2009

Water Quality Report




JerseyWater

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Contents

1 Executive Summary

I am pleased to report that in 2009 the water we supplied was to a very high standard. Only 30 analyses of treated water out of 18,477 taken during the year, failed to comply with bacteriological and chemical parameters. None of these failures presented a risk to public health.

The average daily demand for water supplied by Jersey Water was 19.9 ML, with a total of 7,252 million litres of treated water supplied to its customers in 2009.

All the water leaving the treatment works was 100% compliant with all bacteriological quality parameters and there were no herbicides or pesticides detected.

The water quality monitoring programme and parameters analysed during the year were in accordance with a programme approved by the States of Jersey Planning & Environment department, as required by the Water (Jersey) Law 1972. The programme closely follows the requirements set out in the Water Supply (Water Quality) Regulations 2000 for England & Wales. Monitoring and surveillance of the treated water we supply to our customers is undertaken on a continuous basis.

As well as monitoring treated water quality, Jersey Water has an extensive programme of raw water quality monitoring, at the streams, reservoirs and throughout the treatment processes. This programme, together with on-line quality monitoring equipment installed at the treatment works, allows our operating staff to select and optimise the most suitable water to be taken for treatment.

All the water leaving the treatment works was 100% compliant with all bacteriological quality parameters and there were no herbicides or pesticides detected.

The sampling for nitrates showed that twenty three analyses were above the 50 mg/l limit and the highest recorded figure was 59.8 mg/l. Jersey Water has no controls over the source of nitrates in water resources, consequently a dispensation has been granted, which allows 33% of regulatory analyses to be above 50 mg/l, but not greater than 70 mg/l.

The tables in this report show the results of the treated water monitoring programme carried out in 2009. The tables show the maximum, mean and minimum concentration of the particular parameter.

Howard N Snowden
Managing Director & Engineer

1 April 2010

2 Water Quality Monitoring Team

Jersey Water has long realised the importance of water quality monitoring as a useful tool in the production of good clean water for supply. To this end the Company has a modern laboratory situated at the Millbrook Depot, St Lawrence.

The Laboratory Manager, David Mayman, has been employed by the Company for over 25 years and is a Chartered Chemist and member of the Royal Society of Chemistry. Sarah Gavey is the assistant manager and has been with the Company for over 16 years and the laboratory technician is Nora Treanor, who has a wealth of experience from her previous roles in agriculture, the dairy and other laboratories.

The three samplers of the department, Keith Quemard, Bob Langford and Matthew Parkin have continued to provide an excellent service to the laboratory and when attending consumer queries.

Water Quality Laboratory

3 Raw Water Quality

The majority of water supplied by Jersey Water is derived from surface water resources, with streams across the Island either feeding directly into or pumped to 6 large storage reservoirs. A small volume of ground water is abstracted from the sand aquifer located in the southern part of St Ouen's Bay area.

For operational and monitoring purposes Jersey Water takes samples of water from streams and reservoirs. This enables our operational staff to select the most suitable waters to be taken for treatment.

Analysis is carried out for physical, bacteriological and chemical parameters. In 2009 our results showed that out of 4,554 analyses for herbicides and pesticides in the stream courses only 30 were above the 0.1 μg/l limit compared to 46 in 2008.

For operational and monitoring purposes Jersey Water takes samples of water from streams and reservoirs.

Queens Valley Reservoir

4 Treatment Works and Service Reservoir Performance

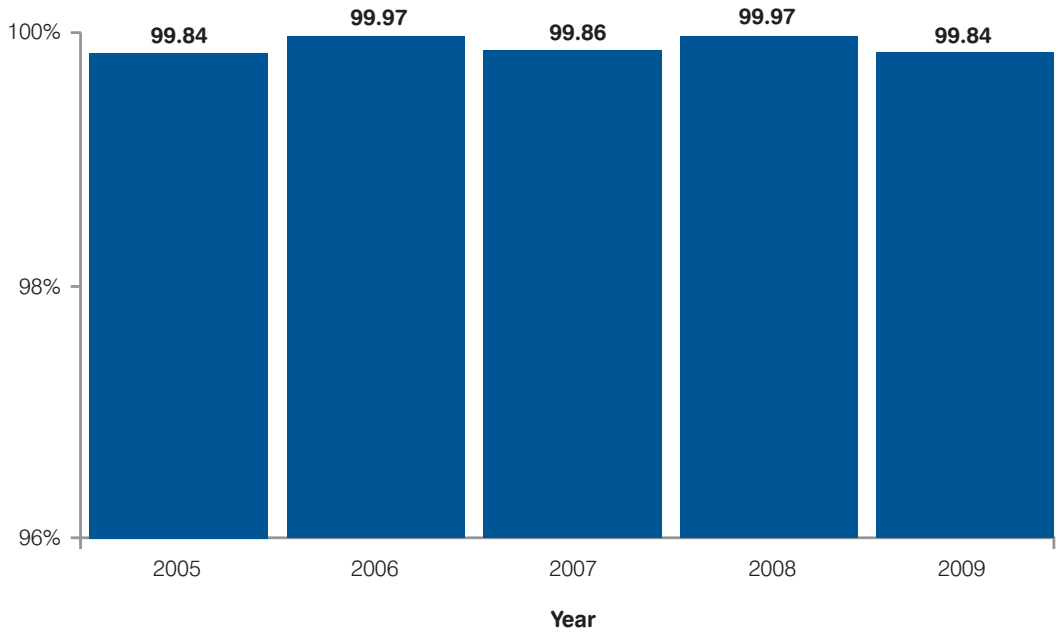
Treatment of the raw water is undertaken at two treatment works, located at Handois, St Lawrence and Augrès, Trinity. Both these works have identical treatment processes, which include chemically assisted clarification, followed by filtration using a combination of sand and anthracite.


Handois Treatment Works

Disinfection of the treated water ensures that any remaining bacteria present in the water are killed before it passes into the distribution network and to customers premises. A combination of chlorine and ammonia is used to effect the disinfection process and a relatively long retention time in holding tanks is allowed to optimise the process, which is also time dependant. The amount of chlorine and ammonia added to the treated water is very small and is continuously monitored to ensure levels are within acceptable aesthetic levels. The disinfection process also ensures that the highest bacteriological standards are maintained up to the customers tap.

There were 30 non-compliant analyses detected in 2009, out of the 18,477 analyses taken for compliance purposes, giving a percentage compliance of 99.84%. The following table shows the percentage compliance in treated water for 2009 and the previous four years.

Percentage Compliance



4 Treatment Works and Service Reservoir Performance - continued

The water quality regulations require two types of monitoring to be undertaken, these are designated as "check" and "audit" monitoring. Check monitoring is carried out on a frequent basis to ensure the treatment processes are operating as expected and the water in the distribution system is of an acceptable standard, whereas the audit monitoring is used to investigate the quality of water more thoroughly.

The 2009 results of the check monitoring of treated water leaving the treatment works, their respective Maximum Allowable Concentrations and compliance levels are shown in the following tables. The results from the audit monitoring programme can be found in the appendix.

Check Monitoring: Handois WTW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	313	100
Coliform bacteria	0 per 100ml	0	0	0	313	100
Colony counts	No abnormal change	No abnormal change			313	100
Nitrite	0.1 mg NO_2/l	<0.003	0.004	0.007	104	100
Residual disinfectant	No value mg Cl_2/l	0.40	0.56	0.72	313	
Turbidity	4 NTU	0.16	0.27	0.50	251	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μS/cm at 20˚C	414	561	670	52	100

Check Monitoring: Augrès WTW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	313	100
Coliform bacteria	0 per 100ml	0	0	0	313	100
Colony counts	No abnormal change	No abnormal change			313	100
Nitrite	0.1 mg NO_2/l	<0.003	0.003	0.006	104	100
Residual disinfectant	No value mg Cl_2/l	0.36	0.43	0.54	313	
Turbidity	4 NTU	0.14	0.24	0.53	251	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μS/cm at 20˚C	376	558	667	52	100

4 Treatment Works and Service Reservoir Performance - continued

In order to ensure adequate treated water is available to meet peak demand periods and exceptional summer time demand, treated water storage reservoirs are provided within the distribution system. The total storage capacity of the reservoirs is 18 ML, which just below the average daily demand of 20 ML. Jersey Water has two service reservoirs, strategically located on high ground at Westmount Road, St Helier and Les Platons, Trinity.

The 2009 results of the check monitoring of treated water leaving the water storage reservoirs, their respective Maximum Allowable Concentrations and compliance levels are shown in the following tables. The results from the audit monitoring programme can be found in the appendix.

Check Monitoring: Les Platons Service Reservoir, East Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	313	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	0	313	100
Colony counts	No abnormal change	No abnormal change			313	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μS/cm at 20˚C	414	561	667	52	100

Check Monitoring: Les Platons Service Reservoir, West Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	313	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	0	313	100
Colony counts	No abnormal change	No abnormal change			313	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μS/cm at 20˚C	413	558	666	52	100

Check Monitoring: Westmount Service Reservoir

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	313	100
Coliform bacteria	0 per 100ml (95% of samples)	0	0	3	313	99
Colony counts	No abnormal change	No abnormal change			313	100
Clostridium perfringens	0 per 100ml	0	0	0	52	100
Conductivity	2500 μS/cm at 20˚C	390	558	662	52	100

5 Water Quality in the Distribution System

Sampling of water throughout the distribution network is undertaken in accordance with a programme to ensure the water we supply meets physical, bacteriological and chemical standards.

During 2009, 1,341 samples of water were taken and the following tables show the results of the check and audit monitoring programme together with the compliance levels.

Check Monitoring: Supply Zone

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
E.coli	0 per 100ml	0	0	0	720	100
Coliform bacteria	0 per 100ml	0	0	1	720	99
Residual disinfectant	No value (mg Cl_2/l)	<0.02	0.12	0.58	621	
Aluminium	200 µg Al/l	3	25	148	100	100
Ammonium	0.50 mg NH4/l	<0.04	0.04	0.28	100	100
Clostridium perfringens	0 per 100ml	0	0	0	100	100
Colony counts	No abnormal change	No abnormal change			621	100
Colour	20 mg/l Pt/Co	<0.69	1.86	13.9	100	100
Conductivity	2500 µS/cm at 20˚C	415	566	686	100	100
Hydrogen ion	10.0 pH value 6.5 (min)	7.42	7.76	8.24	100	100
Iron	200 µg Fe/l	<3	18	128	100	100
Manganese	50 µg Mn/l	<0.7	4.6	38.7	100	100
Nitrate	50 mg NO_3/l	24.3	41.8	59.8	100	77
Nitrite	0.5 mg NO_2/l	<0.013	0.019	0.118	100	100
Odour	3 at 25˚C Dilution number	1	1	1	100	100
Taste	3 at 25˚C Dilution number	1	1	2	99	100
Turbidity	4 NTU	0.08	0.16	0.92	100	100

5 Water Quality in the Distribution System - continued

Audit Monitoring: Supply Zone

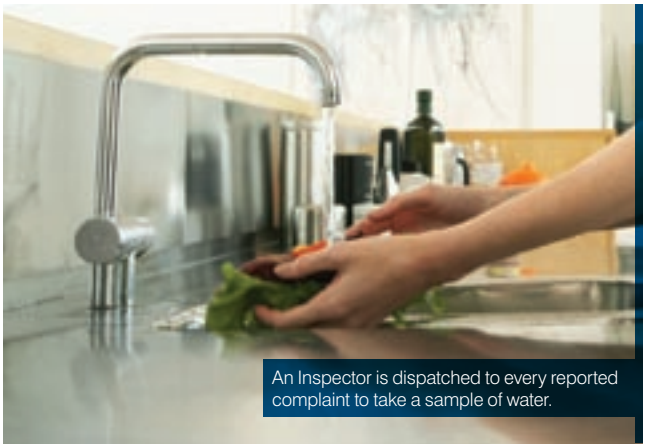
Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Antimony	5.0 µg Sb/l	0.14	0.27	0.36	12	100
Arsenic	10 µg As/l	0.37	0.52	0.86	12	100
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	12	100
Benzo(a)pyrene	0.010 µg/l	<0.001	<0.001	<0.001	12	100
Boron	1.0 mg B/l	0.060	0.074	0.110	12	100
Cadmium	5.0 µg Cd/l	<0.5	<0.5	<0.5	12	100
Chromium	50 µg Cr/l	0.17	0.35	0.75	12	100
Copper	2.0 mg Cu/l	0.002	0.009	0.032	12	100
Cyanide	50 µg CN/l	<1.0	1.9	5.0	12	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	12	100
Enterococci	0 per 100ml	0	0	0	12	100
Fluoride	1.5 mg F/l	<0.050	0.060	0.070	12	100
Lead	25 µg Pb/l [1]	<0.5	0.6	6.8	12	100
Mercury	1.0 µg Hg/l	<0.002	<0.002	0.003	12	100
Nickel	20 µg Ni/l	1.10	1.49	1.90	12	100
Diuron [2]	0.1 µg/l	<0.005	<0.005	0.005	12	100
Hexachlorocyclohexane Alpha [2]	0.1 µg/l	<0.010	<0.010	0.020	12	100
Metaldehyde [2]	0.1 µg/l	<0.025	<0.025	0.027	9	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.027	12	100
Polycyclic aromatic hydrocarbons	0.10 µg/l	<0.010	<0.010	<0.010	12	100
Selenium	10 µg Se/l	0.5	0.9	1.3	12	100
Sodium	200 mg Na/l	42.5	51.7	58.1	12	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	12	100
Tetrachloromethane	3 µg/l	<0.1	<0.1	<0.1	12	100
Trihalomethanes	100 µg/l	6.0	11.5	18.8	12	100
Chloride	250 mg Cl/l	60.2	65.5	70.2	12	100
Sulphate	250 mg SO_4/l	82.3	98.0	114.0	12	100
Total Organic Carbon	No abnormal change	1.61	2.23	4.21	12	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	12	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	0.032	12	100
Gross beta	1.0 Bq/l	0.18	0.21	0.24	12	100

[1] The value of 25 µg Pb/l is valid until immediately before 25th December 2013, reducing to 10 µg Pb/l on and after 25th December 2013.
[2] Detected pesticide - 81 other pesticides analysed for and not detected.

6 Water Quality Complaints

During 2009 we received 116 complaints and queries from customers relating to water quality. An Inspector is dispatched to every reported complaint to take a sample of water and make an on the spot assessment of the customer's complaint. Samples of water taken from customers taps are, where appropriate, given a full physical, bacteriological and chemical analysis and the results are sent to the customer, with a narrative explaining the results.

The following table shows a breakdown of the type of complaint or query received and the analytical compliance level. Two samples proved positive for coliforms, both of which were negative on re-sampling.



An Inspector is dispatched to every reported complaint to take a sample of water.

Type of query	No	Bacteriological compliance %
Discoloured water	70	97
Taste/Odour	27	100
Air in supply	6	100
Illness	2	100
Other	11	100
Total	**116**	**98**

The majority of complaints are due to discolouration of water, resulting from old corroded steel or cast iron pipes, some of which are privately owned and not the responsibility of Jersey Water.

An extensive programme of replacing old pipe work and service connections within the distribution system is in progress, unfortunately the work required in this area does disrupt water supplies and may cause discolouration of water for very small periods.
In 2009, some 1.8 km of treated water mains were replaced with pipe work made of modern lined materials. Customers are always advised in advance of the planned works to be carried out, which results in improvements to the infrastructure supplying them with water and we are grateful for their cooperation

The Planning & Environment department are responsible for the administration of the Water (Jersey) Law 1972 and their officers make quarterly inspections of analytical results of samples derived from customer water quality complaints.

An extensive programme of replacing old pipe work and service connections within the distribution system is in progress.

7 New and Replacement Water Mains

When new and replacement treated water mains are laid, a rigorous programme is undertaken to ensure that they are sterilised before being brought into service. Disinfection and flushing of the main is undertaken, followed by a programme of sampling and analysis of water within the pipes. The sampling programme requires three samples to be taken, with each sample taken at least 24 hours apart, with all three samples being subject to a full physical and bacteriological analysis to ensure the water main is sterile and fit for service.

In 2009, some 135 samples were taken from new and replacement treated water mains.

Replacing a service water main in Green Road, St Clement.

8 Appendices

Appendix A

Audit Monitoring: Handois TW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.07	<0.07	<0.07	10	100
Boron	1.0 mg B/l	0.060	0.079	0.090	10	100
Bromate	10 µg BrO_3/l	<0.2	<0.2	<0.2	10	100
Cyanide	50 µg CN/l	<1	3.4	10.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	<0.05	0.055	0.070	10	100
Mercury	1.0 µg Hg/l	<0.002	0.007	0.051	10	100
Linuron [1]	0.1 µg/l	<0.004	<0.004	0.004	35	100
Diuron [1]	0.1 µg/l	<0.005	<0.005	0.010	35	100
Mecoprop [1]	0.1 µg/l	<0.01	<0.01	0.012	35	100
Propiconazole [1]	0.1 µg/l	<0.004	<0.004	0.004	34	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.012	35	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	0.2	10	100
Tetrachloromethane	3 µg/l	<0.07	<0.07	<0.07	10	100
Chloride	250 mg Cl/l	62.1	64.8	68.2	10	100
Sulphate	250 mg SO_4/l	84.6	96.0	107.0	10	100
Total Organic Carbon	No abnormal change	1.76	2.35	3.86	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	0.034	10	100
Gross beta	1.0 Bq/l	0.19	0.21	0.24	10	100

[1] Detected pesticide - 80 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix B

Audit Monitoring: Augrés TW

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.050	0.079	0.100	10	100
Bromate	10 µg BrO_3/l	<0.2	<0.2	0.7	10	100
Cyanide	50 µg CN/l	<1	2.6	4.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	<0.05	<0.05	0.050	10	100
Mercury	1.0 µg Hg/l	<0.002	<0.002	0.002	10	100
Linuron [1]	0.1 µg/l	<0.004	<0.004	0.006	35	100
Carbetamide [1]	0.1 µg/l	<0.005	<0.005	0.005	35	100
M.C.P.A. [1]	0.1 µg/l	<0.009	<0.009	0.013	35	100
2,4-D [1]	0.1 µg/l	<0.011	<0.011	0.021	35	100
Mecoprop [1]	0.1 µg/l	<0.010	<0.010	0.011	35	100
Cyanazine [1]	0.1 µg/l	<0.007	<0.007	0.009	35	100
Propiconazole [1]	0.1 µg/l	<0.004	<0.004	0.004	35	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.033	35	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	10	100
Tetrachloromethane	3 µg/l	<0.1	<0.1	0.16	10	100
Chloride	250 mg Cl/l	54.3	59.5	64.8	10	100
Sulphate	250 mg SO_4/l	83.2	102.1	114.0	10	100
Total Organic Carbon	No abnormal change	1.63	2.06	3.22	9	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	0.03	10	100
Gross beta	1.0 Bq/l	0.02	0.21	0.26	10	100

[1] Detected pesticide - 77 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix C

Audit Monitoring: Les Platons Service Reservoir, East Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.060	0.079	0.090	10	100
Bromate	10 µg BrO_3/l	<1.0	<1.0	<1.0	10	100
Cyanide	50 µg CN/l	1.0	3.8	12.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Fluoride	1.5 mg F/l	0.06	0.06	0.07	10	100
Mercury	1.0 µg Hg/l	<0.002	<0.002	0.005	10	100
Diuron [1]	0.1 µg/l	<0.005	<0.005	0.008	10	100
Cyanazine [1]	0.1 µg/l	<0.007	<0.007	0.010	10	100
Pesticides total	0.5 µg/l	<0.010	<0.010	0.010	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	0.11	10	100
Tetrachloromethane	3 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	60.0	65.2	69.2	10	100
Sulphate	250 mg SO_4/l	84.4	97.1	109.0	10	100
Total Organic Carbon	No abnormal change	0.68	2.08	4.46	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	<0.03	10	100
Gross beta	1.0 Bq/l	0.18	0.20	0.23	10	100

[1] Detected pesticide - 82 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix D

Audit Monitoring: Les Platons Service Reservoir, West Compartment

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.060	0.076	0.100	10	100
Bromate	10 µg BrO_3/l	<0.2	<0.2	0.5	10	100
Cyanide	50 µg CN/l	<1	2.9	6.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	10	100
Fluoride	1.5 mg F/l	0.05	0.07	0.08	10	100
Mercury	1.0 µg Hg/l	<0.002	0.003	0.020	10	100
Diuron [1]	0.1 µg/l	<0.005	<0.005	0.005	10	100
Pesticides total	0.5 µg/l	<0.010	<0.010	<0.010	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	10	100
Tetrachloromethane	3 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	58.9	64.8	69.6	10	100
Sulphate	250 mg SO_4/l	86.7	98.0	109.0	10	100
Total Organic Carbon	No abnormal change	1.63	2.27	3.89	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	0.049	10	100
Gross beta	1.0 Bq/l	0.15	0.21	0.24	10	100

[1] Detected pesticide - 83 other pesticides analysed for and not detected.

8 Appendices - continued

Appendix E

Audit Monitoring: Westmount Service Reservoir

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	No. of samples	% compliance
Benzene	1.0 µg/l	<0.06	<0.06	<0.06	10	100
Boron	1.0 mg B/l	0.070	0.082	0.110	10	100
Bromate	10 µg BrO_3/l	<1.0	<1.0	<1.0	10	100
Cyanide	50 µg CN/l	<1	1.9	4.0	10	100
1,2 dichloroethane	3.0 µg/l	<0.1	<0.1	<0.1	10	100
Fluoride	1.5 mg F/l	<0.05	<0.05	0.06	10	100
Mercury	1.0 µg Hg/l	<0.002	<0.002	0.003	10	100
Linuron [1]	0.1 µg/l	<0.004	<0.004	0.004	10	100
Pesticides total	0.5 µg/l	<0.010	<0.010	<0.010	10	100
Trichloroethene and Tetrachloroethene	10 µg/l	<0.1	<0.1	<0.1	10	100
Tetrachloromethane	3 µg/l	<0.1	<0.1	<0.1	10	100
Chloride	250 mg Cl/l	59.8	63.4	67.8	10	100
Sulphate	250 mg SO_4/l	83.6	99.3	109.0	10	100
Total Organic Carbon	No abnormal change	1.69	1.90	2.26	10	100
Tritium	100 Bq/l	<10.0	<10.0	<10.0	10	100
Gross alpha	0.1 Bq/l	<0.03	<0.03	0.042	10	100
Gross beta	1.0 Bq/l	0.19	0.23	0.26	10	100

[1] Detected pesticide - 83 other pesticides analysed for and not detected.

Mulcaster House, Westmount Road,
St. Helier, Jersey, JE1 1DG

Telephone: 01534 707300
Facsimile: 01534 707400

Email: info@jerseywater.je
Website: www.jerseywater.je

Jersey Water is the trading name of
The Jersey New Waterworks Company Limited.