	6.5	7.4	0.3	-1.28	7.1
Tairua River at Morrisons Br Hikuai	12	7.0	7.1	6.4	7.6	0.4	-0.43	7.0
Tapu River at Tapu-Coroglen Rd	12	7.3	7.4	6.7	7.6	0.2	-1.28	7.4
Waiau River at E309 Rd Ford	12	7.3	7.3	6.5	7.8	0.3	-0.95	7.4
Waitekauri River at U/S Ohinemuri Conflu	12	7.1	7.2	6.6	7.5	0.5	-0.40	7.2
Waiwawa River at SH25 Coroglen	12	7.2	7.3	6.9	7.8	0.4	0.63	7.2
Wharekawa River at SH25	12	7.2	7.2	6.5	7.6	0.3	-0.75	7.0
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	7.3	7.4	7.0	7.7	0.4	0.01	7.4
Oraka Stm at Lake Rd	12	7.2	7.2	6.9	7.3	0.2	-0.77	7.2
Piako River at Kiwitahi	12	7.1	7.1	6.6	7.3	0.3	-1.13	7.1
Piako River at Paeroa-Tahuna Rd Br	12	7.3	7.3	6.6	7.7	0.5	-0.54	7.3
Piakonui Stm at Piakonui Rd	12	7.3	7.3	6.9	7.7	0.3	-0.08	7.3
Waihou River at Okauia	12	7.3	7.3	7.0	7.5	0.3	-0.43	7.3
Waihou River at Whites Rd	12	6.9	7.0	6.8	7.2	0.2	0.44	6.9
Waihotu Stm at Waihotu Rd (Off SH5)	12	7.2	7.2	6.8	7.4	0.2	-1.09	7.2
Waiomou Stm at Matamata-Tauranga Rd	12	7.2	7.2	6.9	7.4	0.3	0.09	7.1
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	7.3	7.2	6.7	8.1	0.5	0.80	7.2
Waitoa River at Landsdowne Rd Br	12	7.1	7.2	6.6	7.4	0.4	-0.81	7.2
Waitoa River at Mellon Rd Recorder	12	7.2	7.2	6.6	7.7	0.6	-0.12	7.2
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	7.3	7.2	6.5	9.4	0.6	1.66	7.1
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	7.7	7.8	7.3	8.1	0.3	-0.28	7.7
Karapiro Stm at Hickey Rd Bridge	12	7.2	7.2	6.7	7.4	0.2	-0.89	7.2
Kirikiri Stm at Tauhara Dr	12	6.9	6.9	6.5	7.2	0.2	-0.36	6.9
Komakorau Stm at Henry Rd	12	6.6	6.6	5.9	7.1	0.4	-0.45	6.6
Little Waipa Stm at Arapuni - Putaruru Rd	12	7.1	7.0	6.7	7.3	0.2	-0.58	7.0
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	6.9	7.0	5.7	7.4	0.4	-1.65	7.0
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	7.4	7.4	7.1	7.8	0.1	0.47	7.5
Mangaone Stm at Annebrooke Rd Br	12	7.2	7.2	6.9	7.6	0.2	0.53	7.3
Mangaonua Stm at Hoeka Rd	12	7.0	7.0	6.8	7.2	0.2	-0.31	7.0
Mangaonua Stm at Te Miro Rd	12	7.4	7.4	6.8	7.8	0.4	-0.31	7.4
Mangatangi River at SH2 Maramarua	12	7.2	7.2	6.6	7.5	0.3	-0.65	7.1
Mangatawhiri River at Lyons Rd At Buckingham Br	12	7.5	7.5	7.0	7.9	0.3	-0.11	7.4
Mangawara Stm at Rutherford Rd Br	12	6.8	6.8	6.1	7.4	0.4	-0.14	6.8
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	7.0	7.0	6.3	7.2	0.2	<u>-1.70</u>	7.0
Matahuru Stm at Waiterimu Road Below Confluence	12	7.0	7.0	6.3	7.5	0.6	-0.16	7.0
Ohaeroa Stm at SH22 Br	12	7.4	7.4	6.9	7.8	0.5	-0.04	7.5
Opuatia Stm at Ponganui Rd	12	7.5	7.4	7.0	8.0	0.6	0.26	7.5
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	7.2	7.2	6.9	7.3	0.3	-0.32	7.2
Waerenga Stm at Taniwha Rd	12	7.2	7.2	6.8	7.5	0.2	-0.66	7.3
Waitawhiriwhiri Stm at Edgecumbe Street	12	7.0	7.0	6.6	7.2	0.3	-0.57	7.0
Whakapipi Stm at SH22 Br	12	7.2	7.3	6.8	7.5	0.3	-0.57	7.3
Whakauru Stm at U/S SH1 Br	12	7.4	7.4	7.1	7.6	0.2	-0.82	7.5
Whangamarino River at Island Block Rd	12	7.1	7.0	6.6	7.8	0.5	0.64	6.9
Whangamarino River at Jefferies Rd Br	12	7.0	7.1	6.5	7.5	0.3	-0.33	7.1
Whangape Stm at Rangiri-Glen Murray Rd	12	7.5	7.4	6.8	8.4	0.9	0.45	7.4

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries																	
Kaniwhaniwha Stm at Wright Rd	12	9.2	8.3	3.2	18.3	6.9	0.57	8.1	12	7.1	7.1	6.5	7.3	0.3	-1.24	7.1	
Mangaohoi Stm at South Branch Maru Rd	12	1.9	1.6	1.1	3.9	1.1	1.39	1.7	12	7.5	7.4	7.1	8.0	0.3	0.76	7.4	
Mangaokewa Stm at Lawrence St Bridge	12	10.7	3.7	1.7	55.0	6.2	<u>2.17</u>	4.8	12	7.4	7.4	7.0	7.8	0.3	0.14	7.4	
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	13.5	11.4	2.0	38.0	8.4	1.22	14.4	12	7.4	7.5	6.7	8.2	0.9	-0.17	7.2	
Mangapu River at Otorohanga	12	14.0	7.5	1.6	58.0	14.6	<u>1.78</u>	14.1	12	7.6	7.5	6.9	8.8	1.0	0.56	7.4	
Mangatutu Stm (Waikeria) at Walker Rd Br	11	3.5	2.0	0.8	10.7	2.4	1.42	3.0	11	7.2	7.1	6.6	8.1	0.4	0.94	7.2	
Mangauika Stm at Te Awamutu Borough W/S Intake	11	3.7	1.5	1.0	12.6	2.9	1.47	1.8	11	7.3	7.3	6.8	7.7	0.5	-0.25	7.3	
Ohote Stm at Whatawhata/Horotiu Rd	12	12.4	11.1	7.0	20.0	6.4	0.52	12.0	12	6.7	6.8	6.0	7.1	0.3	-1.25	6.8	
Puniu River at Bartons Corner Rd Br	12	8.9	6.1	1.5	29.0	10.6	1.36	6.3	12	7.1	7.1	6.6	7.9	0.4	0.82	7.1	
Waipa River at Mangaokewa Rd	12	3.4	2.2	0.8	13.7	2.7	<u>2.12</u>	2.3	12	7.3	7.2	6.7	7.8	0.5	0.14	7.3	
Waipa River at Pirongia-Ngutunui Rd Br	12	11.3	7.6	3.9	32.0	5.7	1.58	11.2	12	7.1	7.1	6.5	7.5	0.3	-0.47	7.2	
Waipa River at SH3 Otorohanga	12	15.1	4.2	1.1	76.0	9.5	<u>1.77</u>	4.4	12	7.3	7.1	6.8	7.9	0.7	0.36	7.2	
Waitomo Stm at SH31 Otorohanga	12	13.7	9.6	1.7	48.0	12.4	1.39	14.4	12	7.7	7.7	7.2	8.2	0.5	-0.01	7.7	
Waitomo Stm at Tumutumu Rd	12	8.1	4.6	1.6	28.0	8.1	1.44	5.7	12	7.8	7.8	7.5	8.2	0.4	0.29	7.8	
Tributaries to the upper Waikato River																	
Kawaunui Stm at SH5 Br	12	2.9	2.5	1.8	5.2	1.4	0.99	3.6	12	6.9	6.8	6.6	7.6	0.2	<u>1.83</u>	6.9	
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	4.9	4.6	3.1	7.6	2.4	0.45	4.6	12	7.3	7.4	6.8	7.5	0.2	<u>-1.83</u>	7.4	
Mangakara Stm (Reporoa) at SH5	12	4.8	3.7	2.6	13.1	2.5	<u>2.10</u>	5.6	12	7.0	7.0	6.8	7.4	0.2	1.12	7.0	
Mangakino Stm (Whakamaru) at Sandel Rd	12	2.3	2.0	0.7	5.0	2.0	0.71	1.9	12	7.4	7.4	7.2	7.5	0.1	-0.38	7.4	
Otamakokore Stm at Hossack Rd	12	3.5	3.4	1.5	6.4	2.5	0.36	3.6	12	8.1	8.2	7.7	8.3	0.3	-0.69	8.0	
Pueto Stm at Broadlands Rd Br	12	2.6	2.5	1.4	4.1	1.8	0.32	2.7	12	7.3	7.3	7.2	7.4	0.2	-0.14	7.4	
Tahunaatara Stm at Ohakuri Rd	12	2.8	2.8	1.6	4.3	1.8	0.09	3.0	12	7.5	7.5	7.2	7.7	0.2	-0.30	7.5	
Torepatutahi Stm at Vaile Rd Br	12	2.1	1.6	1.1	4.3	1.0	1.18	1.5	12	7.2	7.2	7.0	7.5	0.1	0.19	7.2	
Waiotapu Stm at Campbell Rd Br	12	6.4	6.3	4.0	9.9	3.1	0.38	7.1	12	5.5	5.5	5.0	6.0	0.4	0.02	5.6	
Waiotapu Stm at Homestead Rd Br	12	12.2	11.3	3.7	23.0	14.5	0.22	11.7	12	6.7	6.8	6.4	7.0	0.3	-0.23	6.8	
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	3.8	3.4	2.1	8.3	2.0	1.54	4.7	12	7.7	7.7	7.5	7.8	0.1	0.00	7.7	
Whirinaki Stm at Corbett Rd	12	0.7	0.5	0.3	2.1	0.6	<u>1.68</u>	0.5	12	7.2	7.3	7.0	7.5	0.2	-0.30	7.3	
West Coast																	
Awakino River at Gribbon Rd	12	9.4	2.1	0.4	77.0	6.9	<u>2.90</u>	1.5	12	7.4	7.5	7.0	7.8	0.5	-0.07	7.4	
Awakino River at SH3 Awakau Rd Junction	12	23.6	3.8	0.9	135.0	34.9	<u>2.16</u>	4.7	12	7.5	7.5	6.7	8.4	0.6	0.12	7.5	
Manganui River at Off Manganui Rd	12	55.0	4.9	1.4	440.0	14.4	<u>2.55</u>	5.6	12	7.4	7.3	6.8	8.0	0.7	0.12	7.4	
Mangaotaki River at SH3 Br	12	22.6	4.4	1.2	93.0	21.3	1.54	6.0	12	7.7	7.8	7.4	7.9	0.5	-0.42	7.8	
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	7.9	3.8	1.5	28.0	9.9	1.43	4.2	12	7.8	7.9	7.3	8.3	0.6	-0.12	7.9	
Mokau River at Awakau Rd	12	43.7	17.2	3.2	230.0	35.7	<u>2.13</u>	20.5	12	7.3	7.3	6.7	7.7	0.5	-0.44	7.4	
Mokau River at Mangaokewa Rd (Off SH30)	12	4.7	3.3	2.2	13.0	2.2	1.58	3.1	12	7.2	7.2	6.8	7.7	0.3	0.30	7.2	
Mokau River at Totoro Rd Recorder	12	19.5	6.6	1.2	67.0	26.4	1.19	8.1	12	7.5	7.5	7.2	7.8	0.4	0.32	7.5	
Mokauiti Stm at Three Way Point - Aria	12	27.4	8.6	2.1	141.0	26.9	<u>1.90</u>	13.4	12	7.2	7.2	6.7	7.6	0.5	-0.11	7.2	
Ohautira Stm at Waingaro Te Uku Rd	12	41.7	12.6	3.3	220.0	33.9	<u>2.04</u>	10.2	12	7.2	7.2	6.9	7.7	0.3	0.91	7.3	
Oparau River at Langdon Rd (Off Okupata Rd)	12	6.4	5.9	1.5	13.3	7.4	0.42	3.0	12	7.4	7.5	6.8	7.8	0.4	-0.75	7.5	
Tawarau River at Off Speedies Rd	12	8.4	3.3	1.4	32.0	10.3	1.50	3.7	12	7.8	7.9	7.3	8.3	0.4	-0.39	7.9	
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	43.6	12.7	2.4	320.0	21.9	<u>2.80</u>	10.6	12	7.3	7.3	6.7	7.9	0.6	0.12	7.5	
Waitetuna River at Te Uku-Waingaro Rd	12	21.0	11.7	3.1	102.0	11.7	<u>2.43</u>	13.4	12	7.3	7.3	6.9	7.6	0.4	0.18	7.3	
Inflows to Lake Taupo																	
Hinemaiaia River at SH1	12	1.2	1.1	0.8	2.4	0.5	1.58	1.2	12	7.4	7.5	7.2	7.6	0.2	-0.36	7.5	
Kuratau River at SH41 Moerangi	12	2.5	1.7	1.1	9.4	1.2	<u>2.66</u>	1.7	12	7.2	7.2	7.0	7.5	0.2	0.53	7.1	
Kuratau River at 43 Te Rae Street	12	1.6	1.2	1.0	4.5	0.2	<u>2.39</u>	1.2	12	7.6	7.5	7.1	8.3	0.5	0.84	7.5	
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	3.6	3.3	2.5	6.0	1.6	0.88	2.9	12	7.4	7.4	7.2	7.6	0.2	0.51	7.4	
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	1.2	0.9	0.4	5.3	0.7	<u>2.66</u>	0.9	12	7.3	7.3	7.2	7.4	0.1	-0.42	7.3	
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	1.3	1.1	0.9	2.2	0.6	0.90	1.5	12	7.3	7.4	7.0	7.5	0.1	-1.23	7.4	
Tokaanu Stm at Off SH41 Turangi	12	0.3	0.2	0.1	0.8	0.2	1.42	0.2	12	7.1	7.2	7.0	7.3	0.2	0.00	7.2	
Waihaha River at SH32	12	1.1	0.6	0.4	3.3	0.7	1.54	0.6	12	7.3	7.3	7.0	7.5	0.2	-0.52	7.3	
Waitahanui River at Blake Rd	12	1.1	0.8	0.3	3.3	0.4	<u>1.85</u>	0.8	12	7.4	7.4	7.2	7.6	0.1	-0.71	7.5	
Whangamata Stm (Kinloch) at Whangamata Rd	12	2.1	1.8	0.8	4.4	1.6	0.79	1.9	12	7.4	7.4	7.2	7.6	0.2	0.06	7.4	
Whanganui Stm at Lakeside Lake Taupo	12	1.8	1.6	0.8	4.4	1.0	<u>1.69</u>	1.5	12	7.4	7.4	7.2	7.5	0.2	0.03	7.4	
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	3.5	3.4	1.7	6.8	1.2	1.16	3.3	12	7.4	7.3	7.2	7.5	0.2	0.15	7.4	

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

**E. Coli (n/100mL)**

Location	Count	Mean	Median	Min	Max	IQR	Skew	09-13	
								Median	Median
<b>Coromandel</b>									
Hikutaia River at Old Maratoto Rd	10	391	305	50	900	550	0.48		220
Kauaeranga River at Smiths Cableway/Recorder	10	153	130	34	440	105	1.43		160
Ohinemuri River at Queens Head	10	222	90	34	1500	86	<u>2.63</u>		75
Ohinemuri River at SH25 Br	10	1686	85	42	16000	80	<u>2.67</u>		120
Tairua River at Morrisons Br Hikuai	10	420	40	17	3300	109	<u>2.57</u>		49
Tapu River at Tapu-Coroglen Rd	10	345	53	20	2800	125	<u>2.65</u>		55
Waiau River at E309 Rd Ford	10	1069	52	33	10000	77	<u>2.66</u>		93
Waitekauri River at U/S Ohinemuri Conflu	10	432	53	18	3900	39	<u>2.67</u>		53
Waiwawa River at SH25 Coroglen	10	643	40	19	6000	61	<u>2.67</u>		70
Wharekawa River at SH25	10	1261	215	100	10000	210	<u>2.63</u>		190
<b>Hauraki</b>									
Mangawhero Stm (Kaihere) at Mangawara Rd	11	460	47	7	4100	145	<u>2.82</u>		50
Oraka Stm at Lake Rd	11	264	220	70	580	238	0.77		240
Piako River at Kiwitahi	10	227	200	89	400	190	0.39		320
Piako River at Paeroa-Tahuna Rd Br	10	777	505	190	3200	180	<u>2.45</u>		475
Piakonui Stm at Piakonui Rd	10	111	41	7	700	60	<u>2.52</u>		85
Waihou River at Okauia	11	189	190	60	370	105	0.56		220
Waihou River at Whites Rd	11	46	40	24	100	28	1.23		40
Waiohotu Stm at Waiohotu Rd (Off SH5)	11	71	16	7	300	92	1.50		33
Waiomou Stm at Matamata-Tauranga Rd	11	321	290	130	700	150	1.14		290
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	11	427	260	40	1400	503	1.20		320
Waitoa River at Landsdowne Rd Br	10	524	375	230	1900	160	<u>2.50</u>		490
Waitoa River at Mellon Rd Recorder	10	526	300	190	2000	300	<u>2.03</u>		600
<b>Tributaries to the lower Waikato River</b>									
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	11	411	240	40	1200	548	1		240
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	11	2482	290	40	23000	355	<u>2.80</u>		290
Karapiro Stm at Hickey Rd Bridge	10	226	220	90	440	120	0.71		410
Kirikiri River Stm at Tauhara Dr	10	946	660	310	4100	400	<u>2.46</u>		660
Komakorau Stm at Henry Rd	11	1119	800	140	3800	875	<u>1.89</u>		1000
Little Waipa Stm at Arapuni - Putaruru Rd	11	147	90	30	700	70	<u>2.60</u>		100
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	10	1210	435	290	4400	570	1.47		600
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	11	694	590	100	1900	675	0.93		700
Mangaone Stm at Annebrooke Rd Br	10	1010	900	400	2100	820	0.65		850
Mangaonua Stm at Hoeka Rd	10	1600	1350	700	3000	1900	0.59		1700
Mangaonua Stm at Te Miro Rd	10	303	150	40	1800	90	<u>2.59</u>		180
Mangatangi River at SH2 Maramarua	11	1657	400	190	9700	848	2		400
Mangatawhiri River at Lyons Rd At Buckingham Br	11	1483	230	20	14000	168	3		230
Mangawara Stm at Rutherford Rd Br	11	1705	1000	260	5200	1390	1		1000
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	772	475	200	2500	250	1.51		600
Matahuru Stm at Waiterimu Road Below Confluence	11	738	630	230	1800	448	1		630
Ohaeroa Stm at SH22 Br	11	746	240	100	2500	1025	1		240
Opuatia Stm at Ponganui Rd	11	887	500	230	2300	1415	0.90		385
Pokaiwhenua Stm at Arapuni - Putaruru Rd	11	246	140	40	810	235	1.43		150
Waerenga Stm at Taniwha Rd	11	837	500	100	3900	388	<u>2.16</u>		500
Waitahiriwhiri Stm at Edgecumbe Street	10	1167	400	100	8000	290	<u>2.63</u>		775
Whakapipi Stm at SH22 Br	11	743	400	160	2300	1018	1		400
Whakauru Stm at U/S SH1 Br	11	531	510	240	890	228	0.37		500
Whangamarino River at Island Block Rd	11	331	290	70	700	445	0		290
Whangamarino River at Jefferies Rd Br	11	664	420	190	1700	775	1		420
Whangape Stm at Rangiri-Glen Murray Rd	11	309	300	5	660	398	0		300

**Enterococci (n/100ml)**

Location	Count	Mean	Median	Min	Max	IQR	Skew	09-13	
								Median	Median
<b>Coromandel</b>									
Hikutaia River at Old Maratoto Rd	10	220	100	15	840	311	1.49		70
Kauaeranga River at Smiths Cableway/Recorder	10	121	77	14	430	106	1.48		115
Ohinemuri River at Queens Head	10	73	12	3	600	18	<u>2.64</u>		19
Ohinemuri River at SH25 Br	10	1036	25	4	10000	111	<u>2.67</u>		28
Tairua River at Morrisons Br Hikuai	10	131	9	1	1000	128	<u>2.52</u>		16
Tapu River at Tapu-Coroglen Rd	10	301	38	9	2600	66	<u>2.66</u>		37
Waiau River at E309 Rd Ford	10	294	61	7	2500	64	<u>2.66</u>		71
Waitekauri River at U/S Ohinemuri Conflu	10	110	23	1	900	34	<u>2.64</u>		14
Waiwawa River at SH25 Coroglen	10	333	26	10	2900	52	<u>2.64</u>		34
Wharekawa River at SH25	10	320	105	10	1500	288	<u>1.80</u>		95
<b>Hauraki</b>									
Mangawhero Stm (Kaihere) at Mangawara Rd	11	1473	160	19	14000	198	<u>2.81</u>		60
Oraka Stm at Lake Rd	11	182	180	17	510	252	0.64		150
Piako River at Kiwitahi	10	124	70	16	300	236	0.46		205
Piako River at Paeroa-Tahuna Rd Br	10	446	200	110	2300	250	<u>2.47</u>		275
Piakonui Stm at Piakonui Rd	10	100	44	6	240	211	0.41		90
Waihou River at Okauia	11	165	90	18	760	163	<u>2.22</u>		120
Waihou River at Whites Rd	11	30	19	4	80	25	1.12		30
Waiohotu Stm at Waiohotu Rd (Off SH5)	11	64	22	2	400	60	<u>2.45</u>		22
Waiomou Stm at Matamata-Tauranga Rd	11	446	150	16	2900	363	<u>2.62</u>		160
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	11	451	120	16	3100	158	<u>2.59</u>		170
Waitoa River at Landsdowne Rd Br	10	236	210	23	700	150	1.50		270
Waitoa River at Mellon Rd Recorder	10	355	230	27	1700	326	<u>2.18</u>		315
<b>Tributaries to the lower Waikato River</b>									
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	11	218	90	6	900	296	1		90
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	11	800	50	6	7200	148	<u>2.74</u>		90
Karapiro Stm at Hickey Rd Bridge	10	120	120	10	290	174	0.36		150
Kirikiri River Stm at Tauhara Dr	10	760	235	20	4900	170	<u>2.45</u>		335
Komakorau Stm at Henry Rd	11	644	340	90	2000	973	0.99		430
Little Waipa Stm at Arapuni - Putaruru Rd	11	85	29	9	410	80	<u>2.23</u>		43
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	10	753	220	50	4600	390	<u>2.47</u>		530
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	11	344	320	31	1000	163	1.39		310
Mangaone Stm at Annebrooke Rd Br	10	413	385	110	900	180	0.87		385
Mangaonua Stm at Hoeka Rd	10	739	520	100	1600	1240	0.29		800
Mangaonua Stm at Te Miro Rd	10	403	240	14	1300	775	0.88		205
Mangatangi River at SH2 Maramarua	11	1050	110	34	7600	193	2		110
Mangatawhiri River at Lyons Rd At Buckingham Br	11	793	50	10	7600	116	3		50
Mangawara Stm at Rutherford Rd Br	11	1289	230	120	5300	1210	1		230
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	786	535	80	2500	1250	1.00		700
Matahuru Stm at Waiterimu Road Below Confluence	11	675	300	20	2600	1215	1		300
Ohaeroa Stm at SH22 Br	11	877	130	10	4700	303	2		130
Opuatia Stm at Ponganui Rd	11	568	160	22	3800	440	2.46		165
Pokaiwhenua Stm at Arapuni - Putaruru Rd	11	95	60	13	390	115	<u>1.81</u>		80
Waerenga Stm at Taniwha Rd	11	556	130	30	3900	133	<u>2.44</u>		140
Waitahiriwhiri Stm at Edgecumbe Street	10	1517	540	100	10000	860	<u>2.58</u>		550
Whakapipi Stm at SH22 Br	11	1279	300	50	5400	2458	1		300
Whakauru Stm at U/S SH1 Br	11	273	170	80	630	340	0.77		280
Whangamarino River at Island Block Rd	11	239	100	15	950	210	2		100
Whangamarino River at Jefferies Rd Br	11	616	230	90	2800	775	2		230
Whangape Stm at Rangiri-Glen Murray Rd	11	170	110	5	500	220	1		110

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

**Waipa River and Tributaries**

Kaniwhaniwha Stm at Wright Rd	11	772	250	90	2200	1158	1	250
Mangaohoi Stm at South Branch Maru Rd	11	469	40	5	4400	151	<u>2.82</u>	70
Mangaokewa Stm at Lawrence St Bridge	11	1450	500	70	9000	840	3	500
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	10	952	325	100	4200	250	2	325
Mangapu River at Otorohanga	11	1096	560	22	4900	1375	<u>1.99</u>	565
Mangatutu Stm (Waikeria) at Walker Rd Br	10	157	115	20	520	100	<u>1.82</u>	175
Mangauika Stm at Te Awamutu Borough W/S Intake	10	211	49	1	1100	190	<u>1.86</u>	71
Ohote Stm at Whatawhata/Horotiu Rd	10	488	275	88	2600	250	<u>2.53</u>	340
Puniu River at Bartons Corner Rd Br	10	650	140	20	3000	150	2	140
Waipa River at Mangaokewa Rd	11	408	220	60	1400	500	1	220
Waipa River at Pirongia-Ngutunui Rd Br	11	757	280	40	2500	775	1.23	330
Waipa River at SH3 Otorohanga	11	639	290	100	2300	495	1.49	240
Waitomo Stm at SH31 Otorohanga	11	535	340	60	1600	635	1.13	340
Waitomo Stm at Tumutumu Rd	11	239	180	30	800	299	1.34	180

	11	366	180	15	1500	514	2	180
	11	122	70	8	440	114	1.36	90
	11	464	240	40	1900	518	2	240
	10	549	102	31	3900	196	2	102
	11	628	220	29	2400	982	1.25	175
	10	119	90	13	420	106	<u>1.76</u>	90
	10	204	27	2	900	389	1.30	39
	10	142	50	10	1000	49	<u>2.61</u>	50
	10	428	90	11	2500	194	2	90
	11	171	60	2	900	162	2	60
	11	344	80	11	1000	728	0.74	110
	11	235	90	13	900	227	1.42	70
	11	269	130	9	1600	260	<u>2.47</u>	130
	11	162	28	2	1100	118	<u>2.50</u>	110

**Tributaries to the upper Waikato River**

Kawaunui Stm at SH5 Br	11	213	120	30	840	203	1.64	250
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	11	185	100	40	620	210	1.53	180
Mangakara Stm (Reporoa) at SH5	11	267	110	26	1600	133	<u>2.64</u>	140
Mangakino Stm (Whakamaru) at Sandel Rd	11	56	40	14	270	21	3	40
Otamakokore Stm at Hossack Rd	11	195	190	120	340	63	1.01	200
Pueto Stm at Broadlands Rd Br	11	21	20	14	27	10	0.14	21
Tahunaatara Stm at Ohakuri Rd	11	96	90	40	190	72	0.51	110
Torepatutahi Stm at Vaile Rd Br	11	80	50	13	300	68	2	50
Waiotapu Stm at Campbell Rd Br	11	3	1	1	10	3	1.34	2
Waiotapu Stm at Homestead Rd Br	11	91	110	10	180	85	0	110
Waipapa Stm (Mokai) at Tirohanga Rd Br	11	84	80	20	150	38	0.08	100
Whirinaki Stm at Corbett Rd	11	22	11	1	49	35	0	11

	11	181	150	23	610	224	1.32	150
	11	169	60	9	1200	91	<u>2.73</u>	60
	11	199	120	8	680	217	1.35	120
	11	94	15	1	800	20	3	15
	11	82	30	9	230	113	0.76	80
	11	23	16	4	90	22	<u>2.05</u>	18
	11	60	25	5	230	76	1.61	50
	11	69	31	7	340	82	2	31
	11	4	2	1	12	5	1.14	2
	11	74	39	12	310	82	2	39
	11	81	33	5	290	122	1.19	90
	11	49	22	2	220	56	2	22

**West Coast**

Awakino River at Gribbon Rd	11	117	90	20	280	143	0.68	80
Awakino River at SH3 Awakau Rd Junction	11	603	380	5	2400	793	1.53	320
Manganui River at Off Manganui Rd	11	1112	250	21	9300	503	<u>2.80</u>	230
Mangaotaki River at SH3 Br	11	845	540	90	3200	1065	2	540
Marokopa River at Speedies Rd (Off Te Anga Rd)	11	356	190	20	1800	405	<u>2.15</u>	200
Mokau River at Awakau Rd	11	503	300	30	1600	723	1.09	300
Mokau River at Mangaokewa Rd (Off SH30)	11	180	180	20	340	155	0.13	150
Mokau River at Totoro Rd Recorder	11	748	420	31	3800	835	<u>2.25</u>	280
Mokauiti Stm at Three Way Point - Aria	11	823	450	45	3800	500	<u>1.87</u>	330
Ohautira Stm at Waingaro Te Uku Rd	11	2065	390	70	17000	820	<u>2.77</u>	390
Oparau River at Langdon Rd (Off Okupata Rd)	11	273	110	31	1000	398	1	110
Tawarau River at Off Speedies Rd	11	864	240	39	7000	456	3	240
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	11	2860	310	85	27000	478	3	310
Waitetuna River at Te Uku-Waingaro Rd	11	840	440	110	3200	605	<u>1.73</u>	420

	11	93	60	6	330	107	1.33	34
	11	391	47	1	2600	231	<u>2.29</u>	42
	11	235	41	3	2100	65	<u>2.82</u>	40
	11	555	160	19	2200	638	1	160
	11	301	23	3	1900	192	2.10	26
	11	110	50	5	350	157	1.09	38
	11	99	70	4	310	160	0.91	36
	11	384	100	7	2000	461	<u>1.88</u>	97
	11	299	160	6	1700	320	<u>2.44</u>	160
	11	1070	200	21	6700	1337	<u>2.22</u>	140
	11	243	40	4	1400	291	2	40
	11	338	40	5	1900	262	2	40
	11	1138	210	27	10000	350	3	210
	11	431	140	10	2400	208	1.99	150

**Inflows to Lake Taupo**

Hinemaiaia River at SH1	11	17	12	8	45	9	<u>1.72</u>	15
Kuratau River at SH41 Moerangi	11	9	10	1	28	11	1	10
Kuratau River at 43 Te Rae Street	11	48	34	8	170	39	2	31
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	11	166	110	10	600	170	1.52	70
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	11	19	13	4	80	7	2	13
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	11	5	4	1	11	5	1	4
Tokaanu Stm at Off SH41 Turangi	11	6	5	1	16	8	1	5
Waihaha River at SH32	11	13	8	1	60	11	<u>2.19</u>	7
Waitahanui River at Blake Rd	11	53	16	11	170	77	1.08	16
Whangamata Stm (Kinloch) at Whangamata Rd	11	117	80	26	310	142	1	80
Whanganui Stm at Lakeside Lake Taupo	11	31	29	5	90	27	1.23	29
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	11	122	90	50	410	38	<u>2.48</u>	90

	11	7	6	1	16	10	0.26	5
	11	8	3	1	40	7	2	3
	11	35	16	1	120	62	1	16
	11	109	70	14	270	183	0.56	75
	11	9	3	1	27	13	1	3
	11	1	1	1	5	1	2	1
	11	7	6	2	16	7	1	6
	11	14	3	1	70	13	2.04	5
	11	180	17	3	1800	23	2.84	13
	11	81	44	11	210	116	1	44
	11	46	23	1	180	73	1.29	12
	11	98	24	10	480	127	1.92	37

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Temperature (°C)

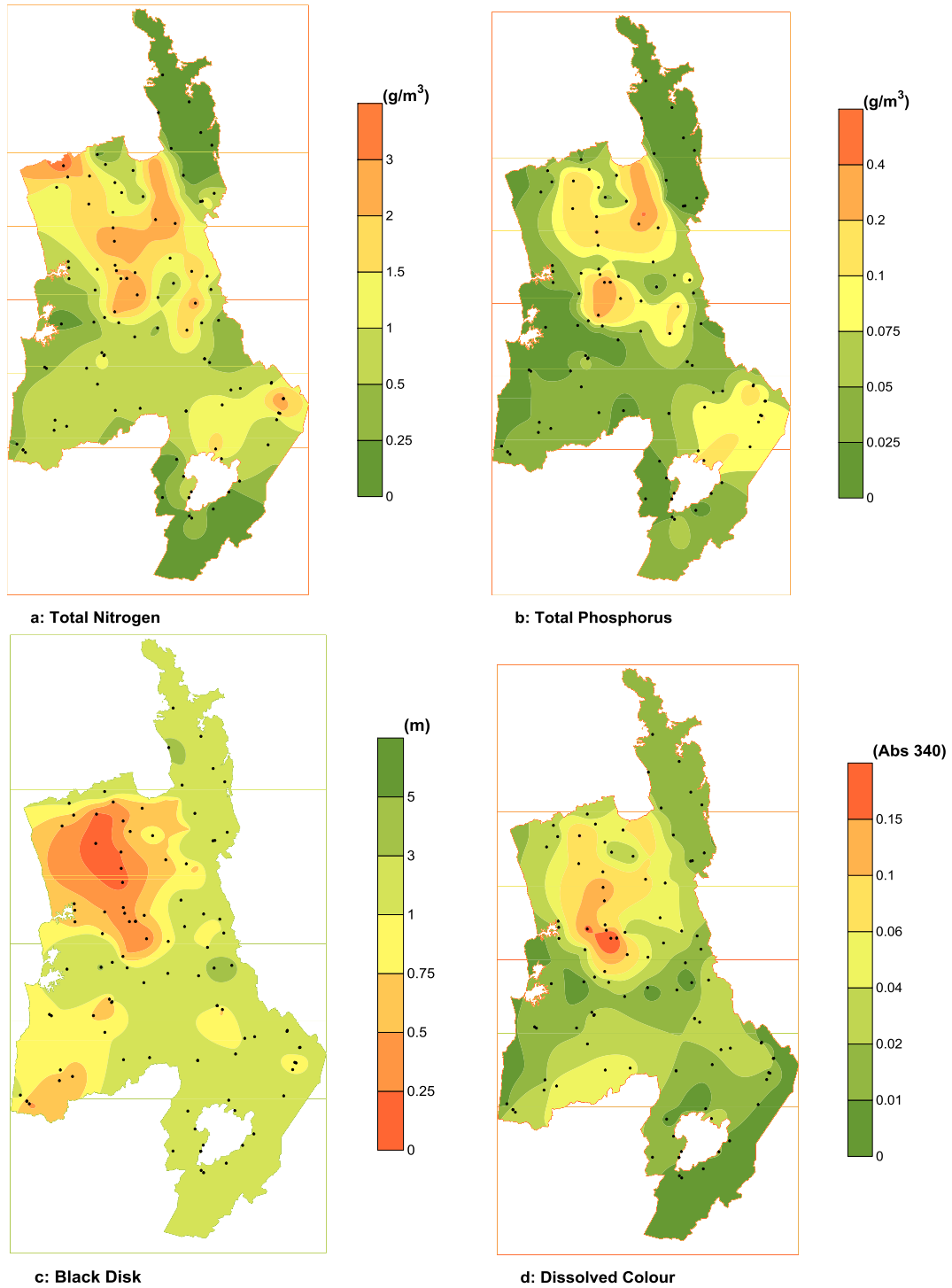
Location	Count	Mean	Median	Min	Max	IQR	Skew	09-13 Median
<b>Coromandel</b>								
Hikutaiia River at Old Maratoto Rd	12	14.7	13.7	9.8	19.4	5.8	0.23	14.8
Kauaeranga River at Smiths Cableway/Recorder	12	15.1	14.7	9.4	20.5	6.3	0.12	15.6
Ohinemuri River at Queens Head	12	16.9	16.4	10.8	22.8	6.5	0.18	16.2
Ohinemuri River at SH25 Br	12	16.2	15.8	11.2	21.2	5.3	0.17	15.8
Tairua River at Morrisons Br Hikuaui	12	16.2	15.5	10.4	21.3	6.9	0.10	16.1
Tapu River at Tapu-Coroglen Rd	12	14.8	14.2	9.5	20.5	5.6	0.21	15.2
Waiau River at E309 Rd Ford	12	14.6	14.0	9.6	18.7	4.6	-0.01	14.8
Waitekauri River at U/S Ohinemuri Conflu	12	15.6	14.7	10.2	20.4	5.5	0.17	15.5
Waiwawa River at SH25 Coroglen	12	15.8	15.4	10.1	21.5	7.1	0.04	16.4
Wharekawa River at SH25	12	15.8	15.2	10.1	20.8	6.5	0.07	15.8
<b>Hauraki</b>								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	14.5	14.7	7.6	18.8	4.5	-0.60	13.9
Oraka Stm at Lake Rd	12	14.1	14.3	10.1	17.6	4.0	-0.08	14.3
Piako River at Kiwitahi	12	16.2	15.7	9.2	22.4	7.9	0.03	15.7
Piako River at Paeroa-Tahuna Rd Br	12	15.4	14.8	9.1	22.2	7.0	0.10	15.1
Piakonui Stm at Piakonui Rd	11	13.1	13.1	8.7	17.3	5.3	-0.03	13.1
Waihou River at Okauia	12	14.4	14.4	10.1	18.3	3.9	-0.06	14.4
Waihou River at Whites Rd	12	13.3	13.4	12.3	14.4	1.0	0.07	13.4
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	11.4	11.6	7.3	14.9	4.2	-0.18	11.3
Waiomou Stm at Matamata-Tauranga Rd	12	13.8	13.7	9.4	17.8	4.7	0.01	13.9
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	16.7	16.7	7.7	22.4	6.9	-0.45	15.3
Waitoa River at Landsdowne Rd Br	11	15.4	15.5	9.0	20.1	7.4	-0.17	15.5
Waitoa River at Mellon Rd Recorder	12	15.5	14.8	9.5	21.4	6.4	0.03	15.7
<b>Tributaries to the lower Waikato River</b>								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	17.8	17.3	9.0	25.1	7.0	-0.12	16.2
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	14.9	15.2	8.3	19.0	4.7	-0.49	14.1
Karapiro Stm at Hickey Rd Bridge	12	15.0	14.9	9.1	19.5	6.1	-0.15	14.9
Kirikiriira Stm at Tauhara Dr	12	15.1	14.3	11.2	18.7	3.9	0.15	15.2
Komakorau Stm at Henry Rd	12	15.7	15.8	8.6	21.4	4.9	-0.22	14.6
Little Waipa Stm at Arapuni - Putaruru Rd	12	14.0	14.3	11.1	16.7	3.0	-0.06	14.3
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	15.2	14.4	10.3	19.2	5.4	-0.02	15.3
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	13.5	13.7	8.9	17.2	5.7	-0.24	14.4
Mangaone Stm at Annebrooke Rd Br	12	13.8	13.0	8.8	17.8	4.8	-0.06	13.8
Mangaonua Stm at Hoeka Rd	12	13.9	13.2	9.7	18.3	4.4	0.04	13.8
Mangaonua Stm at Te Miro Rd	12	14.4	13.9	8.7	18.7	5.7	-0.04	13.9
Mangatangi River at SH2 Maramara	12	17.2	17.2	9.3	22.7	6.1	-0.32	16.0
Mangatawhiri River at Lyons Rd At Buckingham Br	12	17.3	16.7	8.1	24.5	6.0	-0.12	16.6
Mangawara Stm at Rutherford Rd Br	12	16.2	16.6	8.1	21.0	5.9	-0.51	14.6
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	14.2	14.0	10.2	17.4	3.8	-0.18	14.3
Matahuru Stm at Waiterimu Road Below Confluence	12	15.5	15.7	7.3	19.4	5.7	-0.77	14.2
Ohaeroa Stm at SH22 Br	12	15.2	16.1	6.8	19.6	4.7	-0.91	14.3
Opuatia Stm at Ponganui Rd	12	15.7	15.8	7.3	20.8	5.9	-0.57	14.6
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	13.9	14.2	9.7	17.8	4.3	-0.10	14.1
Waerenga Stm at Taniwha Rd	12	14.9	16.0	5.8	19.1	6.1	-0.90	14.0
Waitawhiriwhiri Stm at Edgecumbe Street	12	16.3	15.8	12.0	19.5	4.3	-0.12	16.2
Whakapipi Stm at SH22 Br	12	15.7	16.1	8.3	19.5	4.9	-0.77	15.0
Whakauru Stm at U/S SH1 Br	12	11.9	12.4	7.5	15.6	3.6	-0.30	12.4
Whangamarino River at Island Block Rd	12	18.0	17.7	8.7	24.1	8.2	-0.28	16.9
Whangamarino River at Jefferies Rd Br	12	15.6	15.6	6.7	20.6	6.6	-0.57	14.4
Whangape Stm at Rangiriri-Glen Murray Rd	12	16.8	16.1	7.4	22.3	7.5	-0.45	16.1

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions



<b>Waipa River and Tributaries</b>								
Kaniwhaniwha Stm at Wright Rd	12	15.0	14.8	8.7	20.6	6.0	0.05	14.1
Mangaohoi Stm at South Branch Maru Rd	12	14.7	14.1	10.9	19.8	4.8	0.29	13.9
Mangaokewa Stm at Lawrence St Bridge	12	14.0	13.8	9.4	19.2	4.0	0.21	12.7
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	17.5	16.7	11.1	23.0	8.3	-0.01	16.4
Mangapu River at Otorohanga	12	16.0	16.1	9.0	23.6	7.7	0.06	15.0
Mangatutu Stm (Waikeria) at Walker Rd Br	11	14.7	15.3	9.3	19.8	6.8	0.09	14.0
Mangauika Stm at Te Awamutu Borough W/S Intake	11	12.8	12.3	9.4	16.3	4.1	0.05	12.3
Ohote Stm at Whatawhata/Horotiu Rd	12	15.6	15.7	10.5	19.5	4.7	-0.26	15.5
Puniu River at Bartons Corner Rd Br	12	15.7	15.0	10.2	20.2	7.4	0.01	15.0
Waipa River at Mangaokewa Rd	12	13.8	13.7	9.0	20.0	7.2	0.14	12.9
Waipa River at Pirongia-Ngutunui Rd Br	12	15.8	15.4	8.2	22.6	6.8	0.02	14.8
Waipa River at SH3 Otorohanga	12	15.7	15.4	10.3	22.8	7.7	0.16	14.0
Waitomo Stm at SH31 Otorohanga	12	15.7	15.1	9.9	22.7	6.4	0.27	14.5
Waitomo Stm at Tumutumumu Rd	12	14.4	14.0	10.5	18.3	4.1	0.13	13.7
<b>Tributaries to the upper Waikato River</b>								
Kawaunui Stm at SH5 Br	12	14.4	14.9	10.7	17.3	3.9	-0.35	14.9
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	12.8	13.2	9.4	15.4	2.9	-0.34	13.0
Mangakara Stm (Reporoa) at SH5	12	12.7	13.3	8.5	16.5	4.1	-0.26	13.3
Mangakino Stm (Whakamaru) at Sandel Rd	12	12.4	13.0	8.1	15.8	4.7	-0.38	12.3
Otamakokore Stm at Hossack Rd	12	21.2	21.2	17.0	25.1	3.8	0.08	20.9
Pueto Stm at Broadlands Rd Br	12	13.4	13.6	10.3	16.3	3.5	-0.14	14.1
Tahunaatara Stm at Ohakuri Rd	12	13.3	13.9	7.7	18.7	5.7	-0.11	13.8
Torepatutahi Stm at Vaile Rd Br	12	14.2	14.4	9.8	17.7	4.6	-0.26	14.5
Waiotapu Stm at Campbell Rd Br	12	28.3	28.2	24.6	32.0	3.4	0.16	28.2
Waiotapu Stm at Homestead Rd Br	12	18.8	19.0	14.0	23.4	5.2	-0.03	19.0
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	22.2	22.5	18.5	25.0	3.8	-0.27	22.2
Whirinaki Stm at Corbett Rd	12	11.9	12.2	10.0	13.9	1.9	-0.26	12.5
<b>West Coast</b>								
Awakino River at Gribbon Rd	12	13.7	13.5	8.8	18.6	5.4	0.12	12.6
Awakino River at SH3 Awakau Rd Junction	12	15.5	14.6	9.9	23.0	7.3	0.44	14.6
Manganui River at Off Manganui Rd	12	14.5	14.6	9.8	19.2	5.6	0.02	13.7
Mangaotaki River at SH3 Br	12	14.3	14.1	9.7	19.4	4.9	0.11	13.1
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	14.4	14.1	8.6	18.7	5.9	-0.14	13.6
Mokau River at Awakau Rd	12	15.6	14.9	8.6	22.4	7.9	0.18	14.2
Mokau River at Mangaokewa Rd (Off SH30)	12	12.9	13.5	8.5	17.5	5.1	-0.09	12.2
Mokau River at Totoro Rd Recorder	12	15.4	15.4	9.4	21.5	7.0	0.12	14.0
Mokauiti Stm at Three Way Point - Aria	12	15.8	15.5	9.5	23.8	7.2	0.34	14.3
Ohautira Stm at Waingaro Te Uku Rd	12	14.0	14.1	7.1	19.3	5.0	-0.26	12.8
Oparau River at Langdon Rd (Off Okupata Rd)	12	15.0	14.9	8.9	21.0	5.5	0.00	13.9
Tawarau River at Off Speedies Rd	12	14.3	14.0	8.8	19.3	5.1	-0.01	13.5
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	15.4	15.3	7.6	21.6	5.2	-0.17	14.1
Waitetuna River at Te Uku-Waingaro Rd	12	14.7	14.5	7.6	20.2	5.4	-0.17	13.4
<b>Inflows to Lake Taupo</b>								
Hinemaiaia River at SH1	12	11.8	12.2	5.8	16.9	6.5	-0.17	11.9
Kuratau River at SH41 Moerangi	12	9.8	9.9	6.2	12.7	3.6	-0.26	9.8
Kuratau River at 43 Te Rae Street	12	14.0	13.4	7.5	20.4	9.4	0.00	13.3
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	11.2	11.6	9.3	12.8	2.2	-0.37	11.1
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	11.0	11.6	5.8	15.3	6.9	-0.25	11.3
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	13.1	12.3	7.6	18.9	8.5	0.15	12.6
Tokaanu Stm at Off SH41 Turangi	12	12.3	12.4	10.9	13.5	1.2	-0.40	12.3
Waihaha River at SH32	12	11.6	12.4	6.3	15.4	5.4	-0.41	11.5
Waitahanui River at Blake Rd	12	10.8	11.3	8.4	13.3	1.6	-0.27	10.8
Whangamata Stm (Kinloch) at Whangamata Rd	12	10.4	10.7	8.6	11.4	1.5	-0.59	10.2
Whanganui Stm at Lakeside Lake Taupo	12	11.8	12.1	6.6	15.0	5.7	-0.41	12.2
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	11.3	11.6	7.1	15.1	3.8	-0.16	11.5

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions



**Figure 2: Spatial contour plots of four water quality parameters (based on 5 year median values, 2009-2013); a: Total Nitrogen, b: Total Phosphorus, c: Black disk, d: Dissolved colour (Abs 340).**

## **3.2 Regional rivers monitoring programme comparison with water quality guidelines and standards**

Number of Samples (2013) that Comply with the Satisfactory Water Quality Standards and with the Excellent Water Quality Standards and Guidelines (+n=7, "n=8, \*n=9, ~n=10, ^n=11)

Location	SATISFACTORY										EXCELLENT									
	ECOLOGICAL HEALTH							RECREATION			ECOLOGICAL HEALTH						RECREATION			
	DO	pH	Turb	NH4	Temp	TP	TN	Bdisk	E.coli	E.coli-m	DO	pH	Turb	NH4	Temp	TP	TN	Bdisk	E.coli	E.coli-m
<b>Coromandel</b>																				
Hikutaia River at Old Maratoto Rd	12	12	12	12	10	12	12	10	7/10	N	8	9	10	12	3	9	6	2	1/10	N
Kauaeranga River at Smiths Cableway/Recorder	12	12	12	12	7	12	12	11	10/10	N	12	9	11	12	4	7	8	4	2/10	N
Ohinemuri River at Queens Head	12	12	12	12	5	12	4	8	9/10	Y	12	8	9	8	1	7	0	0	4/10	N
Ohinemuri River at SH25 Br	12	12	11	12	6	11	4	10	9/10	Y	11	10	10	12	1	5	0	2	3/10	N
Tairua River at Morrisons Br Hikuai	12	11	11	12	5	12	12	n/a	9/10	Y	11	9	11	12	1	9	9	n/a	6/10	N
Tapu River at Tapu-Coroglen Rd	12	12	11	12	8	11	11	11	9/10	Y	12	11	10	12	3	11	10	5	5/10	N
Waiau River at E309 Rd Ford	12	12	11	12	8	11	11	9	9/10	Y	12	11	6	12	3	10	7	0	5/10	N
Waitekauri River at U/S Ohinemuri Conflu	12	12	11	12	6	11	11	10	9/10	Y	12	9	11	12	2	10	2	3	6/10	N
Waiwawa River at SH25 Coroglen	12	12	11	12	6	10	11	11	9/10	Y	12	11	10	12	1	7	9	1	7/10	N
Wharekawa River at SH25	11	12	11	12	7	11	11	8^	8/10	N	7	11	5	12	2	9	3	1^	0/10	N
<b>Hauraki</b>																				
Mangawhero Stm (Kaihere) at Mangawara Rd	12	12	0	12	10	0	8	1	10/11	Y	12	12	0	12	4	0	0	0	6/11	N
Oraka Stm at Lake Rd	12	12	7	12	10	0	0	1	10/11	N	9	11	1	8	4	0	0	0	0/11	N
Piako River at Kiwitahi	8	12	11	12	6	1	5	8	10/10	N	5	10	5	12	3	0	0	0	0/10	N
Piako River at Paeroa-Tahuna Rd Br	10	12	4	12	8	0	0	3^	6/10	N	1	10	0	11	3	0	0	0^	0/10	N
Piakonui Stm at Piakonui Rd	11^	12	12	12	11^	12	11	3	9/10	Y	11^	11	0	12	4^	0	0	0	7/10	N
Waihou River at Okauia	12	12	9	12	9	0	0	0	11/11	N	11	12	0	12	3	0	0	0	0/11	N
Waihou River at Whites Rd	12	12	11	12	7	0	0	11^	11/11	Y	12	6	11	12	7	0	0	9^	8/11	N
Waihotu Stm at Waihotu Rd (Off SH5)	12	12	8	12	12	12	12	n/a	11/11	Y	11	11	0	12	11	0	0	n/a	7/11	Y
Waiomou Stm at Matamata-Tauranga Rd	12	12	7	12	11	10	3	0	9/11	N	12	11	0	12	5	0	0	0	0/11	N
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	12	3	12	4	3	5	0~	7/11	N	7	10	2	11	2	0	0	0~	1/11	N
Waitoa River at Landsdowne Rd Br	8^	12	8	12	7^	4	0	3*	9/10	N	3^	8	3	12	2^	0	0	0*	0/10	N
Waitoa River at Mellon Rd Recorder	2	12	4	12	8	0	0	1	8/10	N	0	9	0	8	2	0	0	0	0/10	N
<b>Tributaries to the Lower Waikato River</b>																				
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	10	11	0	12	3	5	1	0^	8/11	N	4	9	0	9	1	0	0	0^	1/11	N
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly F	7	12	3	12	9	11	4	1	9/11	N	1	11	0	12	2	7	0	0	2/11	N
Karapiro Stm at Hickey Rd Bridge	12	12	7	12	9	0	2	0^	10/10	N	5	11	0	12	3	0	0	0+	0/10	N
Kirikiroa Stm at Tauhara Dr	0	12	0	12	8	2	0	0	4/10	N	0	4	0	1	2	0	0	0	0/10	N
Komakorau Stm at Henry Rd	0	9	0	8	7	0	0	0	3/11	N	0	3	0	0	2	0	0	0	0/11	N
Little Waipa Stm at Arapuni - Putaruru Rd	12	12	12	12	8	1	0	7	10/11	Y	12	11	9	12	5	0	0	0	2/11	N
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	11	0	12	9	0	0	0	7/10	N	4	8	0	5	2	0	0	0	0/10	N
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	12	5	12	11	0	0	0	5/11	N	12	12	0	4	5	0	0	0	0/11	N
Mangaone Stm at Annebrooke Rd Br	2	12	0	12	11	0	0	0	3/10	N	0	11	0	12	4	0	0	0	0/10	N
Mangaonua Stm at Hoeka Rd	7	12	1	12	9	4	0	0	0/10	N	0	9	0	6	3	0	0	0	0/10	N
Mangaonua Stm at Te Miro Rd	12	12	9	12	10	11	0	1"	9/10	N	12	11	0	12	4	0	0	0"	2/10	N
Mangatangi River at SH2 Maramarua	10	12	0	12	4	0	5	0^	7/11	N	5	10	0	11	1	0	0	0^	0/11	N
Mangatawhiri River at Lyons Rd At Buckingham Br	12	12	9	12	3	11	10	5	9/11	N	12	12	2	12	1	0	0	0	1/11	N
Mangawara Stm at Rutherford Rd Br	1	10	0	12	6	0	0	0	4/11	N	0	3	0	0	2	0	0	0	0/11	N
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	11	11	0	12	9	0	0	0^	6/10	N	0	6	0	7	2	0	0	0^	0/10	N
Matahuru Stm at Waiterimu Road Below Confluence	10	10	0	12	8	0	3	0^	3/11	N	0	6	0	11	2	0	0	0^	0/11	N
Ohaeroa Stm at SH22 Br	12	12	2	12	8	9	0	0^	8/11	N	9	11	0	12	2	0	0	0~	0/11	N
Opuatia Stm at Ponganui Rd	12	12	0	12	7	6	0	0	6/11	N	9	12	0	12	2	0	0	0	0/11	N
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	12	10	12	11	0	0	5	10/11	N	12	11	6	12	5	0	0	0	1/11	N
Waerenga Stm at Taniwha Rd	12	12	2	12	10	2	1	0	7/11	N	11	11	0	12	2	0	0	0	0/11	N
Waitawhiriwhiri Stm at Edgecumbe Street	9	12	0	12	7	0	0	0	7/10	N	2	7	0	1	1	0	0	0	0/10	N
Whakapipi Stm at SH22 Br	10	12	4	12	8	2	0	1^	7/11	N	4	11	0	12	2	0	0	0^	0/11	N
Whakauru Stm at U/S SH1 Br	12	12	5	12	12	7	8	0^	6/11	N	12	12	0	12	10	0	0	0^	0/11	N
Whangamarino River at Island Block Rd	3	12	0	12	3	0	0	0	8/11	N	0	8	0	9	1	0	0	0	0/11	N
Whangamarino River at Jefferies Rd Br	4	12	0	12	6	0	5	0	7/11	N	0	7	0	11	2	0	0	0	0/11	N
Whangape Stm at Rangiriri-Glen Murray Rd	8	12	0	12	3	1	0	0	10/11	N	4	7	0	9	2	0	0	0	3/11	N

Waipa River and Tributaries																				
Kaniwhaniwha Stm at Wright Rd	9	12	2	12	8	10	4	0^	6/11	N	1	9	0	12	3	0	0	0^	0/11	N
Mangaohoi Stm at South Branch Maru Rd	12	12	12	12	9	1	10	6	10/11	Y	12	12	8	12	3	0	0	0	6/11	N
Mangaokewa Stm at Lawrence Street Br	12	12	8	12	10	7	4	1	6/11	N	10	12	1	12	7	0	0	0	0/11	N
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	11	12	2	12	4	0	0	1~	8/10	N	8	8	1	9	1	0	0	0~	0/10	N
Mangapu River at Otorohanga	12	12	4	12	7	5	1	1	5/11	N	9	7	2	12	2	0	0	0	1/11	N
Mangatutu Stm (Waikeria) at Walker Rd Br	11^	11^	9^	11^	10^	10^	4^	6^	10/10	Y	10^	8^	4^	11^	4^	0^	0^	0^	1/10	N
Mangauika Stm at Te Awamutu Borough W/S Intake	11^	11^	9^	11^	9^	11^	11^	10^	9/10	Y	11^	9^	7^	11^	7^	8^	0^	3^	6/10	N
Ohote Stm at Whatawhata/Horotiu Rd	0	10	0	12	9	2	0	0^	9/10	N	0	3	0	10	2	0	0	0^	0/10	N
Puniu River at Bartons Corner Rd Br	12	12	5	12	7	4	0	n/a	8/10	N	6	9	1	12	1	0	0	n/a	2/10	N
Waipa River at Mangaokewa Rd	12	12	10	12	11	11	7	5	8/11	N	12	11	6	12	5	1	0	0	0/11	N
Waipa River at Pirongia-Ngutunui Rd Br	11	12	1	12	7	7	3	n/a	7/11	N	4	10	0	12	2	0	0	n/a	1/11	N
Waipa River at SH3 Otorohanga	12	12	7	12	8	9	4	4	8/11	N	11	10	3	12	1	2	0	0	0/11	N
Waitomo Stm at SH31 Otorohanga	12	12	5	12	7	10	4	2	8/11	N	10	10	1	12	3	1	0	0	0/11	N
Waitomo Stm at Tumutumumu Rd	12	12	6	12	9	10	0	2^	10/11	N	12	9	2	12	3	1	0	0^	2/11	N
Tributaries to the Upper Waikato River																				
Kawaunui Stm at SH5 Br	12	12	11	12	9	1	0	7	10/11	Y	0	3	3	12	2	0	0	0	4/11	N
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	12	7	12	11	3	2	0	10/11	Y	12	11	0	12	8	0	0	0	2/11	N
Mangakara Stm (Reporoa) at SH5	12	12	8	12	11	0	0	2	10/11	Y	9	9	0	11	8	0	0	0	2/11	N
Mangakino Stm (Whakamaru) at Sandel Rd	12	12	11	12	11	3	0	8	11/11	Y	12	12	7	12	10	0	0	0	10/11	N
Otamakokore Stm at Hossack Rd	12	12	9	12	0	0	0	5	11/11	N	10	5	3	12	0	0	0	0	0/11	N
Pueto Stm at Broadlands Rd Br	12	12	12	12	10	0	3	7~	11/11	Y	12	12	5	12	6	0	0	0~	11/11	Y
Tahunaatara Stm at Ohakuri Rd	12	12	12	12	11	1	0	7	11/11	Y	12	12	4	12	6	0	0	0	3/11	N
Torepatutahi Stm at Vaile Rd Br	12	12	12	12	10	0	3	n/a	11/11	Y	11	12	7	12	4	0	0	n/a	6/11	N
Waiotapu Stm at Campbell Rd Br	12	0	4	5	0	5	0	3	11/11	Y	0	0	0	0	0	0	0	0	11/11	Y
Waiotapu Stm at Homestead Rd Br	11	11	3	12	2	0	0	n/a	11/11	Y	6	2	0	3	0	0	0	n/a	4/11	N
Waipapa Stm at Tirohanga Rd Br	12	12	10	12	0	0	0	3	11/11	Y	12	12	0	12	0	0	0	0	2/11	N
Whirinaki Stm at Corbett Rd	12	12	12	12	12	0	0	n/a	11/11	Y	12	12	11	12	7	0	0	n/a	11/11	Y
West Coast																				
Awakino River at Gribbon Rd	12	12	8	12	11	10	12	7	11/11	Y	12	12	6	12	4	1	3	2	4/11	N
Awakino River at SH3 Awakau Rd Junction	12	12	6	12	9	8	7	4	6/11	N	12	10	5	12	3	4	1	0	2/11	N
Manganui River at Off Manganui Rd	12	12	6	12	11	9	10	3	8/11	N	12	10	3	12	3	1	4	0	2/11	N
Mangaotaki River at SH3 Br	12	12	6	12	11	8	2	3	6/11	N	12	12	2	12	3	2	0	0	0/11	N
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	12	7	12	10	8	10	1	9/11	N	12	9	2	12	3	1	0	0	4/11	N
Mokau River at Awakau Rd	12	12	3	12	9	7	5	0	8/11	N	9	9	0	12	2	1	0	0	2/11	N
Mokau River at Mangaokewa Rd (Off SH30)	12	12	9	12	12	6	6	n/a	11/11	N	12	11	0	12	8	0	0	n/a	2/11	N
Mokau River at Totoro Rd Recorder	12	12	4	12	9	9	2	2	7/11	N	12	12	2	12	2	1	0	0	1/11	N
Mokauiti Stm at Three Way Point - Aria	9	12	4	12	9	8	5	1	7/11	N	6	10	0	11	2	0	0	0	1/11	N
Ohautira Stm at Waingarua Te Uku Rd	12	12	2	12	10	7	3	1	7/11	N	8	9	0	12	5	0	0	0	0/11	N
Oparau River at Langdon Rd (Off Okupata Rd)	12	12	5	12	9	12	11	4	9/11	Y	12	11	1	12	2	3	0	0	3/11	N
Tawarau River at Off Speedies Rd	12	12	7	12	10	8	7	3	8/11	N	12	10	2	12	3	0	0	0	3/11	N
Waingarua River (Pukemiro) at Ruakiwi Rd Off SH22	12	12	2	12	8	9	3	0	8/11	N	7	9	0	12	2	0	0	0	0/11	N
Waitetuna River at Te Uku-Waingarua Rd	12	12	2	12	9	9	4	0	6/11	N	9	11	0	12	3	0	0	0	0/11	N
Inflows to Lake Taupo																				
Hinemaiaia River at SH1	12	12	12	12	12	7	12	9	11/11	Y	12	12	11	12	9	0	3	0	11/11	Y
Kuratau River at SH41 Moerangi	12	12	11	12	12	12	11	10	11/11	Y	11	12	8	12	12	9	0	0	11/11	Y
Kuratau River at Te Rae Street	12	12	12	12	11	12	1	n/a	11/11	Y	12	10	10	12	5	3	0	n/a	8/11	N
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Re)	12	12	11	12	12	0	0	3	10/11	Y	1	12	0	12	10	0	0	0	3/11	N
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	12	11	12	12	12	12	11	11/11	Y	12	12	11	12	11	0	3	5	10/11	Y
Tokaanu at Off SH41 Turangi	9	12	12	12	10	0	11	n/a	11/11	Y	0	12	12	12	7	0	0	n/a	11/11	Y
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over	12	12	12	12	12	12	12	n/a	11/11	Y	12	12	11	12	7	2	10	n/a	11/11	Y
Waihaha River at SH32	12	12	12	12	12	12	12	11	11/11	Y	12	12	10	12	11	0	0	3	10/11	Y
Waitahanui River at Blake Rd	12	12	12	12	12	0	8	12	11/11	Y	12	12	10	12	10	0	0	2	7/11	Y
Whangamata Stm (Kinloch) at Whangamata Rd	12	12	12	12	12	0	0	n/a	11/11	Y	12	12	7	12	11	0	0	n/a	4/11	N
Whanganui Stm at Lakeside Lake Taupo	12	12	12	12	12	12	11	n/a	11/11	Y	11	12	9	12	11	2	0	n/a	9/11	N
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	12	11	12	12	11	0	n/a	11/11	Y	12	12	1	12	11	0	0	n/a	1/11	N

*E.coli-m* refers to whether the 2013 sample median meets the satisfactory median *E.coli* guideline of <126/100 ml or the Excellent guideline value of <23/100 ml for recreational use of water

# References

- Tulagi A 2013. Regional rivers water quality monitoring programme data report 2012. Waikato Regional Council Technical Report 2013/13. Hamilton, Waikato Regional Council.
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- Waikato Regional Council (Environment Waikato) 1999. Waikato state of the environment report 1998. Hamilton, Waikato Regional Council (Environment Waikato).

# Appendix I: Water quality guidelines and standards

## Details of water quality guidelines and standards for “satisfactory” water quality

Parameter	Critical Value(s)	Source
Dissolved oxygen	>80% of saturation concentration	RMA Third Schedule, Classes AE, F, and FS.
pH	6.5–9	ANZECC (1992) and Canadian guidelines for freshwater aquatic life (1987).
Turbidity	<5 NTU	Studies of adverse effects on underwater light—and thus on plant and invertebrate production—in certain South Island streams (Davies-Colley 1991).
Ammoniacal-nitrogen	<0.88 g N/m <sup>3</sup>	USEPA (1998) value for 1-hour exposure at pH 9.
Temperature	<12°C (May – Sep) <20°C (Oct – Apr)	Waikato Regional Council Draft Regional Plan standards for trout fisheries and trout spawning (1997).
Total phosphorus	<0.04 g/m <sup>3</sup>	From upper quartile values for 77 New Zealand rivers in NIWA’s National Water Quality Network (after Smith & Maasdam 1994)—note that the guidelines for “excellent” conditions are the lower quartile concentrations for these rivers.
Total nitrogen	<0.5 g/m <sup>3</sup>	From upper quartile values for 77 New Zealand rivers in NIWA’s National Water Quality Network (after Smith & Maasdam 1994)—note that the guidelines for “excellent” conditions are the lower quartile concentrations for these rivers.
Water clarity at baseflow	>1.6 m	“Baseflow” defined as flows less than the upper decile flow. Guideline from Ministry for the Environment (1994).
<i>Escherichia coli</i>	<550/100 mL	Ministry of the Environment (2003) guidelines for the management of recreational and marine shellfish-gathering waters.
Median <i>Escherichia coli</i>	<126/100 mL	Ministry of the Environment (1999) guidelines for the management of recreational and marine shellfish-gathering waters.





# Appendix II: Water quality monitoring parameters

## Field instruments and analytical methods

### Regional River monitoring programme - water quality parameters and analytical methods

Id <sup>1</sup>	Parameter	Method
A340F	Absorbance @ 340 nm filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
A440F	Absorbance @ 440 nm filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
A780	Absorbance @ 780 nm filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
BDISK	Black disk	Field measurement, horizontal water transparency (20mm, 60mm, 100mm, 200mm disk) in river or trough (20mm only)
COND	Conductivity	Lab Meter @ 25°C. APHA method 2510B
DO	Dissolved oxygen	Field measurement (Hach DO meter, model HQ 30d)
DO (% Sat)	Dissolved oxygen (percent saturation)	Field measurement (Hach DO meter, model HQ 30d)
DRP	Dissolved reactive Phosphorus	Filtration, Molybdenum Blue Colorimetry. Discrete analyser. APHA 4500 PE (modified)
E. coli	Escherichia coli	Membrane Filtration (mFC Agar) confirmation by MUG Agar. APHA method 9222 G
ENT	Enterococci bacteria	Membrane Filtration (mE Agar) confirmation by EIA Agar. APHA method 9230 C
FC	Faecal coliforms	Membrane Filtration (mFC Agar). APHA method 9222 D
NH <sub>4</sub> -N	Ammoniacal Nitrogen (Total)	Filtration, Phenol/Hypochlorite Colorimetry. Discrete analyser. APHA method 4500-NH <sub>3</sub> F (modified).
NNN	Nitrite/Nitrate Nitrogen	Automated Cadmium reduction. Flow injection analyser. APHA method 4500 – NO <sub>3</sub> -I (modified).
pH	pH	Lab Meter @ 25°C. APHA method 4500-H <sup>+</sup> B
TEMP	Temperature	Field measurement (Hach DO meter, model HQ 30d)
TKN	Total Kjeldahl-Nitrogen	Acid digestion. Phenol/Hypochlorite colorimetry. Discrete analyser. APHA method 4500-N <sub>org</sub> D
TN	Total Nitrogen	Calculated from NNN + TKN (Nitrite/Nitrate Nitrogen + Total Kjeldahl-Nitrogen)
TP	Total Phosphorus As Reductant	Acid persulphate digestion, Colorimetry. Discrete Analyser. APHA method 4500-P B & E (modified). Also modified to include the use of reductant to eliminate interference from arsenic present in the sample.NAWASCA Pub 38, 1982
TURB	Turbidity	Turbidity Meter Hach 2100N. APHA method 2130 B

<sup>1</sup> Water quality parameter identification code refers to Waikato Regional Council's water quality database (Timestudio) parameter short name.

APHA = Standards Methods for the Examination of Water and Wastewater, 22<sup>nd</sup> Edition, 2012, APHA, AWWA, WEF