

Regional rivers water quality monitoring programme: Data report 2015

Prepared by:
Asaeli Tulagi

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

13 April 2018

Document #: 11345646

Peer reviewed by:
Dr Eloise Ryan

Date January 2018

Approved for release by:
Dr Edmund Brown

Date June 2018

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Acknowledgement

Thanks to Chris McKinnon, Ian Weir, Kane Lynn, Claire Littler, Julia Simpson, Harriet Lees, Neil Berry, Stephen Scothern, Tony Piskot, Katie Noakes and Baylee Kelepamu for their commitment and reliability in undertaking field measurements and sample collection; and Ian Buchanan for co-ordinating the laboratory analyses and assisting with co-ordination of the field aspects of sample collection.

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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 20th since the implementation of the regional rivers monitoring programme (RERIMP) in 1993¹ and follows the format of the previous data report (Tulagi, 2015). 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 and filling out the request for service form at: www.waikatoregion.govt.nz/request or in electronic format from the publications page of the Waikato Regional Council website: www.waikatoregion.govt.nz/publications.

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 2015 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 2015. 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).

¹ Waikato River reported separately — see Tulagi, 2016.

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 ¹	Satisfactory	Excellent
Ecological health			
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 ³)	aquatic life (toxicity)	<0.88	<0.1
Temperature (°C)	(May-Sep)	<12	<10
	(Oct-Apr)	<20	<16
Total phosphorus (g/m ³)	nuisance plant growth	<0.04	<0.01
Total nitrogen (g/m ³)	nuisance plant growth	<0.5	<0.1
Human uses—recreation			
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

¹ 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

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).

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.
Coromandel			
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
Hauraki			
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
Tributaries to the lower Waikato River			
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 (a.k.a Waitakaruru 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 Buckingham 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.
Waipa River and tributaries			
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
Tributaries to the upper Waikato River			
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
West coast			
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
Inflows to Lake Taupo			
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

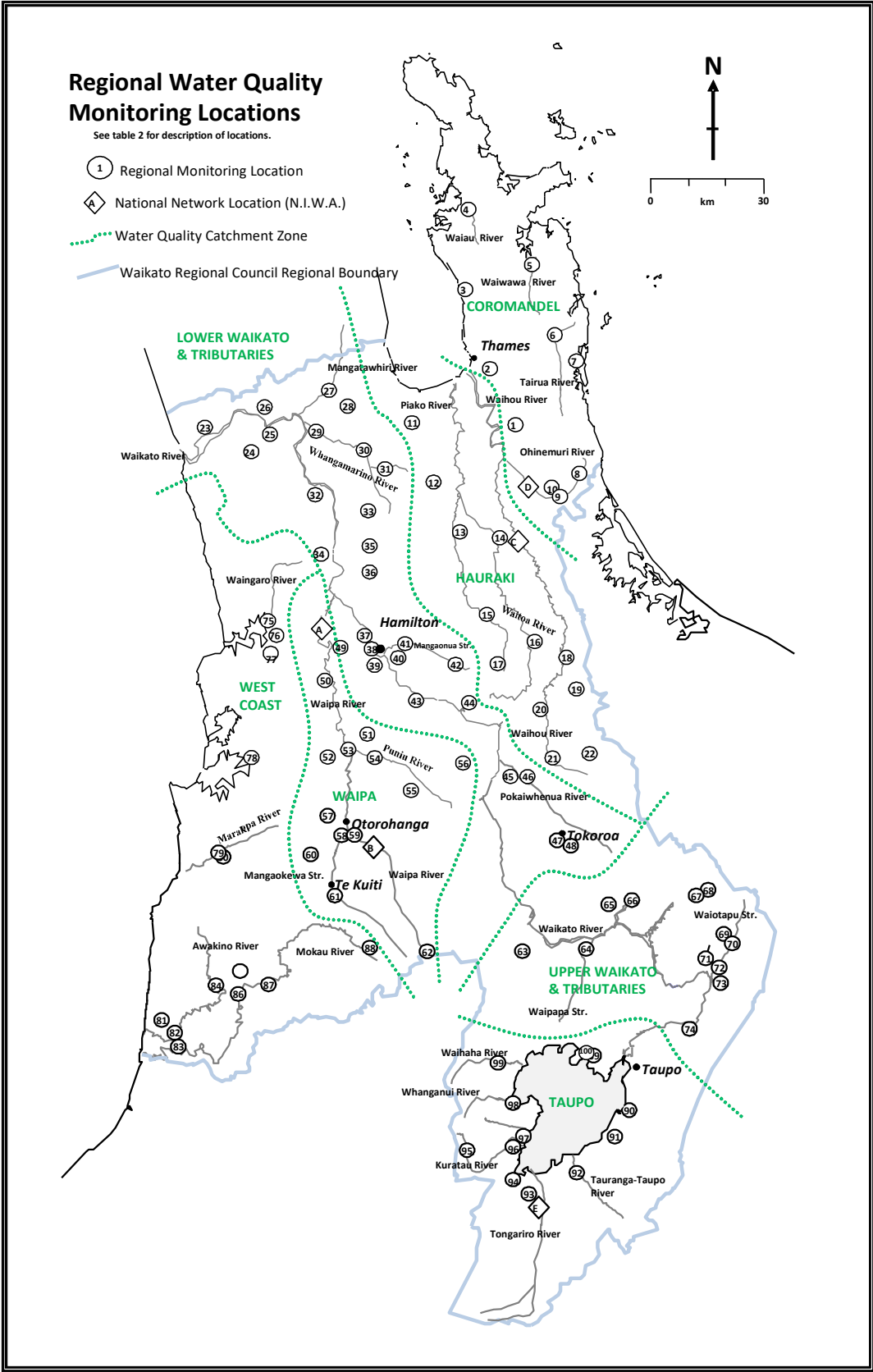


Figure 1: Monitoring locations

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 (± 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 (19 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 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 12). 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 2015 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

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.027	0.025	0.015	0.067	0.017	<u>1.74</u>	0.025
Mangaohoi Stm at South Branch Maru Rd	12	0.017	0.007	0.006	0.065	0.015	<u>1.74</u>	0.007
Mangaokewa Stm at Lawrence Street Br	12	0.037	0.037	0.020	0.063	0.020	0.47	0.034
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.088	0.086	0.046	0.125	0.038	-0.11	0.074
Mangapu River at Otorohanga	12	0.029	0.028	0.019	0.047	0.013	0.63	0.027
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.023	0.018	0.016	0.043	0.008	1.52	0.018
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.006	0.007	0.002	0.008	0.004	-0.42	0.006
Ohote Stm at Whatawhata/Horotiu Rd	12	0.183	0.193	0.085	0.270	0.121	-0.09	0.163
Puniu River at Bartons Corner Rd Br	12	0.033	0.028	0.025	0.075	0.009	<u>2.48</u>	0.028
Waipa River at Mangaokewa Rd	12	0.046	0.052	0.020	0.057	0.019	-0.98	0.048
Waipa River at Pirongia-Ngutunui Rd Br	12	0.029	0.028	0.017	0.046	0.014	0.47	0.028
Waipa River at SH3 Otorohanga	12	0.026	0.024	0.019	0.043	0.009	1.19	0.025
Waitomo Stm at SH31 Otorohanga	11	0.022	0.018	0.009	0.052	0.016	1.38	0.019
Waitomo Stm at Tumutum Rd	12	0.014	0.013	0.008	0.032	0.009	1.41	0.012

	12	0.005	0.005	0.002	0.014	0.003	<u>1.76</u>	0.005
	12	0.003	0.001	0.001	0.013	0.004	1.63	0.001
	12	0.007	0.008	0.003	0.013	0.004	0.28	0.006
	12	0.015	0.015	0.008	0.021	0.007	-0.12	0.012
	12	0.005	0.006	0.003	0.009	0.002	0.66	0.005
	12	0.005	0.004	0.003	0.010	0.002	<u>1.92</u>	0.004
	12	0.001	0.001	0.001	0.002	0.001	1.15	0.001
	12	0.031	0.032	0.012	0.046	0.024	-0.17	0.027
	12	0.006	0.005	0.004	0.016	0.002	<u>2.48</u>	0.005
	12	0.009	0.010	0.003	0.011	0.004	-1.05	0.009
	12	0.006	0.006	0.002	0.009	0.003	-0.02	0.005
	12	0.005	0.005	0.004	0.009	0.002	<u>1.77</u>	0.005
	11	0.004	0.004	0.001	0.010	0.004	0.92	0.003
	12	0.002	0.001	0.001	0.006	0.002	1.33	0.001

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.040	0.034	0.014	0.122	0.019	1.64	0.025
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.035	0.031	0.022	0.072	0.012	1.64	0.027
Mangakara Stm (Repora) at SH5	12	0.026	0.021	0.016	0.070	0.012	<u>2.35</u>	0.018
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.018	0.014	0.008	0.042	0.014	1.09	0.011
Otamakokore Stm at Hossack Rd	12	0.065	0.045	0.019	0.210	0.032	1.63	0.033
Pueto Stm at Broadlands Rd Br	12	0.011	0.011	0.009	0.014	0.001	1.28	0.010
Tahunaatara Stm at Ohakuri Rd	12	0.048	0.037	0.021	0.112	0.026	1.34	0.030
Torepatutahi Stm at Vaile Rd Br	12	0.013	0.012	0.010	0.025	0.004	<u>2.02</u>	0.012
Waiotapu Stm at Campbell Rd Br	11	0.007	0.005	0.003	0.022	0.002	<u>2.27</u>	0.005
Waiotapu Stm at Homestead Rd Br	11	0.024	0.021	0.017	0.046	0.004	<u>1.78</u>	0.021
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.014	0.012	0.010	0.022	0.008	0.70	0.012
Whirinaki Stm at Corbett Rd	12	0.004	0.002	0.001	0.014	0.004	<u>1.72</u>	0.001

	12	0.009	0.006	0.003	0.028	0.004	<u>1.68</u>	0.004
	12	0.007	0.006	0.004	0.014	0.002	<u>1.70</u>	0.005
	12	0.006	0.004	0.003	0.017	0.003	<u>2.44</u>	0.003
	12	0.004	0.003	0.001	0.009	0.003	0.94	0.002
	12	0.014	0.010	0.005	0.048	0.007	<u>1.69</u>	0.007
	12	0.001	0.001	0.001	0.003	0.000	<u>2.22</u>	0.001
	12	0.010	0.008	0.005	0.025	0.006	1.37	0.006
	12	0.002	0.002	0.001	0.006	0.002	1.58	0.002
	11	0.001	0.001	0.001	0.004	0.000	<u>2.85</u>	0.001
	11	0.004	0.004	0.003	0.009	0.002	<u>1.96</u>	0.003
	12	0.002	0.002	0.001	0.005	0.003	0.42	0.001
	12	0.001	0.001	0.001	0.003	0.000	<u>2.22</u>	0.001

West Coast

Awakino River at Gribbon Rd	12	0.006	0.006	0.002	0.013	0.002	<u>1.68</u>	0.006
Awakino River at SH3 Awakau Rd Junction	12	0.011	0.012	0.007	0.014	0.005	-0.26	0.012
Manganui River at Off Manganui Rd	12	0.008	0.008	0.004	0.012	0.005	-0.03	0.008
Mangaotaki River at SH3 Br	11	0.015	0.016	0.008	0.019	0.006	-0.40	0.016
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.016	0.015	0.012	0.029	0.006	<u>1.86</u>	0.015
Mokau River at Awakau Rd	12	0.033	0.031	0.017	0.058	0.011	1.02	0.033
Mokau River at Mangaokewa Rd (Off SH30)	12	0.044	0.045	0.029	0.059	0.014	-0.26	0.045
Mokau River at Totoro Rd Recorder	12	0.030	0.028	0.017	0.051	0.008	1.09	0.030
Mokauiti Stm at Three Way Point - Aria	12	0.058	0.058	0.029	0.092	0.035	0.29	0.049
Ohautira Stm at Waingaro Te Uku Rd	10	0.022	0.019	0.010	0.044	0.014	0.79	0.019
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.017	0.016	0.011	0.039	0.008	<u>1.82</u>	0.016
Tawarau River at Off Speedies Rd	12	0.015	0.014	0.012	0.025	0.004	<u>2.03</u>	0.014
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	0.031	0.029	0.017	0.055	0.020	0.61	0.034
Waitetuna River at Te Uku-Waingaro Rd	10	0.025	0.020	0.011	0.052	0.022	0.67	0.022

	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
	12	0.002	0.002	0.001	0.004	0.002	0.56	0.002
	12	0.001	0.001	0.001	0.004	0.000	<u>2.56</u>	0.001
	11	0.003	0.003	0.001	0.005	0.003	0.03	0.003
	12	0.003	0.004	0.001	0.006	0.003	0.14	0.003
	12	0.006	0.006	0.002	0.012	0.002	0.85	0.006
	12	0.009	0.009	0.005	0.011	0.003	-0.36	0.009
	12	0.005	0.005	0.002	0.010	0.003	0.36	0.005
	12	0.010	0.010	0.005	0.017	0.007	0.33	0.009
	10	0.004	0.004	0.001	0.008	0.005	0.18	0.004
	12	0.003	0.003	0.001	0.008	0.003	0.98	0.003
	12	0.002	0.003	0.001	0.005	0.002	0.57	0.003
	10	0.006	0.006	0.003	0.010	0.005	0.31	0.006
	10	0.005	0.004	0.001	0.010	0.006	0.33	0.004

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.017	0.015	0.013	0.041	0.003	<u>2.81</u>	0.013
Kuratau River at SH41 Moerangi	12	0.021	0.018	0.015	0.043	0.007	<u>2.10</u>	0.016
Kuratau River at Te Rae Street	12	0.020	0.023	0.004	0.027	0.008	-1.18	0.020
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.037	0.035	0.028	0.053	0.009	0.94	0.037
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	0.008	0.007	0.006	0.014	0.005	1.05	0.006
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.007	0.006	0.004	0.011	0.003	0.77	0.005
Tokaanu Stm at Off SH41 Turangi	12	0.002	0.001	0.001	0.008	0.002	1.49	0.001
Waihaha River at SH32	12	0.013	0.010	0.008	0.031	0.008	1.49	0.008
Waitahanui River at Blake Rd	12	0.005	0.003	0.001	0.015	0.004	1.50	0.002
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.007	0.006	0.004	0.012	0.005	0.60	0.005
Whanganui Stm at Lakeside Lake Taupo	12	0.020	0.016	0.013	0.044	0.009	1.61	0.014
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.021	0.018	0.015	0.035	0.009	1.12	0.016

	12	0.003	0.003	0.002	0.009	0.001	<u>2.48</u>	0.002
	12	0.004	0.003	0.002	0.009	0.001	<u>2.11</u>	0.003
	12	0.004	0.005	0.001	0.005	0.002	-1.19	0.004
	12	0.007	0.007	0.005	0.011	0.002	0.75	0.007
	12	0.002	0.001	0.001	0.003	0.001	1.12	0.001
	12	0.001	0.001	0.001	0.003	0.000	<u>2.22</u>	0.001
	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
	12	0.003	0.002	0.001	0.006	0.003	0.82	0.001
	12	0.001	0.001	0.001	0.003	0.000	<u>2.22</u>	0.001
	12	0.001	0.001	0.001	0.002	0.001	1.15	0.001
	12	0.004	0.004	0.002	0.010	0.002	1.37	0.003
	12	0.004	0.004	0.003	0.007	0.003	0.82	0.003

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

Black Disk (m)

Location	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	3.10	3.05	0.70	5.40	1.41	-0.05	2.71
Kauaeeranga River at Smiths Cableway/Recorder	12	4.07	4.00	1.15	8.60	2.36	0.66	3.33
Ohinemuri River at Queens Head	12	3.85	3.75	3.00	5.15	1.03	0.43	2.85
Ohinemuri River at SH25 Br	12	3.57	3.25	2.40	6.08	1.74	0.93	2.91
Tairua River at Morrisons Br Hikuai	-	-	-	-	-	-	-	-
Tapu River at Tapu-Coroglen Rd	12	4.91	5.30	0.50	7.66	2.53	-0.84	4.00
Waiau River at E309 Rd Ford	12	2.98	3.12	0.97	5.10	2.14	-0.05	2.15
Waitekauri River at U/S Ohinemuri Conflu	12	3.74	3.68	1.81	5.86	1.07	0.25	3.18
Waiwawa River at SH25 Coroglen	12	4.07	4.08	0.90	6.70	3.91	-0.09	2.90
Wharekawa River at SH25	12	3.05	2.81	1.45	5.30	1.55	0.56	2.45
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	11	1.13	1.19	0.53	1.62	0.30	-0.40	1.11
Oraka Stm at Lake Rd	12	1.31	1.03	0.22	3.35	0.71	1.43	0.96
Piako River at Kiwitahi	12	1.98	1.93	1.19	3.60	0.63	1.49	1.50
Piako River at Paeroa-Tahuna Rd Br	11	1.42	1.11	0.85	2.49	1.00	0.73	0.92
Piakonui Stm at Piakonui Rd	12	1.54	1.57	0.55	2.35	0.54	-0.38	1.47
Waihou River at Okauia	12	1.22	1.08	0.25	2.03	0.74	-0.03	1.06
Waihou River at Whites Rd	12	5.28	5.37	1.07	6.71	1.23	<u>-1.88</u>	5.00
Waihotu Stm at Waihotu (Off SH5)	-	-	-	-	-	-	-	-
Waiomou Stm at Matamata-Tauranga Rd	12	1.51	1.37	0.27	2.74	0.60	0.06	1.22
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	11	1.17	1.12	0.39	2.56	0.83	0.83	0.71
Waitoa River at Landsdowne Rd Br	11	2.15	2.04	0.86	3.50	0.90	0.19	1.40
Waitoa River at Mellon Rd Recorder	12	1.53	1.39	1.05	2.31	0.76	0.65	1.20
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	9	0.73	0.44	0.10	2.87	0.69	<u>1.87</u>	0.36
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	1.37	1.34	0.71	2.04	0.22	0.20	0.87
Karapiro Stm at Hickey Rd Bridge	9	0.82	0.76	0.27	2.04	0.97	0.85	0.83
Kirikirihoa Stm at Tauhara Dr	12	0.63	0.60	0.31	0.90	0.24	-0.02	0.42
Komakorau Stm at Henry Rd	12	0.30	0.23	0.10	0.57	0.28	0.56	0.20
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.72	1.68	0.21	4.00	1.19	0.77	1.52
Mangakotukutuku Stm at Peacocks Rd	12	0.68	0.67	0.28	1.13	0.38	0.09	0.44
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	11	0.86	0.90	0.23	1.71	0.61	0.44	0.82
Mangaone Stm at Annebrooke Rd Br	12	1.35	1.40	0.84	1.88	0.50	-0.05	1.06
Mangaonua Stm at Hoeka Rd	12	1.42	1.11	0.68	3.51	0.44	<u>1.79</u>	1.02
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	1.34	1.42	0.37	2.09	0.92	-0.43	1.25
Mangatangi River at SH2 Maramarua	9	0.66	0.68	0.37	1.06	0.19	0.46	0.51
Mangatawhiri River at Lyons Rd At Buckingham Br	12	1.84	1.93	0.30	3.45	1.12	0.00	1.61
Mangawara Stm at Rutherford Rd Br	12	0.40	0.41	0.11	0.67	0.28	-0.05	0.26
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	11	0.33	0.25	0.11	0.72	0.20	0.92	0.25
Matahuru Stm at Waiterimu Road Below Confluence	12	0.37	0.38	0.14	0.60	0.36	-0.05	0.29
Ohaeroa Stm at SH22 Br	11	1.12	0.99	0.64	1.96	0.63	0.64	0.77
Opuatia Stm at Ponganui Rd	12	0.67	0.63	0.10	1.10	0.24	-0.59	0.52
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.22	1.09	0.20	2.30	1.01	0.22	1.19
Waerenga Stm at Taniwha Rd	11	1.06	1.00	0.41	1.81	0.46	0.33	0.80
Waitawhiriwhiri Stm at Edgecumbe Street	12	0.64	0.55	0.31	1.29	0.18	1.34	0.41
Whakapipi Stm at SH22 Br	11	1.65	1.57	0.85	2.51	0.42	0.21	1.16
Whakauru Stm at U/S SH1 Br	12	0.83	0.73	0.15	1.57	0.49	0.52	0.73
Whangamarino River at Island Block Rd	11	0.23	0.22	0.11	0.38	0.10	0.51	0.20
Whangamarino River at Jefferies Rd Br	12	0.55	0.55	0.20	1.03	0.33	0.31	0.45
Whangape Stm at Rangiri-Glen Murray Rd	12	0.29	0.25	0.06	0.99	0.28	<u>1.77</u>	0.18

Conductivity at 25 °C (mS/m)

Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
12	8.4	8.3	7.5	9.5	1.0	0.39	8.3
12	8.8	9.0	7.4	10.3	1.5	0.04	8.2
12	25.0	26.8	10.7	43.1	20.0	0.22	25.2
12	7.9	8.0	7.2	8.4	0.6	-0.25	7.6
12	6.3	6.1	5.8	7.0	0.6	0.62	6.0
12	10.7	10.8	8.8	11.9	1.5	-0.50	10.2
12	10.0	10.0	9.1	10.4	0.7	-0.60	9.5
12	12.5	12.2	8.6	19.6	4.2	-0.90	10.9
12	6.9	6.9	5.6	7.9	0.9	0.40	6.7
12	7.6	7.4	6.9	8.2	0.8	0.39	7.3
12	11.3	11.3	9.9	12.6	0.9	0.08	11.3
12	14.6	12.8	9.8	23.2	6.7	0.94	12.4
12	14.2	14.5	7.9	16.3	1.4	<u>-2.01</u>	14.7
12	22.8	22.2	19.7	26.6	3.7	0.55	21.9
12	8.6	8.1	6.2	16.1	2.8	<u>1.76</u>	7.4
12	10.2	10.3	8.3	11.8	0.8	-0.38	10.1
12	8.2	8.2	7.8	8.5	0.2	-0.80	8.2
12	5.2	5.3	3.1	6.0	0.6	<u>-2.02</u>	5.5
12	6.9	6.8	5.5	7.9	0.8	-0.45	6.9
12	18.3	17.8	15.4	23.9	4.3	0.83	17.0
12	16.8	17.6	13.6	19.7	4.0	-0.20	16.1
12	29.5	28.3	21.8	40.9	11.4	0.48	28.1
12	27.9	25.7	20.9	35.1	7.2	0.34	26.2
12	89.8	69.4	45.7	178.0	71.6	0.85	67.9
12	13.9	13.9	11.4	16.4	3.6	-0.03	13.4
12	19.6	22.0	6.3	22.6	3.0	<u>-1.86</u>	21.2
12	28.7	28.4	23.9	35.4	7.0	0.27	25.6
12	10.2	10.2	9.2	10.8	0.7	-0.35	10.2
12	18.2	19.0	9.5	23.5	3.0	-1.13	18.7
12	13.2	14.1	8.8	15.4	3.0	-1.01	14.0
12	26.8	27.1	23.9	28.1	1.0	-1.41	27.0
12	20.6	21.1	18.5	22.6	2.1	-0.13	20.6
12	10.0	9.7	8.4	12.1	2.4	0.42	9.9
12	13.6	13.7	12.2	15.1	1.7	-0.01	12.8
12	12.4	12.5	10.6	13.9	0.9	-0.37	12.2
12	25.4	23.8	17.1	37.6	6.5	0.78	21.9
12	21.9	21.7	20.2	23.9	1.0	0.53	21.9
12	15.0	14.0	12.7	21.4	2.7	1.39	13.7
12	16.4	15.4	14.1	20.4	3.5	0.72	15.4
12	17.7	17.8	16.1	18.8	0.8	-0.63	17.1
12	10.7	11.0	7.7	11.8	0.8	<u>-1.69</u>	10.9
12	12.0	11.7	11.0	13.5	1.1	0.88	11.8
12	19.4	20.6	13.6	21.7	3.0	-1.22	20.2
12	19.0	18.3	16.7	24.2	2.4	1.20	18.2
12	7.3	7.4	6.2	7.6	0.2	-1.68	7.2
12	17.0	16.9	14.2	19.8	3.4	0.02	16.3
12	16.2	16.0	13.8	18.6	1.7	0.20	15.5
12	22.6	21.2	14.7	31.9	8.8	0.29	20.2

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

Waipa River and Tributaries																
Kaniwhaniwha Stm at Wright Rd	11	1.60	1.52	0.60	3.50	0.96	1.05	0.96	12	10.2	9.9	8.0	12.0	2.1	0.17	9.7
Mangaohoi Stm at South Branch Maru Rd	12	1.60	1.88	0.28	2.31	0.68	-1.17	1.66	12	7.7	8.0	4.3	9.5	1.4	-1.05	8.2
Mangaokewa Stm at Lawrence Street Br	12	1.36	1.29	0.56	2.29	0.96	0.21	1.10	12	16.2	14.8	11.7	23.5	6.8	0.66	14.9
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	1.20	0.71	0.11	3.50	1.15	1.06	0.67	12	19.5	18.7	14.6	29.8	3.9	1.28	18.3
Mangapu River at Otorohanga	10	1.00	0.86	0.30	2.18	1.00	0.77	0.59	12	20.2	18.8	15.7	25.9	7.0	0.52	18.5
Mangatutu Stm (Waikeria) at Walker Rd Br	12	1.87	1.77	0.32	3.30	1.31	-0.23	1.61	12	7.1	7.1	6.1	7.6	0.7	-0.71	6.9
Mangauika Stm at Te Awamutu Borough W/S Intake	12	5.37	4.81	3.62	8.00	2.39	0.53	3.80	12	6.6	6.6	5.8	7.5	1.0	0.20	6.4
Ohote Stm at Whatawhata/Horotiu Rd	11	0.85	0.83	0.26	1.49	0.84	0.30	0.59	12	19.1	19.3	16.7	23.2	2.5	0.66	17.4
Puniu River at Bartons Corner Rd Br	-	-	-	-	-	-	-	-	12	8.6	8.6	7.5	9.3	0.6	-0.52	8.4
Waipa River at Mangaokewa Rd	12	2.33	2.00	1.55	4.11	0.79	1.29	1.75	12	5.6	5.0	4.4	8.3	1.5	1.21	5.0
Waipa River at Pirongia-Ngutunui Rd Br	-	-	-	-	-	-	-	-	12	12.0	11.9	9.9	14.0	1.6	-0.04	11.8
Waipa River at SH3 Otorohanga	12	1.49	1.33	0.41	2.91	0.98	0.53	1.10	12	8.2	8.3	5.0	10.0	1.0	-1.30	8.3
Waitomo Stm at SH31 Otorohanga	10	1.21	0.85	0.36	2.41	1.38	0.40	0.57	11	19.5	18.7	14.6	23.9	5.1	0.20	18.6
Waitomo Stm at Tumutumu Rd	12	1.44	1.26	0.31	3.11	1.13	0.60	0.94	12	19.5	19.0	17.4	22.8	3.6	0.49	18.8
Tributaries to the upper Waikato River																
Kawaunui Stm at SH5 Br	12	1.41	1.50	0.34	2.33	0.91	-0.23	1.34	12	13.7	13.3	12.1	15.6	1.4	0.51	13.5
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	1.00	0.96	0.27	1.98	0.78	0.33	1.02	12	8.9	9.0	7.7	9.2	0.3	<u>-2.26</u>	8.9
Mangakara Stm (Reporoa) at SH5	9	0.96	0.91	0.53	1.50	0.58	0.31	0.88	12	9.8	10.0	9.1	10.5	0.9	-0.31	9.9
Mangakino Stm (Whakamaru) at Sandel Rd	12	1.94	2.10	0.93	2.71	1.10	-0.48	1.74	12	6.6	6.4	5.6	7.5	1.2	0.16	6.6
Otamakokore Stm at Hossack Rd	11	1.52	1.59	0.51	2.69	1.33	0.06	1.23	12	39.7	40.4	22.5	45.9	6.0	<u>-1.76</u>	38.9
Pueto Stm at Broadlands Rd Br	11	2.08	1.90	0.97	4.20	0.56	1.17	1.71	12	11.7	11.8	11.4	12.0	0.3	-0.25	11.7
Tahunaatara Stm at Ohakuri Rd	12	1.40	1.65	0.32	2.25	0.93	-0.57	1.31	12	7.7	7.8	5.6	8.1	0.3	<u>-2.77</u>	7.7
Torepatutahi Stm at Vaile Rd Br	-	-	-	-	-	-	-	-	12	9.5	9.4	8.9	10.2	0.6	0.45	9.6
Waiotapu Stm at Campbell Rd Br	12	1.37	1.37	0.43	2.34	0.59	0.03	1.17	11	75.8	77.6	56.3	82.8	4.9	<u>-1.92</u>	71.3
Waiotapu Stm at Homestead Rd Br	-	-	-	-	-	-	-	-	11	51.1	51.4	41.2	58.7	8.0	-0.27	47.9
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	1.41	1.44	0.53	2.40	1.00	0.14	1.13	12	44.9	45.5	38.9	48.7	3.7	-0.68	41.5
Whirinaki Stm at Corbett Rd	-	-	-	-	-	-	-	-	12	6.8	6.8	6.7	7.1	0.1	1.14	6.8
West Coast																
Awakino River at Gribbon Rd	12	2.98	3.00	1.23	4.91	1.23	0.15	2.26	12	7.2	7.1	6.4	8.0	0.8	0.50	7.0
Awakino River at SH3 Awakau Rd Junction	12	2.15	2.06	0.29	4.06	2.00	0.13	1.31	12	14.3	12.3	10.3	21.8	6.5	0.91	12.5
Manganui River at Off Manganui Rd	12	1.34	1.12	0.59	2.81	1.12	0.73	1.13	12	10.9	10.3	9.4	13.5	2.1	0.86	10.6
Mangaotaki River at SH3 Br	11	1.29	1.10	0.48	2.31	0.85	0.51	0.90	11	13.6	13.4	12.1	15.1	1.7	0.22	13.2
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	1.31	1.34	0.47	2.21	0.61	0.10	1.02	12	14.3	14.1	11.6	16.7	2.0	0.18	14.1
Mokau River at Awakau Rd	11	0.83	0.70	0.14	1.91	0.69	0.72	0.50	12	14.2	12.4	11.1	20.4	5.3	0.88	12.5
Mokau River at Mangaokewa Rd (Off SH30)	-	-	-	-	-	-	-	-	12	6.8	6.6	5.9	7.9	1.1	0.50	6.6
Mokau River at Totoro Rd Recorder	12	1.35	0.98	0.28	3.33	1.17	1.04	0.68	12	12.5	11.8	10.6	15.2	3.1	0.55	11.8
Mokauiti Stm at Three Way Point - Aria	12	1.15	0.84	0.21	2.89	1.02	0.97	0.72	12	11.6	10.4	9.4	15.0	3.7	0.72	10.4
Ohautira Stm at Waingaro Te Uku Rd	8	1.20	0.95	0.38	2.00	1.18	0.25	0.86	10	13.8	13.5	11.7	16.0	2.5	0.32	13.4
Oparau River at Langdon Rd (Off Okupata Rd)	12	2.11	1.93	1.51	3.55	0.73	1.25	1.48	12	8.8	8.4	7.4	10.6	1.4	0.67	8.3
Tawarau River at Off Speedies Rd	12	1.45	1.38	0.66	2.53	0.81	0.56	1.20	12	13.4	13.1	10.9	15.9	2.2	0.28	13.3
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	1.18	1.03	0.29	2.66	1.08	0.76	0.77	10	15.2	14.3	13.1	18.8	3.4	0.76	14.3
Waitetuna River at Te Uku-Waingaro Rd	10	1.04	0.88	0.30	1.71	0.85	0.22	0.70	10	10.2	9.7	8.9	12.1	1.6	0.66	9.9
Inflows to Lake Taupo																
Hinemaiaia River at SH1	12	2.35	2.78	0.60	3.63	1.36	-0.64	2.20	12	5.7	5.6	4.1	7.2	1.5	0.24	5.9
Kuratau River at SH41 Moerangi	12	3.17	3.26	1.73	4.88	1.44	0.05	2.46	12	4.4	4.2	3.7	5.5	0.8	0.87	4.3
Kuratau River at Te Rae Street	-	-	-	-	-	-	-	-	12	7.3	6.4	5.7	11.1	1.6	1.36	6.6
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	1.55	1.61	0.93	2.29	0.13	0.02	1.49	12	12.5	12.4	12.2	12.7	0.2	0.11	12.4
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	3.50	4.06	0.59	6.50	2.88	-0.30	3.94	12	4.5	4.4	2.9	6.2	1.8	0.35	4.7
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	-	-	-	-	-	-	-	-	12	12.7	11.9	9.6	21.0	2.9	<u>1.80</u>	12.3
Tokaanu Stm at Off SH41 Turangi	-	-	-	-	-	-	-	-	12	9.9	9.9	9.7	10.2	0.1	0.19	10.0
Waihaha River at SH32	10	3.38	3.60	1.85	4.99	1.19	-0.24	3.04	12	4.7	4.6	3.8	5.9	1.3	0.56	4.7
Waitahanui River at Blake Rd	12	3.11	3.26	1.23	4.69	1.14	-0.35	2.87	12	7.3	7.4	6.4	7.7	0.4	-1.21	7.5
Whangamata Stm (Kinloch) at Whangamata Rd	-	-	-	-	-	-	-	-	12	8.8	8.8	8.6	8.9	0.0	-1.00	8.8
Whanganui Stm at Lakeside Lake Taupo	-	-	-	-	-	-	-	-	12	5.8	5.6	4.4	7.6	2.1	0.45	5.5
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	-	-	-	-	-	-	-	-	12	7.7	7.9	6.8	8.4	1.2	-0.43	7.7

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

Dissolved Oxygen (% Saturation)

Location	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	97.2	94.7	91.2	125.0	4.0	<u>2.66</u>	95.9
Kauaeranga River at Smiths Cableway/Recorder	12	99.7	99.2	88.9	115.0	8.0	0.71	99.7
Ohinemuri River at Queens Head	12	109.4	106.3	98.9	124.3	17.0	0.29	104.6
Ohinemuri River at SH25 Br	12	108.2	107.8	100.5	125.0	10.2	1.00	107.1
Tairua River at Morrisons Br Hikuai	12	98.3	98.6	90.7	102.6	4.5	-0.75	98.2
Tapu River at Tapu-Coroglen Rd	12	102.1	101.4	95.6	109.5	5.5	0.21	102.3
Waiau River at E309 Rd Ford	12	102.8	102.4	98.3	110.6	3.7	0.94	101.6
Waitekauri River at U/S Ohinemuri Conflu	12	103.4	102.8	97.9	113.8	5.8	1.00	102.9
Waiwawa River at SH25 Coroglen	12	101.0	100.6	95.7	105.6	5.2	-0.05	101.4
Wharekawa River at SH25	12	97.7	99.4	82.8	112.4	6.3	-0.11	99.1
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	95.8	96.0	87.7	101.7	7.3	-0.26	96.4
Oraka Stm at Lake Rd	12	89.3	88.6	78.9	98.9	2.7	0.07	90.4
Piako River at Kiwitahi	12	79.9	83.1	44.1	112.7	30.6	-0.36	88.3
Piako River at Paeroa-Tahuna Rd Br	12	80.8	81.9	69.9	90.0	10.9	-0.25	84.4
Piakonui Stm at Piakonui Rd	12	97.2	97.1	91.1	104.9	5.6	0.29	98.4
Waihou River at Okauia	12	89.5	89.9	80.1	96.1	4.3	-0.76	92.5
Waihou River at Whites Rd	12	98.6	98.8	93.7	106.1	6.8	0.41	100.0
Waiohotu Stm at Waiohotu (Off SH5)	12	89.5	89.0	84.0	97.6	1.7	1.05	92.7
Waiomou Stm at Matamata-Tauranga Rd	12	92.3	91.8	88.7	98.4	4.0	0.67	93.7
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	88.2	90.8	60.1	96.2	10.7	<u>-1.80</u>	91.4
Waitoa River at Landsdowne Rd Br	12	85.1	88.2	62.6	95.9	12.8	-0.98	88.5
Waitoa River at Mellon Rd Recorder	12	71.2	71.0	59.3	83.2	12.4	0.07	76.4
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	90.3	87.5	26.3	163.1	17.7	0.41	86.1
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	82.4	83.2	67.5	93.2	7.4	-0.70	84.9
Karapiro Stm at Hickey Rd Bridge	12	86.6	86.0	74.8	97.3	11.0	-0.03	89.7
Kirikiri River at Tauhara Dr	12	70.7	71.3	51.0	83.8	15.2	-0.46	70.6
Komakorau Stm at Henry Rd	11	61.5	68.0	3.7	75.8	9.9	<u>-2.20</u>	64.7
Little Waipa Stm at Arapuni - Putaruru Rd	12	97.2	97.7	90.0	108.5	11.2	0.22	100.2
Mangakotukutuku Stm at Peacocks Rd	12	89.9	90.7	80.6	99.0	9.4	-0.15	90.8
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	98.0	96.4	90.5	109.0	9.1	0.60	100.5
Mangaone Stm at Annebrooke Rd Br	12	78.6	78.1	70.0	86.2	9.3	0.07	79.6
Mangaonua Stm at Hoeka Rd	12	74.5	75.6	58.1	85.2	16.2	-0.36	82.8
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	98.0	98.3	92.2	104.6	7.1	0.04	98.4
Mangatangi River at SH2 Maramarua	12	82.8	82.8	70.4	97.4	9.9	0.28	85.4
Mangatawhiri River at Lyons Rd At Buckingham Br	12	106.5	108.9	90.8	118.9	7.6	-0.64	109.4
Mangawara Stm at Rutherford Rd Br	12	69.5	71.3	57.7	82.6	10.4	-0.24	75.1
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	85.9	85.0	80.1	92.7	8.0	0.27	85.0
Matahuru Stm at Waiterimu Road Below Confluence	12	80.4	81.4	63.0	90.6	6.2	-1.17	84.7
Ohaeroa Stm at SH22 Br	12	93.5	93.6	86.4	103.0	6.5	0.26	95.4
Opuatia Stm at Ponganui Rd	12	93.4	94.3	83.5	99.3	6.5	-0.71	94.7
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	95.9	95.7	90.0	105.4	9.6	0.49	100.6
Waerenga Stm at Taniwha Rd	12	92.7	92.9	80.6	104.2	9.1	-0.18	96.6
Waitawhiririri Stm at Edgcombe Street	12	79.6	82.7	46.3	90.6	5.5	<u>-2.01</u>	84.9
Whakapipi Stm at SH22 Br	12	89.9	92.1	62.5	100.6	7.3	<u>-1.91</u>	91.4
Whakauru Stm at U/S SH1 Br	12	94.2	93.3	89.8	101.2	5.4	0.56	97.5
Whangamarino River at Island Block Rd	12	63.9	56.1	19.1	124.5	30.2	0.80	61.1
Whangamarino River at Jefferies Rd Br	12	70.1	75.9	50.5	85.1	21.5	-0.57	76.2
Whangape Stm at Rangiriri-Glen Murray Rd	12	72.5	80.5	28.6	99.9	38.4	-0.73	88.9

Dissolved Oxygen (g/m³)

Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
12	10.2	10.2	8.3	13.2	1.8	0.60	9.8
12	10.3	10.5	8.8	11.8	1.3	0.09	9.9
12	10.7	10.7	9.7	11.3	0.8	-0.43	10.4
12	10.6	10.7	9.3	11.1	0.6	-1.17	10.5
12	9.9	10.0	8.2	11.6	1.8	-0.03	9.7
12	10.6	10.7	9.1	12.1	1.5	-0.12	10.3
12	10.7	10.7	9.3	12.5	1.7	0.11	10.4
12	10.4	10.5	9.1	11.7	1.0	-0.02	10.3
12	10.2	10.2	9.0	11.4	1.6	-0.10	10.1
12	9.9	10.0	7.5	11.7	1.6	-0.38	9.8
Hauraki							
12	10.0	10.2	8.8	11.3	1.0	0.04	9.8
12	9.2	9.4	7.7	10.3	1.0	-0.46	9.4
12	8.1	8.4	3.8	11.4	4.1	-0.36	8.9
12	8.3	8.1	6.6	11.2	2.0	0.80	8.6
12	10.1	10.0	9.1	11.7	1.7	0.39	10.2
12	9.3	9.2	8.3	10.3	0.9	0.02	9.6
12	10.2	10.2	9.4	10.9	0.5	-0.06	10.4
12	9.7	9.6	8.6	11.3	0.9	0.77	9.8
12	9.6	9.5	8.8	10.8	0.6	0.61	9.7
12	8.9	9.5	5.4	10.3	1.3	-1.44	9.2
12	8.8	8.9	6.7	11.0	2.0	-0.01	9.1
12	7.3	7.3	5.6	9.9	1.1	0.89	7.6
Tributaries to the lower Waikato River							
12	8.8	9.1	2.3	13.2	1.2	-1.20	8.7
12	8.5	8.5	6.3	10.7	2.0	0.14	8.7
12	8.9	8.5	7.1	11.4	2.4	0.41	9.0
12	7.2	7.2	4.9	9.2	2.4	-0.03	7.1
11	6.4	7.0	0.3	8.8	1.8	<u>-1.85</u>	6.5
12	10.0	10.0	9.0	10.6	0.8	-0.44	10.3
12	9.1	9.0	7.7	10.6	1.5	0.25	9.1
12	9.9	9.7	9.1	10.8	0.9	0.41	10.0
12	8.4	7.8	7.2	10.7	1.9	0.74	8.4
12	7.9	7.9	5.7	10.1	2.6	0.02	8.6
12	10.1	9.8	9.1	11.5	1.3	0.52	10.1
12	8.1	8.2	6.9	9.8	1.6	0.36	8.4
12	10.5	10.5	9.4	12.1	1.2	0.43	10.5
12	7.1	7.7	5.4	9.0	1.7	-0.30	7.6
12	8.9	8.5	7.9	10.4	1.5	0.56	8.7
12	8.3	8.4	6.4	10.0	1.5	-0.14	8.4
12	9.8	9.8	8.4	11.0	0.6	-0.21	9.9
12	9.6	9.7	7.7	11.0	1.2	-0.41	9.6
12	9.9	9.7	9.0	10.7	0.9	0.10	10.5
12	9.6	10.0	7.5	11.2	1.7	-0.66	9.9
12	7.8	8.2	4.3	9.2	1.4	-1.46	8.4
12	9.2	9.6	6.0	10.7	1.6	-1.07	9.2
12	9.8	9.8	9.0	10.8	0.7	0.32	10.1
12	6.0	5.5	2.2	10.3	2.3	0.53	6.1
12	7.3	8.0	5.1	9.4	3.4	-0.44	7.6
12	7.5	8.5	2.6	10.6	5.5	-0.56	9.2

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

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	84.4	85.5	76.8	92.0	7.5	-0.15	85.6	12	8.8	8.7	7.4	10.7	1.7	0.27	8.9
Mangaohoi Stm at South Branch Maru Rd	12	98.4	98.8	90.2	106.8	7.1	-0.05	99.8	12	9.9	9.9	9.0	10.7	0.9	-0.06	10.0
Mangaokewa Stm at Lawrence Street Br	12	92.4	91.7	86.3	99.7	6.8	0.32	94.8	12	9.9	9.9	8.4	11.8	1.8	0.19	10.1
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	98.0	95.1	81.0	131.1	23.9	0.76	95.5	12	9.4	9.3	8.0	11.0	1.5	0.31	9.6
Mangapu River at Otorohanga	12	89.9	90.5	68.7	104.4	8.7	-0.91	93.5	12	9.1	9.2	6.0	10.8	1.3	-1.12	9.3
Mangatutu Stm (Waikeria) at Walker Rd Br	12	94.4	94.3	87.3	101.6	4.2	-0.09	95.4	12	9.5	9.8	8.4	10.3	1.2	-0.41	9.6
Mangauika Stm at Te Awamutu Borough W/S Intake	12	98.5	99.3	93.8	103.2	6.2	-0.26	99.7	12	10.5	10.5	9.5	11.6	1.0	0.12	10.4
Ohote Stm at Whatawhata/Horotiu Rd	12	44.4	43.0	1.9	81.3	39.5	-0.14	51.2	12	4.7	4.2	0.2	8.6	4.8	0.05	5.0
Puniu River at Bartons Corner Rd Br	12	91.6	90.3	83.4	102.7	11.7	0.38	93.5	12	9.1	9.3	7.5	10.0	0.7	-1.07	9.3
Waipa River at Mangaokewa Rd	12	101.2	102.5	94.0	109.5	6.3	0.02	101.8	12	10.4	10.2	9.2	11.7	1.2	0.31	10.2
Waipa River at Pirongia-Ngutunui Rd Br	12	88.5	87.8	82.8	95.0	4.3	0.28	89.6	12	9.1	9.2	7.8	10.7	2.0	0.05	9.1
Waipa River at SH3 Otorohanga	12	100.3	98.0	91.8	121.8	10.5	1.31	101.2	12	10.4	10.3	9.1	12.4	1.1	0.63	10.2
Waitomo Stm at SH31 Otorohanga	11	98.8	95.8	90.0	113.7	13.0	0.71	97.6	11	9.9	10.0	8.8	10.4	0.6	-1.22	9.9
Waitomo Stm at Tumutumumu Rd	12	101.0	100.0	93.5	112.8	7.6	0.72	101.3	12	10.4	10.6	9.6	10.9	0.6	-0.85	10.5

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	83.0	82.3	75.7	91.5	6.8	0.31	85.7	12	8.2	8.1	7.4	9.5	0.5	0.98	8.5
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	91.1	90.7	87.4	97.2	5.7	0.51	93.2	12	9.4	9.3	8.6	10.2	0.6	0.37	9.6
Mangakara Stm (Reporoa) at SH5	12	87.2	88.1	71.0	96.3	4.2	-1.36	91.3	12	9.0	9.0	7.4	10.1	0.6	-0.43	9.3
Mangakino Stm (Whakamaru) at Sandel Rd	12	100.3	98.6	95.7	109.3	8.2	0.71	101.4	12	10.6	10.5	9.9	11.4	0.9	0.33	10.7
Otamakokore Stm at Hossack Rd	12	93.1	92.3	74.9	112.1	15.7	-0.12	99.0	12	8.1	8.1	6.3	9.6	0.9	-0.46	8.6
Pueto Stm at Broadlands Rd Br	12	91.3	91.5	83.0	98.6	6.9	-0.01	92.6	12	9.2	9.1	8.6	10.0	0.6	0.72	9.3
Tahunaatara Stm at Ohakuri Rd	12	100.8	100.9	93.1	116.4	9.0	0.85	102.1	12	10.3	10.1	9.3	11.3	0.8	0.16	10.5
Torepatutahi Stm at Vaile Rd Br	12	98.1	97.9	89.2	107.3	13.2	0.02	99.1	12	9.8	9.8	9.0	11.0	0.7	0.85	10.0
Waiotapu Stm at Campbell Rd Br	12	85.1	84.5	79.1	90.7	6.1	0.17	87.1	12	6.4	6.4	6.0	7.3	0.5	1.09	6.6
Waiotapu Stm at Homestead Rd Br	12	84.8	84.8	69.9	97.4	10.8	-0.07	88.6	12	7.7	7.7	6.3	8.6	1.0	-0.65	8.2
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	96.4	96.2	91.5	103.4	6.1	0.59	98.8	12	8.2	8.1	7.9	8.8	0.4	1.03	8.3
Whirinaki Stm at Corbett Rd	12	93.8	92.2	90.3	100.1	5.9	0.74	96.3	12	9.5	9.6	6.7	10.4	0.6	<u>-2.27</u>	10.0

West Coast

Awakino River at Gribbon Rd	12	101.0	99.9	96.0	109.5	6.7	0.62	102.5	12	10.7	10.4	10.0	11.8	1.0	0.57	10.5
Awakino River at SH3 Awakau Rd Junction	12	104.6	101.4	97.3	120.6	9.2	1.10	105.5	12	10.8	10.8	9.7	11.8	1.0	-0.04	10.9
Manganui River at Off Manganui Rd	12	98.4	97.2	92.4	108.4	5.7	0.80	100.5	12	10.3	10.1	9.6	11.8	1.0	0.82	10.4
Mangaotaki River at SH3 Br	11	101.9	103.0	96.3	105.1	4.9	-0.77	103.2	11	10.7	10.6	9.7	11.9	1.0	0.28	10.6
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	103.4	102.4	95.1	115.6	8.0	0.72	104.2	12	10.8	10.9	9.5	11.5	0.9	-0.63	10.8
Mokau River at Awakau Rd	12	94.9	96.6	76.7	102.9	9.3	-1.11	95.7	12	9.6	9.2	7.2	12.0	1.7	0.20	9.7
Mokau River at Mangaokewa Rd (Off SH30)	12	97.4	97.9	90.8	103.9	7.1	-0.09	99.1	12	10.4	10.4	9.2	11.6	1.1	0.14	10.3
Mokau River at Totoro Rd Recorder	12	100.9	99.8	96.6	105.6	6.9	0.17	101.8	12	10.4	10.2	9.0	11.8	1.8	0.26	10.3
Mokauiti Stm at Three Way Point - Aria	12	93.1	93.4	77.4	102.5	3.8	-0.83	94.1	12	9.4	9.5	6.7	10.9	1.2	-0.93	9.5
Ohautira Stm at Waingaro Te Uku Rd	10	92.6	92.8	87.4	98.0	3.7	0.13	93.5	10	10.0	9.8	8.6	11.9	1.9	0.38	10.1
Oparau River at Langdon Rd (Off Okupata Rd)	12	104.7	104.9	96.7	113.1	5.5	0.20	105.7	12	10.9	10.8	9.8	12.6	1.1	0.71	10.7
Tawarau River at Off Speedies Rd	12	102.3	102.1	96.5	111.9	8.0	0.52	103.6	12	10.8	10.7	9.9	11.7	0.9	0.28	10.6
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	91.4	91.8	85.7	97.1	6.0	0.04	93.5	10	9.5	9.6	8.0	11.4	2.4	0.05	9.8
Waitetuna River at Te Uku-Waingaro Rd	10	93.8	94.1	86.1	99.9	2.6	-0.60	95.4	10	9.9	10.0	8.5	11.8	1.7	0.24	10.2

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	98.2	96.7	92.6	111.8	8.8	1.02	99.6	12	10.3	10.2	9.4	11.3	1.3	0.28	10.4
Kuratau River at SH41 Moerangi	12	91.6	90.4	89.9	99.1	1.6	<u>1.91</u>	92.8	12	9.7	9.7	8.9	10.7	0.8	0.22	9.8
Kuratau River at Te Rae Street	12	97.8	96.7	86.0	113.4	4.5	0.79	100.2	12	10.0	9.9	8.3	11.8	1.3	0.17	10.1
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	84.6	83.3	81.3	91.6	4.6	1.00	86.5	12	9.0	9.0	8.7	9.6	0.4	0.81	9.2
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	95.5	94.3	91.8	102.9	4.2	1.08	98.5	12	10.3	10.2	9.3	11.4	1.1	0.16	10.5
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	98.4	98.4	90.6	123.1	8.9	<u>1.91</u>	101.2	12	10.0	10.1	8.3	10.9	1.2	-0.67	10.4
Tokaanu Stm at Off SH41 Turangi	12	79.1	78.3	72.8	87.7	5.5	0.39	81.9	12	8.2	8.1	7.5	8.9	0.4	0.36	8.4
Waihaha River at SH32	12	98.3	96.5	93.0	109.1	8.6	0.86	101.1	12	10.3	10.4	9.2	11.1	0.8	-0.26	10.5
Waitahanui River at Blake Rd	12	96.7	95.1	91.9	103.4	8.4	0.55	98.8	12	10.4	10.4	9.9	10.9	0.6	0.22	10.6
Whangamata Stm (Kinloch) at Whangamata Rd	12	92.8	91.1	88.8	98.9	5.7	0.54	94.7	12	10.1	9.9	9.7	11.5	0.5	<u>1.88</u>	10.2
Whanganui Stm at Lakeside Lake Taupo	12	97.2	94.7	88.4	107.2	8.8	0.47	99.2	12	10.2	10.3	8.6	11.3	0.9	-0.53	10.3
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	93.1	90.7	89.4	100.6	5.7	0.96	95.6	12	9.9	9.9	9.2	10.8	0.7	0.45	10.0

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

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.007	0.007	0.004	0.012	0.003	0.58	0.007
Mangaohoi Stm at South Branch Maru Rd	12	0.037	0.036	0.014	0.056	0.016	-0.13	0.042
Mangaokewa Stm at Lawrence Street Br	12	0.014	0.013	0.005	0.022	0.006	0.16	0.014
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.136	0.114	0.045	0.340	0.112	1.14	0.112
Mangapu River at Otorohanga	12	0.020	0.018	0.008	0.038	0.015	0.51	0.022
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.010	0.010	0.004	0.024	0.006	1.28	0.008
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.003	0.002	0.002	0.006	0.002	1.10	0.002
Ohote Stm at Whatawhata/Horotiu Rd	12	0.024	0.020	0.007	0.049	0.023	0.45	0.020
Puniu River at Bartons Corner Rd Br	12	0.023	0.021	0.017	0.034	0.007	0.97	0.021
Waipa River at Mangaokewa Rd	12	0.006	0.006	0.002	0.013	0.007	0.33	0.005
Waipa River at Pirongia-Ngutunui Rd Br	12	0.014	0.014	0.008	0.021	0.004	0.44	0.014
Waipa River at SH3 Otorohanga	12	0.006	0.007	0.002	0.011	0.006	-0.13	0.008
Waitomo Stm at SH31 Otorohanga	11	0.007	0.008	0.002	0.013	0.002	-0.11	0.006
Waitomo Stm at Tumutumu Rd	12	0.011	0.010	0.009	0.014	0.001	1.28	0.010

	12	0.023	0.022	0.013	0.041	0.013	0.69	0.024
	12	0.065	0.052	0.034	0.187	0.026	2.38	0.053
	12	0.036	0.033	0.018	0.066	0.018	0.81	0.034
	12	0.254	0.240	0.114	0.480	0.143	0.58	0.205
	12	0.042	0.041	0.022	0.074	0.015	0.71	0.049
	12	0.028	0.021	0.011	0.100	0.009	2.37	0.020
	12	0.007	0.008	0.002	0.014	0.002	0.54	0.008
	12	0.084	0.077	0.029	0.177	0.070	0.61	0.077
	12	0.050	0.046	0.036	0.083	0.014	1.24	0.047
	12	0.018	0.016	0.009	0.030	0.013	0.50	0.014
	12	0.042	0.035	0.027	0.096	0.011	2.09	0.046
	12	0.021	0.017	0.011	0.066	0.004	2.71	0.021
	11	0.031	0.025	0.012	0.071	0.028	0.91	0.029
	12	0.023	0.021	0.016	0.031	0.010	0.33	0.022

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.054	0.050	0.038	0.092	0.011	1.53	0.050
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.031	0.033	0.022	0.037	0.006	-0.77	0.031
Mangakara Stm (Reporoa) at SH5	12	0.050	0.051	0.037	0.065	0.010	0.18	0.048
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.038	0.036	0.026	0.054	0.018	0.33	0.039
Otamakokore Stm at Hossack Rd	12	0.154	0.148	0.135	0.220	0.026	1.77	0.150
Pueto Stm at Broadlands Rd Br	12	0.072	0.074	0.056	0.079	0.010	-1.04	0.074
Tahunaatara Stm at Ohakuri Rd	12	0.036	0.034	0.028	0.073	0.005	2.70	0.031
Torepatutahi Stm at Vaile Rd Br	12	0.086	0.086	0.072	0.110	0.005	1.10	0.083
Waiotapu Stm at Campbell Rd Br	11	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Waiotapu Stm at Homestead Rd Br	11	0.029	0.034	0.008	0.047	0.022	-0.31	0.034
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.092	0.090	0.062	0.172	0.021	1.93	0.087
Whirinaki Stm at Corbett Rd	12	0.060	0.061	0.047	0.066	0.006	-0.99	0.061

	12	0.107	0.084	0.060	0.330	0.016	2.55	0.078
	12	0.067	0.057	0.042	0.108	0.034	0.90	0.049
	12	0.080	0.076	0.059	0.122	0.019	1.37	0.072
	12	0.052	0.050	0.033	0.069	0.017	0.09	0.047
	12	0.167	0.15	0.145	0.25	0.014	1.71	0.146
	12	0.096	0.097	0.073	0.120	0.014	0.00	0.090
	12	0.068	0.050	0.038	0.178	0.020	1.81	0.045
	12	0.103	0.104	0.090	0.122	0.012	0.23	0.097
	11	0.070	0.069	0.017	0.173	0.04675	0.98	0.072
	11	0.109	0.106	0.059	0.19	0.0585	0.50	0.103
	12	0.101	0.095	0.072	0.166	0.018	1.84	0.095
	12	0.067	0.066	0.061	0.088	0.006	1.97	0.062

West Coast

Awakino River at Gribbon Rd	12	0.012	0.012	0.006	0.018	0.005	-0.22	0.012
Awakino River at SH3 Awakau Rd Junction	12	0.008	0.010	0.002	0.016	0.008	-0.15	0.008
Manganui River at Off Manganui Rd	12	0.014	0.014	0.007	0.018	0.004	-0.76	0.012
Mangaotaki River at SH3 Br	11	0.009	0.012	0.002	0.014	0.007	-0.69	0.011
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.016	0.014	0.010	0.032	0.002	2.04	0.014
Mokau River at Awakau Rd	12	0.008	0.008	0.002	0.014	0.005	-0.20	0.007
Mokau River at Mangaokewa Rd (Off SH30)	12	0.016	0.015	0.007	0.026	0.009	0.06	0.014
Mokau River at Totoro Rd Recorder	12	0.011	0.010	0.002	0.030	0.010	0.95	0.010
Mokauiti Stm at Three Way Point - Aria	12	0.011	0.008	0.004	0.042	0.007	2.52	0.008
Ohautira Stm at Waingaro Te Uku Rd	10	0.019	0.019	0.015	0.025	0.006	0.35	0.018
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.007	0.008	0.002	0.010	0.004	-1.02	0.006
Tawarau River at Off Speedies Rd	12	0.017	0.016	0.012	0.041	0.004	2.68	0.014
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	0.010	0.010	0.008	0.015	0.004	0.59	0.009
Waitetuna River at Te Uku-Waingaro Rd	10	0.013	0.013	0.010	0.018	0.003	0.68	0.011

	12	0.016	0.015	0.009	0.023	0.007	0.12	0.016
	12	0.018	0.016	0.004	0.048	0.012	1.38	0.016
	12	0.024	0.024	0.015	0.036	0.007	0.47	0.023
	11	0.023	0.022	0.012	0.048	0.008	1.68	0.024
	12	0.027	0.026	0.020	0.043	0.008	1.17	0.024
	12	0.032	0.025	0.016	0.100	0.015	2.43	0.031
	12	0.032	0.034	0.020	0.045	0.015	-0.10	0.035
	12	0.030	0.025	0.014	0.084	0.016	2.04	0.028
	12	0.032	0.026	0.023	0.084	0.008	2.59	0.034
	10	0.039	0.034	0.030	0.079	0.007	2.41	0.035
	12	0.015	0.015	0.002	0.022	0.004	-1.14	0.014
	12	0.028	0.024	0.018	0.052	0.011	1.27	0.024
	10	0.031	0.029	0.020	0.058	0.011	1.50	0.031
	10	0.034	0.031	0.024	0.068	0.007	2.21	0.032

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.022	0.023	0.015	0.026	0.006	-0.59	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 Te Rae Street	12	0.006	0.004	0.002	0.022	0.005	2.08	0.002
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.126	0.124	0.115	0.140	0.016	0.30	0.124
Tauranga- Taupo River at 20 Metres U/S SH1 Bridge	12	0.011	0.011	0.008	0.016	0.004	0.38	0.013
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.004	0.003	0.002	0.006	0.004	0.36	0.002
Tokaanu Stm at Off SH41 Turangi	12	0.075	0.075	0.069	0.079	0.004	-0.38	0.076
Waihaha River at SH32	12	0.018	0.015	0.007	0.032	0.012	0.54	0.018
Waitahanui River at Blake Rd	12	0.042	0.042	0.034	0.048	0.006	-0.38	0.043
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.067	0.068	0.060	0.073	0.004	-0.50	0.065
Whanganui Stm at Lakeside Lake Taupo	12	0.009	0.008	0.002	0.016	0.007	0.34	0.009
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.020	0.020	0.013	0.024	0.005	-0.52	0.020

	12	0.034	0.032	0.027	0.051	0.010	1.17	0.033
	12	0.006	0.005	0.002	0.014	0.005	1.05	0.004
	12	0.015	0.012	0.008	0.028	0.007	1.13	0.012
	12	0.145	0.145	0.137	0.155	0.010	0.32	0.143
	12	0.016	0.016	0.012	0.020	0.004	0.03	0.016
	12	0.014	0.013	0.008	0.026	0.005	1.21	0.012
	12	0.078	0.079	0.072	0.080	0.004	-1.29	0.077
	12	0.026	0.021	0.014	0.061	0.015	1.76	0.023
	12	0.048	0.047	0.042	0.059	0.004	1.29	0.046
	12	0.076	0.075	0.066	0.087	0.011	0.27	0.071
	12	0.017	0.014	0.009	0.048	0.004	2.54	0.014
	12	0.032	0.032	0.026	0.047	0.004	1.69	0.031

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

Ammoniacal Nitrogen (g/m³N)

Location	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.01	0.01	0.01	0.08	0.00	<u>3.02</u>	0.005
Kauaeranga River at Smiths Cableway/Recorder	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.005
Ohinemuri River at Queens Head	12	0.04	0.01	0.01	0.17	0.05	<u>1.92</u>	0.052
Ohinemuri River at SH25 Br	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Tairua River at Morrison's 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	1.00	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	0.06	0.00	<u>3.02</u>	0.005
Waiwawa River at SH25 Coroglen	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Wharekawa River at SH25	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Oraka Stm at Lake Rd	12	0.13	0.03	0.01	0.50	0.17	1.36	0.030
Piako River at KIWITAHĪ	12	0.02	0.01	0.01	0.05	0.02	1.03	0.005
Piako River at Paeroa-Tahuna Rd Br	12	0.03	0.02	0.01	0.10	0.03	1.10	0.028
Piakonui Stm at Piakonui Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Waihou River at Okauia	12	0.03	0.01	0.01	0.21	0.01	<u>2.92</u>	0.011
Waihou River at Whites Rd	12	0.01	0.01	0.01	0.02	0.00	<u>2.45</u>	0.005
Waiohotu Stm at Waiohotu (Off SH5)	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005
Waiomou Stm at Matamata-Tauranga Rd	12	0.02	0.01	0.01	0.13	0.01	<u>2.94</u>	0.008
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.03	0.02	0.01	0.10	0.02	1.63	0.017
Waitoa River at Landsdowne Rd Br	12	0.01	0.01	0.01	0.03	0.01	0.96	0.011
Waitoa River at Mellon Rd Recorder	12	0.05	0.02	0.01	0.16	0.10	0.99	0.035
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.03	0.03	0.01	0.07	0.04	0.18	0.044
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	0.11	0.07	0.01	0.40	0.10	1.55	0.035
Karapiro Stm at Hickey Rd Bridge	12	0.02	0.02	0.01	0.04	0.02	0.12	0.018
Kirikiroa Stm at Tauhara Dr	12	0.28	0.27	0.04	0.54	0.17	-0.01	0.260
Komakorau Stm at Henry Rd	12	0.73	0.84	0.16	1.10	0.61	-0.51	0.740
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.04	0.01	0.01	0.24	0.04	<u>2.12</u>	0.005
Mangakotukutuku Stm at Peacocks Rd	12	0.18	0.15	0.05	0.33	0.17	0.38	0.181
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.28	0.27	0.01	1.00	0.34	1.33	0.194
Mangaone Stm at Annebrooke Rd Br	12	0.02	0.02	0.01	0.03	0.02	0.26	0.017
Mangaonua Stm at Hoeka Rd	12	0.07	0.07	0.01	0.14	0.06	0.12	0.086
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	0.01	0.01	0.01	0.01	0.00	<u>1.82</u>	0.005
Mangatangī River at SH2 Maramarua	12	0.02	0.01	0.01	0.11	0.02	<u>2.39</u>	0.005
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	0.34	0.37	0.09	0.56	0.17	-0.41	0.300
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.11	0.09	0.04	0.21	0.10	0.48	0.102
Matahuru Stm at Waiterimu Road Below Confluence	12	0.09	0.08	0.01	0.28	0.07	1.63	0.042
Ohaeroa Stm at SH22 Br	12	0.01	0.01	0.01	0.02	0.00	1.46	0.005
Opuatia Stm at Ponganui Rd	12	0.01	0.01	0.01	0.02	0.01	0.98	0.005
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.05	0.02	0.01	0.23	0.02	<u>1.76</u>	0.005
Waerenga Stm at Taniwha Rd	12	0.02	0.02	0.01	0.06	0.02	1.32	0.011
Waitawhiriwhiri Stm at Edgcombe Street	12	0.55	0.61	0.01	0.85	0.21	-1.21	0.595
Whakapipi Stm at SH22 Br	12	0.01	0.01	0.01	0.03	0.01	<u>2.04</u>	0.011
Whakauru Stm at U/S SH1 Br	12	0.01	0.01	0.01	0.02	0.00	1.48	0.005
Whangamarino River at Island Block Rd	12	0.06	0.01	0.01	0.25	0.10	1.40	0.037
Whangamarino River at Jefferies Rd Br	12	0.05	0.03	0.01	0.19	0.04	<u>2.10</u>	0.024
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.06	0.01	0.01	0.57	0.03	<u>2.93</u>	0.005

Nitrate/Nitrite (g/m³)

Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
12	0.099	0.019	0.001	0.660	0.119	<u>2.53</u>	0.019
12	0.047	0.036	0.001	0.130	0.079	0.54	0.032
12	0.669	0.715	0.073	1.220	0.645	-0.18	0.920
12	0.374	0.305	0.090	0.890	0.289	1.04	0.455
12	0.019	0.006	0.001	0.089	0.026	1.56	0.015
12	0.007	0.004	0.001	0.021	0.004	1.52	0.003
12	0.011	0.005	0.001	0.052	0.010	<u>2.05</u>	0.017
12	0.102	0.064	0.001	0.340	0.185	0.84	0.092
12	0.006	0.003	0.001	0.028	0.007	1.67	0.006
12	0.050	0.019	0.001	0.184	0.080	1.18	0.045
12	0.302	0.305	0.171	0.400	0.155	-0.24	0.330
12	2.033	1.945	1.220	2.800	0.390	-0.06	2.100
12	1.036	0.191	0.033	3.400	2.248	0.79	0.750
12	1.673	1.265	0.460	4.000	<u>1.795</u>	0.80	1.315
12	0.337	0.250	0.104	1.160	0.291	<u>1.90</u>	0.210
12	1.107	1.110	0.900	1.310	0.235	0.20	1.130
12	0.746	0.750	0.710	0.780	0.040	-0.27	0.740
12	0.139	0.127	0.096	0.199	0.060	0.57	0.145
12	0.495	0.440	0.250	0.780	0.420	0.16	0.520
12	0.312	0.246	0.017	0.840	0.479	0.60	0.230
12	1.514	1.420	0.680	2.500	0.930	0.14	1.435
12	1.743	1.645	0.540	3.200	1.365	0.17	2.000
12	1.396	1.635	0.187	2.300	1.380	-0.42	1.430
12	0.728	0.715	0.088	1.820	0.400	0.92	0.715
12	0.729	0.530	0.130	1.810	1.000	0.68	0.490
12	1.034	0.800	0.460	2.300	0.920	0.90	0.770
12	1.880	1.575	1.090	4.200	0.765	1.59	1.310
12	1.636	1.655	1.330	1.950	0.380	0.16	1.605
12	0.943	0.765	0.500	1.830	0.475	1.16	0.780
12	2.501	2.500	1.660	3.400	0.925	-0.10	2.700
12	2.416	2.300	1.590	3.100	0.500	-0.07	2.600
12	1.529	1.450	1.150	2.200	0.590	0.57	1.460
12	0.592	0.435	0.180	1.350	0.640	0.77	0.460
12	0.430	0.320	0.001	1.230	0.659	0.71	0.150
12	0.111	0.112	0.001	0.440	0.152	1.44	0.022
12	1.587	1.020	0.280	6.100	1.175	<u>1.99</u>	0.785
12	1.949	1.905	1.400	3.100	0.590	0.98	2.100
12	1.086	1.050	0.109	3.100	0.940	1.04	0.780
12	1.618	1.655	1.170	2.200	0.475	0.24	1.520
12	0.800	0.800	0.460	1.040	0.260	-0.35	0.745
12	1.783	1.825	1.250	2.200	0.550	-0.13	1.760
12	0.761	0.835	0.125	1.280	0.695	-0.30	0.835
12	0.788	0.830	0.230	1.360	0.230	-0.32	0.845
12	3.340	3.300	1.280	4.600	1.600	-0.49	3.400
12	0.475	0.475	0.310	0.740	0.200	0.39	0.315
12	0.227	0.119	0.001	1.270	0.232	<u>2.45</u>	0.106
12	0.973	0.965	0.019	2.500	1.008	0.46	0.695
12	0.224	0.069	0.001	1.050	0.424	1.50	0.004

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

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.02	0.02	0.01	0.07	0.02	1.47	0.017	12	0.438	0.505	0.011	0.930	0.630	-0.08	0.400
Mangaohoi Stm at South Branch Maru Rd	12	0.01	0.01	0.01	0.01	0.01	0.53	0.005	12	0.202	0.163	0.089	0.340	0.171	0.27	0.225
Mangaokewa Stm at Lawrence Street Br	12	0.01	0.01	0.01	0.05	0.01	2.25	0.010	12	0.555	0.515	0.134	1.040	0.600	0.06	0.540
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.03	0.03	0.01	0.11	0.05	0.86	0.039	12	1.458	1.670	0.430	2.500	1.285	-0.18	1.385
Mangapu River at Otorohanga	12	0.01	0.01	0.01	0.03	0.01	0.33	0.024	12	0.742	0.690	0.068	1.500	0.837	-0.03	0.810
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.01	0.01	0.01	0.05	0.00	2.52	0.005	12	0.407	0.290	0.064	0.860	0.566	0.24	0.380
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.212	0.205	0.151	0.280	0.050	0.05	0.210
Ohote Stm at Whatawhata/Horotiu Rd	12	0.07	0.07	0.03	0.15	0.05	0.82	0.060	12	0.527	0.435	0.010	1.530	0.888	0.64	0.480
Puniu River at Bartons Corner Rd Br	12	0.02	0.01	0.01	0.04	0.02	0.58	0.015	12	0.705	0.555	0.250	1.190	0.605	0.24	0.640
Waipa River at Mangaokewa Rd	12	0.01	0.01	0.01	0.02	0.01	0.35	0.005	12	0.362	0.355	0.116	0.780	0.135	1.10	0.365
Waipa River at Pirongia-Ngutu Rd Br	12	0.02	0.02	0.01	0.03	0.01	0.71	0.018	12	0.687	0.765	0.070	1.350	0.757	-0.05	0.615
Waipa River at SH3 Otorohanga	12	0.01	0.01	0.01	0.02	0.01	0.98	0.011	12	0.475	0.415	0.060	1.090	0.626	0.38	0.380
Waitomo Stm at SH31 Otorohanga	11	0.01	0.02	0.01	0.02	0.01	0.08	0.014	11	0.533	0.600	0.280	0.850	0.418	0.04	0.530
Waitomo Stm at Tumutum Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.633	0.605	0.470	0.810	0.175	0.08	0.625

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.03	0.01	0.01	0.10	0.01	1.73	0.014	12	2.537	2.600	1.840	2.800	0.300	-1.52	2.600
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.01	0.01	0.01	0.02	0.00	2.17	0.005	12	0.564	0.515	0.290	0.830	0.380	0.02	0.520
Mangakara Stm (Reporoa) at SH5	12	0.03	0.03	0.02	0.05	0.02	0.60	0.022	12	1.259	1.235	1.060	1.490	0.130	0.29	1.300
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.01	0.01	0.01	0.02	0.00	3.02	0.005	12	0.670	0.665	0.480	0.840	0.130	-0.15	0.650
Otamakokore Stm at Hossack Rd	12	0.03	0.01	0.01	0.27	0.01	2.97	0.005	12	0.757	0.740	0.520	1.150	0.400	0.35	0.745
Pueto Stm at Broadlands Rd Br	12	0.01	0.01	0.01	0.01	0.00	1.29	0.005	12	0.438	0.445	0.350	0.500	0.065	-0.55	0.450
Tahunaatara Stm at Ohakuri Rd	12	0.01	0.01	0.01	0.02	0.00	1.36	0.005	12	0.596	0.600	0.350	0.990	0.215	0.69	0.570
Torepatutahi Stm at Vaile Rd Br	12	0.01	0.01	0.01	0.01	0.01	0.34	0.005	12	0.480	0.470	0.370	0.620	0.140	0.27	0.500
Waiotapu Stm at Campbell Rd Br	11	1.02	1.00	0.86	1.10	0.10	-0.63	0.900	11	0.932	0.920	0.810	1.070	0.053	0.69	0.930
Waiotapu Stm at Homestead Rd Br	11	0.30	0.28	0.03	0.53	0.31	-0.13	0.320	11	1.345	1.330	1.180	1.520	0.155	0.24	1.300
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	1.261	1.205	1.080	1.520	0.205	0.47	1.210
Whirinaki Stm at Corbett Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.788	0.775	0.720	0.910	0.055	0.95	0.780

West Coast

Awakino River at Gribbon Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.089	0.066	0.009	0.174	0.139	0.18	0.110
Awakino River at SH3 Awakau Rd Junction	12	0.01	0.01	0.01	0.02	0.00	2.56	0.005	12	0.200	0.158	0.004	0.410	0.309	0.10	0.212
Manganui River at Off Manganui Rd	12	0.01	0.01	0.01	0.01	0.00	3.02	0.005	12	0.144	0.149	0.002	0.260	0.218	-0.18	0.132
Mangaotaki River at SH3 Br	11	0.01	0.01	0.01	0.03	0.00	2.45	0.005	11	0.673	0.600	0.340	1.080	0.503	0.09	0.640
Marokopa River at Speedies Rd (Off Te Angra Rd)	12	0.01	0.01	0.01	0.01	0.00	3.02	0.005	12	0.281	0.270	0.158	0.410	0.197	0.03	0.255
Mokau River at Awakau Rd	12	0.01	0.01	0.01	0.03	0.01	1.00	0.012	12	0.466	0.425	0.020	1.040	0.579	0.14	0.410
Mokau River at Mangaokewa Rd (Off SH30)	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.362	0.285	0.179	0.630	0.270	0.43	0.275
Mokau River at Totoro Rd Recorder	12	0.01	0.01	0.01	0.04	0.01	2.25	0.005	12	0.598	0.525	0.210	1.170	0.605	0.28	0.510
Mokauiti Stm at Three Way Point - Aria	12	0.02	0.01	0.01	0.09	0.02	2.34	0.015	12	0.322	0.180	0.007	0.860	0.576	0.48	0.220
Ohautira Stm at Waingaro Te Uku Rd	10	0.01	0.01	0.01	0.02	0.00	1.72	0.005	10	0.339	0.420	0.016	0.630	0.471	-0.42	0.315
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.147	0.109	0.005	0.390	0.249	0.37	0.115
Tawarau River at Off Speedies Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.333	0.310	0.210	0.470	0.200	0.12	0.290
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	0.01	0.01	0.01	0.04	0.01	1.64	0.005	10	0.498	0.625	0.001	1.030	0.759	-0.21	0.430
Waitetuna River at Te Uku-Waingaro Rd	10	0.01	0.01	0.01	0.02	0.01	1.03	0.005	10	0.393	0.505	0.069	0.710	0.456	-0.33	0.380

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.070	0.079	0.001	0.120	0.094	-0.39	0.076
Kuratau River at SH41 Moerangi	12	0.01	0.01	0.01	0.01	0.00	3.02	0.005	12	0.328	0.315	0.165	0.480	0.100	-0.05	0.240
Kuratau River at Te Rae Street	12	0.01	0.01	0.01	0.01	0.01	0.78	0.005	12	0.665	0.675	0.210	1.150	0.375	0.11	0.615
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.01	0.01	0.01	0.02	0.01	0.69	0.005	12	0.769	0.775	0.680	0.860	0.080	0.09	0.780
Tauranga- Taupo River at 20 Metres U/S SH1 Bridge	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.044	0.044	0.004	0.081	0.021	-0.12	0.054
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.01	0.01	0.01	0.03	0.00	2.68	0.005	12	0.007	0.003	0.001	0.031	0.010	1.74	0.002
Tokaanu Stm at Off SH41 Turangi	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.417	0.410	0.390	0.460	0.035	0.48	0.440
Waihaha River at SH32	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.096	0.097	0.060	0.144	0.027	0.27	0.107
Waitahanui River at Blake Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.389	0.395	0.340	0.420	0.035	-0.58	0.425
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.01	0.01	0.01	0.01	0.00	2.02	0.005	12	1.286	1.320	1.100	1.400	0.105	-0.85	1.615
Whanganui Stm at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.267	0.260	0.173	0.330	0.085	-0.24	0.315
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.00	1.00	0.005	12	0.635	0.600	0.430	0.930	0.295	0.37	0.680

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

Total Kjeldahl Nitrogen (g/m³)

Location	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.13	0.09	0.06	0.48	0.04	<u>2.76</u>	0.07
Kauaeranga River at Smiths Cableway/Recorder	12	0.11	0.12	0.03	0.19	0.10	-0.17	0.08
Ohinemuri River at Queens Head	12	0.23	0.21	0.12	0.45	0.09	1.08	0.25
Ohinemuri River at SH25 Br	12	0.15	0.15	0.06	0.32	0.06	1.33	0.13
Tairua River at Morrison's Br Hikuai	12	0.07	0.07	0.03	0.13	0.04	0.31	0.06
Tapu River at Tapu-Coroglen Rd	12	0.09	0.08	0.03	0.25	0.04	<u>1.82</u>	0.06
Waiau River at E309 Rd Ford	12	0.08	0.08	0.03	0.13	0.03	-0.06	0.08
Waitekauri River at U/S Ohinemuri Conflu	12	0.12	0.10	0.06	0.22	0.06	0.74	0.10
Waiwawa River at SH25 Coroglen	12	0.09	0.08	0.03	0.15	0.08	0.11	0.07
Wharekawa River at SH25	12	0.11	0.09	0.06	0.23	0.07	1.15	0.08
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.10	0.09	0.07	0.13	0.02	0.57	0.11
Oraka Stm at Lake Rd	12	0.50	0.31	0.16	2.00	0.30	<u>2.41</u>	0.31
Piako River at KIWITAHĪ	12	0.34	0.33	0.19	0.51	0.10	0.40	0.35
Piako River at Paeroa-Tahuna Rd Br	12	0.60	0.55	0.42	0.85	0.20	0.84	0.55
Piakonui Stm at Piakonui Rd	12	0.21	0.16	0.10	0.57	0.09	1.64	0.16
Waihou River at Okauia	12	0.35	0.23	0.11	1.80	0.07	<u>2.94</u>	0.20
Waihou River at Whites Rd	12	0.04	0.03	0.03	0.12	0.01	<u>1.70</u>	0.03
Waiohotu Stm at Waiohotu (Off SH5)	12	0.20	0.16	0.14	0.32	0.12	0.75	0.14
Waiomou Stm at Matamata-Tauranga Rd	12	0.26	0.18	0.08	1.24	0.10	<u>2.84</u>	0.18
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.37	0.34	0.23	0.67	0.13	1.30	0.36
Waitoa River at Landsdowne Rd Br	12	0.40	0.38	0.25	0.74	0.12	1.53	0.40
Waitoa River at Mellon Rd Recorder	12	0.51	0.48	0.29	0.74	0.24	0.23	0.49
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.56	0.59	0.29	0.89	0.31	-0.03	0.55
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	0.33	0.31	0.19	0.61	0.15	1.06	0.29
Karapiro Stm at Hickey Rd Bridge	12	0.35	0.32	0.24	0.53	0.10	0.91	0.30
Kirikiriroa Stm at Tauhara Dr	12	0.67	0.70	0.33	0.91	0.23	-0.63	0.68
Komakorau Stm at Henry Rd	12	1.85	2.00	0.87	3.00	0.86	-0.12	1.68
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.42	0.25	0.05	2.30	0.22	<u>2.78</u>	0.20
Mangakotukutuku Stm at Peacocks Rd	12	1.05	0.94	0.41	2.00	0.86	0.40	1.08
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.80	0.66	0.31	1.67	0.33	1.19	0.62
Mangaone Stm at Annebrooke Rd Br	12	0.40	0.38	0.24	0.66	0.14	0.87	0.38
Mangaonua Stm at Hoeka Rd	12	0.38	0.40	0.20	0.50	0.15	-0.47	0.38
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	0.27	0.23	0.15	0.59	0.07	1.59	0.22
Mangatangi River at SH2 Maramarua	12	0.38	0.34	0.18	0.67	0.12	0.82	0.35
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.16	0.15	0.08	0.28	0.07	0.63	0.14
Mangawara Stm at Rutherford Rd Br	12	1.25	1.20	0.48	2.50	0.58	0.93	1.12
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	0.99	0.78	0.52	1.92	0.65	0.90	0.80
Matahuru Stm at Waiterimu Road Below Confluence	12	0.81	0.65	0.40	1.85	0.52	1.41	0.61
Ohaeroa Stm at SH22 Br	12	0.29	0.29	0.17	0.40	0.06	-0.26	0.30
Opuatia Stm at Ponganui Rd	12	0.29	0.29	0.17	0.48	0.10	0.87	0.32
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.51	0.33	0.14	2.80	0.13	<u>2.90</u>	0.23
Waerenga Stm at Taniwha Rd	12	0.28	0.26	0.12	0.59	0.14	1.27	0.26
Waitawhiriwhiri Stm at Edgcombe Street	12	1.14	1.21	0.27	1.63	0.59	-0.77	1.19
Whakapipi Stm at SH22 Br	12	0.35	0.35	0.26	0.45	0.06	0.20	0.37
Whakauru Stm at U/S SH1 Br	12	0.53	0.30	0.13	3.50	0.16	<u>2.98</u>	0.20
Whangamarino River at Island Block Rd	12	2.09	2.02	1.16	3.60	1.23	0.46	1.63
Whangamarino River at Jefferies Rd Br	12	0.54	0.48	0.28	1.28	0.14	<u>2.07</u>	0.45
Whangape Stm at Rangiriri-Glen Murray Rd	12	1.89	1.89	0.50	3.00	1.64	-0.29	1.94

Total Nitrogen (g/m³)

Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
12	0.22	0.13	0.06	0.74	0.17	1.57	0.10
12	0.16	0.17	0.03	0.29	0.14	-0.10	0.11
12	0.90	0.96	0.19	1.67	0.64	-0.03	1.17
12	0.52	0.52	0.15	1.06	0.27	0.70	0.58
12	0.09	0.09	0.05	0.14	0.06	0.23	0.08
12	0.09	0.09	0.03	0.26	0.04	<u>1.74</u>	0.07
12	0.09	0.09	0.03	0.14	0.03	-0.37	0.10
12	0.22	0.22	0.09	0.40	0.19	0.20	0.24
12	0.09	0.08	0.03	0.15	0.07	0.18	0.07
12	0.16	0.15	0.08	0.25	0.09	0.35	0.12
Hauraki							
12	0.40	0.41	0.28	0.50	0.15	-0.26	0.45
12	2.53	2.46	2.01	3.58	0.65	0.84	2.42
12	1.37	0.66	0.22	3.76	2.28	0.77	1.23
12	2.28	1.81	1.06	4.85	1.82	0.84	1.95
12	0.55	0.46	0.24	1.73	0.30	<u>2.32</u>	0.38
12	1.45	1.34	1.12	2.70	0.29	<u>2.40</u>	1.38
12	0.79	0.79	0.75	0.83	0.03	0.30	0.78
12	0.34	0.32	0.25	0.47	0.16	0.43	0.28
12	0.76	0.68	0.35	1.88	0.49	1.55	0.70
12	0.68	0.58	0.28	1.50	0.39	1.04	0.69
12	1.91	1.82	1.19	2.90	0.97	0.28	1.81
12	2.26	2.05	0.83	3.94	1.61	0.20	2.52
Tributaries to the lower Waikato River							
12	1.95	2.12	0.83	2.62	1.08	-0.59	2.09
12	1.06	1.02	0.41	2.32	0.57	1.03	1.00
12	1.08	0.87	0.37	2.15	0.92	0.53	0.84
12	1.70	1.50	0.79	3.21	0.85	0.77	1.49
12	3.73	3.34	2.18	6.20	1.32	0.88	2.93
12	2.06	1.88	1.38	3.94	0.70	<u>1.80</u>	1.81
12	1.99	1.73	1.09	3.83	1.41	0.80	1.83
12	3.30	3.42	2.27	4.03	0.93	-0.50	3.33
12	2.82	2.67	2.25	3.62	0.67	0.56	2.99
12	1.91	1.76	1.39	2.70	0.53	0.53	1.86
12	0.86	0.84	0.33	1.54	0.63	0.25	0.68
12	0.81	0.72	0.18	1.87	0.62	0.90	0.51
12	0.27	0.26	0.11	0.60	0.19	0.94	0.19
12	2.84	2.21	0.76	8.60	1.70	<u>1.78</u>	1.98
12	2.94	2.78	2.05	5.02	1.20	1.03	2.93
12	1.89	1.82	0.51	4.95	1.25	1.30	1.39
12	1.91	1.92	1.50	2.48	0.46	0.35	1.83
12	1.09	1.11	0.77	1.32	0.28	-0.36	1.05
12	2.30	2.20	1.62	4.05	0.74	1.59	2.05
12	1.04	1.09	0.39	1.55	0.71	-0.41	1.13
12	1.93	2.09	0.53	2.99	0.64	-0.85	2.06
12	3.69	3.66	1.70	4.95	1.52	-0.48	3.81
12	1.01	0.76	0.44	4.24	0.27	<u>2.89</u>	0.53
12	2.32	2.08	1.18	4.87	1.14	1.26	1.94
12	1.51	1.52	0.30	3.78	1.02	0.91	1.15
12	2.12	1.95	1.21	3.00	1.04	0.02	2.12

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

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.21	0.21	0.14	0.31	0.12	0.40	0.18
Mangaohoi Stm at South Branch Maru Rd	12	0.36	0.18	0.08	2.10	0.17	<u>2.75</u>	0.14
Mangaokewa Stm at Lawrence Street Br	12	0.25	0.22	0.16	0.43	0.09	1.06	0.22
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.84	0.74	0.38	1.94	0.34	1.42	0.61
Mangapu River at Otorohanga	12	0.27	0.25	0.18	0.48	0.06	<u>1.71</u>	0.27
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.20	0.16	0.09	0.59	0.07	<u>2.05</u>	0.16
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.05	0.06	0.03	0.13	0.04	1.23	0.06
Ohote Stm at Whatawhata/Horotiu Rd	12	0.71	0.70	0.63	0.84	0.05	1.01	0.71
Puniu River at Bartons Corner Rd Br	12	0.30	0.27	0.14	0.63	0.11	1.38	0.25
Waipa River at Mangaokewa Rd	12	0.19	0.20	0.12	0.23	0.06	-0.58	0.19
Waipa River at Pirongia-Ngutu Rd Br	12	0.27	0.24	0.16	0.47	0.07	1.35	0.26
Waipa River at SH3 Otorohanga	12	0.20	0.17	0.13	0.46	0.05	<u>2.50</u>	0.18
Waitomo Stm at SH31 Otorohanga	11	0.21	0.21	0.11	0.39	0.10	0.83	0.21
Waitomo Stm at Tumutumu Rd	12	0.13	0.12	0.07	0.20	0.06	0.48	0.12

	12	0.65	0.72	0.15	1.08	0.65	-0.28	0.61
	12	0.56	0.39	0.19	2.37	0.23	<u>2.53</u>	0.36
	12	0.81	0.79	0.32	1.32	0.56	0.02	0.79
	12	2.29	2.58	0.81	3.64	1.69	-0.17	2.01
	12	1.01	0.95	0.25	1.75	0.83	-0.08	1.17
	12	0.61	0.46	0.17	1.38	0.64	0.62	0.51
	12	0.26	0.27	0.18	0.34	0.07	-0.24	0.27
	12	1.24	1.15	0.64	2.37	0.85	0.80	1.22
	12	1.00	1.00	0.39	1.80	0.68	0.27	0.89
	12	0.55	0.54	0.32	0.91	0.10	0.93	0.57
	12	0.96	1.03	0.23	1.59	0.67	-0.31	0.91
	12	0.67	0.58	0.19	1.40	0.65	0.51	0.62
	11	0.74	0.73	0.40	1.10	0.48	-0.09	0.74
	12	0.76	0.73	0.62	0.92	0.19	0.30	0.76

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.47	0.32	0.15	1.69	0.37	<u>2.13</u>	0.31
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.24	0.21	0.12	0.57	0.14	1.40	0.17
Mangakara Stm (Reporoa) at SH5	12	0.32	0.31	0.15	0.58	0.20	0.36	0.25
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.21	0.12	0.08	0.67	0.18	1.65	0.09
Otamakokore Stm at Hossack Rd	12	0.40	0.29	0.11	1.51	0.14	<u>2.01</u>	0.23
Pueto Stm at Broadlands Rd Br	12	0.09	0.09	0.03	0.16	0.03	<u>0.26</u>	0.09
Tahunaatara Stm at Ohakuri Rd	12	0.31	0.22	0.13	0.96	0.13	<u>1.74</u>	0.19
Torepatutahi Stm at Vaile Rd Br	12	0.11	0.10	0.07	0.17	0.05	0.48	0.11
Waiotapu Stm at Campbell Rd Br	11	1.19	1.24	1.02	1.31	0.23	-0.30	1.04
Waiotapu Stm at Homestead Rd Br	11	0.67	0.69	0.18	1.22	0.65	-0.12	0.61
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.17	0.16	0.08	0.34	0.10	0.89	0.16
Whirinaki Stm at Corbett Rd	12	0.06	0.06	0.03	0.19	0.06	1.52	0.03

	12	3.00	2.90	2.72	3.53	0.30	1.03	2.98
	12	0.80	0.75	0.42	1.40	0.52	0.39	0.69
	12	1.58	1.52	1.27	2.07	0.29	0.70	1.56
	12	0.88	0.80	0.65	1.31	0.28	0.90	0.76
	12	1.16	1.13	0.66	2.47	0.66	1.27	1.00
	12	0.53	0.54	0.41	0.65	0.08	-0.26	0.55
	12	0.90	0.88	0.50	1.57	0.56	0.55	0.80
	12	0.59	0.60	0.44	0.75	0.13	0.05	0.61
	11	2.12	2.12	1.95	2.22	0.13	-0.64	2.01
	11	2.01	1.96	1.61	2.53	0.49	0.28	1.86
	12	1.43	1.38	1.18	1.78	0.29	0.38	1.36
	12	0.85	0.84	0.76	1.01	0.12	0.79	0.83

West Coast

Awakino River at Gribbon Rd	12	0.06	0.06	0.03	0.14	0.06	0.80	0.06
Awakino River at SH3 Awakau Rd Junction	12	0.12	0.10	0.03	0.33	0.06	1.50	0.11
Manganui River at Off Manganui Rd	12	0.10	0.09	0.03	0.17	0.06	0.26	0.08
Mangaotaki River at SH3 Br	11	0.17	0.15	0.13	0.33	0.04	<u>2.13</u>	0.17
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.13	0.11	0.09	0.24	0.07	1.12	0.12
Mokau River at Awakau Rd	12	0.28	0.24	0.15	0.55	0.12	1.18	0.24
Mokau River at Mangaokewa Rd (Off SH30)	12	0.19	0.18	0.14	0.31	0.04	1.34	0.19
Mokau River at Totoro Rd Recorder	12	0.24	0.20	0.15	0.46	0.10	1.51	0.22
Mokauiti Stm at Three Way Point - Aria	12	0.33	0.33	0.21	0.57	0.15	0.83	0.29
Ohautira Stm at Waingaro Te Uku Rd	10	0.16	0.14	0.09	0.37	0.06	<u>2.01</u>	0.15
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.11	0.11	0.06	0.18	0.06	0.29	0.11
Tawarau River at Off Speedies Rd	12	0.12	0.11	0.07	0.21	0.05	0.80	0.13
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	0.24	0.21	0.17	0.40	0.07	1.15	0.24
Waitetuna River at Te Uku-Waingaro Rd	10	0.18	0.16	0.13	0.33	0.06	1.59	0.17

	12	0.15	0.14	0.07	0.31	0.09	0.89	0.16
	12	0.32	0.26	0.14	0.70	0.24	0.92	0.37
	12	0.24	0.26	0.07	0.40	0.21	-0.13	0.22
	11	0.84	0.75	0.48	1.22	0.54	0.05	0.88
	12	0.41	0.42	0.25	0.60	0.20	-0.09	0.41
	12	0.75	0.65	0.26	1.27	0.59	0.18	0.67
	12	0.56	0.48	0.33	0.81	0.38	0.28	0.53
	12	0.83	0.71	0.42	1.38	0.57	0.34	0.80
	12	0.65	0.48	0.36	1.17	0.55	0.65	0.57
	10	0.50	0.57	0.16	0.80	0.52	-0.46	0.50
	12	0.26	0.24	0.13	0.46	0.18	0.31	0.22
	12	0.46	0.44	0.33	0.64	0.18	0.32	0.44
	10	0.74	0.85	0.17	1.30	0.70	-0.22	0.73
	10	0.58	0.66	0.22	0.94	0.41	-0.35	0.62

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.11	0.10	0.06	0.22	0.05	1.51	0.08
Kuratau River at SH41 Moerangi	12	0.09	0.09	0.06	0.12	0.03	0.34	0.08
Kuratau River at Te Rae Street	12	0.17	0.16	0.10	0.27	0.09	0.60	0.15
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.18	0.18	0.15	0.24	0.03	1.13	0.19
Tauranga- Taupo River at 20 Metres U/S SH1 Bridge	12	0.06	0.05	0.03	0.13	0.05	0.97	0.05
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.11	0.09	0.08	0.26	0.03	<u>2.43</u>	0.09
Tokaanu Stm at Off SH41 Turangi	12	0.04	0.03	0.03	0.11	0.00	<u>2.40</u>	0.03
Waihaha River at SH32	12	0.11	0.09	0.03	0.36	0.05	<u>1.89</u>	0.06
Waitahanui River at Blake Rd	12	0.10	0.08	0.03	0.24	0.08	1.00	0.07
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.12	0.11	0.06	0.22	0.08	0.47	0.12
Whanganui Stm at Lakeside Lake Taupo	12	0.11	0.10	0.06	0.15	0.05	0.08	0.09
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.18	0.17	0.10	0.30	0.06	0.72	0.15

	12	0.18	0.16	0.08	0.33	0.12	0.58	0.14
	12	0.41	0.41	0.26	0.54	0.08	-0.43	0.33
	12	0.83	0.80	0.46	1.26	0.34	0.26	0.78
	12	0.95	0.96	0.84	1.05	0.13	-0.10	0.98
	12	0.10	0.11	0.03	0.16	0.05	-0.21	0.11
	12	0.12	0.10	0.08	0.26	0.04	<u>2.21</u>	0.10
	12	0.45	0.45	0.42	0.51	0.04	0.67	0.47
	12	0.20	0.18	0.09	0.45	0.06	1.59	0.17
	12	0.49	0.47	0.41	0.61	0.10	0.54	0.50
	12	1.41	1.42	1.20	1.56	0.17	-0.34	1.72
	12	0.37	0.37	0.29	0.45	0.10	0.03	0.40
	12	0.81	0.75	0.57	1.15	0.39	0.46	0.83

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

Turbidity (NTU)

pH (pH units)

Location	Turbidity (NTU)								pH (pH units)							
	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel																
Hikutaia River at Old Maratoto Rd	12	2.1	1.3	0.6	11.2	0.9	<u>2.9</u>	1.3	12	7.3	7.3	6.8	7.8	0.5	0.0	7.2
Kauaeranga River at Smiths Cableway/Recorder	12	2.1	1.2	0.3	6.2	2.9	1.0	1.1	12	7.1	7.2	6.5	7.7	0.5	-0.3	7.2
Ohinemuri River at Queens Head	12	1.0	1.0	0.5	1.6	0.4	0.2	1.2	12	7.2	7.2	6.7	8.3	0.4	1.5	7.1
Ohinemuri River at SH25 Br	12	1.3	1.4	0.6	1.7	0.7	-0.6	1.0	12	7.2	7.2	6.7	7.8	0.4	0.3	7.1
Tairua River at Morrisons Br Hikuai	12	1.1	1.1	0.6	2.1	0.4	0.9	1.0	12	7.2	7.2	6.9	7.6	0.2	0.5	7.0
Tapu River at Tapu-Coroglen Rd	12	2.3	1.0	0.3	15.7	0.4	<u>2.9</u>	1.0	12	7.4	7.5	6.8	7.7	0.3	-1.2	7.4
Waiau River at E309 Rd Ford	12	2.7	2.1	1.0	8.3	1.7	<u>1.9</u>	2.3	12	7.3	7.4	6.8	7.8	0.3	-0.6	7.4
Waitekauri River at U/S Ohinemuri Conflu	12	1.0	0.6	0.4	2.4	0.8	1.1	0.7	12	7.1	7.2	6.6	7.5	0.4	-0.7	7.2
Waiwawa River at SH25 Coroglen	12	1.5	1.0	0.5	5.1	0.5	<u>1.9</u>	1.1	12	7.2	7.3	6.6	7.6	0.4	-0.9	7.2
Wharekawa River at SH25	12	2.4	2.1	0.9	5.9	2.0	1.0	2.2	12	7.1	7.1	6.5	7.4	0.2	-1.4	7.0
Hauraki																
Mangawhero Stm (Kaihere) at Mangawara Rd	12	8.3	7.8	3.0	17.2	3.6	0.8	8.1	12	7.3	7.4	7.0	7.9	0.4	0.4	7.4
Oraka Stm at Lake Rd	12	10.2	4.7	1.2	71.0	5.6	<u>2.9</u>	5.3	12	7.2	7.2	6.8	7.7	0.3	0.3	7.3
Piako River at Kiwitahi	12	4.3	3.4	1.0	14.1	2.4	<u>1.8</u>	3.8	12	7.1	7.1	6.8	7.3	0.3	-0.1	7.1
Piako River at Paeroa-Tahuna Rd Br	12	6.6	6.9	1.5	14.0	6.3	0.3	7.4	12	7.3	7.4	6.8	7.6	0.5	-0.6	7.3
Piakonui Stm at Piakonui Rd	12	4.4	3.7	2.6	13.4	1.1	<u>2.8</u>	3.9	12	7.3	7.4	6.7	7.5	0.3	-1.3	7.4
Waihou River at Okauia	12	9.2	4.5	1.7	65.0	3.1	<u>3.0</u>	4.5	12	7.2	7.3	6.8	7.6	0.3	-0.2	7.3
Waihou River at Whites Rd	12	1.0	0.6	0.3	4.8	0.4	<u>2.8</u>	0.6	12	6.9	7.0	6.7	7.1	0.2	-0.5	7.0
Waihotu Stm at Waihotu (Off SH5)	12	6.0	5.0	3.6	14.7	2.5	<u>1.8</u>	4.9	12	7.2	7.3	6.7	7.5	0.3	-0.8	7.2
Waiomou Stm at Matamata-Tauranga Rd	12	9.4	4.0	1.9	68.0	2.9	<u>3.0</u>	4.4	12	7.2	7.2	6.8	7.5	0.3	-0.2	7.2
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	8.3	6.9	1.0	18.5	9.7	0.5	7.8	12	7.1	7.2	6.8	7.5	0.5	0.0	7.2
Waitoa River at Landsdowne Rd Br	12	4.3	4.0	0.9	10.3	4.1	0.7	4.4	12	7.0	7.1	6.7	7.2	0.3	-0.8	7.1
Waitoa River at Mellon Rd Recorder	12	6.0	6.1	1.9	12.1	5.5	0.4	6.5	12	7.3	7.4	6.7	7.6	0.3	-1.2	7.3
Tributaries to the lower Waikato River																
Awaroa River (Waiuku) at Otaua Rd Br opp Moseley Rd	12	13.4	17.8	1.4	27.0	17.7	-0.2	16.2	12	7.2	7.1	5.4	8.6	0.9	-0.3	7.1
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	5.7	5.0	2.6	11.0	2.1	1.1	6.7	12	7.8	7.8	7.4	8.2	0.6	0.0	7.8
Karapiro Stm at Hickey Rd Bridge	12	8.6	5.8	3.3	33.0	3.7	<u>2.4</u>	5.5	12	7.0	7.2	6.6	7.3	0.5	-0.7	7.2
Kirikirihoa Stm at Tauhara Dr	12	21.5	22.0	8.3	38.0	8.8	0.4	26.0	12	6.8	6.9	6.6	7.0	0.3	-0.2	6.9
Komakorau Stm at Henry Rd	12	63.8	52.5	18.0	127.0	62.0	0.4	70.0	12	6.6	6.6	6.2	6.8	0.2	-0.8	6.6
Little Waipa Stm at Arapuni - Putaruru Rd	12	7.9	2.8	0.7	61.0	4.3	<u>2.9</u>	1.9	12	7.0	7.0	6.7	7.3	0.3	0.0	7.0
Mangakotukutuku Stm at Peacocks Rd	12	21.6	22.5	7.7	43.0	21.4	0.3	22.0	12	6.9	7.1	6.3	7.3	0.6	-0.5	7.0
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	9.9	5.7	2.4	35.0	7.3	1.6	5.3	12	7.4	7.5	6.8	7.7	0.6	-0.6	7.5
Mangaone Stm at Annebrooke Rd Br	12	6.9	6.6	3.4	10.8	4.1	0.1	7.8	12	7.2	7.2	6.9	7.4	0.2	-0.5	7.3
Mangaonua Stm at Hoeka Rd	12	9.3	9.6	3.2	16.7	4.7	0.1	10.3	12	7.0	7.0	6.8	7.3	0.2	0.8	7.0
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	8.1	4.1	2.2	36.0	5.1	<u>2.1</u>	4.0	12	7.2	7.4	6.5	7.6	0.6	-0.6	7.4
Mangatangi River at SH2 Maramarua	12	12.9	12.9	4.6	30.0	7.2	1.0	14.1	12	7.2	7.3	6.7	7.6	0.3	-0.6	7.2
Mangatawhiri River at Lyons Rd At Buckingham Br	12	6.0	3.6	1.7	24.0	4.7	<u>2.1</u>	3.7	12	7.3	7.3	6.7	7.6	0.5	-0.6	7.4
Mangawara Stm at Rutherford Rd Br	12	33.5	27.0	18.6	56.0	23.5	0.7	40.0	12	6.7	6.8	6.3	7.3	0.4	0.2	6.8
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	49.9	46.0	16.5	177.0	33.0	<u>2.3</u>	48.5	12	6.9	6.9	6.6	7.3	0.5	0.1	7.0
Matahuru Stm at Waiterimu Road Below Confluence	12	45.7	29.5	16.4	109.0	38.0	1.1	32.0	12	7.0	7.1	6.4	7.5	0.4	-0.2	7.0
Ohaeroa Stm at SH22 Br	12	9.0	7.8	3.2	22.0	5.8	1.3	9.1	12	7.3	7.3	6.7	7.6	0.3	-1.2	7.4
Opuatia Stm at Ponganui Rd	12	15.4	11.7	6.4	57.0	4.9	<u>2.7</u>	14.8	12	7.4	7.4	7.0	7.7	0.3	-0.1	7.5
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	10.7	4.0	1.2	79.0	5.3	<u>2.9</u>	3.3	12	7.1	7.1	6.8	7.3	0.4	-0.2	7.2
Waerenga Stm at Taniwha Rd	12	10.9	7.8	3.1	39.0	5.0	<u>2.1</u>	7.8	12	7.1	7.1	6.7	7.6	0.4	0.3	7.2
Waitawhiriwhiri Stm at Edgcombe Street	12	25.9	29.0	3.3	38.0	20.0	-0.7	31.0	12	7.0	7.1	6.6	7.1	0.3	-0.6	7.0
Whakapipi Stm at SH22 Br	12	7.2	6.0	1.3	18.0	5.8	1.0	6.2	12	7.3	7.2	6.9	7.6	0.3	0.0	7.3
Whakauru Stm at U/S SH1 Br	12	17.7	7.7	4.0	117.0	5.8	<u>2.9</u>	6.3	12	7.3	7.4	6.5	7.6	0.3	-1.5	7.4
Whangamarino River at Island Block Rd	12	39.4	30.5	18.3	87.0	14.5	1.5	40.5	12	7.1	7.0	6.7	7.7	0.6	0.7	7.0
Whangamarino River at Jefferies Rd Br	12	27.2	23.0	10.9	78.0	6.2	<u>1.9</u>	21.0	12	7.0	7.0	6.5	7.3	0.4	-0.5	7.0
Whangape Stm at Rangiri-Glen Murray Rd	12	63.3	48.5	22.0	172.0	32.0	1.5	52.0	12	7.3	7.3	6.8	7.8	0.4	0.3	7.3

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

Waipa River and Tributaries																
Kaniwhaniwha Stm at Wright Rd	12	5.4	5.4	1.6	10.5	3.2	0.3	5.7	12	7.2	7.3	6.8	7.4	0.2	-1.1	7.1
Mangaohoi Stm at South Branch Maru Rd	12	6.9	2.0	1.1	46.0	1.5	<u>2.5</u>	1.8	12	7.3	7.4	6.6	7.7	0.3	-1.5	7.4
Mangaokewa Stm at Lawrence Street Br	12	5.3	5.1	2.2	12.9	3.1	1.3	4.4	12	7.2	7.3	6.6	7.6	0.7	-0.4	7.3
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	18.0	12.1	0.7	73.0	12.6	<u>1.7</u>	12.4	12	7.3	7.3	6.5	8.1	0.8	0.1	7.3
Mangapu River at Otorohanga	12	9.3	7.5	1.7	32.0	9.5	1.6	11.5	12	7.9	7.9	7.1	9.1	1.2	0.3	7.5
Mangatutu Stm (Waikeria) at Walker Rd Br	12	4.3	1.5	1.1	20.0	2.4	<u>2.0</u>	2.9	12	7.2	7.2	6.6	7.6	0.2	-0.8	7.2
Manguaika Stm at Te Awamutu Borough W/S Intake	12	1.7	1.5	0.8	4.1	1.0	1.5	1.7	12	7.3	7.4	6.7	7.8	0.4	-0.4	7.3
Ohote Stm at Whatawhata/Horotiu Rd	12	15.4	14.3	6.6	30.0	13.4	0.6	10.5	12	6.7	6.8	6.3	7.0	0.5	-0.3	6.8
Puniu River at Bartons Corner Rd Br	12	6.4	5.3	1.5	17.2	4.7	1.4	5.9	12	7.1	7.2	6.6	7.7	0.4	-0.3	7.1
Waipa River at Mangaokewa Rd	12	2.2	2.2	0.8	4.4	1.1	0.6	2.2	12	7.5	7.5	7.1	7.7	0.4	-0.3	7.4
Waipa River at Pirongia-Ngutunui Rd Br	12	9.4	8.0	3.2	26.0	7.0	1.6	10.2	12	7.2	7.3	6.7	7.7	0.3	-0.1	7.2
Waipa River at SH3 Otorohanga	12	3.8	2.7	1.0	14.8	3.4	<u>2.0</u>	3.6	12	7.4	7.4	6.9	8.0	0.3	0.7	7.2
Waitomo Stm at SH31 Otorohanga	11	11.9	8.9	1.4	28.0	20.7	0.5	12.2	11	7.8	7.7	7.4	8.2	0.6	0.3	7.7
Waitomo Stm at Tumutumu Rd	12	6.3	7.0	1.8	12.9	6.0	0.2	5.8	12	7.8	7.9	7.4	8.2	0.4	-0.2	7.8
Tributaries to the upper Waikato River																
Kawaunui Stm at SH5 Br	12	5.7	3.4	2.1	26.0	2.8	<u>2.8</u>	3.5	12	6.8	6.8	6.5	7.2	0.6	0.1	7.0
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	11.9	7.0	3.9	40.0	12.5	<u>1.7</u>	4.8	12	7.3	7.4	6.5	7.5	0.1	<u>-1.8</u>	7.4
Mangakara Stm (Reporoa) at SH5	12	7.3	6.1	2.7	15.9	5.7	0.9	5.4	12	7.0	7.0	6.7	7.7	0.4	1.0	7.1
Mangakino Stm (Whakamaru) at Sandel Rd	12	2.6	2.0	0.9	4.9	2.9	0.5	1.6	12	7.2	7.3	6.5	7.6	0.4	-1.0	7.4
Otamakokore Stm at Hossack Rd	12	4.8	3.2	1.5	13.4	3.7	1.5	3.5	12	8.0	8.1	7.5	8.3	0.3	-1.0	8.1
Pueto Stm at Broadlands Rd Br	12	3.2	3.1	1.2	7.0	1.5	1.1	2.8	12	7.3	7.3	7.0	7.6	0.3	-0.3	7.4
Tahunaatara Stm at Ohakuri Rd	12	5.9	3.0	1.8	27.0	3.7	<u>2.4</u>	3.3	12	7.5	7.5	6.8	8.2	0.4	0.0	7.5
Torepatutahi Stm at Vaile Rd Br	12	1.7	1.8	1.0	2.4	0.5	0.0	1.6	12	7.2	7.3	6.9	7.4	0.3	-0.3	7.3
Waiotapu Stm at Campbell Rd Br	11	7.9	6.9	3.9	20.0	3.0	<u>2.0</u>	7.1	11	5.3	5.4	4.3	5.7	0.7	-1.0	5.6
Waiotapu Stm at Homestead Rd Br	11	13.3	14.1	3.8	25.0	13.9	0.1	11.8	11	6.7	6.7	6.4	6.9	0.2	-0.5	6.8
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	4.7	3.6	1.3	10.9	2.8	1.2	4.1	12	7.6	7.7	7.4	7.8	0.4	-0.3	7.7
Whirinaki Stm at Corbett Rd	12	1.0	0.9	0.5	3.0	0.3	<u>2.4</u>	0.6	12	7.3	7.3	6.8	7.4	0.2	-1.3	7.3
West Coast																
Awakino River at Gribbon Rd	12	1.5	1.3	0.6	4.4	1.0	<u>1.9</u>	1.3	12	7.5	7.5	7.2	7.9	0.3	0.5	7.5
Awakino River at SH3 Awakau Rd Junction	12	5.4	2.6	0.7	34.0	2.6	<u>2.8</u>	3.6	12	7.5	7.5	7.1	8.3	0.4	1.0	7.5
Manganui River at Off Manganui Rd	12	7.3	7.6	1.6	14.8	8.3	0.1	5.2	12	7.4	7.4	7.0	7.7	0.3	-0.2	7.4
Mangaotaki River at SH3 Br	11	5.8	5.3	2.1	15.1	5.2	1.2	5.7	11	7.6	7.5	7.2	7.9	0.4	-0.2	7.7
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	6.0	3.9	1.8	19.6	6.2	1.5	4.0	12	7.9	7.8	7.3	8.3	0.5	-0.2	7.9
Mokau River at Awakau Rd	12	16.4	12.9	2.8	81.0	12.0	<u>2.6</u>	15.9	12	7.4	7.4	7.0	7.6	0.4	-0.6	7.4
Mokau River at Mangaokewa Rd (Off SH30)	12	3.6	3.2	2.5	6.5	1.8	1.1	3.3	12	7.2	7.2	6.7	7.6	0.2	-0.5	7.2
Mokau River at Totoro Rd Recorder	12	7.5	7.5	1.2	27.0	6.3	<u>1.8</u>	7.5	12	7.5	7.6	7.0	7.9	0.5	-0.3	7.5
Mokauiti Stm at Three Way Point - Aria	12	10.8	7.9	1.4	46.0	8.6	<u>2.3</u>	10.4	12	7.3	7.3	7.0	7.6	0.3	0.1	7.3
Ohautira Stm at Waingaro Te Uku Rd	10	12.7	8.1	3.3	56.0	9.4	<u>2.4</u>	9.3	10	7.4	7.5	6.7	7.9	0.6	-0.6	7.3
Oparau River at Langdon Rd (Off Okupata Rd)	12	2.9	2.8	1.2	4.3	1.0	-0.2	3.0	12	7.5	7.5	6.8	8.0	0.6	-0.3	7.5
Tawarau River at Off Speedies Rd	12	4.6	3.4	1.3	14.2	4.6	1.5	3.4	12	7.8	7.8	7.2	8.4	0.6	0.0	7.9
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	12.5	9.2	1.4	40.0	15.7	1.2	10.0	10	7.6	7.7	7.0	7.9	0.4	-0.8	7.5
Waitetuna River at Te Uku-Waingaro Rd	10	12.3	10.4	3.0	39.0	9.7	<u>1.8</u>	10.6	10	7.4	7.4	7.0	7.6	0.3	-0.8	7.3
Inflows to Lake Taupo																
Hinemaiaia River at SH1	12	2.5	1.4	0.9	8.3	1.6	1.7	1.2	12	7.3	7.3	6.8	7.7	0.3	-0.5	7.4
Kuratau River at SH41 Moerangi	12	1.6	1.4	0.9	3.1	1.0	0.9	1.5	12	7.2	7.2	7.0	7.4	0.2	0.0	7.1
Kuratau River at Te Rae Street	12	1.3	1.3	0.7	2.1	0.4	0.6	1.2	12	7.4	7.4	7.0	7.9	0.4	0.4	7.4
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	3.0	3.2	1.9	3.7	0.9	-0.7	3.1	12	7.3	7.3	7.1	7.5	0.2	0.3	7.4
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	3.0	1.1	0.4	15.0	2.9	<u>2.1</u>	0.9	12	7.2	7.3	6.5	7.4	0.3	-1.4	7.3
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	1.7	1.3	0.6	5.2	0.6	<u>2.0</u>	1.4	12	7.3	7.2	6.8	7.8	0.4	0.3	7.4
Tokaanu Stm at Off SH41 Turangi	12	0.4	0.3	0.1	1.0	0.3	1.2	0.2	12	7.1	7.1	6.7	7.3	0.3	-0.7	7.2
Waihaha River at SH32	12	2.2	1.1	0.4	12.1	1.7	<u>2.7</u>	0.6	12	7.1	7.2	6.3	7.4	0.3	<u>-1.8</u>	7.3
Waitahanui River at Blake Rd	12	2.2	1.0	0.4	9.9	2.1	<u>2.1</u>	0.8	12	7.3	7.4	6.7	7.7	0.3	-1.0	7.4
Whangamata Stm (Kinloch) at Whangamata Rd	12	2.0	1.6	0.7	4.3	1.6	0.6	1.8	12	7.2	7.2	6.8	7.5	0.3	-0.3	7.4
Whanganui Stm at Lakeside Lake Taupo	12	1.5	1.3	0.8	3.2	1.1	0.9	1.3	12	7.3	7.3	6.9	7.5	0.4	-0.2	7.4
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	4.0	3.1	2.2	9.0	3.5	1.1	3.2	12	7.3	7.4	6.7	7.5	0.4	-0.9	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	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	2298	260	37	25000	185	<u>3.01</u>	240
Kauaeranga River at Smiths Cableway/Recorder	12	1447	220	10	15000	260	<u>3.01</u>	120
Ohinemuri River at Queens Head	12	151	53	16	1200	57	<u>2.96</u>	56
Ohinemuri River at SH25 Br	12	232	155	28	1300	110	<u>2.75</u>	105
Tairua River at Morrisons Br Hikuai	12	133	85	7	390	192	0.85	57
Tapu River at Tapu-Coroglen Rd	12	122	48	16	800	74	<u>2.87</u>	55
Waiau River at E309 Rd Ford	12	170	80	15	980	130	<u>2.57</u>	80
Waitekauri River at U/S Ohinemuri Conflu	12	223	80	9	1900	57	<u>3.00</u>	55
Waiwawa River at SH25 Coroglen	12	159	60	6	610	179	1.40	51
Wharekawa River at SH25	12	351	200	28	1000	452	1.02	175
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	50	31	3	190	44	1.58	45
Oraka Stm at Lake Rd	12	5289	295	160	60000	110	<u>3.01</u>	280
Piako River at Kiwitahi	12	1113	195	70	11000	140	<u>3.00</u>	210
Piako River at Paeroa-Tahuna Rd Br	12	640	425	200	2500	360	<u>2.29</u>	460
Piakonui Stm at Piakonui Rd	12	95	46	26	380	47	<u>1.80</u>	55
Waihou River at Okauia	12	5015	230	26	57000	200	<u>3.01</u>	210
Waihou River at Whites Rd	12	120	35	21	800	36	<u>2.66</u>	40
Waiohotu Stm at Waiohotu (Off SH5)	12	106	75	9	390	119	1.54	60
Waiomou Stm at Matamata-Tauranga Rd	12	5244	315	130	58000	220	<u>3.01</u>	310
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	466	215	50	2900	265	<u>2.68</u>	260
Waitoa River at Landsdowne Rd Br	12	469	450	160	1200	445	0.95	415
Waitoa River at Mellon Rd Recorder	12	3797	270	50	42000	355	<u>3.01</u>	355
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	1333	180	1	12000	336	2.82	240
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	262	160	29	900	260	1.64	280
Karapiro Stm at Hickey Rd Bridge	12	247	160	55	1100	190	<u>2.45</u>	225
Kirikiroa Stm at Tauhara Dr	12	1464	555	120	6800	895	<u>1.76</u>	595
Komakorau Stm at Henry Rd	12	852	750	90	2000	845	0.64	900
Little Waipa Stm at Arapuni - Putaruru Rd	12	1143	270	120	8000	895	<u>2.71</u>	140
Mangakotukutuku Stm at Peacocks Rd	12	4620	330	110	37000	945	<u>2.48</u>	425
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	2508	475	210	22000	930	<u>2.95</u>	500
Mangaone Stm at Annebrooke Rd Br	12	575	510	240	1200	330	0.93	700
Mangaonua Stm at Hoeka Rd	12	851	850	170	2800	830	1.57	1100
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	615	160	70	5200	95	<u>2.95</u>	155
Mangatangi River at SH2 Maramarua	12	379	245	90	1200	220	1.58	340
Mangatawhiri River at Lyons Rd At Buckingham Br	12	328	240	41	900	340	0.93	220
Mangawara Stm at Rutherford Rd Br	12	1398	750	120	5900	1275	1.97	1000
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	1035	460	170	5500	655	<u>2.43</u>	500
Matahuru Stm at Waiterimu Road Below Confluence	12	1458	335	110	8600	1260	2.26	600
Ohaeroa Stm at SH22 Br	12	510	430	50	1300	625	0.65	340
Opuatia Stm at Ponganui Rd	12	727	370	120	4800	325	<u>2.87</u>	400
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	965	185	10	8000	450	<u>2.91</u>	160
Waerenga Stm at Taniwha Rd	12	1079	475	120	6700	805	<u>2.75</u>	500
Waitawhiriwhiri Stm at Edgecumbe Street	12	1992	1550	500	5500	2200	0.98	700
Whakapipi Stm at SH22 Br	12	610	285	120	3400	210	2.65	320
Whakauru Stm at U/S SH1 Br	12	3905	600	280	40000	405	<u>3.01</u>	510
Whangamarino River at Island Block Rd	12	606	110	30	4100	638	2.52	140
Whangamarino River at Jefferies Rd Br	12	1563	630	330	8300	1460	2.47	600
Whangape Stm at Rangiriri-Glen Murray Rd	12	330	275	9	1300	424	1.40	220

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

Enterococci (n/100ml)

Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel							
12	530	170	9	4600	251	<u>2.97</u>	150
12	689	105	2	6000	313	<u>2.88</u>	100
12	37	18	4	180	17	<u>2.11</u>	18
12	98	61	8	420	58	<u>2.07</u>	38
12	157	54	2	1100	115	<u>2.67</u>	19
12	120	51	10	600	130	<u>2.25</u>	50
12	214	175	16	670	266	1.12	80
12	39	30	4	170	35	<u>1.89</u>	29
12	370	63	4	2600	289	<u>2.43</u>	45
12	326	123	3	1200	533	1.12	85
Hauraki							
12	101	59	3	410	142	1.44	60
12	1337	235	55	12000	485	<u>2.97</u>	200
12	777	73	33	7200	328	<u>2.93</u>	110
12	541	190	100	3100	190	<u>2.35</u>	270
12	282	31	2	1700	231	<u>1.98</u>	65
12	3358	185	28	36000	173	<u>2.99</u>	140
12	70	29	10	430	31	<u>2.71</u>	26
12	169	27	5	700	288	1.23	21
12	1334	240	80	9000	505	<u>2.32</u>	200
12	386	105	13	1300	687	1.04	120
12	506	360	17	2100	617	1.60	270
12	383	165	25	1400	587	1.18	230
Tributaries to the lower Waikato River							
12	505	32	4	3500	95	2.02	43
12	217	129	17	800	324	1.16	90
12	321	120	14	2000	211	<u>2.39</u>	135
12	2995	230	46	27000	1455	<u>2.88</u>	315
12	653	380	100	2400	675	1.50	390
12	2562	220	45	28000	225	<u>3.01</u>	120
12	2642	305	56	19000	2865	<u>2.49</u>	390
12	1397	490	29	6900	925	<u>1.78</u>	330
12	620	525	63	1700	220	1.39	435
12	822	370	24	3300	750	1.54	460
12	1012	200	22	5200	1159	<u>1.70</u>	220
12	376	75	11	1900	361	1.76	120
12	205	100	5	900	223	1.73	70
12	1629	440	28	10000	1420	2.45	450
12	1396	375	60	9500	605	2.43	480
12	1293	160	18	5100	2200	1.19	170
12	279	190	24	800	400	0.71	180
12	334	175	26	1700	275	2.03	150
12	1908	150	1	20000	329	<u>2.99</u>	80
12	405	115	10	2300	483	<u>2.31</u>	130
12	1172	615	72	3700	1425	1.12	550
12	895	235	18	6400	350	2.68	300
12	5548	635	150	58000	1215	3.00	370
12	437	63	12	2200	267	1.72	70
12	1079	355	38	4300	1190	1.47	340
12	229	40	5	1500	253	2.6	50

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	327	245	80	1000	305	1.40	250
Mangaohoi Stm at South Branch Maru Rd	12	386	225	7	2100	342	<u>2.42</u>	80
Mangaokewa Stm at Lawrence Street Br	12	372	285	70	1300	210	1.73	360
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	1225	355	40	7000	840	2.20	350
Mangapu River at Otorohanga	12	1089	240	90	9000	580	<u>2.92</u>	390
Mangatutu Stm (Waikeria) at Walker Rd Br	12	1940	135	60	20000	175	<u>2.97</u>	150
Mangauika Stm at Te Awamutu Borough W/S Intake	12	11	9	1	43	11	<u>1.90</u>	18
Ohote Stm at Whatawhata/Horotiu Rd	12	283	220	40	900	225	1.39	245
Puniu River at Bartons Corner Rd Br	12	459	105	37	3400	373	2.78	120
Waipa River at Mangaokewa Rd	12	219	155	40	750	224	1.59	200
Waipa River at Pirongia-Ngutunui Rd Br	12	601	140	29	4600	190	<u>2.99</u>	280
Waipa River at SH3 Otorohanga	12	341	140	27	2700	125	<u>2.97</u>	160
Waitomo Stm at SH31 Otorohanga	11	607	190	55	4500	215	<u>2.79</u>	300
Waitomo Stm at Tumutumu Rd	12	269	110	30	1900	110	<u>2.92</u>	140

	12	241	160	32	800	315	1.18	150
	12	223	70	3	1000	257	1.62	70
	12	200	180	27	460	206	0.53	210
	12	945	250	57	5600	470	2.06	190
	12	162	130	21	510	219	1.08	130
	12	644	105	19	3900	635	<u>2.05</u>	90
	12	26	9	1	100	44	1.16	14
	12	368	135	21	1600	110	<u>1.75</u>	93
	12	241	45	17	1300	174	1.86	85
	12	71	37	1	340	62	2.11	40
	12	305	35	14	2700	118	2.91	80
	12	167	67	5	900	215	<u>2.18</u>	74
	11	300	120	9	2200	160	<u>2.77</u>	135
	12	119	33	6	640	162	<u>2.06</u>	40

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	1434	145	36	13000	637	<u>2.88</u>	180
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	821	265	79	3600	455	<u>1.71</u>	170
Mangakara Stm (Reporoa) at SH5	12	371	200	30	2200	195	<u>2.77</u>	150
Mangakino Stm (Whakamaru) at Sandel Rd	12	210	76	11	1700	78	2.96	40
Otamakokore Stm at Hossack Rd	12	3133	275	120	29000	665	<u>2.88</u>	220
Pueto Stm at Broadlands Rd Br	12	34	24	5	95	23	1.28	22
Tahunaatara Stm at Ohakuri Rd	12	1113	95	50	6200	295	<u>1.78</u>	110
Torepatutahi Stm at Vaile Rd Br	12	76	65	25	220	53	1.77	55
Waiotapu Stm at Campbell Rd Br	11	20	1	1	190	3	2.82	1
Waiotapu Stm at Homestead Rd Br	11	510	150	30	3800	85	2.79	125
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	136	110	30	500	110	<u>2.01</u>	80
Whirinaki Stm at Corbett Rd	12	193	32	10	1500	72	2.60	22

	12	1617	160	18	12000	905	<u>2.55</u>	150
	12	418	340	50	1000	535	0.53	80
	12	1029	255	43	7700	825	<u>2.81</u>	130
	12	90	24	1	360	109	1.43	22
	12	1080	265	20	6700	455	2.05	100
	12	60	19	14	230	73	1.47	18
	12	1013	105	16	6200	171	<u>1.84</u>	50
	12	107	51	11	470	135	1.91	46
	11	39	6	1	290	13	2.54	3
	11	650	130	33	5400	300	2.81	100
	12	172	130	17	480	216	0.74	76
	12	58	43	4	190	77	1.03	19

West Coast

Awakino River at Gribbon Rd	12	86	52	24	220	101	1.04	60
Awakino River at SH3 Awakau Rd Junction	12	239	69	14	1700	123	<u>2.68</u>	100
Manganui River at Off Manganui Rd	12	153	145	21	380	70	0.93	160
Mangaotaki River at SH3 Br	11	295	180	56	900	285	1.28	320
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	142	105	30	500	104	1.67	110
Mokau River at Awakau Rd	12	263	100	40	1100	260	1.59	130
Mokau River at Mangaokewa Rd (Off SH30)	12	348	75	17	3000	137	<u>2.94</u>	120
Mokau River at Totoro Rd Recorder	12	186	100	38	600	225	1.20	170
Mokauiti Stm at Three Way Point - Aria	12	393	150	50	3000	125	<u>2.97</u>	230
Ohautira Stm at Waingaro Te Uku Rd	10	774	280	90	4500	680	<u>2.41</u>	300
Oparau River at Langdon Rd (Off Okupata Rd)	12	126	85	23	380	146	1.17	95
Tawarau River at Off Speedies Rd	12	234	100	40	1100	80	1.84	100
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	480	150	50	3300	200	2.58	220
Waitetuna River at Te Uku-Waingaro Rd	10	462	340	120	1600	300	<u>1.79</u>	360

	12	41	28	3	110	49	0.87	34
	12	147	46	10	620	150	1.53	29
	12	56	34	3	210	55	1.56	29
	11	88	70	21	180	119	0.33	120
	12	53	32	4	190	39	1.53	34
	12	370	85	9	3300	201	<u>2.95</u>	63
	12	547	32	3	5100	271	<u>2.91</u>	36
	12	92	53	14	370	129	<u>1.74</u>	58
	12	486	60	8	5000	107	<u>3.00</u>	80
	10	492	155	16	1700	570	1.18	170
	12	39	30	6	130	35	1.49	40
	12	42	34	3	110	64	0.56	40
	10	279	47	13	1800	157	2.36	60
	10	312	255	29	1100	413	1.42	170

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	31	21	5	150	17	<u>2.68</u>	16
Kuratau River at SH41 Moerangi	12	7	2	1	21	12	0.82	5
Kuratau River at Te Rae Street	12	36	30	13	70	37	0.60	31
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	59	44	15	250	38	<u>2.45</u>	60
Tauranga-Taupo River at 20 Metres U/S SH1 Bridge	12	33	13	7	190	18	2.51	16
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	4	2	1	12	7	0.90	3
Tokaanu Stm at Off SH41 Turangi	12	30	11	1	150	11	1.78	10
Waihaha River at SH32	12	10	7	1	35	8	<u>1.70</u>	7
Waitahanui River at Blake Rd	12	24	19	7	52	24	0.72	18
Whangamata Stm (Kinloch) at Whangamata Rd	12	74	75	21	120	66	-0.09	80
Whanganui Stm at Lakeside Lake Taupo	12	34	25	3	140	25	<u>2.12</u>	26
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	108	100	50	200	37	1.02	90

	12	27	10	1	220	12	<u>2.96</u>	8
	12	7	2	1	42	5	2	3
	12	28	16	3	76	41	1	17
	12	118	40	13	370	208	0.87	46
	12	9	5	1	33	7	2	6
	12	10	2	1	42	12	1	1
	12	17	7	1	60	23	1	6
	12	11	3	1	60	18	1.92	3
	12	17	8	1	60	21	1.29	9
	12	116	45	22	400	143	1	44
	12	61	15	1	290	84	1.63	15
	12	86	30	2	370	112	1.57	27

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

Temperature (°C)

Location	Count	Mean	Median	Min	Max	IQR	Skew	11-15 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	13.7	12.9	6.1	21.0	6.3	0.11	14.3
Kauaeranga River at Smiths Cableway/Recorder	12	14.6	14.2	7.6	21.9	6.6	0.13	15.2
Ohinemuri River at Queens Head	12	16.5	15.6	9.4	24.4	7.6	0.18	16.3
Ohinemuri River at SH25 Br	12	16.3	14.7	11.0	24.2	6.7	0.49	15.8
Tairua River at Morrisons Br Hikuaui	12	15.9	15.2	9.7	23.8	7.6	0.21	16.1
Tapu River at Tapu-Coroglen Rd	12	14.5	13.5	6.8	22.6	6.2	0.22	14.7
Waiau River at E309 Rd Ford	12	14.0	13.7	6.8	20.1	6.6	-0.11	14.2
Waitekauri River at U/S Ohinemuri Conflu	12	15.5	14.4	9.4	23.2	6.4	0.42	15.1
Waiwawa River at SH25 Coroglen	12	15.5	14.4	9.6	23.3	7.0	0.29	15.4
Wharekawa River at SH25	12	14.8	13.8	9.0	23.4	5.1	0.66	15.4
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	13.6	13.4	9.0	18.8	5.1	0.04	14.0
Oraka Stm at Lake Rd	12	13.8	14.7	9.2	17.6	3.6	-0.43	14.2
Piako River at Kiwitahi	12	15.5	15.8	6.8	22.4	7.8	-0.37	15.9
Piako River at Paeroa-Tahuna Rd Br	12	14.9	15.0	6.2	21.7	7.4	-0.37	15.2
Piakonui Stm at Piakonui Rd	12	12.8	13.0	7.0	18.1	4.7	-0.24	13.0
Waihou River at Okauia	12	14.0	14.8	9.5	18.2	3.7	-0.21	14.4
Waihou River at Whites Rd	12	13.2	13.4	11.8	14.2	1.2	-0.43	13.3
Waiohotu Stm at Waiohotu (Off SH5)	12	11.0	11.4	5.5	15.1	4.2	-0.34	11.3
Waiomou Stm at Matamata-Tauranga Rd	12	13.5	14.3	7.7	18.3	4.0	-0.31	13.8
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	15.8	15.4	10.4	23.3	6.3	0.40	15.6
Waitoa River at Landsdowne Rd Br	12	14.5	14.6	6.8	21.5	6.5	-0.27	15.7
Waitoa River at Mellon Rd Recorder	12	15.1	15.5	6.6	21.5	7.2	-0.46	15.8
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	17.0	16.2	11.1	26.2	7.5	0.54	16.3
Awaroa Stm (Rotowaro) at Sansons Br @ Rotowaro-Huntly Rd	12	14.8	15.1	9.1	22.1	5.8	0.24	14.7
Karapiro Stm at Hickey Rd Bridge	12	14.4	14.5	6.5	20.1	6.5	-0.45	15.0
Kirikiri Stm at Tauhara Dr	12	14.9	15.2	9.9	19.0	4.5	-0.36	15.1
Komakorau Stm at Henry Rd	11	14.8	14.7	9.5	19.4	6.5	-0.06	14.7
Little Waipa Stm at Arapuni - Putaruru Rd	12	13.7	14.4	10.2	15.9	2.9	-0.54	14.2
Mangakotukutuku Stm at Peacocks Rd	12	15.1	15.4	8.6	20.5	5.7	-0.20	15.2
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	13.6	14.6	8.4	17.7	4.9	-0.22	14.0
Mangaone Stm at Annebrooke Rd Br	12	13.1	14.1	6.5	17.3	5.1	-0.66	13.9
Mangaonua Stm at Hoeka Rd	12	13.7	14.2	7.6	18.1	5.2	-0.49	14.0
Mangaonua Stm (a.k.a Waitakaruru Stm) at Te Miro Rd	12	14.1	14.2	8.0	19.3	4.7	-0.36	14.2
Mangatangi River at SH2 Maramarua	12	16.3	15.8	10.9	24.4	6.5	0.54	16.3
Mangatawhiri River at Lyons Rd At Buckingham Br	12	16.7	16.0	10.9	24.2	6.4	0.38	16.7
Mangawara Stm at Rutherford Rd Br	12	15.0	14.6	9.8	21.9	5.5	0.36	15.1
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	12	13.9	14.3	8.9	17.8	3.9	-0.47	14.3
Matahuru Stm at Waiterimu Road Below Confluence	12	14.7	14.9	9.3	21.0	6.0	0.13	14.9
Ohaeroa Stm at SH22 Br	12	14.0	14.2	9.2	19.0	4.6	-0.01	14.5
Opuatia Stm at Ponganui Rd	12	14.8	14.2	9.3	22.4	5.7	0.45	14.6
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	13.6	14.5	8.9	17.2	3.8	-0.40	14.0
Waerenga Stm at Taniwha Rd	12	14.2	14.0	8.3	20.5	6.1	0.07	14.7
Waitawhiriwhiri Stm at Edgumbe Street	12	16.6	16.8	11.1	21.8	4.9	-0.29	16.3
Whakapipi Stm at SH22 Br	12	15.3	15.2	10.4	21.3	5.2	0.21	15.6
Whakauru Stm at U/S SH1 Br	12	11.9	12.6	7.4	14.8	3.5	-0.48	12.3
Whangamarino River at Island Block Rd	12	17.3	16.7	10.0	27.2	8.6	0.37	17.2
Whangamarino River at Jefferies Rd Br	12	14.7	14.5	8.8	22.0	5.9	0.30	15.0
Whangape Stm at Rangiriri-Glen Murray Rd	12	15.9	15.1	10.3	24.3	6.0	0.56	16.3

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

Waipa River and Tributaries								
Kaniwhaniwha Stm at Wright Rd	12	14.4	14.9	8.7	19.9	4.5	-0.03	14.4
Mangaohoi Stm at South Branch Maru Rd	12	14.3	13.8	10.6	18.9	4.3	0.23	14.1
Mangaokewa Stm at Lawrence Street Br	12	13.1	13.8	7.4	17.9	4.1	-0.21	13.1
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	17.5	16.7	12.2	24.1	7.0	0.29	17.1
Mangapu River at Otorohanga	12	15.5	16.1	9.8	22.1	5.1	0.26	15.4
Mangatutu Stm (Waikeria) at Walker Rd Br	12	15.2	13.5	11.1	20.8	6.8	0.42	13.9
Mangauika Stm at Te Awamutu Borough W/S Intake	12	12.5	12.3	8.9	15.2	3.1	-0.22	12.3
Ohote Stm at Whatawhata/Horotiu Rd	12	15.2	15.6	8.0	20.6	5.0	-0.48	15.6
Puniu River at Bartons Corner Rd Br	12	16.0	14.8	11.7	21.4	6.5	0.38	15.0
Waipa River at Mangaokewa Rd	12	12.6	12.5	7.8	17.2	4.7	-0.05	13.1
Waipa River at Pirongia-Ngutunui Rd Br	12	15.0	14.7	9.5	21.6	6.4	0.28	14.7
Waipa River at SH3 Otorohanga	12	14.9	16.0	8.9	21.3	4.7	0.11	15.0
Waitomo Stm at SH31 Otorohanga	11	15.4	15.5	11.2	20.4	4.7	0.26	14.9
Waitomo Stm at Tumutumu Rd	12	14.1	14.1	11.1	18.1	3.3	0.40	13.9
Tributaries to the upper Waikato River								
Kawaunui Stm at SH5 Br	12	14.2	15.0	10.2	17.0	3.4	-0.49	14.7
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	12.9	13.8	8.8	15.5	3.1	-0.58	13.1
Mangakara Stm (Reporoa) at SH5	12	12.7	13.8	8.4	15.7	3.1	-0.59	13.0
Mangakino Stm (Whakamaru) at Sandel Rd	12	11.8	12.3	7.4	15.8	4.3	-0.10	12.2
Otamakokore Stm at Hossack Rd	12	20.0	21.0	13.7	24.8	3.8	-0.58	21.0
Pueto Stm at Broadlands Rd Br	12	13.8	13.8	10.2	16.9	3.3	-0.03	13.6
Tahunaatara Stm at Ohakuri Rd	12	13.0	13.9	7.6	17.2	4.9	-0.30	13.3
Torepatutahi Stm at Vaile Rd Br	12	14.1	14.8	9.5	17.0	3.8	-0.48	14.1
Waiotapu Stm at Campbell Rd Br	12	27.8	27.9	22.9	31.5	4.3	-0.33	27.7
Waiotapu Stm at Homestead Rd Br	12	18.2	18.8	13.0	22.9	5.4	-0.20	18.6
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	22.4	22.9	19.2	25.3	3.2	-0.12	22.3
Whirinaki Stm at Corbett Rd	12	11.8	12.1	10.1	13.1	1.7	-0.32	12.1
West Coast								
Awakino River at Gribbon Rd	12	13.2	13.1	7.7	18.3	4.2	0.18	12.8
Awakino River at SH3 Awakau Rd Junction	12	14.9	15.0	8.8	22.5	5.9	0.36	14.6
Manganui River at Off Manganui Rd	12	13.9	13.7	7.4	19.0	4.8	-0.12	13.8
Mangaotaki River at SH3 Br	11	13.4	14.5	8.0	17.7	4.8	-0.26	13.1
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	13.9	13.8	8.9	20.3	4.5	0.32	13.6
Mokau River at Awakau Rd	12	14.9	15.0	8.4	22.4	6.6	0.26	14.3
Mokau River at Mangaokewa Rd (Off SH30)	12	12.1	11.9	7.3	17.1	3.4	0.21	12.2
Mokau River at Totoro Rd Recorder	12	14.7	15.1	8.6	20.3	6.0	0.00	14.2
Mokauiti Stm at Three Way Point - Aria	12	15.0	15.5	8.4	22.2	6.2	0.21	14.5
Ohautira Stm at Waingaro Te Uku Rd	10	13.0	13.1	7.2	18.1	5.1	-0.08	12.9
Oparau River at Langdon Rd (Off Okupata Rd)	12	14.3	14.1	8.7	20.3	5.1	0.21	14.2
Tawarau River at Off Speedies Rd	12	13.4	13.8	8.7	18.1	4.1	0.01	13.6
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	10	14.7	14.0	8.6	21.8	6.8	0.17	14.1
Waitetuna River at Te Uku-Waingaro Rd	10	13.9	13.3	8.6	19.3	5.9	0.01	13.5
Inflows to Lake Taupo								
Hinemaiaia River at SH1	12	11.5	11.9	6.6	17.2	5.1	0.12	11.7
Kuratau River at SH41 Moerangi	12	9.7	10.0	6.5	13.5	3.3	0.13	9.8
Kuratau River at Te Rae Street	12	12.7	12.9	7.4	19.5	6.4	0.21	13.6
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	10.8	11.1	8.8	12.4	1.9	-0.19	11.2
Tauranga- Taupo River at 20 Metres U/S SH1 Bridge	12	10.6	11.0	6.2	15.4	5.6	0.04	11.8
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	13.0	13.3	6.8	21.7	7.4	0.33	12.6
Tokaanu Stm at Off SH41 Turangi	12	12.1	12.1	11.1	13.3	1.0	-0.02	12.2
Waihaha River at SH32	12	11.1	11.3	6.4	16.9	4.8	0.25	11.6
Waitahanui River at Blake Rd	12	10.5	10.9	7.4	12.0	2.5	-0.78	10.8
Whangamata Stm (Kinloch) at Whangamata Rd	12	9.9	9.9	5.8	11.8	1.9	-1.21	10.3
Whanganui Stm at Lakeside Lake Taupo	12	11.4	11.4	6.3	15.7	6.0	-0.04	12.2
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	11.0	11.0	6.7	14.1	4.2	-0.19	11.5

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

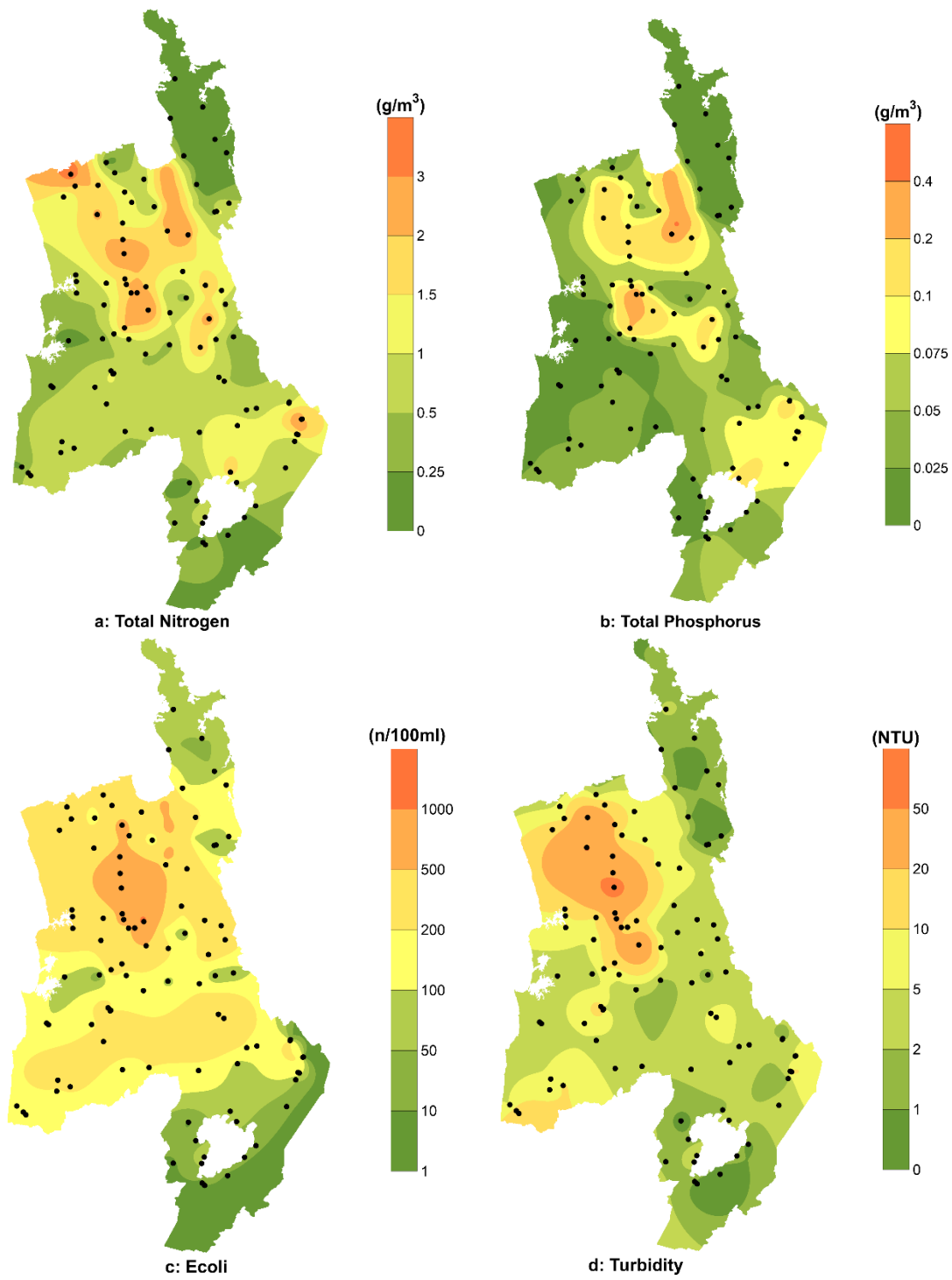


Figure 2: Spatial contour plots of four water quality parameters (based on 5 year median values, 2011-2015); a: Total Nitrogen, b: Total Phosphorus, c: *Escherichia coli*, d: Turbidity.

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

Number of Samples (2015) that Comply with the Satisfactory Water Quality Standards and with the Excellent Water Quality Standards and Guidelines (#n=8,*n=9, ~n=10, ^n=11)

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

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

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

E.coli-m refers to whether the 2015 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.

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- Vant B 2013. Trends in river water quality in the Waikato region, 1993-2012. Waikato Regional Council Technical Report 2013/20, Hamilton, Waikato Regional Council
- 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 ³	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 ³	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 ³	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 ¹	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 ₄ -N	Ammoniacal Nitrogen (Total)	Filtration, Phenol/Hypochlorite Colorimetry. Discrete analyser. APHA method 4500-NH ₃ F (modified).
NNN	Nitrite/Nitrate Nitrogen	Automated Cadmium reduction. Flow injection analyser. APHA method 4500 – NO ₃ -I (modified).
pH	pH	Lab Meter @ 25°C. APHA method 4500-H ⁺ 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 _{org} 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

¹ Water quality parameter identification code refers to Waikato Regional Council's water quality database (WISKI) parameter short name.

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

