DECOURCEY
Water Service Area
Annual Report
2009

Prepared by:

REGIONAL DISTRICT OF NANAIMO
Water Services Department

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1. Introduction

The following annual report describes the Decourcey Water Service Area and summarizes the water quality and production data from 2009. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, the Emergency Response Plan, and the Cross Connection Control Program.

This report is to be submitted to the Vancouver Island Health Authority by the Spring of 2010.

2. Decourcey Water Service Area

The Decourcey Water Service Area was established in 1998 in a rural area south of Nanaimo, and comprises two properties on Bissel Road and two properties on Pylades Drive. The water source for the Decourcey Water Service Area comes from one groundwater well located nearby. The water supply is stored in one reservoir and is chlorinated manually. A map of the Decourcey Water Service Area is provided in Appendix A for reference.

2.1 Groundwater Wells

One groundwater production well is present at 3284 Bissel Road, Cedar, B.C.

Well / Name	Well Depth	Wellhead Protection In-Place	Treated/Untreated with Chlorine
#1	61.0 m	Yes	Treated

2.2 Reservoirs

One steel reservoir is present at 3280 Bissel Road, and has a capacity of 136 m^3 (30,000 imperial gallons).

2.3 Distribution System

The water distribution system in Decourcey is comprised entirely of 150mm PVC watermains (0.7 km). Four fire hydrants are located in the water service area.

3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. The following table includes a summary of all testing:

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total coliforms, E.coli Temperature, pH, Conductivity Chlorine residual, Salinity Total Dissolved Solids
Health Dept. (Weekly, or as-required)	BC Centre for Disease Control	Total, Fecal coliforms
Monthly	North Island Labs	Chloride, Fluoride Iron, Manganese
Quarterly	North Island Labs	Tri-halomethanes
Annual Source Water Testing	North Island Labs	Complete potability testing of each well
Annual System Water Testing	North Island Labs	Complete potability testing of distribution system

4. Water Quality - Source Water and Distribution System

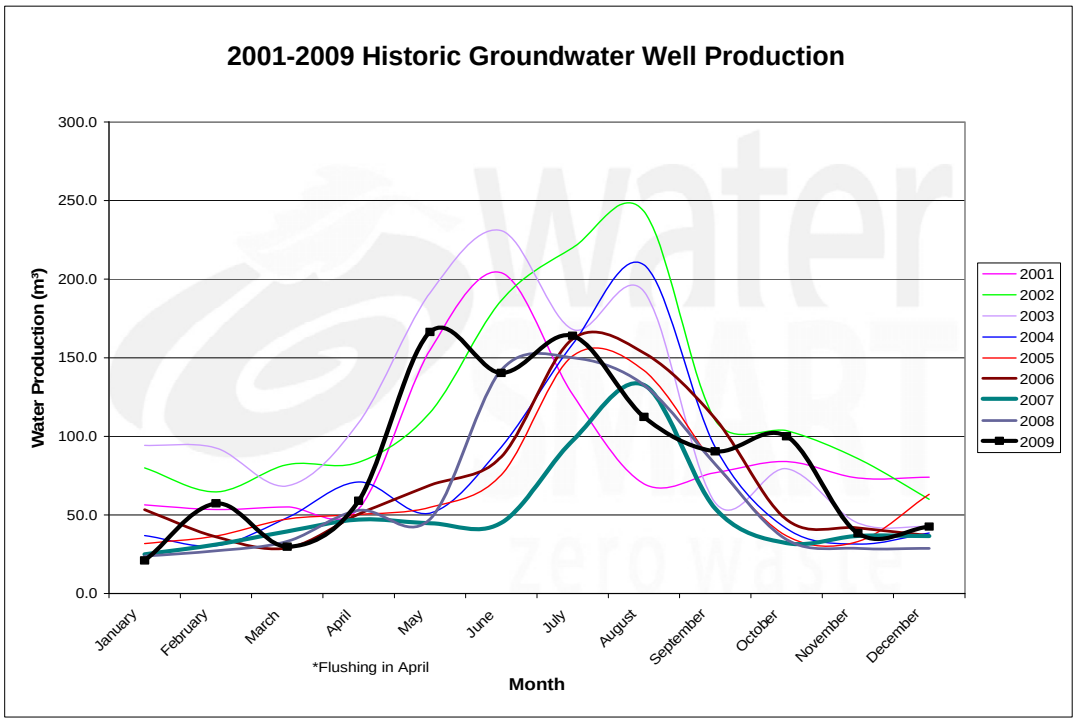
Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca in the WaterSmart section, under "Communities". Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

5. Water Quality Inquiries and Complaints

Very few complaints and inquiries were received from the Decourcey water service area, and were typically related to power outages.

6. Groundwater Production and Consumption

The monthly groundwater production in the Decourcey system for the past 9 years is shown in the chart below. Groundwater production in 2009 was average in comparison to previous years.



Consumption

In the Fall/Winter of 2009, the average usage per home in Decourcey was 0.35 cubic metres per day (77 imperial gallons). In the summer, the average water usage was 1.2 cubic metres per day (270 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 288 L/day (based on 2.4 people/household). This consumption is 16% less than the RDN system average of 345 L/day/capita for 2009.

7. Maintenance Program

A weekly pump station inspection is carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Watermains are flushed once annually in the Spring. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance) in the Fall.

Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Water Service Area Projects

8.1 2009 Completed Studies & Projects

- Completed roof and wall repairs at the Decourcey pumphouse;
- Completed annual B-service fire hydrant maintenance;
- Carried out a comprehensive water conservation campaign (Team WaterSmart);
- Updated and improved the RDN website at www.rdn.bc.ca;

- Updated the Emergency Response Plan;
- Considered Scada options for implementation;
- Utilized the Auto E-message service to notify member residents of water service disruptions and upcoming maintenance activities;
- Developed a low-flush toilet incentive;
- Maintained a high level of water quality;
- Maintained excellent customer complaint and service request response times;
- Continued quality control through regular testing and monitoring of our water systems; and
- Completed additional educational programs.

8.2 2010 Proposed Projects & Upgrades

- Drain and clean the Decourcey water storage reservoir; and
- Complete the Cross-Connection Control bylaws, and establish a procedure for reviewing commercial and industrial properties for water system risks.

9. Emergency Response Plan

The Emergency Response Plan (ERP) was reviewed and updated in 2009. A copy of the ERP is attached in Appendix C.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

In 2008, a review and comparison of successful cross-connection control programs in other small Water Service Areas nearby was undertaken. A database of commercial customers was set-up in order to keep track of the maintenance history of testable backflow prevention assemblies at each site. Three RDN Operations staff achieved Backflow Prevention Tester's certification.

The program in 2010 will include:

- A survey of existing and potential cross-connections,
- An audit of RDN-owned facilities in each water service area,
- The preparation of a draft bylaw to allow enforcement of the Cross Connection Control Program.

11. Closing

An annual report for the year 2010 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2011. Annual reports are also available on our website at www.rdn.bc.ca in the WaterSmart section, under "Communities".

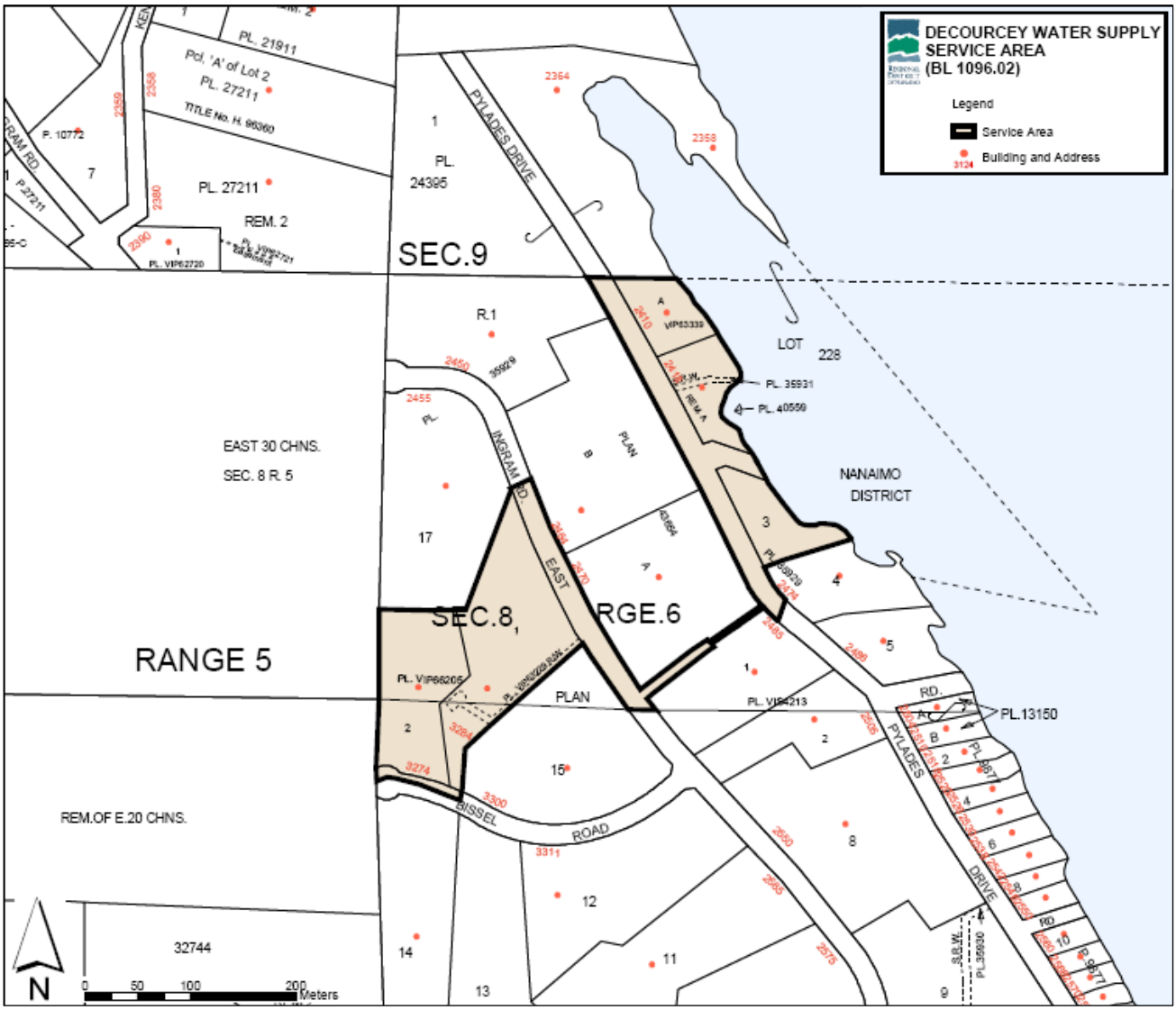
APPENIDX A

MAP OF DECOURCEY

WATER SERVICE AREA

DECOURCEY

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Jan-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
06-Jan	2418 Pylades Dr	0	0	0	0	4	6.9	0.02	289	0.3	605	0.09	0.012
13-Jan	2418 Pylades Dr			0	0	4	6.9	0.02	283	0.3	600		
20-Jan	2418 Pylades Dr			0	0	5	6.8	0.02	284	0.3	603		
27-Jan	*2418 Pylades Dr			0	0								
	Average	0	0	0	0	4.3	6.9	0.02	285.3	0.3	602.7	0.09	0.012
	Maximum	0	0	0	0	5	6.9	0.02	289	0.3	605	0.09	0.012
	Minimum	0	0	0	0	4	6.8	0.02	283	0.3	600	0.09	0.012

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

*** Sample not taken on Jan 27 due to frozen service line.**

Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Feb-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
03-Feb	2418 Pylades Dr	0	0	0	0	4	7	0.02	280	0.3	594	0.05	0
10-Feb	2418 Pylades Dr			0	0	5	6.9	0.03	270	0.3	574		
17-Feb	2418 Pylades Dr			0	0	4	6.9	0.03	278	0.3	601		
24-Feb	2418 Pylades Dr			0	0	5	7	0.03	272	0.3	578		
	Average	0	0	0	0	4.5	7.0	0.03	275.0	0.3	586.8	0.05	0
	Maximum	0	0	0	0	5	7	0.03	280	0.3	601	0.05	0
	Minimum	0	0	0	0	4	6.9	0.02	270	0.3	574	0.05	0

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Comments:

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Mar-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
03-Mar	2418 Pylades Dr	0	0	0	0	6	6.9	0.02	273	0.3	575	0.04	0
10-Mar	2418 Pylades Dr			0	0	5	6.9	0.02	266	0.3	577		
18-Mar	2418 Pylades Dr			0	0	5	6.9	0.02	275	0.3	585		
25-Mar	2418 Pylades Dr			0	0	6	6.9	0.02	274	0.3	571		
	Average	0	0	0	0	5.5	6.9	0.02	272.0	0.3	577.0	0.04	0
	Maximum	0	0	0	0	6	6.9	0.02	275	0.3	585	0.04	0
	Minimum	0	0	0	0	5	6.9	0.02	266	0.3	571	0.04	0

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Apr-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
15-Apr	2418 Pylades Dr	0	0										
22-Apr	2418 Pylades Dr			0	0	9	6.9	0.01	268	0.3	560		
29-Apr	2418 Pylades Dr					10	6.9	0.02	266	0.3	554		
	Average	0	0	0	0	9.5	6.9	0.02	267.0	0.3	557.0	#DIV/0!	#DIV/0!
	Maximum	0	0	0	0	10	6.9	0.02	268	0.3	560	0	0
	Minimum	0	0	0	0	9	6.9	0.01	266	0.3	554	0	0

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date May-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o}C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-May	2418 Pylades Dr	0	0	0	0	10	6.9	0.02	265	0.3	558	0.06	0.016
12-May	2418 Pylades Dr			0	0	11	6.9	0.02	267	0.3	564		
27-May	2418 Pylades Dr			0	0	12	6.9	0.03	286	0.3	596		
	Average	0	0	0	0	11.0	6.9	0.02	272.7	0.3	572.7	0.06	0.016
	Maximum	0	0	0	0	12	6.9	0.03	286	0.3	596	0.06	0.016
	Minimum	0	0	0	0	10	6.9	0.02	265	0.3	558	0.06	0.016

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Jun-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Jun	2418 Pylades Dr	0	0	0	0	14	6.9	0.03	296	0.3	617	0.07	0.017
09-Jun	2418 Pylades Dr			0	0	15	6.9	0.01	308	0.3	639		
	Average	0	0	0	0	14.5	6.9	0.02	302.0	0.3	628.0	0.07	0.017
	Maximum	0	0	0	0	15	6.9	0.03	308	0.3	639	0.07	0.017
	Minimum	0	0	0	0	14	6.9	0.01	296	0.3	617	0.07	0.017

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Jul-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
07-Jul	2418 Pylades Dr			0	0	16	6.8	0.03	320	0.3	671	0.04	0.051
15-Jul	2418 Pylades Dr	0	0	0	0	17	6.9	0.03	324	0.3	675		
	Average	0	0	0	0	16.5	6.9	0.03	322.0	0.3	673.0	0.04	0.051
	Maximum	0	0	0	0	17	6.9	0.03	324	0.3	675	0.04	0.051
	Minimum	0	0	0	0	16	6.8	0.03	320	0.3	671	0.04	0.051

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Aug-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-Aug	2418 Pylades Dr	0	0	0	0	20	6.9	0.02	328	0.3	683	0.04	0
12-Aug	2418 Pylades Dr			0	0	19	6.8	0.01	336	0.3	700		
19-Aug	2418 Pylades Dr			0	0	18	7.1	0.05	330	0.3	369		
25-Aug	2418 Pylades Dr					18	6.9	0.02	335	0.3	699		
	Average	0	0	0	0	18.8	6.9	0.03	332.3	0.3	612.8	0.04	0
	Maximum	0	0	0	0	20	7.1	0.05	336	0.3	700	0.04	0
	Minimum	0	0	0	0	18	6.8	0.01	328	0.3	369	0.04	0

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Sep-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
01-Sep	2418 Pylades Dr	0	0				7	0.01	358	0.4	740		
09-Sep	2418 Pylades Dr					17	6.8	0.02	338	0.3	698	0	0.004
16-Sep	2418 Pylades					17	6.9	0.09	145	0.1	305		
22-Sep	2418 Pylades			0	0	16	6.9	0.01	353	0.4	734		
28-Sep	2418 Pylades			0	0	16	6.8	0.02	340	0.3	714		
	Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	17.0	6.8	0.02	338.0	0.3	698.0	0.00	0.004
	Maximum	0	0	0	0	17	6.8	0.02	338	0.3	698	0	0.004
	Minimum	0	0	0	0	17	6.8	0.02	338	0.3	698	0	0.004

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Oct-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-Oct	2418 Pylades Dr	0	0	0	0	14	7.1	0.03	329	0.3	682		
14-Oct	2418 Pylades Dr	0	1	0	0	13	6.9	0.01	335	0.3	698		0.013
20-Oct	2418 Pylades Dr			0	0		7	0.02	332	0.3	691		
28-Oct	2418 Pylades Dr			0	0	12	7	0.03	331	0.3	692		
	Average	0	0.5	0	0	13.0	7.0	0.02	331.8	0.3	690.8	#DIV/0!	0.013
	Maximum	0	1	0	0	14	7.1	0.03	335	0.3	698	0	0.013
	Minimum	0	0	0	0	12	6.9	0.01	329	0.3	682	0	0.013

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Nov-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
04-Nov	2418 Pylades Dr	0	0	0	0	12	6.9	0.02	334	0.3	694	0.03	0.02
10-Nov	2418 Pylades Dr			0	0	11	6.9	0.02	330	0.3	691		
17-Nov	2418 Pylades Dr			0	0	10	6.9	0.02	332	0.3	695		
24-Nov	2418 Pylades Dr			0	0	9	6.8	0.02	325	0.3	683		
	Average	0	0	0	0	10.5	6.9	0.02	330.3	0.3	690.8	0.03	0.02
	Maximum	0	0	0	0	12	6.9	0.02	334	0.3	695	0.03	0.02
	Minimum	0	0	0	0	9	6.8	0.02	325	0.3	683	0.03	0.02

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Regional District of Nanaimo - Utilities Department

Decourcey Water Analysis - Monthly Report

Date Dec-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Dec	2418 Pylades Dr	0	0	0	0	9	6.9	0.01	322	0.3	684	0.03	0.018
08-Dec	2418 Pylades Dr			0	0	7	7.1	0.02	326	0.3	697		
21-Dec	2418 Pylades Dr			0	0	6	7	0.02	316	0.3	674		
29-Dec	2418 Pylades Dr					7	7.2	0.02	322	0.3	673		
	Average	0	0	0	0	7.3	7.1	0.02	321.5	0.3	682.0	0.03	0.018
	Maximum	0	0	0	0	9	7.2	0.02	326	0.3	697	0.03	0.018
	Minimum	0	0	0	0	6	6.9	0.01	316	0.3	673	0.03	0.018

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REGIONAL DISTRICT OF NANAIMO

Decourcey Distribution Water Analysis Results

Location: 2418 Pylades Drive

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC=Interim Maximum Acceptable Concentration AO=Aesthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines

water SMART zero waste

Parameters	Water Quality Guidelines				1999	2000	2001	06-Mar 2002	23-Apr 2003	2004	20-Apr 2005	17-May 2006	22-May 2007	26-May 2008	11-May 2009	2010
	Units	CDWG	BCAWQG													
Color	CU	15	</=15	AO				2	3	7	<5	<5	10	<5	<5	
Conductivity	uS		700	MAC				521	527	529	543	569	563	584	592	
TDS	mg/L	500	</=500	AO				267	307	320	310	353	322	338	318	
Hardness (CaCO3)	mg/L	80-100	</=500	AO				**37.5**	**34.7**	**36**	**39**	**37**	**40**	**37**	**42**	
pH	pH units	6.5-8.5	6.5-8.5	AO				7.49	7.69	7.8	7.7	7.9	7.8	8.03	7.9	
Turbidity	NTU's	5	1	MAC				<.05	0.16	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	
Alkalinity	mg/L							199	227	200	210	210	200	190	190	
Chloride	mg/L	250	</=250	AO				33.04	33.4	28.2	35.4	38.6	41.9	47.6	55.8	
Fluoride	mg/L	1.5	1.5	MAC				0.19	0.15	<1	<1.0	1.8	<1	<1.0	<1.0	
Sulfate	mg/L	500	</=500	AO				28.98	23.6	32.6	20.5	22.3	20.8	19.6	20.3	
Nitrate	mg/L	10	10	MAC				0.03	0.05	<0.1	<0.1	0.04	<0.1	<0.1	0.1	
Nitrite	mg/L	1						<.006	<0.01	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	
T-Aluminum	mg/L		0.2	MAC				<.009	0.011	0.008	0.006	<0.005	<0.005	<0.05	<0.005	
T-Antimony	mg/L		0.006	MAC				<.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC				<.01	0.0003	0.0002	0.0007	0.0004	0.0003	0.002	0.0004	
T-Barium	mg/L	1.0	1	MAC				0.0126	0.013	0.009	0.02	0.031	0.019	0.02	0.02	
T-Boron	mg/L	5.0	5	MAC				0.019	0.153	0.144	0.14	0.12	0.121	0.1	0.176	
T-Cadmium	mg/L	0.005						<.0006	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0003	<0.00001	
T-Calcium	mg/L							11.7	10.8	11.5	12	11.8	12.4	11.5	13	
T-Chromium	mg/L	0.05	0.05	MAC				<.0009	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	<0.003	<0.0004	
T-Copper	mg/L	1.0	</=1	MAC				0.005	0.005	0.005	0.01	0.013	0.013	0.02	0.013	
T-Iron	mg/L	0.3	</=0.3	AO				0.026	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.03	
T-Lead	mg/L	0.01	0.01	MAC				0.004	0.0004	0.0003	0.0006	0.0006	0.0006	<0.0005	0.0004	
T-Lithium	mg/L														0.015	
T-Magnesium	mg/L		</=700	AO				2.02	1.9	1.8	2.1	1.9	2.2	2	2.37	
T-Manganese	mg/L	0.05	</=0.05	AO				0.0051	0.006	<0.005	<0.005	<0.005	<0.005	0.006	0.002	
T-Mercury	mg/L	0.001	0.001	MAC				<.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.01	<0.01	
T-Nickel	mg/L														<0.001	
T-Phosphorus	mg/L														<0.01	
T-Potassium	mg/L							0.8	0.5	0.7	0.8	0.6	0.6	0.6	0.7	
T-Selium	mg/L	0.01	0.01	MAC				<.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.003	0.0008	
T-Silver	mg/L														<0.00001	
T-Sodium	mg/L	200	</=200	AO				111	114	111	108	6.7	112	126	126	
T-Uranium	mg/L	0.1	0.1	MAC				<.02	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0004	
T-Zinc	mg/L	5	<5	AO				0.0494	0.042	0.071	0.108	0.115	0.116	0.099	0.092	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml				n/a	n/a	<1	<1	<1	<1	<1.0	<1.0	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml				n/a	n/a	<1	<1	<1	<1			
E.coli	cfu/100ml	<1	<1	cfu/100ml								<1	<1	<1.0	<1.0	
Tannins & Lignins								<.1	n/a	n/a	n/a	n/a	n/a			
Trihalomethanes	mg/l	0.1		MAC				n/a	n/a	n/a	n/a	**0.123**				

REGIONAL DISTRICT OF NANAIMO

Decourcey Well Water Analysis Results
Canadian Drinking Water Guidelines Package
Decourcey Well: Between 3274 & 3284 Bisell Road

water SMART zero waste

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective
CDWG= Canadian Drinking Water Guidelines BCAWQG= British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw water

Parameter	Water Quality Guidelines				16-Oct 2002	22-Oct 2003	26-Oct 2004	24-Oct 2005	24-Oct 2006	22-Oct 2007	14-Oct 2008	14-Oct 2009	2010
	Units	CDWG	BCAWQG										
Color	CU	15	</=15	AO	5	10	**<5**	**<5**	**<5**	10	8	7	
Conductivity	µS		700	MAC	564	226	408	611	514	433	558	**737**	
Total Dissolved Solids	mg/L	500	</=500	AO	327	120	220	327	300	270	370	398	
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**35.7**	82	**44**	**23**	**13**	**43**	**18**	**49**	
pH	pH units	6.5-8.5	6.5-8.5	AO	7.6	6.56	7.3	7.9	8.1	7.38	8.3	7.7	
Turbidity	NTU's	5	1	MAC	<0.05	0.56	0.6	0.7	<0.5	0.6	<0.5	<0.5	
Alkalinity	mg/L				224	90	200	230	230	170	230	210	
Chloride	mg/L	250	</=250	AO	6	5	8.4	44.8	22.5	19.6	36	83.8	
Fluoride	mg/L	1.5	1.5	MAC	0.21	<0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1	
Sulfate	mg/L	500	</=500	AO	29.74	11.5	11.2	20.2	10.6	14.1	13	22.9	
Nitrate (N)	mg/L	10	10	MAC	<0.01	0.6	0.1	<0.1	<0.1	0.3	<0.1	<0.1	
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
T-Aluminum	mg/L	0.1	0.2	MAC	0.007	0.03	0.031	0.061	0.015	0.013	0.001	<0.005	
T-Antimony	mg/L	0.006	0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC	0.0003	<0.0002	0.0003	0.0004	0.0003	0.0002	0.0004	0.0018	
T- Barium	mg/L	1.0	1	MAC	0.01	0.005	0.006	0.006	0.003	0.006	0.003	0.011	
T-Boron	mg/L	5.0	5	MAC	0.132	0.02	0.166	0.187	0.234	0.105	0.193	0.143	
T-Cadmium	mg/L	0.005			<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
T-Calcium	mg/L				11	26.1	14.4	7.4	4.2	13.6	5.74	15.1	
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	0.0008	<0.0004	
T-Copper	mg/L	1.0	</=1	MAC	0.001	0.009	0.007	0.026	0.007	0.011	0.008	0.002	
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.04	<0.01	
T-Lead	mg/L	0.01	0.01	MAC	0.0009	0.0014	0.0007	0.0011	0.0003	0.0007	0.0002	0.0001	
T-Lithium	mg/L											0.018	
T-Magnesium	mg/L		</=700	AO	2	4.1	1.9	1.1	0.5	2.1	0.94	2.69	
T-Manganese	mg/L	0.05	</=0.05	AO	**0.085**	0.009	0.008	0.009	<0.005	<0.005	0.0005	0.0106	
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.01	<0.01	
T-Nickel	mg/L											<0.001	
T-Phosphorus	mg/L											0.03	
T-Potassium	mg/L				0.6	<0.4	<0.4	<0.4	<0.4	0.4	0.2	0.9	
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	0.0008	<0.0006	
T-Silver	mg/L											<0.00001	
T-Sodium	mg/L	200	</=200	AO	125	13.7	81.2	124	116	76.6	113	160	
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	
T-Zinc	mg/L	5	<5	AO	0.003	0.032	0.022	0.019	0.014	0.035	0.011	0.013	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***11**	<1	<1	***360**	<1	<1	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	***7**	<1		
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	***7**	<1	<1	

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

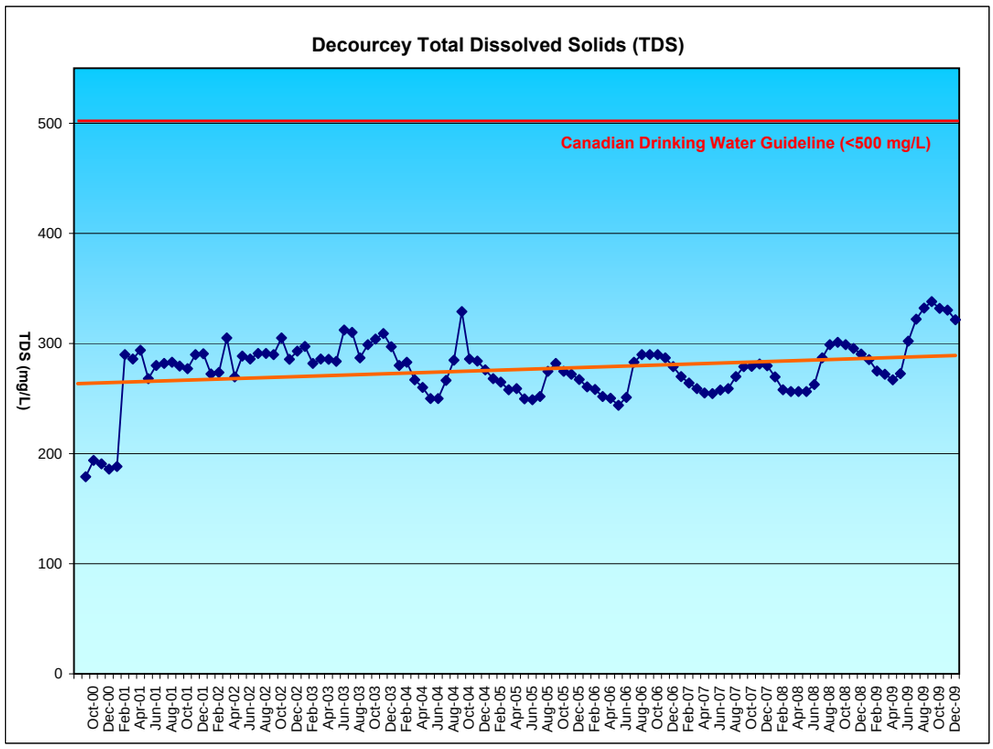
Decourcey Lab Analysis

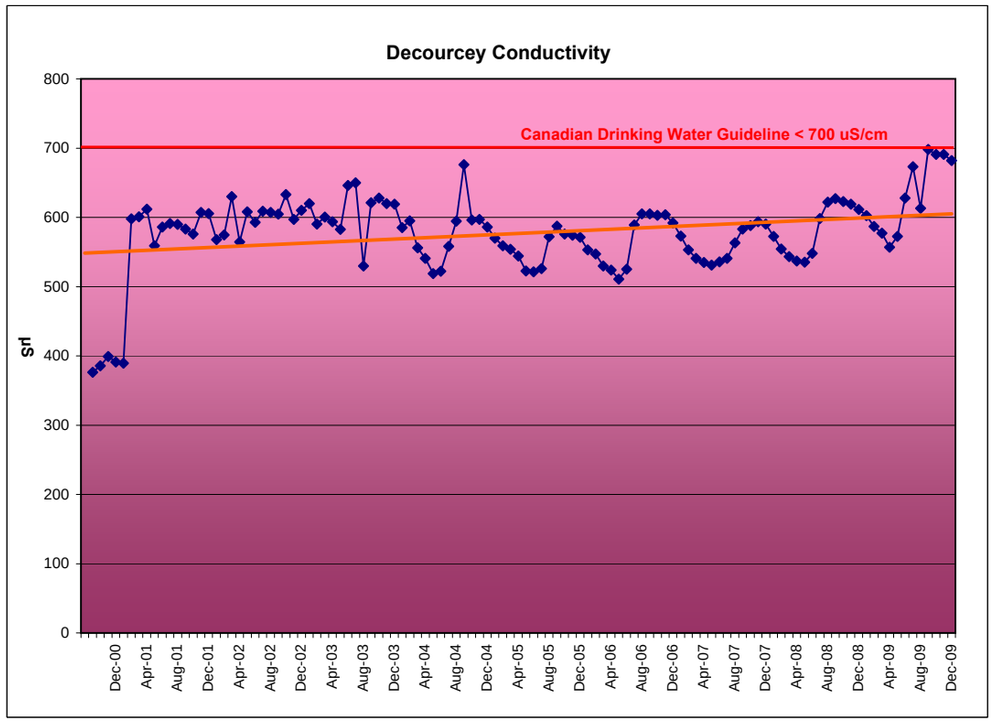
Monthly TDS - Conductivity - Salinity Comparison

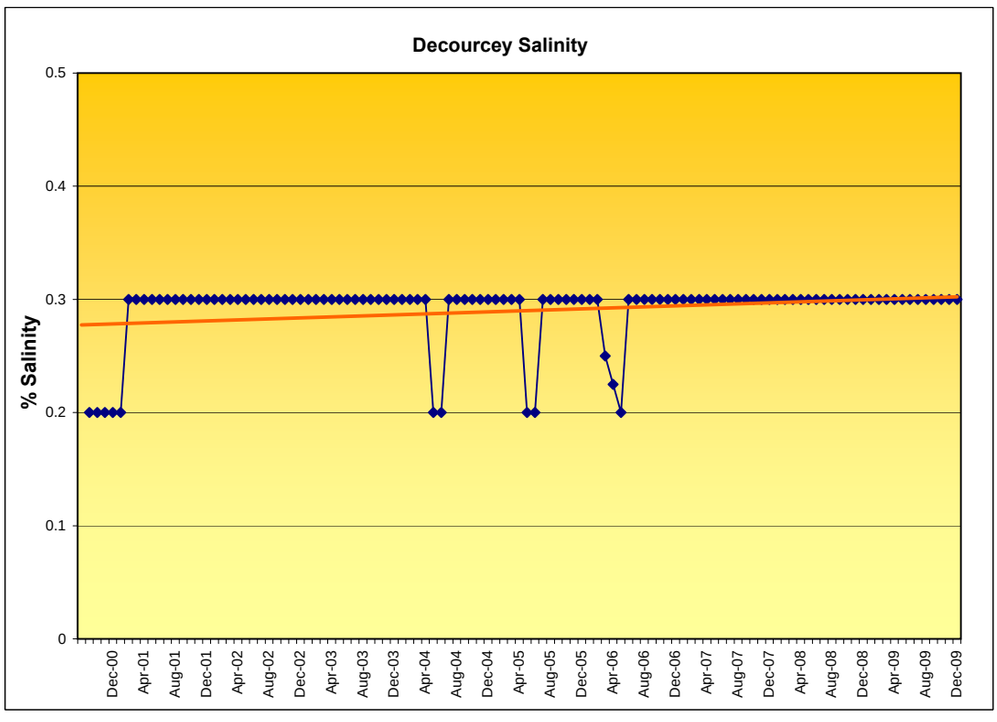
TDS - CDWG = <500 mg/L
Cond. - CDWG = <700 uS/cm
SAL. - CDWG = N/A

Average monthly readings (Sampled weekly)

Date	TDS	Cond.	Salinity
Sep-00	179.00	376.5	0.2
Oct-00	194.00	385.7	0.2
Nov-00	190.70	399.0	0.2
Dec-00	186.00	391.0	0.2
Jan-01	188.30	389.3	0.2
Feb-01	290.00	598.0	0.3
Mar-01	286.00	601.0	0.3
Apr-01	294.00	612.0	0.3
May-01	268.00	559.0	0.3
Jun-01	280.00	586.0	0.3
Jul-01	282.00	591.0	0.3
Aug-01	283.00	590.0	0.3
Sep-01	279.50	583.0	0.3
Oct-01	277.00	576.0	0.3
Nov-01	290.00	607.0	0.3
Dec-01	290.70	605.7	0.3
Jan-02	272.30	567.7	0.3
Feb-02	273.70	574.7	0.3
Mar-02	305.00	630.0	0.3
Apr-02	269.80	564.5	0.3
May-02	288.50	608.0	0.3
Jun-02	285.80	592.8	0.3
Jul-02	291.00	608.8	0.3
Aug-02	291.00	607.0	0.3
Sep-02	289.80	604.5	0.3
Oct-02	305.00	633.0	0.3
Nov-02	285.60	597.1	0.3
Dec-02	293.00	610.0	0.3
Jan-03	297.30	619.7	0.3
Feb-03	282.00	590.3	0.3
Mar-03	286.00	600.3	0.3
Apr-03	285.70	593.7	0.3
May-03	283.70	582.7	0.3
Jun-03	312.30	646.0	0.3
Jul-03	310.00	650.0	0.3
Aug-03	287.00	529.8	0.3
Sep-03	299.00	621.0	0.3
Oct-03	304.00	628.0	0.3
Nov-03	309.00	620.0	0.3
Dec-03	297.00	619.0	0.3
Jan-04	280.00	585.0	0.3
Feb-04	283.00	595.0	0.3
Mar-04	267.00	556.0	0.3
Apr-04	260.00	541.0	0.3
May-04	250.00	519.0	0.2
Jun-04	250.00	522.0	0.2
Jul-04	266.50	558.0	0.3
Aug-04	284.80	594.4	0.3
Sep-04	329.00	676.0	0.3
Oct-04	286.00	596.0	0.3
Nov-04	284.00	597.0	0.3
Dec-04	276.00	586.0	0.3
Jan-05	268.00	570.0	0.3
Feb-05	265.00	559.0	0.3
Mar-05	258.00	554.0	0.3
Apr-05	259.00	544.0	0.3
May-05	249.80	522.8	0.2
Jun-05	249.00	521.3	0.2
Jul-05	251.80	526.0	0.3
Aug-05	274.80	572.0	0.3
Sep-05	281.80	587.5	0.3
Oct-05	274.80	575.8	0.3
Nov-05	272.00	574.0	0.3
Dec-05	267.30	571.3	0.3
Jan-06	260.60	553.0	0.3
Feb-06	258.33	547.0	0.3
Mar-06	251.75	529.8	0.3
Apr-06	250.25	523.8	0.2
May-06	244.00	510.8	0.2
Jun-06	251.00	525.0	0.3
Jul-06	283.00	589.0	0.3
Aug-06	290.00	605.0	0.3
Sep-06	290.00	605.0	0.3
Oct-06	290.00	603.0	0.3
Nov-06	287.00	604.0	0.3
Dec-06	279.00	592.0	0.3
Jan-07	270.00	573.0	0.3
Feb-07	264.00	553.0	0.3
Mar-07	259.00	541.0	0.3
Apr-07	255.00	535.0	0.3
May-07	254.40	531.0	0.3
Jun-07	257.80	535.8	0.3
Jul-07	259	541	0.3
Aug-07	270	563.3	0.3
Sep-07	279	583	0.3
Oct-07	279.3	588	0.3
Nov-07	281.5	593.8	0.3
Dec-07	279.7	590.3	0.3
Jan-08	269.7	572.7	0.3
Feb-08	258	554.3	0.3
Mar-08	256.5	543.3	0.3
Apr-08	256.5	537	0.3
May-08	256.3	535.3	0.3
Jun-08	262.7	548	0.3
Jul-08	287	598.5	0.3
Aug-08	299	622	0.3
Sep-08	301	627	0.3
Oct-08	299	623	0.3
Nov-08	295.5	619	0.3
Dec-08	290.5	611.5	0.3
Jan-09	285.3	602.7	0.3
Feb-09	275	586.8	0.3
Mar-09	272	577	0.3
Apr-09	267	557	0.3
May-09	272.7	572.7	0.3
Jun-09	302	628	0.3
Jul-09	322	673	0.3
Aug-09	332.3	612.9	0.3
Sep-09	338	698	0.3
Oct-09	331.8	690.8	0.3
Nov-09	330.3	690.8	0.3
Dec-09	321.5	682	0.3







Decourcey Lab Analysis

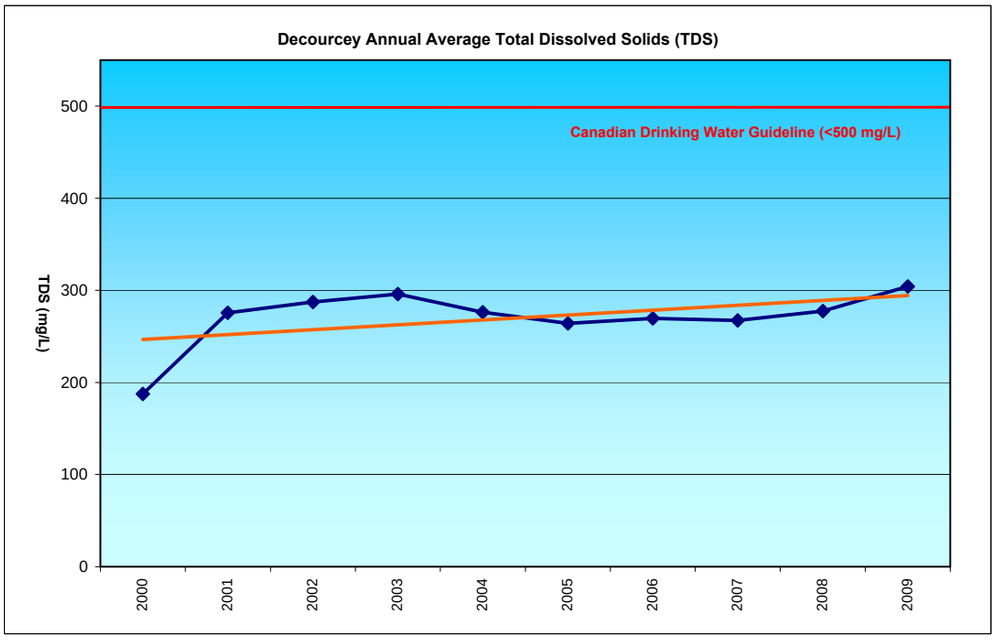
Annual TDS - Conductivity - Salinity Comparison

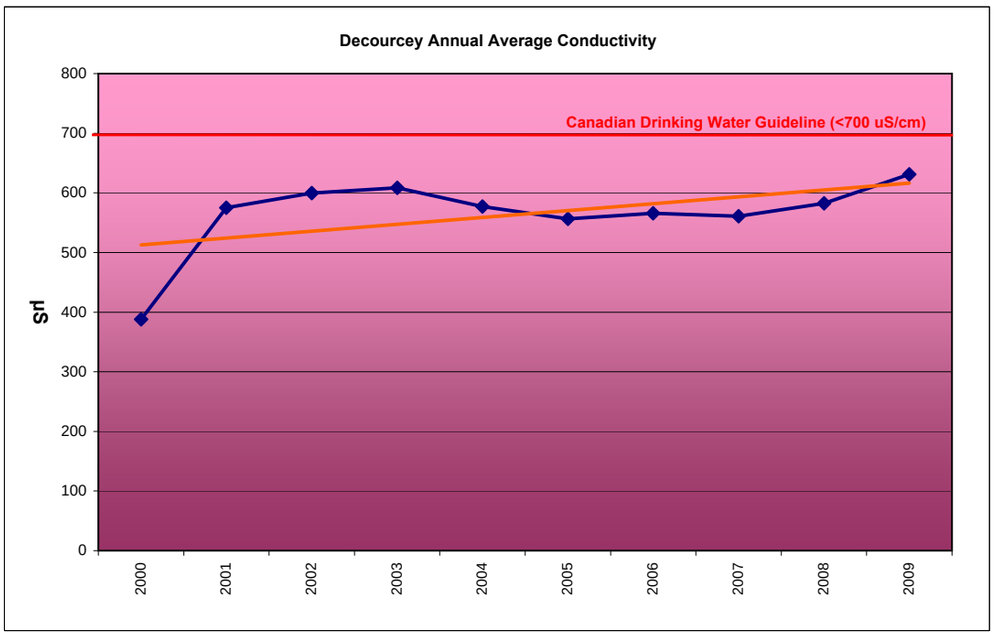
TDS - CDWG = <500 mg/L

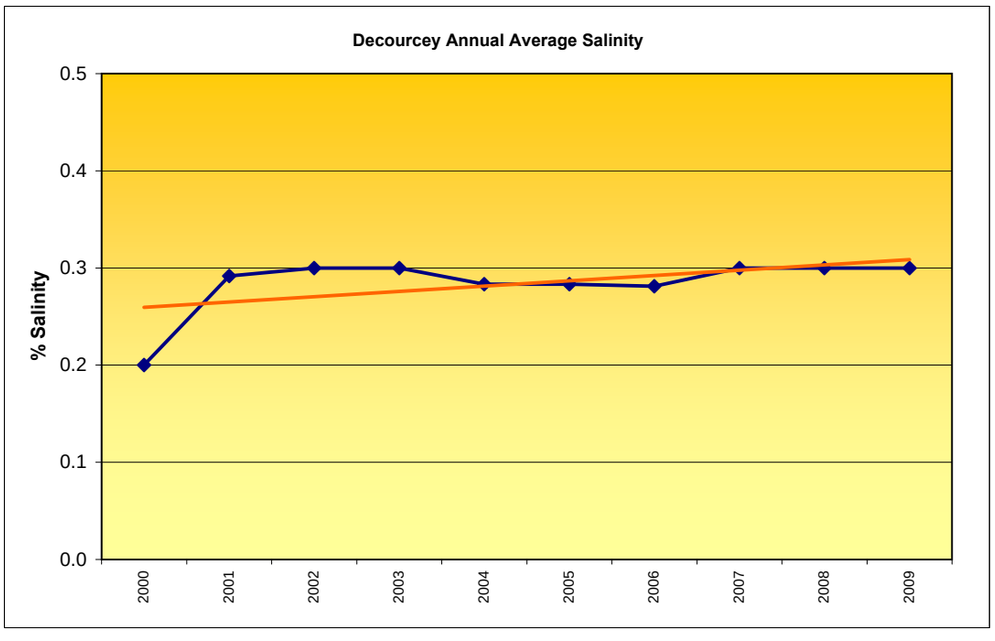
Cond. - CDWG = <700 uS/cm

SAL. - CDWG = N/A

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TDS	187.43	275.71	287.54	296.08	276.36	264.28	269.58	267.39	277.64	304.16
Conductivity	388.05	574.83	599.84	608.38	577.12	556.48	565.61	560.68	582.63	630.98
Salinity	0.20	0.29	0.30	0.30	0.28	0.28	0.28	0.30	0.30	0.30



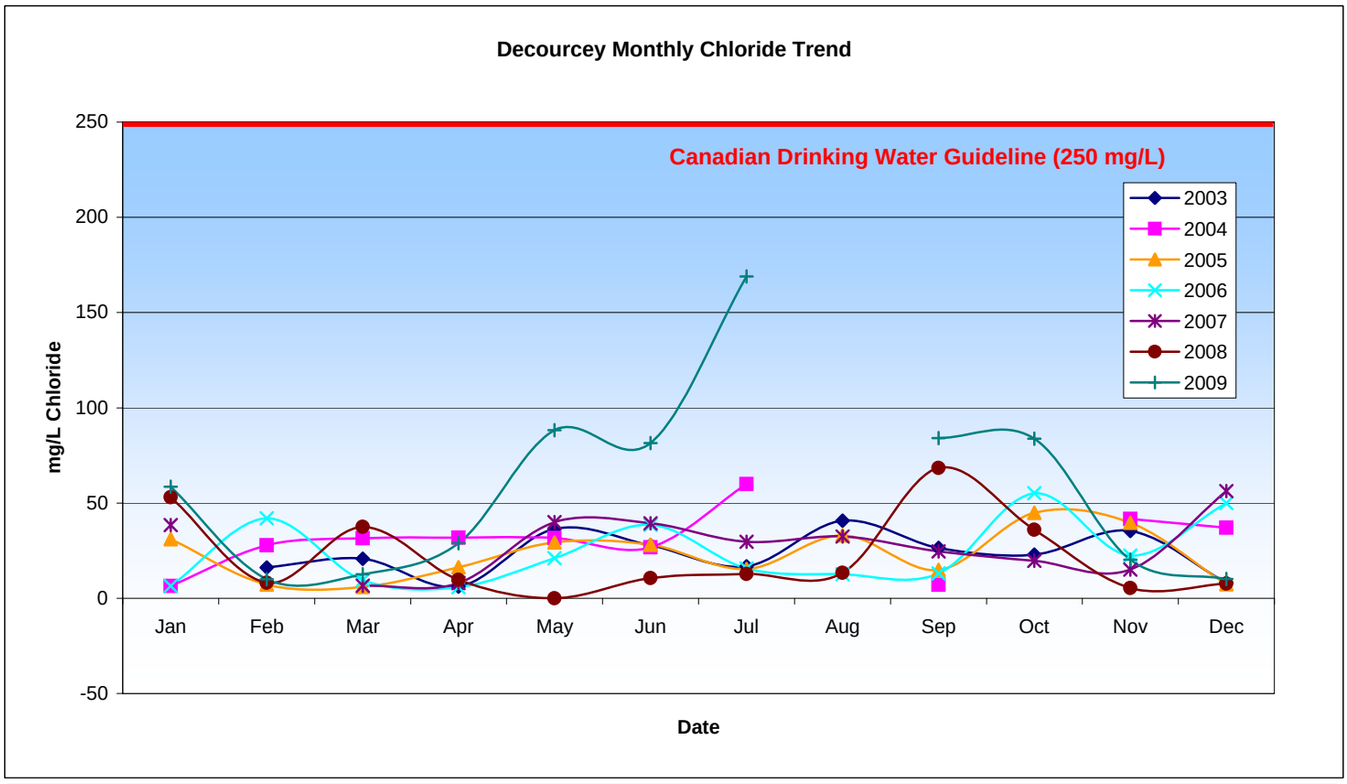


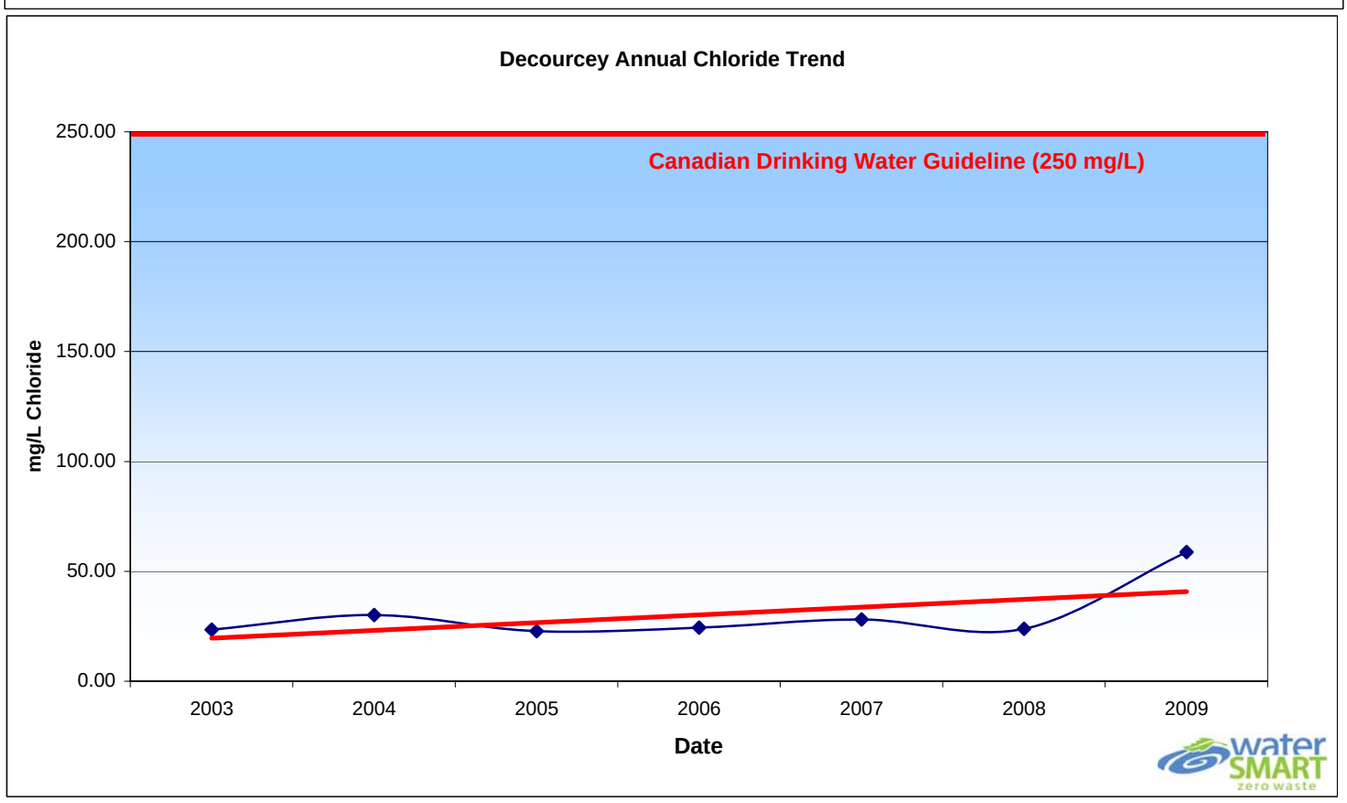


REGIONAL DISTRICT OF NANAIMO

Decourcey Monthly Well Testing Chloride (mg/L)

Date	Chloride (mg/L)						
	2003	2004	2005	2006	2007	2008	2009
Jan		6.4	31.0	6.5	38.4	53.1	58.5
Feb	16.06	27.8	7.2	42.0		8.1	9.9
Mar	20.71	31.5	6.0	9.5	6.6	37.5	12.6
Apr	6.06	31.8	16.3	5.8	7.9	9.6	28.9
May	36.4	31.7	29.4	21.1	39.9	<2.0	88.3
Jun	27.8	26.8	28.1	38.5	39.4	10.6	81.5
Jul	16.7	60	15.4	15.7	29.7	12.7	169.0
Aug	40.7		33.0	12.6	32.4	13.4	
Sep	26.4	7	14.9	13.0	24.6	68.4	84.1
Oct	22.9		44.8	55.1	19.6	36	83.8
Nov	35.4	41.7	39.6	22.5	15.0	5.3	20.2
Dec	8.2	37	7.4	50	56.3	7.7	10.1
Avg	23.39	30.17	22.76	24.36	28.16	23.85	58.81

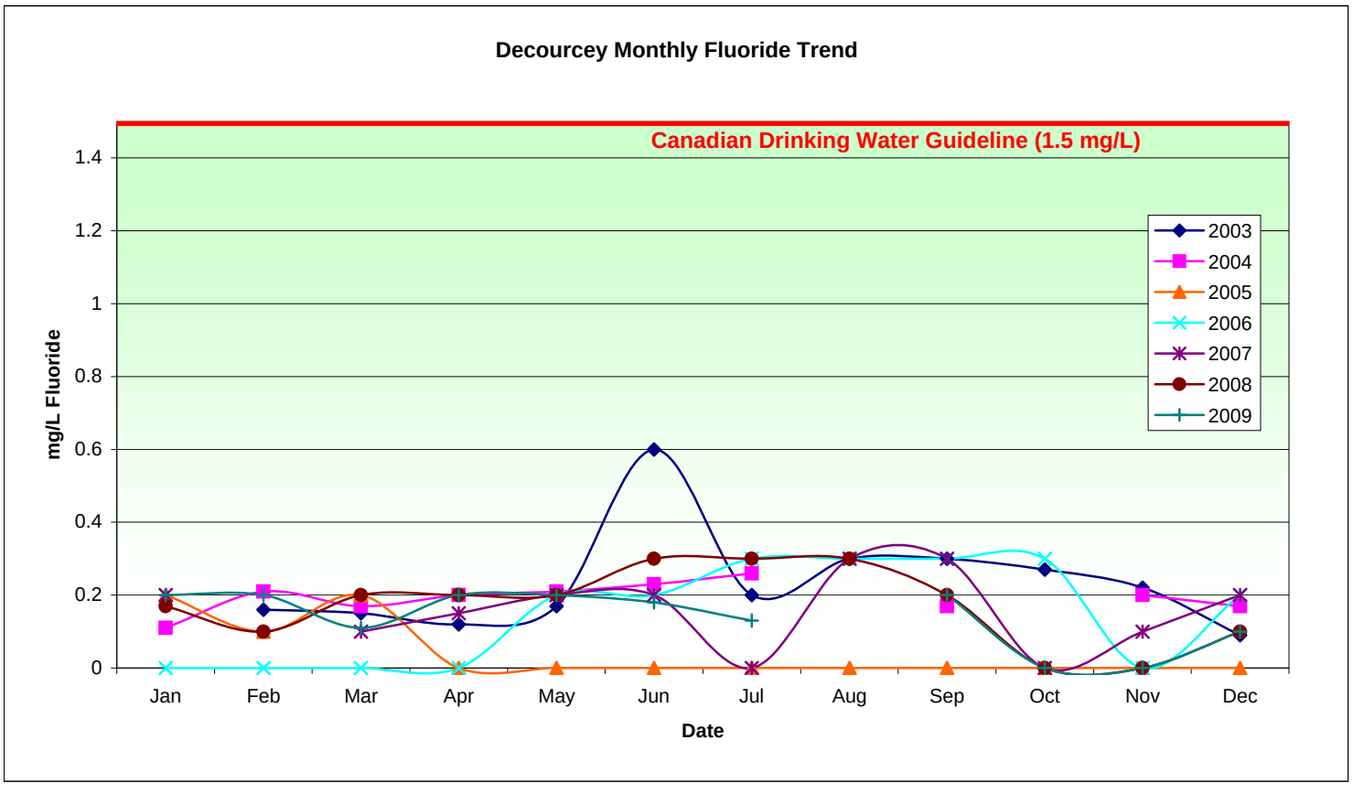


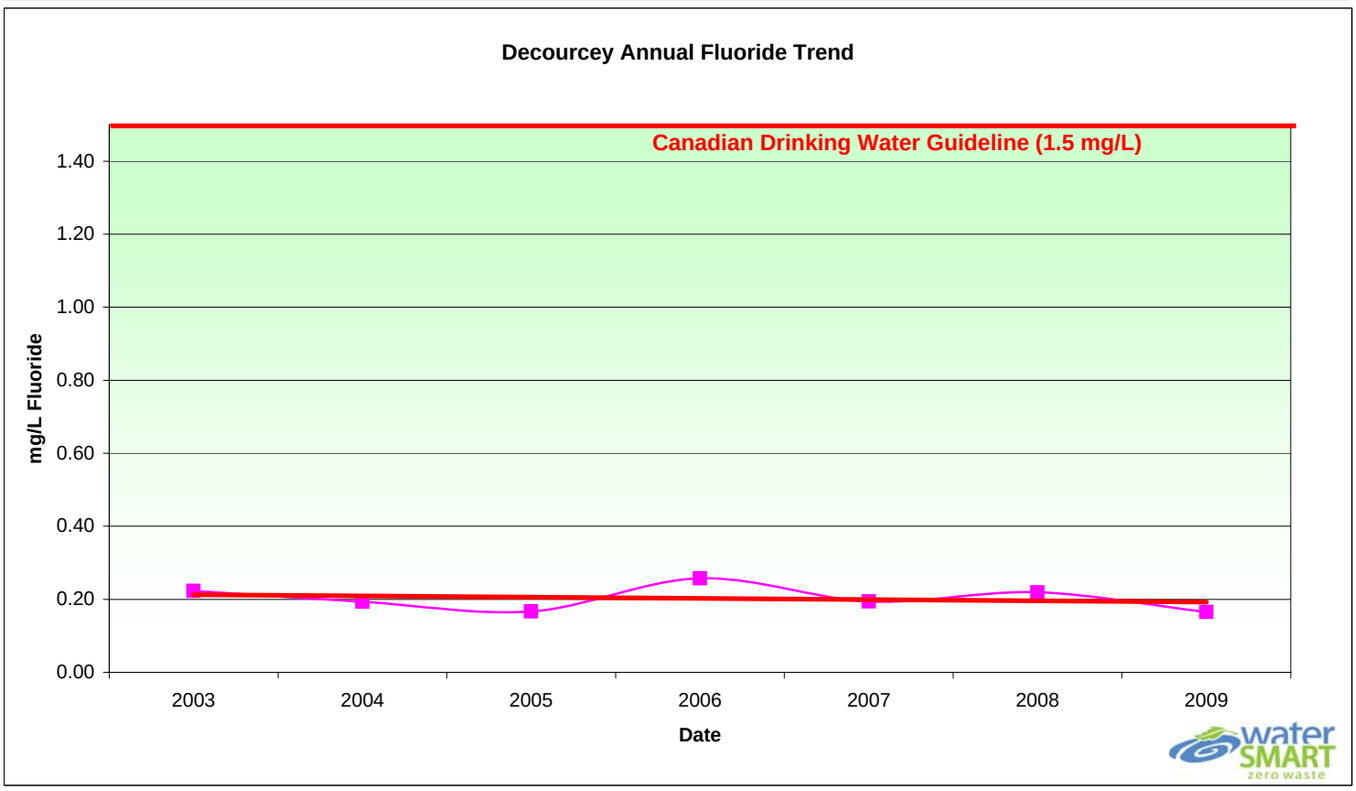


REGIONAL DISTRICT OF NANAIMO

Decourcey Monthly Well Testing Fluoride (mg/L)

Date	Fluoride (mg/L)						
	2003	2004	2005	2006	2007	2008	2009
Jan		0.11	0.2	<1.0	0.2	0.2	0.20
Feb	0.16	0.21	0.1	<1.0		0.1	0.20
Mar	0.15	0.17	0.2	<1.0	0.1	0.2	0.11
Apr	0.12	0.2	<1.0	<.1	0.2	0.2	0.20
May	0.17	0.21	<0.1	0.2	0.2	0.2	0.20
Jun	0.6	0.23	<1.0	0.2	0.2	0.3	0.18
Jul	0.2	0.26	<1.0	0.3	<0.1	0.3	0.13
Aug	0.3		<0.1	0.3	0.3	0.3	
Sep	0.3	0.17	<0.1	0.3	0.3	0.2	0.20
Oct	0.27		<1.0	0.3	<1.0	<1.0	<1.0
Nov	0.22	0.2	<1.0	<1.0	0.1	<0.1	<0.1
Dec	0.09	0.17	<1.0	0.2	0.2	0.1	0.10
Avg	0.22	0.19	0.17	0.26	0.2	0.2	0.2

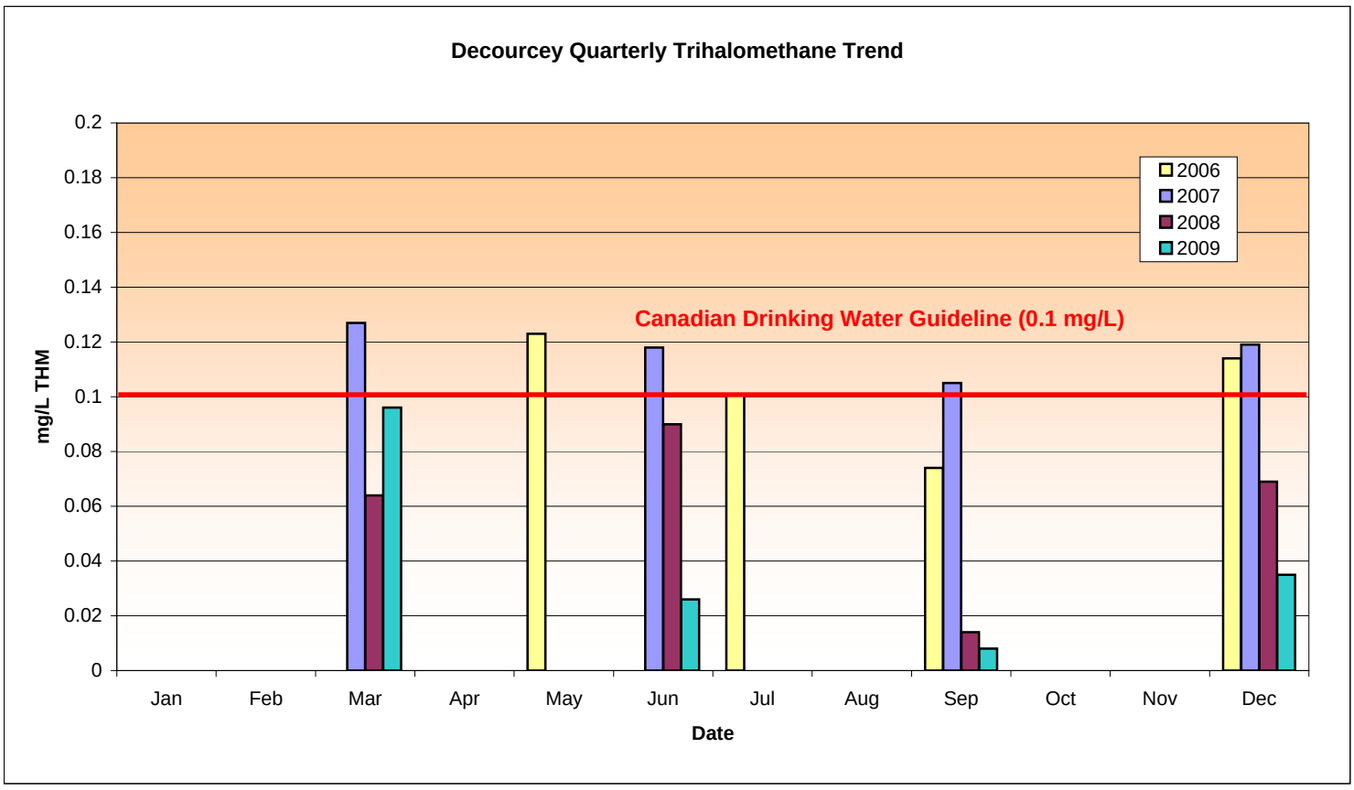


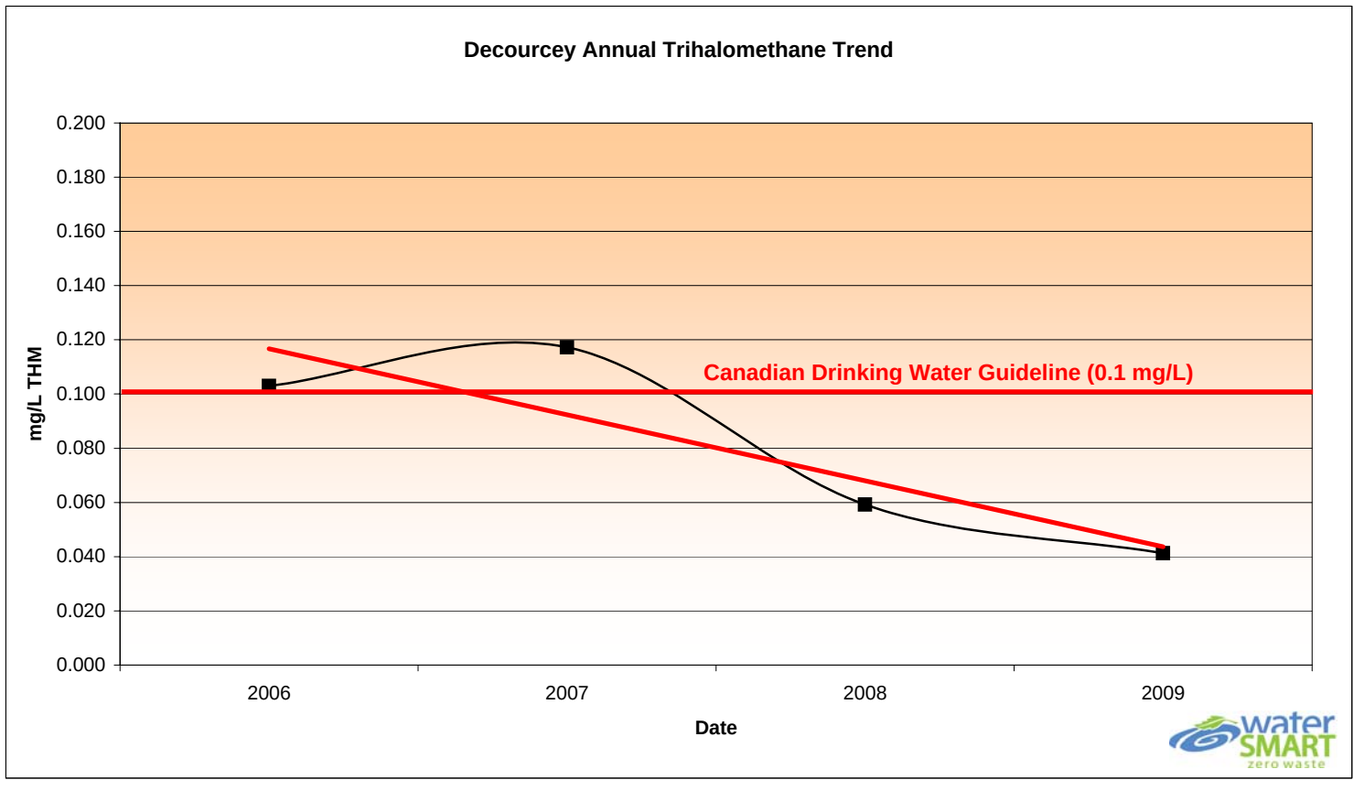


REGIONAL DISTRICT OF NANAIMO

Decourcey Quarterly Testing THM's (mg/L)

Date	Trihalomethanes (mg/L)						
	2003	2004	2005	2006	2007	2008	2009
Jan							
Feb							
Mar					0.127	0.064	0.096
Apr							
May				0.123			
Jun					0.118	0.09	0.026
Jul				0.101			
Aug							
Sep				0.074	0.105	0.014	0.008
Oct							
Nov							
Dec				0.114	0.119	0.069	0.035
Avg				0.103	0.117	0.059	0.041





APPENDIX C

EMERGENCY RESPONSE PLAN

* Emergency Response Plan not included in Public Copy.