Akaroa

Wastewater Treatment Plant

Annual Monitoring Report

07/2012 – 06/2013

Prepared by: City Care Ltd
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On behalf of

Christchurch City Council, City Water & Waste Unit

31 July 2013

Christchurch City Council

city care

Resource Consent Number: CRC071865.1
File Number: CO6C/01282
Client Name: Christchurch City Council (City Solutions)
To: To discharge contaminants into the Coastal Waters.
Consent Location: Red House Bay, Beach Road, AKAROA HARBOUR
State: Current

Events:

17/08/2010 Change in Conditions takes effect
1/07/2013 Consent Expires
1/07/2013 Lapse Date if not Given Effect To

1	The discharge shall be only treated wastewater from the Akaroa Wastewater Treatment Plant, located at Redhouse Bay, Akaroa Harbour.
	Partial compliance; partially treated wastewater was discharged from 15-16/08/2012 and 16-23/06/2013 due to heavy rain; overflow reports submitted to CCC on 27/08/2012 and 16/07/2013, respectively.
2	Treated wastewater from the Akaroa Wastewater Treatment Plant shall be discharged into Akaroa Harbour via an existing 100 meter long submerged outfall at map reference NZMS 260 N37:05561-09862, as shown in Appendix A which forms part of this consent.
	Compliance
3	Warning notices, which can be read from a distance of five metres, shall be erected and maintained at the following locations: On the shoreline 400 metres either side of the point on the shoreline nearest the outfall, and Beside Beach Road adjacent to the rocks that lead out to Green Point. The warning notices shall advise the public of the existence of a wastewater outfall and the dangers of swimming in the area or eating shellfish collected in that location.
	Compliance
4	The volume of wastewater exiting the Akaroa Wastewater Treatment Plant shall be continuously recorded using a flow meter. The readings from the flow meter shall be recorded in litres per second and shall be used to calculate the daily volume of wastewater entering the treatment plant, and these daily volumes shall be recorded. The daily volumes recorded shall be used to determine compliance with condition (5).
	Compliance (Attachment 1)
5	The volume of treated wastewater discharged shall not exceed 750 cubic metres per day, except during rainfall events of a total of 50 millimetres or more over 3 consecutive days, when the volume of treated wastewater discharged may exceed 750 cubic metres per day but not 3,000 cubic metres per day. Note: For the purposes of this condition, the rainfall shall be that measured at the weather station operated by NIWA on Rue Lavaud, Akaroa (Agent number = 4951).
	Partial compliance (Attachments 1 and 2); Station 4951 has stopped operation, so data from 36593 were used instead.
6	Treated wastewater shall be sampled after treatment and prior to discharge into Akaroa Harbour via the outfall. The samples shall be collected at the frequencies specified and analysed for the contaminants listed in Table 1: Table 1: Treated wastewater quality monitoring – contaminants and sampling frequency Weekly (Dec, Jan, Feb) Monthly Monthly (between 1 Mar and 30 Nov) Annually (Jan) faecal coliforms dissolved reactive phosphorus (DRP) Faecal coliforms lead enterococci ammonia enterococci copper total suspended solids (TSS) total nitrogen (TN) TSS chromium total five day biochemical oxygen demand (BOD5) oxides of nitrogen (NOx) BOD5 cadmium total phosphorus (TP) zinc temperature
	Compliance (Attachment 3)
7	The median concentration of faecal coliforms in the treated wastewater shall not exceed 1,000 per 100 millilitres
	Non-compliance (Attachment 3)
8	The consent holder shall use the best practicable option to ensure the median concentration of BOD5 and TSS does not exceed 30 grams per cubic metre
	Compliance (Attachment 3); maximum medians were 11 mg/L BOD_5 and 20 mg/L TSS
9	For the purposes of conditions (7) and (8) the median shall be calculated from the results of any five consecutive treated wastewater samples analysed
	Compliance (Attachment 3)
10	The receiving water shall be sampled and analysed for faecal coliforms and enterococci at the following locations, as shown on plan CRC071865A: Adjacent to the two rocky outcrops either side of the Treatment Plant at or about map references NZMS260:N36:0573-1022 and NZMS260:N37:0554-0979; At the shoreline nearest the outfall; 400 metres along the shoreline in a southerly direction from site (b); and 400 metres along the shoreline in a northerly direction from site (b).

	Compliance (Attachment 3)
11	Receiving water sampling and analysis for faecal coliforms and enterococci shall be occur at least weekly during December, January and February each year and at least monthly for faecal coliforms between 1 March and 30 November. Receiving water sampling shall occur within six hours of treated wastewater sampling.
	Compliance (Attachment 3)
12	In the event that the analysis of receiving water samples collected under condition (11) from outside the 250 metre radius mixing zone indicates: A concentration of faecal coliforms that exceeds a median of 14 per 100 millilitres and/or That the concentration of the faecal coliforms in more that ten percent of samples exceeds 43 per 100 millilitres; The consent holder shall notify the Canterbury regional council, Attention: RMA Compliance and Enforcement manager. The results of all samples collected in December and the following January and February of each year shall be used to determine whether the values specified in this condition have been exceeded for each site.
	Compliance; ECAN was notified of 1 exceedance of the trigger level (Report 633R-2013-006, dated 20 March 2013 addressed these requirements)
13	The notification required by condition (12) shall be provided within one month of detecting the exceedance, and shall identify whether the exceedance resulted from wastewater discharge and, if so, shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects as a result of the exceedance and to prevent a reoccurrence. Such measures may include: Additional sampling and analysis; and Investigation of whether the exceedance was related to high concentrations in the treated wastewater.
	Compliance (Report 633R-2013-006, dated 20 March 2013 addressed these requirements)
14	The receiving water shall be sampled and analysed for temperature, TN, NOx, TP, DRP and ammonia at the following locations, as shown on plan CRC071865.1A attached to this consent as Appendix B: 250 metres due north of the outfall; 250 metres due west of the outfall; and 250 metres due south of the outfall.
	Compliance (Attachment 3)
15	Receiving water sampling and analysis for temperature, TN, NOx, TP, DRP and ammonia shall occur at least once during the first week of February, May, August and November. Receiving water sampling shall occur within six hours of treated wastewater sampling.
	Compliance (Attachment 3)
16	The consent holder shall use the best practicable option to ensure the median concentration of TN, NOx, TP, DRP and ammonia in the receiving water do not exceed the following concentrations: TN that exceeds a median of 0.21 mg/L; NOx that exceeds a median of 0.023 mg/L TP that exceeds a median of 0.039 mg/L; DRP that exceeds a median of 0.017 mg/L; and Ammonia that exceeds a median of 0.910 mg/L The consent holder shall notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcements Manager. For the purposes this condition, the median shall be calculated for each site from the results of any four consecutive samples.
	Partial compliance (Attachment 3)
17	The notification required by condition (16) shall be provided within one month of detecting the exceedance, and shall identify whether the exceedance resulted from the wastewater discharge and, if so, shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects as a result of the exceedance and to prevent a reoccurrence. Such measures may include: Additional sampling and analysis; and Investigation of whether the exceedance was related to high concentrations in the treated wastewater.
	See comments below
18	The time and date that the sample is collected shall be recorded for all samples collected under this consent. The laboratory carrying out the analyses of all samples collected under this consent shall be accredited for the analyses to ISO guide 25, either by International Accreditation New Zealand (IANZ), or by an organisation with a mutual agreement with IANZ.
	Compliance; details of all sample methods and dates/times provided to ECAN monthly; non-accredited TN results for receiving environment samples accepted by ECAN (according to 09/07/2012 email) while CCC lab pursues validation.
19	The consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, any sampling results required by this consent during each month by the 15th working day of the following month.
	Compliance
20	The consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an annual report by 31 July each year which includes, but is not limited to, the following: Results of the monitoring undertaken in the previous year from 1 July to 30 June; An analysis of monitoring results with limits and trigger values specified in the conditions of this consent; An analysis of receiving water monitoring results with treated wastewater monitoring results; Measures taken to remedy any exceedances of limits or trigger values; Comparison of monitoring results with historical data; An interpretation of the results in relation to the effects of the discharge on the environment; and Details of all upgrades to the treatment plant or that may affect the quality or volume of treated wastewater discharged.

	Compliance via this report
21	Copies of all monitoring results and reports relating to the discharge from the wastewater treatment plant shall be made available to the community via the Akaroa Service Centre and the Christchurch City Council website.
	CCC to follow up
22	The consent holder shall submit to the Canterbury Regional Council, within six months of the grant of this consent, a management plan that details the measures that will be taken to ensure compliance with the trigger values specified in this consent relating to treated wastewater and receiving environment quality and shall include contingency measures in response to mechanical or electrical failures.
	Compliance
23	The consent shall be exercise in accordance with the management plan.
	Compliance
24	The consent holder shall use its best endeavours to establish and maintain a Community Working Party (CWP), and provide reasonable organisational and administrative support for such a group for the duration of the consent. The CWP shall be established within 6 months of the granting of this consent and the first meeting shall set up the framework and aims for the group and their responsibilities. In establishing the group, the consent holder shall invite a representative of each of the following organisations to be members of the CWP and to meet at least once per year: Friends of Banks Peninsula; Department of Conservation; Environment Canterbury; Onuku Runanga; Wairewa Runanga; Taiapure Management Group; Akaroa Promotions; Akaroa Harbour marine Protection Society; and Any other interested person or interest group. The consent holder shall liaise with the CWP with the aim of facilitating the following outcomes: The consent holder has access to community opinions, observations, and activities that may be affected by the exercise of this consent; and Communication and liaison between the consent holder and local community is maintained.
	CCC to follow up
25	The consent holder shall undertake a programme of works associated with the investigation and selection of a long-term method of treatment and disposal of wastewater from the Akaroa Wastewater Treatment Plant. This programme shall be undertaken in general accordance with the schedule attached as Appendix C which forms part of this consent. The consent holder shall submit to the Canterbury Regional Council and the CWP: a report on the list of options for wastewater treatment and disposal, no later than 31 July 2009; and a report of the preferred option for wastewater treatment and disposal, no later than 31 July 2011. A progress report shall be submitted to the Canterbury Regional Council and to the CWP, six months prior to the dates set out in (b) above, to show that progress is being made to meet these timeframes.
	CCC to follow up
26	The Canterbury Regional Council may, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of: Dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; and Requiring the consent holder to conduct monitoring instead of, or in addition to, that required by the consent.
	ECAN to request

Treatment Plant Effluent Monitoring

Flows into the Akaroa Wastewater Treatment Plant (WWTP) were heavily impacted by heavy rain and stormwater during this reporting period causing discharge in excess of the 750-m^3/d dry weather maximum on 31/07/2012, 01/08/2012, 13-16/08/2012, 06-07/05/2013, and 17-24/06/2013. For these events, more than 50 mm of rainfall was received over three consecutive days (Attachment 2.1), so the 3,000-m^3/d wet weather maximum applied and flows were compliant. An extreme event of 282 mm of rainfall in three days also caused the wet weather maximum to be exceeded from 14-15/08/2012. These weather events resulted in approximately 25% more flow through the WWTP compared to the previous reporting period (i.e., 84,713 m^3 in 2011-2012 vs. 105,327 m^3 in 2012-2013) and raised the 95th percentile for flow from 390 to 570m^3/d (Attachment 1).

Plant performance relating to organic parameters like BOD_5 and TSS was very good with no exceedances above the 30-mg/L median limits for effluent quality (Table 1). Faecal coliforms (FC), however, were problematic despite several upgrades to WWTP components. In particular, the UV system was made more robust in an effort to reduce FC in the effluent and prevent transgressions. The following improvements were made to the UV system:

- Added H&S switches, replaced lamps, and replaced a power cable in September 2012;
- Enhanced software to improve lamp failure alarming in January 2013;
- Installed a new remote telemetry unit (RTU) in an effort to reduce SCADA communication failures in January 2013;
- Adjusted Bank B start flowrate to 50 m^3/h to reduce on/off cycling in January 2013;
- Replaced four lamps and air ram cylinder required to operate wipers for Bank B in April 2013;

- Installed an uninterruptible power supply (UPS) to prevent electrical fluctuations from causing damage to the components and increase their lifespan in May 2013.

FC exceedances have persisted possibly due to the role of low alkalinity during periods of higher organic loading. When this occurs, colloids may be negatively affecting UV transmissivity. In particular, this scenario likely occurred on 03/04/2013 when a maximum of 21,000 CFU/100 mL was measured. This sample was taken just after the busy Easter weekend when the WWTP was recovering from over 60% greater hydraulic flow compared to the monthly average. Closer monitoring of the pH via real-time monitoring and addition of lime to increase alkalinity could reduce these transgressions.

The consent associated with this discharge has expired effective 01/07/2013. A new consent is in the process of being initiated. CCC can provide more information on its progress to design and install a new WWTP as well as any other future plans such as addition of switches on the diesel generator in 2013/2014 to give run indication and alarm in case of generator fault (depending on budget).

Receiving Environment Monitoring

Some trigger limits were exceeded for human-health related parameters (Attachment 3.2). 15% of summer samples (2 events) collected at South Rocky Outcrop were >43 CFU/100mL FC. All location medians were <14 CFU/100mL FC.

Nutrient data gathered from the receiving environment exceeded trigger values at all locations for NOx (Attachment 3.3). While these 3 medians are non-compliant, this does represent an improvement compared to last year when 7 medians were exceeded. These levels do not appear related to the treatment process, and they have generally continued to improve compared to the 2011/2012 monitoring period based on all medians.

Exceedances and transgressions relating to the receiving environment should not be linked to the WWTP discharge as discussed in Akaroa WWTP's 1) annual monitoring reports for 2011-2012 and 2) summer sampling results for receiving water faecal coliforms dated 20 March 2013. A direct causative relationship cannot be determined from the data likely due to the impact from other sources (e.g., runoff, tourist ships, etc.).

Table 1. Summary of Monitoring Non-Compliances from July 2012-June 2013.

Treatment Plant Effluent			
Parameter	**Single Samples Exceeding Limit**	**Median Limit Exceedances**	**Condition Non-Compliances**
Dry Weather Flow < 750 m3/d	0	-	1
Wet Weather Flow < 3,000 m3/d	2	-	
BOD_5 < 30 mg/L	0	0	0
TSS < 30 mg/L	1	0	
FC < 1,000 CFU/100 mL	8	7	1
Receiving Environment			
Parameter	**Single Samples Exceeding Limit**	**Median Limit or % Exceedances**	**Condition Non-Compliances**
Summer FC < 14 CFU/100 mL	17	0	0
<10% Summer FC > 43 CFU/100 mL	6	1	
TN < 0.21 mg/L	1	0	1
NOx < 0.023 mg/L	6	3	
TP < 0.039 mg/L	0	0	
DRP median < 0.017 mg/L	1	0	
NH3 median < 0.910 mg/L	0	0	

Attachment 1.1: Flows, Akaroa, Data

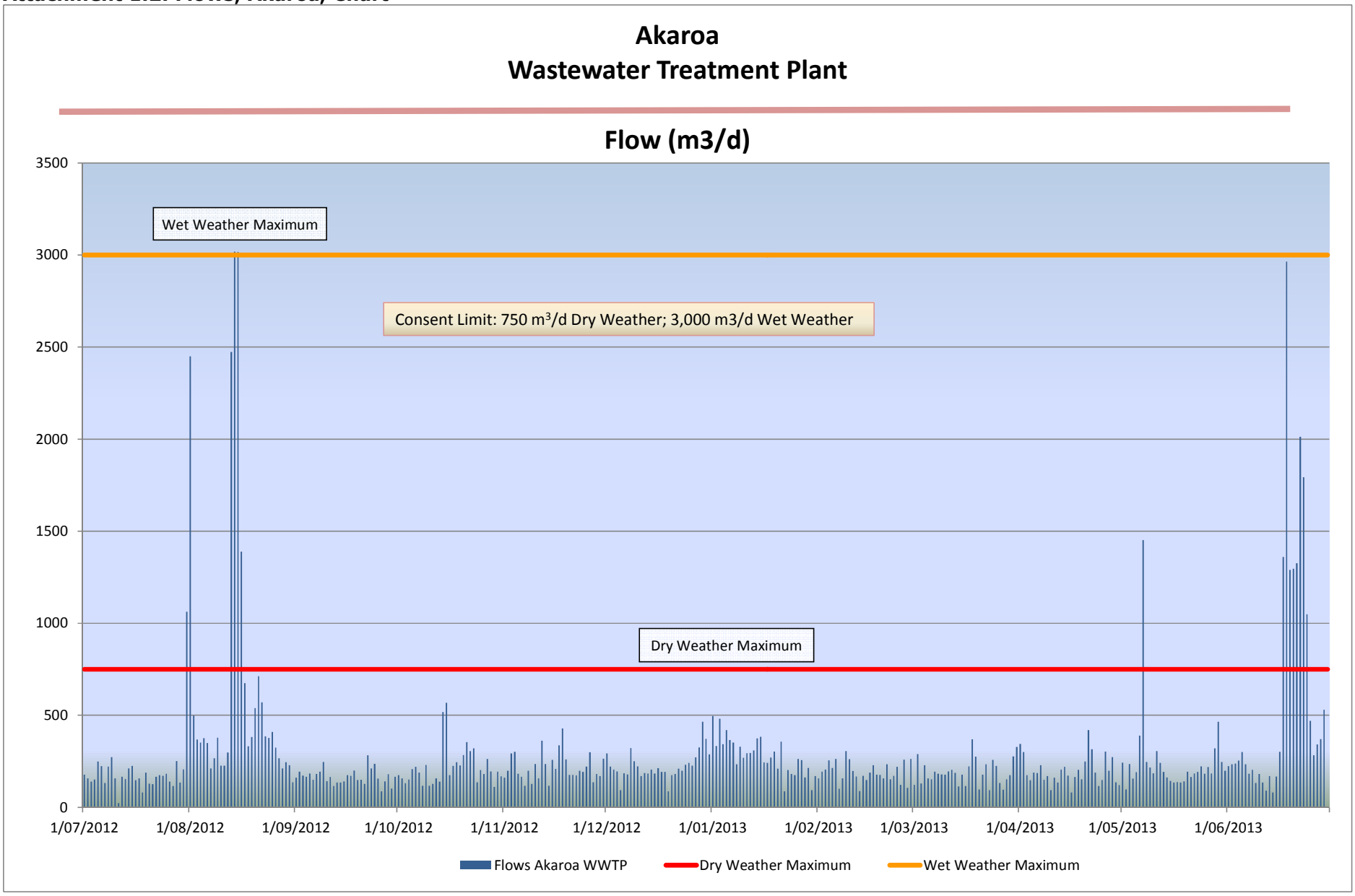
Plant:	Akaroa Wastewater Treatment, Banks Peninsula
Asset Owner:	Christchurch City Council
Laboratory	Christchurch City Council Laboratory, City Water & Waste Unit

Max:	750	m^3/d	Dry weather	Max:	3000	m^3/d	Wet weather

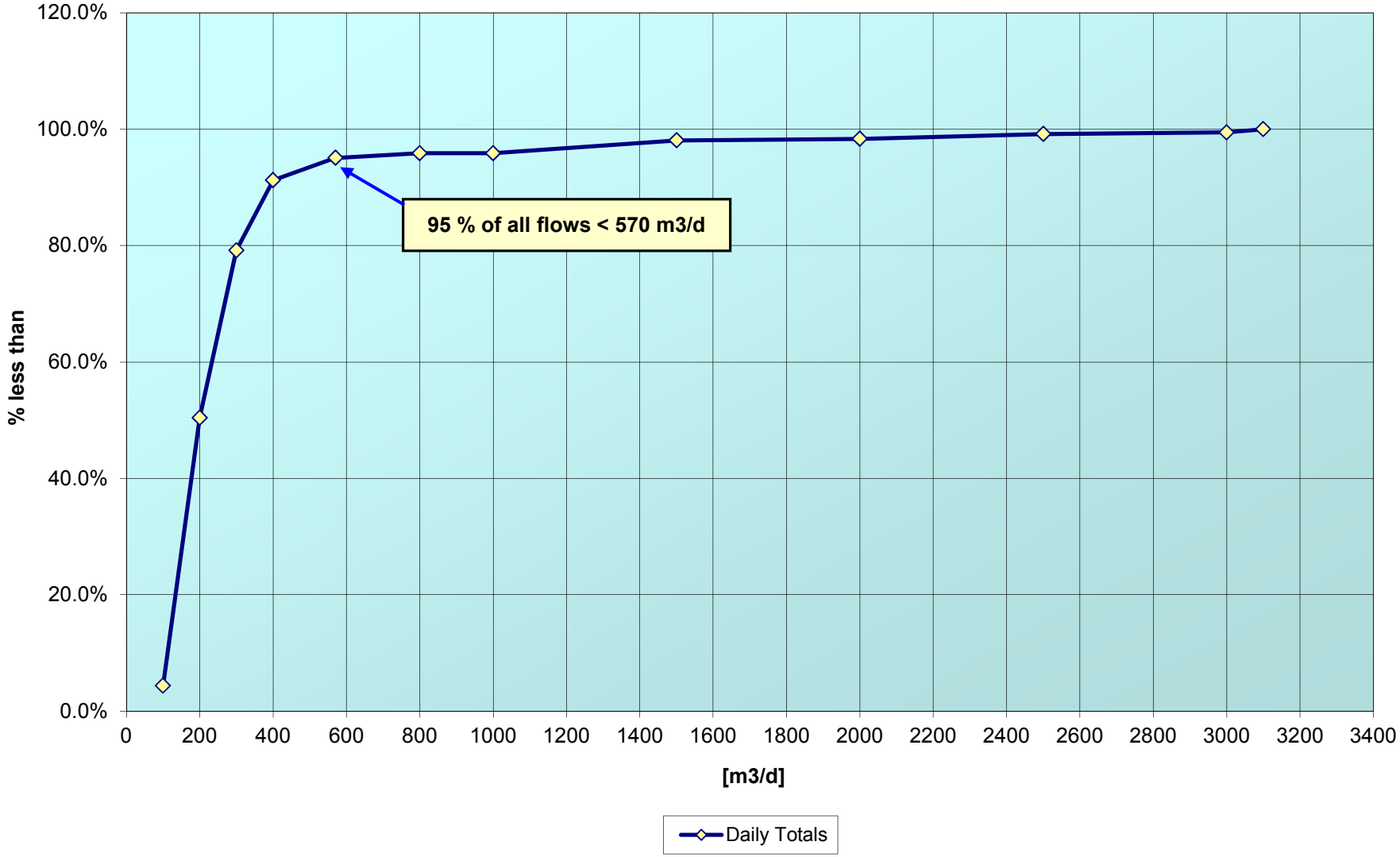
Date	Flow [m^3/d]	Date	Flow [m^3/d]	Date	Flow [m^3/d]	Date	Flow [m^3/d]
1/07/2012	177	1/10/2012	174	1/01/2013	496	1/04/2013	344
2/07/2012	157	2/10/2012	157	2/01/2013	333	2/04/2013	300
3/07/2012	140	3/10/2012	131	3/01/2013	481	3/04/2013	174
4/07/2012	151	4/10/2012	150	4/01/2013	343	4/04/2013	147
5/07/2012	249	5/10/2012	207	5/01/2013	419	5/04/2013	189
6/07/2012	224	6/10/2012	220	6/01/2013	366	6/04/2013	186
7/07/2012	132	7/10/2012	189	7/01/2013	351	7/04/2013	229
8/07/2012	221	8/10/2012	116	8/01/2013	234	8/04/2013	149
9/07/2012	273	9/10/2012	230	9/01/2013	329	9/04/2013	170
10/07/2012	158	10/10/2012	117	10/01/2013	268	10/04/2013	94
11/07/2012	22	11/10/2012	127	11/01/2013	294	11/04/2013	161
12/07/2012	166	12/10/2012	157	12/01/2013	295	12/04/2013	134
13/07/2012	154	13/10/2012	139	13/01/2013	309	13/04/2013	205
14/07/2012	212	14/10/2012	518	14/01/2013	374	14/04/2013	220
15/07/2012	225	15/10/2012	567	15/01/2013	383	15/04/2013	172
16/07/2012	147	16/10/2012	175	16/01/2013	244	16/04/2013	80
17/07/2012	157	17/10/2012	225	17/01/2013	242	17/04/2013	165
18/07/2012	80	18/10/2012	246	18/01/2013	270	18/04/2013	203
19/07/2012	189	19/10/2012	227	19/01/2013	303	19/04/2013	152
20/07/2012	128	20/10/2012	284	20/01/2013	210	20/04/2013	249
21/07/2012	126	21/10/2012	354	21/01/2013	356	21/04/2013	419
22/07/2012	166	22/10/2012	306	22/01/2013	86	22/04/2013	315
23/07/2012	174	23/10/2012	320	23/01/2013	202	23/04/2013	189
24/07/2012	171	24/10/2012	136	24/01/2013	181	24/04/2013	115
25/07/2012	183	25/10/2012	202	25/01/2013	174	25/04/2013	148
26/07/2012	139	26/10/2012	180	26/01/2013	262	26/04/2013	303
27/07/2012	115	27/10/2012	263	27/01/2013	256	27/04/2013	198
28/07/2012	252	28/10/2012	195	28/01/2013	162	28/04/2013	273
29/07/2012	134	29/10/2012	110	29/01/2013	214	29/04/2013	136
30/07/2012	206	30/10/2012	194	30/01/2013	94	30/04/2013	121
31/07/2012	1063	31/10/2012	168	31/01/2013	170	1/05/2013	243
1/08/2012	2450	1/11/2012	161	1/02/2013	158	2/05/2013	97
2/08/2012	499	2/11/2012	198	2/02/2013	194	3/05/2013	235
3/08/2012	368	3/11/2012	292	3/02/2013	205	4/05/2013	156
4/08/2012	352	4/11/2012	302	4/02/2013	255	5/05/2013	191
5/08/2012	376	5/11/2012	183	5/02/2013	214	6/05/2013	389
6/08/2012	349	6/11/2012	166	6/02/2013	263	7/05/2013	1452
7/08/2012	211	7/11/2012	117	7/02/2013	101	8/05/2013	247
8/08/2012	266	8/11/2012	199	8/02/2013	158	9/05/2013	217
9/08/2012	378	9/11/2012	127	9/02/2013	306	10/05/2013	185
10/08/2012	226	10/11/2012	235	10/02/2013	261	11/05/2013	306
11/08/2012	226	11/11/2012	157	11/02/2013	197	12/05/2013	241
12/08/2012	297	12/11/2012	361	12/02/2013	167	13/05/2013	193
13/08/2012	2473	13/11/2012	235	13/02/2013	88	14/05/2013	162
14/08/2012	3019	14/11/2012	116	14/02/2013	171	15/05/2013	143
15/08/2012	3018	15/11/2012	257	15/02/2013	148	16/05/2013	134
16/08/2012	1388	16/11/2012	208	16/02/2013	189	17/05/2013	137

17/08/2012	675	17/11/2012	337	17/02/2013	229	18/05/2013	134
18/08/2012	331	18/11/2012	429	18/02/2013	177	19/05/2013	141
19/08/2012	382	19/11/2012	260	19/02/2013	176	20/05/2013	194
20/08/2012	539	20/11/2012	177	20/02/2013	158	21/05/2013	165
21/08/2012	712	21/11/2012	177	21/02/2013	233	22/05/2013	184
22/08/2012	570	22/11/2012	173	22/02/2013	152	23/05/2013	192
23/08/2012	385	23/11/2012	198	23/02/2013	171	24/05/2013	222
24/08/2012	377	24/11/2012	193	24/02/2013	220	25/05/2013	183
25/08/2012	409	25/11/2012	221	25/02/2013	123	26/05/2013	219
26/08/2012	324	26/11/2012	299	26/02/2013	259	27/05/2013	184
27/08/2012	266	27/11/2012	136	27/02/2013	106	28/05/2013	320
28/08/2012	212	28/11/2012	182	28/02/2013	263	29/05/2013	465
29/08/2012	246	29/11/2012	170	1/03/2013	123	30/05/2013	247
30/08/2012	229	30/11/2012	264	2/03/2013	289	31/05/2013	199
31/08/2012	136	1/12/2012	292	3/03/2013	130	1/06/2013	224
1/09/2012	161	2/12/2012	221	4/03/2013	229	2/06/2013	233
2/09/2012	194	3/12/2012	205	5/03/2013	158	3/06/2013	237
3/09/2012	172	4/12/2012	195	6/03/2013	153	4/06/2013	254
4/09/2012	166	5/12/2012	93	7/03/2013	194	5/06/2013	300
5/09/2012	184	6/12/2012	185	8/03/2013	183	6/06/2013	233
6/09/2012	149	7/12/2012	178	9/03/2013	178	7/06/2013	183
7/09/2012	180	8/12/2012	322	10/03/2013	177	8/06/2013	203
8/09/2012	194	9/12/2012	250	11/03/2013	195	9/06/2013	132
9/09/2012	247	10/12/2012	223	12/03/2013	203	10/06/2013	181
10/09/2012	142	11/12/2012	169	13/03/2013	188	11/06/2013	135
11/09/2012	165	12/12/2012	186	14/03/2013	113	12/06/2013	91
12/09/2012	115	13/12/2012	184	15/03/2013	177	13/06/2013	170
13/09/2012	134	14/12/2012	205	16/03/2013	115	14/06/2013	80
14/09/2012	135	15/12/2012	184	17/03/2013	223	15/06/2013	167
15/09/2012	141	16/12/2012	213	18/03/2013	370	16/06/2013	302
16/09/2012	175	17/12/2012	193	19/03/2013	275	17/06/2013	1360
17/09/2012	171	18/12/2012	192	20/03/2013	97	18/06/2013	2965
18/09/2012	200	19/12/2012	87	21/03/2013	177	19/06/2013	1290
19/09/2012	148	20/12/2012	175	22/03/2013	233	20/06/2013	1295
20/09/2012	149	21/12/2012	181	23/03/2013	94	21/06/2013	1326
21/09/2012	127	22/12/2012	210	24/03/2013	257	22/06/2013	2013
22/09/2012	283	23/12/2012	199	25/03/2013	225	23/06/2013	1793
23/09/2012	212	24/12/2012	231	26/03/2013	132	24/06/2013	1048
24/09/2012	236	25/12/2012	241	27/03/2013	96	25/06/2013	470
25/09/2012	156	26/12/2012	226	28/03/2013	153	26/06/2013	283
26/09/2012	87	27/12/2012	271	29/03/2013	175	27/06/2013	342
27/09/2012	141	28/12/2012	325	30/03/2013	277	28/06/2013	371
28/09/2012	179	29/12/2012	465	31/03/2013	328	29/06/2013	530
29/09/2012	102	30/12/2012	372			30/06/2013	374
30/09/2012	166	31/12/2012	288				

Attachment 1.2: Flows, Akaroa, Chart



Attachment 1.3: Flows, Akaroa, '% less than'



Attachment 2.1: Rainfall data, Akaroa

Station information:										
Name	Agent Number	Netwo	Latitude (dec.deg)		Longitu	Height	Posn_Pr	Observing Authority		
Akaroa Ew	36593	H32895	-43.809		173	45	G	Niwa		
Note: Position precision types are: "W" = based on whole minutes, "T" = estimated to tenth minute,										
G = derived from gridref , "E" = error cases derived from gridref,										
H = based on GPS readings (NZGD49), "D" = by definition i.e. grid points.										
Rain: Daily										
Station	Date(NZST)	Time (NZST)	Amount (mm)	3 day total (mm)	SofG	Deficit (mm)	Runoff (mm)	Period (Hrs)	Freq	Comment
36593	20120729	900	0		-	4.3	0	24	D	
36593	20120730	900	0		-	4.8	0	24	D	
36593	20120731	900	130.8	130.8	-	0	125.4	24	D	>50mm/3d
36593	20120801	900	34.6	165.4	-	0	34.1	24	D	>50mm/3d
36593	20120802	900	0	165.4	-	0.9	0	24	D	>50mm/3d
36593	20120803	900	3	37.6	-	0	1.2	24	D	
36593	20120811	900	0		-	1.8	0	24	D	
36593	20120812	900	1.4		-	1.2	0	24	D	
36593	20120813	900	197.8	199.2	-	0	195.7	24	D	>50mm/3d
36593	20120814	900	51.2	250.4	-	0	50.3	24	D	>50mm/3d
36593	20120815	900	32.8	281.8	-	0	31.9	24	D	>50mm/3d
36593	20120816	900	0	84	-	0.9	0	24	D	>50mm/3d
36593	20120817	900	0	32.8	-	1.8	0	24	D	
36593	20130504	900	0.2		-	59.3	0	24	D	
36593	20130505	900	0		-	60	0	24	D	
36593	20130506	900	54.4	54.6	-	6.3	0	24	D	>50mm/3d
36593	20130507	900	48.6	103	-	0	41.6	24	D	>50mm/3d
36593	20130508	900	0	103	-	0.7	0	24	D	>50mm/3d
36593	20130509	900	0	48.6	-	1.4	0	24	D	
36593	20130615	900	0		-	3.2	0	24	D	
36593	20130616	900	19.2		-	0	15.7	24	D	
36593	20130617	900	114.4	133.6	-	0	114	24	D	>50mm/3d
36593	20130618	900	35.2	168.8	-	0	34.8	24	D	>50mm/3d
36593	20130619	900	0.2	149.8	-	0.2	0	24	D	>50mm/3d
36593	20130620	900	56.8	92.2	-	0	56.3	24	D	>50mm/3d
36593	20130621	900	52.4	109.4	-	0	52	24	D	>50mm/3d
36593	20130622	900	40	149.2	-	0	39.6	24	D	>50mm/3d
36593	20130623	900	36	128.4	-	0	35.6	24	D	>50mm/3d
36593	20130624	900	0	76	-	0.4	0	24	D	>50mm/3d
36593	20130625	900	0	36	-	0.7	0	24	D	

Attachment 2.2: Closing of Rainfall Station 4951, Akaroa

Station Details for Agent: 4951

Check Data Availability | Sensor and Site History

Parameter	Indicator
Agent Number	4951
Network Number	H32893
Name	Akaroa,Rue Lavaud
Lat (dec deg, S of equator is neg)	-43.80418
Longitude (dec deg, E of Greenwich is pos e.g. NZ)	172.96997
Position Precision	H
Note: Position precision types are: "W" = based on whole minutes, "T" = estimated to tenth minute, "G" = derived from gridref, "E" = error cases derived from gridref, "H" = based on GPS readings (NZGD49), "D" = by definition i.e. grid points.	
Height above MSL in metres	4m
Grid Reference (NZ Metric Map Series)	N36076117
Start Date	30-Nov-1977
End Date	01-Jan-2008
Closed Indicator (Closed = 1)	1
Stty Station Type	1: Climat (Standard)
Synoptic Number (World Met. Organisation Number)	-
WRA No	328903
Observing Authority	N/A

Current Indicators

Note: the following indicators show the current status for open stations.
Closed stations may show no recorded parameters.

Parameter	Indicator	Parameter	Indicator
Rain	X	Evaporation	-
Surface Wind Dirn	-	Surface Wind Speed	-
Max Gust Dirn	-	Max Gust Speed	-
Solar Radiation	-	Sunshine Hours	-
10cm Earth Temp	-	20cm Earth Temp	-
30cm Earth Temp	-	100cm Earth Temp	-
Dry Bulb Temp	X	Wet Bulb Temp	X
Grass Min Temp	X	Weather Phenomonen	-
Max Temp	X	Min Temp	X
Visibility	-	Cloud Amount	-
MSL Pressure	-		
Wind Run	-		
Time Offset (from UTC)	12	day_daylight_area	02

Sensor and Site History | Check Data Availability
Find stations USING datatypes | Find stations IGNORING datatypes
Database Query Form | CliFlo Home

Attachment 3.1: Lab Data, Akaroa Wastewater Treatment Plant (Conditions 6-9)

											5-Sample Median		
Date	NH_4-N	BOD_5	ENT	FC	Temp	NOx	DRP	TP	TSS	TN	BOD_5	TSS	FC
	[mg/l]	[mg/l]	MPN/100ml	CFU/100ml	[deg C]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	CFU/100ml
5/07/2012	2.6	9.1	5	5	10.3	15	4.8	5	16	18.9	7.7	8	5
2/08/2012	0.6	4.0	5	27	10.6	7.7	1.3	1.5	20	9.5	5.9	8	18
3/09/2012	11	9.8	5	45	11.1	8.5	4.4	5.2	18	22.4	7.7	16	20
3/10/2012	32	13.0	1500	2,900	14.0	4.2	7.3	7.9	31	37.2	7.9	18	27
1/11/2012	31	13.0	190	80	15.9	3	7	7.3	22	37	8.4	20	45
5/12/2012	11	4.7	60	350	18.4	19	7.1	6.5	11	29.2	8.4	20	80
12/12/2012		9.2	390	1,500	18.6				18		9.2	18	350
19/12/2012		1.5	310	1,900	19.9				11		9.2	18	1,500
27/12/2012		10.0	200	1,100	20.6				16		9.5	16	1,100
3/01/2013	27.0	16.0	5	5	21.3	6.7	7.3	8.4	21	39.4	9.9	16	1,100
10/01/2013		12.0	350	600	17.9				18		11.0	18	1,100
16/01/2013		9.4	10	14	20.0				27		9.7	18	600
23/01/2013		5.8	130	270	21.1				13		9.3	18	270
30/01/2013		5.5	500	1,600	21.3				15		9.3	18	270
7/02/2013		4.1	5	40	19.5				5		7.6	15	270
13/02/2013	8.8	4.2	140	650	21.0	30	7.8	8.1	6	37.5	7.6	13	270
20/02/2013		3.5	5	5	20.8				5		5.7	6	270
27/02/2013		6.0	130	1,300	21.0				5		5.7	5	650
5/03/2013	3.4	6.1	320	2,000	19.6	30	7.6	8.1	5	36.9	5.7	5	650
3/04/2013	18	9.1	3100	21,000	19.7	33	8.3	8.7	5	51	5.7	5	1,300
2/05/2013	7.1	6.8	90	210	15.0	31.0	5.8	6.5	17.0	37.5	5.8	5	1,300
4/06/2013	4.9	7.5	30	180	13.1	15.0	4.3	6.1	19.0	20.9	6.1	5	1,300
										Limit	30	30	1,000
	As	Cr	Cd	Cu	Zn	Ni	Pb		**Exceedances**		0	0	7
	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]						
10/01/2013	<1.5	<1	<0.2	21.0	63.0	<2.5	<1.5						

Removed < for calculations and halved the value.

Attachment 3.2: Lab Data, Receiving Environment (Condition 12)

	400m Shoreline North	400m Shoreline South	North Rocky Outcrop	Shoreline nearest OF	South Rocky Outcrop	400m Shoreline North	400m Shoreline South	North Rocky Outcrop	Shoreline nearest OF	South Rocky Outcrop
	ENT	ENT	ENT	ENT	ENT	FC	FC	FC	FC	FC
	MPN/100ml	MPN/100ml	MPN/100ml	MPN/100ml	MPN/100ml	CFU/100ml	CFU/100ml	CFU/100ml	CFU/100ml	CFU/100ml
5/07/2012	10	5	5	5	5	10	4.5	4.5	4.5	4.5
2/08/2012	10	5	31	20	5	27	36	9	9	4.5
3/09/2012	5	5	10	10	5	1	4	2	2	1
3/10/2012						2	2	1	0.5	0.5
1/11/2012	5	5	5	5	10	1	3	5	2	0.5
5/12/2012	5	5	5	5	5	15	73	64	75	46
12/12/2012	5	10	5	5	5	0.5	1	0.5	1	0.5
19/12/2012	10	5	5	10	20	4	6	8	8	16
27/12/2012	5	97	5	5	5	6	13	2	3	5
3/01/2013	20	10	10	20	5	37	37	33	28	52
10/01/2013	10	5	20	10	20	40	35	22	42	38
16/01/2013	320	10	63	31	10	530	5	4	9	7
23/01/2013	5	5	5	41	10	1	0.5	2	1	0.5
30/01/2013	5	20	10	5	5	0.5	2	3	0.5	0.5
7/02/2013	5	5	10	5	5	0.5	0.5	1	3	0.5
13/02/2013	40	10	60	20	10	12	7	3	11	2
20/02/2013	5	5	5	5	5	0.5	0.5	0.5	0.5	3
27/02/2013	5	5	5	5	5	0.5	0.5	0.5	1	1
5/03/2013						1	2	2	4	1
3/04/2013	31	5	20	5	20	1	4	2	0.5	4
2/05/2013						0.5	0.5	1	2	1
4/06/2013						0.5	5	10	8	3
Removed < for calculations and halved the value.										
median of summer samples						4	5	3	3	3
# summer samples > 43						1	1	1	1	2
% summer samples > 43						7.7%	7.7%	7.7%	7.7%	15.4%

Attachment 3.3: Lab Data, Receiving Environment (Conditions 14-16)

	250 metres due north						250 metres due west						250 metres due south					
	Temp	TN	NOx	NH3	TP	DRP	Temp	TN	NOx	NH3	TP	DRP	Temp	TN	NOx	NH3	TP	DRP
	°C	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	mg/L	mg/L
TRIGGER		0.210	0.023	0.910	0.039	0.017		0.210	0.023	0.910	0.039	0.017		0.210	0.023	0.910	0.039	0.017
3/08/2011	6.5	1.100	0.100	0.005	0.500	0.009	6.5	1.100	0.070	0.200	0.500	0.009	6.5	1.100	0.080	0.037	0.500	0.016
2/11/2011	13.9	0.400	0.002	0.005	0.057	0.002	13.9	0.800	0.002	0.005	0.046	0.002	13.9	0.600	0.002	0.005	0.040	0.009
1/02/2012	16.0	0.100	0.130	0.014	0.005	0.003	16.0	0.100	0.142	0.013	0.015	0.002	16.0	0.100	0.132	0.018	0.005	0.002
2/05/2012	11.4	0.120	0.089	0.055	0.028	0.014	11.4	0.100	0.060	0.060	0.027	0.011	11.4	0.230	0.070	0.060	0.026	0.012
2/08/2012	8.9	0.160	0.127	0.033	0.013	0.014	8.9	0.120	0.121	0.014	0.013	0.015	8.9	0.210	0.123	0.060	0.016	0.014
1/11/2012	13.6	0.091	0.005	0.005	0.010	0.011	13.6	0.140	0.005	0.005	0.010	0.005	13.6	0.100	0.005	0.005	0.010	0.006
7/02/2013	15.9	0.062	0.005	0.005	0.024	0.007	15.9	0.060	0.005	0.021	0.010	0.006	15.9	0.062	0.018	0.005	0.010	0.006
2/05/2013	12.1	0.170	0.049	0.005	0.010	0.015	12.1	0.200	0.057	0.005	0.010	0.014	12.1	0.230	0.086	0.005	0.021	0.023
2011/2012 4-Sample Median		0.260	0.095	0.010	0.043	0.006		0.450	0.065	0.037	0.037	0.005		0.415	0.075	0.028	0.033	0.011
2012/2013 4-Sample Median		0.126	0.027	0.005	0.012	0.013		0.130	0.031	0.010	0.010	0.010		0.155	0.052	0.005	0.013	0.010
			Over trigger levels															
		Removed < for calculations and halved the value.																