

TABLE 2. 2010 TREATED WATER QUALITY BELOW JAPAN GULCH PLANT

PARAMETER		2010 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2001-2010)			
Parameter	Units of	Median	Samples	Range		≤ = Less than or equal to	Ten Year	Samples	Range	Sampling
Name	Measure	Value	Analyzed	Min.	Max.		Median	Analyzed	Min.-Max.	Frequency
mg/L = parts per million ug/L = parts per billion ng/L = parts per trillion										
Physical Parameters (< means less than instrument can detect)										
Alkalinity, Total	mg/L	13.8	12	11.7	16.0		13.8	219	6.7 - 16.1	12/yr
Carbon, Dissolved Organic	mg/L	2.16	11	1.82	2.30		2.4	117	1.7 - 6.0	12/yr
Carbon, Total Organic	mg/L	2.24	11	1.83	2.72	Guideline Archived	2.4	120	1.7 - 9.5	12/yr
Colour, True	TCU	4.6	54	2.0	9.9	≤ 15 AO	5.2	575	1.4 - 14	52/yr
Conductivity @ 25 C	uS/cm	43.8	51	42.1	47.8		43.8	518	31.6 - 48.9	52/yr
Hardness as CaCO ₃	mg/L	17.4	18	16.2	19.0	No Guideline Required	17.2	144	9.5 - 30.7	12/yr
Odour	Flavour Profile	Trace	248	Odour Free	Moderate	Inoffensive	Weak	2,468	Odour free - Strong	250/yr
pH	pH units	7.04	51	6.55	7.28	6.5 - 8.5 AO	7.11	516	6.55 - 7.52	52/yr
Taste	Flavour Profile	Trace	248	Taste Free	Moderate	Inoffensive	Weak	2,461	Taste free - Strong	250/yr
Total Dissolved Solids	mg/L	27.8	12	26.0	30.5	≤500 AO	26	235	13.2 - 33	12/yr
Total Suspended Solids	mg/L	0.3	12	<0.2	2		0.5	235	<0.03 - 10	12/yr
Total Solids	mg/L	29.6	12	26.0	31.0		27	234	14 - 41	12/yr
Turbidity, Grab Samples	NTU	0.34	245	0.20	0.95	1 MAC and ≤ 5 AO	0.38	2,403	0.16 - 38.1	250/yr
Water Temperature, Grab Samples	degrees C	9.8	248	4.7	20.0	≤ 15 AO	9.8	2,494	2.7 - 22.1	250/yr
Non-Metallic Inorganic Chemicals (< means less than instrument can detect)										
Ammonia, Total	ug/L as N	140	11	80	266	No Guideline Required	165	120	<0.61 - 581	12/yr
Bromide	mg/L as Br	0.002	11	0.0001	0.015		0.003	94	<0.0001 - 0.028	12/yr
Chloride	mg/L as Cl	3.43	2	2.55	4.3	≤ 250 AO	3.82	20	1.64 - 6.57	2/yr
Cyanide	mg/L as Cn	<0.002	2			0.2 MAC	<0.015	21	<0.002 - <0.015	2/yr
Fluoride	mg/L as F	0.005	2	<0.003	0.01	1.5 MAC	0.008	20	<0.003 - 0.13	2/yr
Nitrate, Total	ug/L as N	25.8	11	5.1	54.6	10000 MAC	19.7	114	<0.3 - 105	12/yr
Nitrite, Total	ug/L as N	<0.3	11			3.2 MAC	0.30	112	<0.16 - 3.6	12/yr
Nitrogen, Total	ug/L as N	306	11	177	410		275	112	135 - 534	12/yr
Phosphate, Ortho, Dissolved	ug/L as P	0.43	11	<0.08	1.5		0.90	114	<0.04 - 2.93	12/yr
Phosphate, Total, Dissolved	ug/L as P	2.95	11	2.05	4.0		3.24	112	<1.15 - 8.99	12/yr
Phosphate, Total	ug/L as P	4.71	10	3.38	6.90		5.07	113	2.17 - 10.7	12/yr
Silica	mg/L as SiO ₂	3.31	9	0.09	4.30		3.74	54	0.086 - 5.9	12/yr
Silicon	mg/L as Si	1.84	10	1.50	2.38		1.83	72	1.09 - 19.3	12/yr
Sulphate	mg/L as SO ₄	2.07	11	1.71	3.38	≤ 500 AO	1.61	114	<0.86 - 3.97	12/yr
Sulphide	mg/L as H ₂ S	<0.007	2			≤ 0.05 AO	<0.015	22	<0.005 - <0.062	2/yr
Sulphite	mg/L as SO ₃	Not analyzed in 2010					<0.002	1		Irregular
Sulfur	mg/L as S	<3.0	10				0.6	87	<0.5 - 4.0	12/yr

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Name	Measure	Value	Analyzed	Min.	Max.		Median	Analyzed	Min.-Max.	Frequency	
mg/L = parts per million ug/L = parts per billion ng/L = parts per trillion											
Metallic Inorganic Chemicals (< means less than instrument can detect)											
Aluminum	mg/L as Al	0.019	10	0.01	0.053	0.1 AO and 0.2 Operational	0.020	92	<0.001 - 0.17	12/yr	
Antimony	mg/L as Sb	<0.0005	10			0.006 MAC	<0.001	93	<0.000005 - <0.06	12/yr	
Arsenic	mg/L as As	<0.0001	10	<0.0001	0.0002	0.01 MAC	<0.001	94	<0.00003 - <0.06	12/yr	
Barium	mg/L as Ba	0.004	10	0.004	0.005	1.0 MAC	0.004	95	<0.002 - 0.012	12/yr	
Beryllium	mg/L as Be	<0.0001	10				<0.0002	93	<0.0001 - <0.003	12/yr	
Bismuth	mg/L as Bi	<0.001	10				<0.05	86	<0.001 - 0.05	12/yr	
Boron	mg/L as B	<0.05	10	<0.05	0.05	5 MAC	0.008	95	<0.004 - 0.24	12/yr	
Cadmium	mg/L as Cd	<0.00001	10	<0.00001	0.0003	0.005 MAC	<0.00003	93	<0.00001 - <1.0	12/yr	
Calcium	mg/L as Ca	5.08	10	4.64	5.46	No Guideline Required	5.00	95	2.84 - 8.98	12/yr	
Cerium	ug/L as Ce	Not analyzed in 2010					0.005	2	0.003 - 0.01	Irregular	
Cesium	ug/L as Cs	Not analyzed in 2010					<0.029	2	<0.028 - <0.03	Irregular	
Chromium	mg/L as Cr	<0.001	10			0.05 MAC	<0.001	92	<0.0003 - 0.019	12/yr	
Cobalt	mg/L as Co	<0.0005	10				<0.0005	93	<0.00002 - 0.02	12/yr	
Copper	mg/L as Cu	0.021	10	0.002	0.033	≤ 1.0 AO	0.013	92	<0.002 - 0.044	12/yr	
Dysprosium	ug/L as Dy	Not analyzed in 2010					0.005	2	0.0006 - <0.01	Irregular	
Erbium	ug/L as Er	Not analyzed in 2010					<0.0006	2		Irregular	
Europium	ug/L as Eu	Not analyzed in 2010					0.002	2	0.00001 - <0.003	Irregular	
Gallium	ug/L as Ga	Not analyzed in 2010					<0.05	2		Irregular	
Gadolinium	ug/L as Gd	Not analyzed in 2010					<0.002	2		Irregular	
Germanium	ug/L as Ge	Not analyzed in 2010					<0.001	2		Irregular	
Gold	mg/L as Au	Not analyzed in 2010					<0.04	8	<0.0000001 - <0.04	Irregular	
Hafnium	ug/L as Hf	Not analyzed in 2010					<0.005	2		Irregular	
Holmium	ug/L as Ho	Not analyzed in 2010					0.002	2	0.0009 - <0.003	Irregular	
Iron	mg/L as Fe	0.031	10	0.016	0.174	≤ 0.3 AO	0.034	95	0.014 - 0.174	12/yr	
Lanthanum	mg/L as La	Not analyzed in 2010					<0.02	8	<0.000001 - <0.02	Irregular	
Lead	ug/L as Pb	0.4	10	<0.2	0.5	10 MAC	<0.5	93	0.03 - <60	12/yr	
Lithium	ug/L as Li	<5.0	10				<5	50	<0.06 - <5	Irregular	
Lutetium	ug/L as Lu	Not analyzed in 2010					0.07	2	0.0006 - <0.14	Irregular	
Magnesium	mg/L as Mg	1.20	10	1.07	1.30	No Guideline Required	1.18	95	0.59 - 2.0	12/yr	
Manganese	mg/L as Mn	0.004	10	<0.003	0.014	≤ 0.05 AO	0.007	95	<0.003 - 0.035	12/yr	
Mercury, Methyl	ng/L as Hg	Not analyzed in 2010					0.020	50	<0.01 - 0.065	Special	
Mercury, Total	ug/L as Hg	<0.02	10	<0.02	0.04	1.0 MAC	0.001	95	0.00005 - 0.04	12/yr	
Molybdenum	mg/L as Mo	<0.001	10				<0.005	95	<0.00003 - 0.026	12/yr	
Neodymium	ug/L as Nd	Not analyzed in 2010					<0.004	2		Irregular	
Nickel	mg/L as Ni	<0.001	10	<0.001	0.003		<0.008	95	0.0002 - <0.05	12/yr	
Phosphorus	mg/L as P	Not analyzed in 2010					<0.1	65	0.02 - 0.2	12/yr	
Potassium	mg/L as K	0.2	10	0.16	0.19	Guideline Under Review	1.0	98	0.006 - 1.05	12/yr	
Praseodymium	ug/L as Pr	Not analyzed in 2010					0.003	2	0.002 - 0.004	Irregular	
Rubidium	ug/L as Rb	Not analyzed in 2010					0.21	2	0.21 - 0.215	Irregular	
Samarium	ug/L as Sm	Not analyzed in 2010					<0.006	2	<0.003 - <0.01	Irregular	
Scandium	mg/L as Sc	Not analyzed in 2010					<0.05	8	0.001 - <0.05	Irregular	

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mg/L = parts per million	ug/L = parts per billion	ng/L = parts per trillion								
Selenium	mg/L as Se	<0.0001	10			0.01 MAC	<0.001	97	<0.00005 - <0.5	12/yr
Silver	mg/L as Ag	<0.00002	10			No Guideline Required	<0.001	93	0.00001 - <1.0	12/yr
Sodium	mg/L as Na	1.63	10	1.50	2.36	≤ 200 AO	1.7	98	<0.05 - 2.8	12/yr
Strontium	mg/L as Sr	0.016	10	0.014	0.017		0.016	95	0.011 - 0.028	12/yr
Tantalum	ug/L as Ta	Not analyzed in 2010					<0.71	2		Irregular
Tellurium	mg/L as Te	Not analyzed in 2010					<0.05	23		Irregular
Thallium	ug/L as Tl	<0.05	10				<0.1	86	0.02 - <30	12/yr
Thorium	ug/L as Th	Not analyzed in 2010					<0.001	2		Irregular
Thulium	ug/L as Tm	Not analyzed in 2010					<0.0001	2		Irregular
Tin	mg/L as Sn	<0.005	10				<0.02	89	<0.00002 - <0.06	12/yr
Titanium	mg/L as Ti	<0.005	10				<0.003	95	0.0007 - <0.021	12/yr
Tungsten	mg/L as W	Not analyzed in 2010					<0.05	8	<0.000005 - <0.05	Irregular
Uranium	ug/L as U	<0.10	10			20 MAC	<0.1	57	<0.005 - <0.1	12/yr
Vanadium	mg/L as V	<0.005	10				<0.005	95	0.0002 - <0.01	12/yr
Yttrium	ug/L as Y	Not analyzed in 2010					0.022	2	0.005 - 0.04	Irregular
Ytterbium	ug/L as Yb	Not analyzed in 2010					0.0007	2	0.0004 - <0.001	Irregular
Zinc	mg/L as Zn	<0.005	10	<0.005	0.01	≤5.0 AO	<0.005	95	0.0006 - 0.049	12/yr
Zirconium	ug/L as Zr	<0.5	10				<5.0	88	0.0004 - <5	12/yr

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Microbial Parameters (< means less than method or instrument can detect)										
Coliform Bacteria										
Coliforms, Total	CFU/100 mL	0	248	0	2	0 MAC	0	2,500	0 - 16	250/yr
<i>E. coli</i>	CFU/100 mL	0	248			0 MAC	0	1,188		250/yr
Coliforms, Background	CFU/100 mL	Discontinued in July 2006				No Guideline Required	0	1,383	0 - 3,200	Discontinued
Heterotrophic Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	10	245	0	7,800	No Guideline Required	10	2,454	0 - 9,400	250/yr
Hetero. Plate Count, 35C (2 day)	CFU/1 mL	Discontinued in 2005					1	979	0 - 300	Discontinued
<i>Aeromonas</i> species	CFU/100 mL	0	243	0	20	No MAC Established	0	1,707	0 - 44	Special
Disinfectants (< means less than instrument can detect)										
Disinfectants										
Chlorine, Total Residual	mg/L as Cl ₂	1.30	253	0.73	1.52	3.0 MAC (chloramines)	1.23	2,562	0 - 1.79	250/yr
Dichloramine	mg/L as Cl ₂	0.11	242	<0.02	0.61		0.12	1,679	<0.01 - 1.09	250/yr
Monochloramine	mg/L as Cl ₂	1.13	244	<0.03	1.52		1.01	1,683	0.03 - 1.70	250/yr
Biological Toxins (< means less than instrument can detect)										
Cyanobacterial Toxins										
Anatoxin A	ug/L	Not analyzed in 2010					<0.16	9		Special
Microcystin-LR	ug/L	Not analyzed in 2010				1.5 MAC (Total Microcystins)	<0.16	10		Special
Other Microcystins	ug/L	Not analyzed in 2010					<0.16	10		Special

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Name	Measure	Value		Min.	Max.				Min.-Max.	
mg/L = parts per million ug/L = parts per billion ng/L = parts per trillion										
Disinfection By-Products (< means less than instrument can detect)										
Trihalomethanes (THMs)										
Bromodichloromethane (BDCM)	ug/L	0.7	5	0.6	1.5		1	70	<0.3 - 3.7	6/yr
Bromoform (BRFM)	ug/L	<0.1	5				0.6	70	<0.1 - <2.0	6/yr
Chloroform (CHLF)	ug/L	13.6	5	10.4	18.9		11.2	70	2.1 - 19.6	6/yr
Dibromochloromethane (DBCM)	ug/L	<0.1	5	<0.1	1.5		<0.5	70	<0.1 - 1.5	6/yr
Total Trihalomethanes (TTHM)	ug/L	15.8	5	11.0	19.9	100 MAC	12.2	70	2.1 - 21.9	6/yr
Haloacetic Acids (HAAs)										
Bromochloroacetic Acid (BCAA)	ug/L	0.96	4	0.89	1.21		0.43	56	0.21 - 1.21	6/yr
Bromodichloroacetic Acid (BDCAA)	ug/L	<0.2	4				<0.2	56	<0.2 - <1.0	6/yr
Chlorodibromoacetic Acid (CDBAA)	ug/L	<0.5	4				<0.5	55	<0.5 - <2.0	6/yr
Dibromoacetic Acid* (DBAA)	ug/L	<0.2	4				<0.2	55	<0.2 - <1.0	6/yr
Dichloroacetic Acid* (DCAA)	ug/L	13.3	4	9.47	43.0		8.84	56	<1.0 - 43	6/yr
Monobromoacetic Acid* (MBAA)	ug/L	0.32	4	<0.2	2.2		<0.2	56	<0.2 - <2.2	6/yr
Monochloroacetic Acid* (MCAA)	ug/L	<0.5	4				<0.5	56	<0.5 - <2.0	6/yr
Tribromoacetic Acid (TBAA)	ug/L	<1.0	4				<1.0	55	<1.0 - <4.0	6/yr
Trichloroacetic Acid* (TCAA)	ug/L	8.1	4	2.7	22.0		4.74	56	<1.0 - 22	6/yr
Haloacetic Acids (*5 Total, HAA5)	ug/L	21.9	4	13.8	65	80 MAC	14.5	56	<1.0 - 65	6/yr
Haloacetic Acids (9 Total, HAA9)	ug/L	22.8	4	14.8	66		15.0	56	<4.0 - 66	6/yr
Other Disinfection By-Products										
1,1,1-Trichloro-2-propanone	ug/L	Not analyzed in 2010					0.8	4	<0.5 - 1.6	Special
1,1,-Dichloropropanone	ug/L	Not analyzed in 2010					1.1	4	0.9 - 1.2	Special
Bromate	ug/L	<0.1	2			100 MAC	<0.1	9	<0.03 - <1.5	2/yr
Bromochloroacetonitrile	ug/L	Not analyzed in 2010					<0.5	4		Special
Chloral Hydrate	ug/L	Not analyzed in 2010					0.9	3	<0.5 - 1.4	Special
Cyanogen Chloride	ug/L	Not analyzed in 2010					<0.5	3		Special
Chloropicrin	ug/L	Not analyzed in 2010					<0.5	4		Special
Dibromoacetonitrile	ug/L	Not analyzed in 2010					<0.5	4		Special
Dichloroacetonitrile	ug/L	Not analyzed in 2010					<0.5	4	<0.5 - 0.5	Special
N-nitrosodimethylamine (NDMA)	ug/L	Not analyzed in 2010					<0.002	2	<0.001 - <0.002	Special
Trichloroacetonitrile	ug/L	Not analyzed in 2010					0.55	5	<0.5 - 0.8	Special

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