DRINKING WATER QUALITY MONITORING PROGRAM

Annual Report for 2011

VILLAGE OF LYTTON
P.O. BOX 100, 380 MAIN ST.
LYTTON, B.C. V0K 1Z0
Phone 250-455-2355 Fax 250-455-2142
Email: hotspot@lytton.ca

TABLE OF CONTENTS

ANNUAL REPORT
2011 YEAR

November 30, 2012

1. INTRODUCTION

Under the terms of the BC Drinking Water Protection Act & Regulation the Village is required to provide an annual report to users of the system that gives an overview of the water system, a summary of water test results, and a review of maintenance and improvements made to the system. This report has been submitted to Interior Health and is posted on the Village of Lytton website www.lytton.ca

2. LYTTON WATER DISTRIBUTION SYSTEM

The Village of Lytton has 143 residential and 33 commercial water connections (176 total) serving the residents of Lytton. Water is also distributed to, two Lytton First Nation Reserves bordering the village of Lytton,

- IR-17 with 17 connections
- IR-18 with 28 connections

In total there are 221 water service connections, serving a population of approximately 346. The population distribution is: 203 for the village, 61 for IR-17 and 82 for IR-18.

The primary drinking water source is Lytton Creek. The intake is located approximately 1km upslope and east of the Trans-Canada Highway. The village also has an emergency backup source, Well 1 located at Alonzo Way within the village. It has not been used as a backup source since August 2009.

Currently, water from the Lytton Creek source has only one form of treatment, which is 12% liquid sodium hypochlorite (bleach/chlorine). After treatment the chlorine level becomes diluted. Bacterial samples are taken from four Zones in the distribution system on a weekly basis and then sent to CARO Analytical Services in Kelowna for bacterial analysis. Zone 1 is located at 951 - IR-18 at the Lytton First Nation Band Office, or 938, - IR-18. Zone 2 is located at the Village of Lytton Office. Zone 3 is a private residence located at 430 Ponderosa Heights. Zone 4 is a private residence located at 370, IR-17. The chlorine level is also monitored at the wastewater treatment plant. Turbidity (NTU) levels are also monitored at the dam intake, at the chlorine treatment facility and the 5 areas in the distribution system.

(Note: 265 & 345 refers to elevation above sea level in meters, as well as where the reservoirs are located as pressure zones on a map. Lytton's elevation is listed as 195 meters).

The Village maintains approximately 6.5 km of water mains of various type and size, as well as 3 reservoirs throughout the water distribution system. The old reservoir capacity is 445 cubic metres of water. The new 345 reservoir has 480 cubic metres and the new 265 reservoir has 360 cubic metres of water. The combined total of all 3 reservoirs is 1285 Cubic Metres of water storage (282,659 Imperial Gallons).

Water from Well 1is not treated at this time before it enters into the distribution system. As a requirement to operate the well, the Village must advise the Interior Health's Drinking Water

Officer of the request to turn on the well. A Boil Water Notice is then issued to all residents on the Village of Lytton water distribution system because there is no well head protection program in place.

Figures 1 & 2, show the layout of the Village's water distribution system. The new 345 reservoir is located above the old reservoir shown in Figure 1. And the new 265 reservoir that is located north of IR-17 shown in Figure 2. (New updated mapping was not available to show upgrades. They are marked in by hand to show new reservoir locations).

FIGURE 1

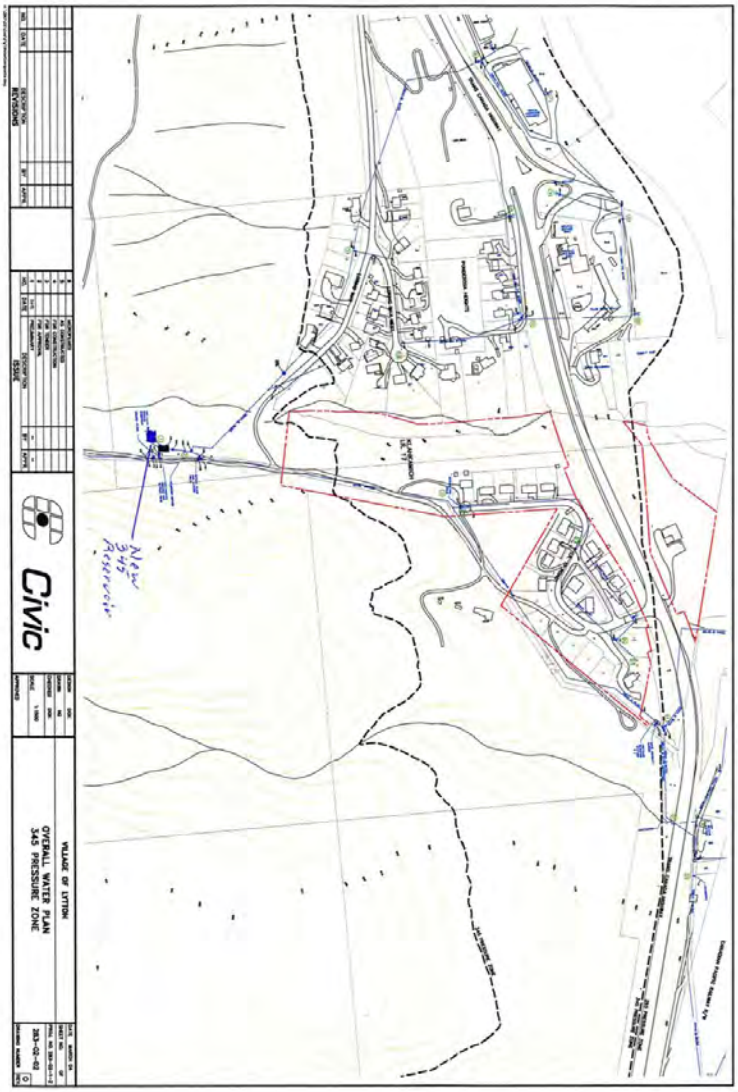
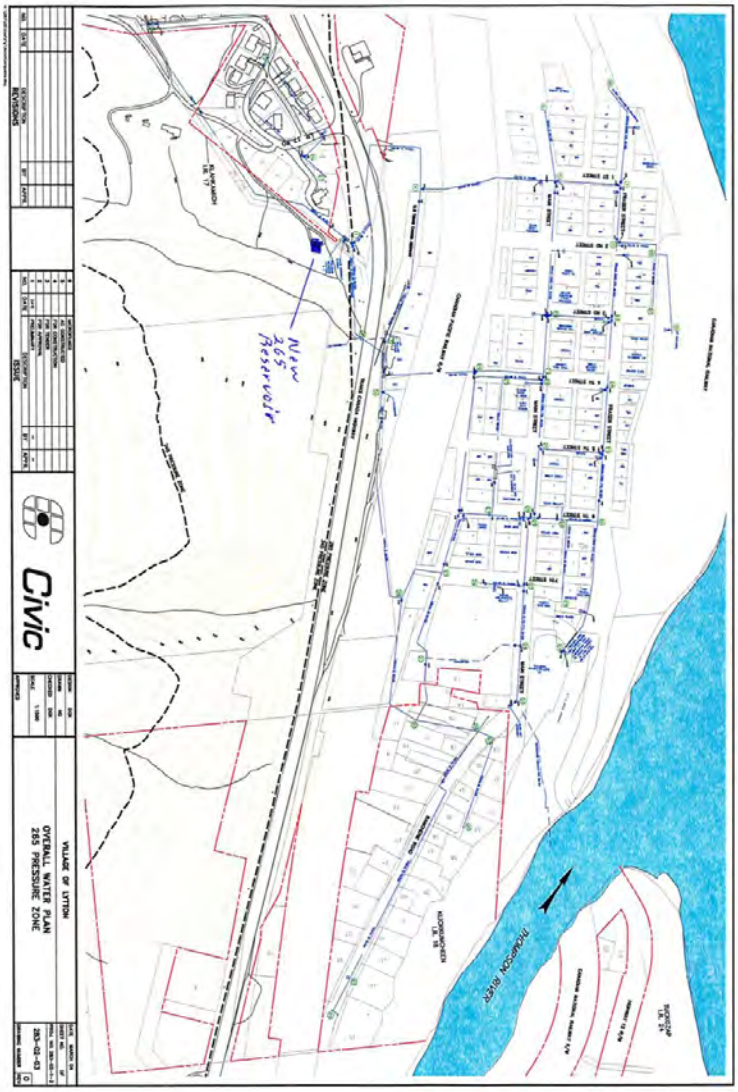

Civic
VILLAGE OF LYTTON
OVERALL WATER PLAN
345 PRESSURE ZONE

FIGURE 2


New
265
Reservoir
THOMPSON RIVER
Civic
VILLAGE OF LYTTON
OVERALL WATER PLAN
265 PRESSURE ZONE

Water is disinfected inside the chlorine building located 1200 feet below the dam intake on Lytton Creek prior to entering the 345 upper reservoirs.. Twelve percent (12%) liquid chlorine is injected directly into the flow stream piping as the reservoir is filling the mix/settlement chamber. Most fine sediment (organic or mineral) is captured by a 6" fine mesh screen and the remainder in the settlement chamber of the old 345 reservoir. Water then overflows into the main reservoirs, which in turn gives a better mix of water and chlorine to allow for contact time for disinfection. The Interior Health Authority requires a minimum of 0.2 mg/L of free chlorine residual remaining in the water distribution system at the far ends of the water lines. To achieve this, the chlorine levels in the upper reservoirs are monitored and adjusted to maintain a reading of 1.0 mg/L of free chlorine.. The amount of chlorine dosage is controlled by a flow meter that is attached to a prominent chlorine pump. The chlorine level is adjusted manually dependant on turbidity and free chlorine readings taken from the 5 areas in the distribution system with portable hand held chlorine & turbidity meter readers. Turbidity, intake pressure, reservoir depth and free chlorine readings are monitored with a basic SCADA (Supervisory Control and Data Acquisition) system. The instrumentation for monitoring turbidity, intake pressure and reservoir depth is located at the chlorination building. Free chlorine residual is monitored at the wastewater treatment plant at the south end of town. The data is linked together through a basic computer program and available to operators over the internet through a secure log-in procedure. Operators use this as a tool to monitor what's happening without being onsite. The limitation is the operator currently cannot make any adjustments remotely, as with some more updated SCADA systems.

Water from the upper reservoirs at 345; distribute water to IR-17, Ponderosa Heights and Loring Way to the High School through to Kent Road. It also supplies water to the new 265 reservoir north of IR-17. The 265 reservoir in turn supplies water to all residents below the Trans-Canada Highway, which include downtown and IR-18.

3. SYSTEM CLASSIFICATION

3.1 Environmental Operators Certification Program classified the Village of Lytton Water System as a Small Water System on May 25, 2005. Certificate No. 1126. (Certificate attached, Figure 3)

FIGURE 3

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Facility Classification

THIS IS TO CERTIFY THAT

Village of Lytton
Water Systems

has been classified by the Environmental Operators Certification Program in accordance with the guidelines established in co-operation with the Association of Boards of Certification (A.B.C.) as a

Small Water System

Dated at Burnaby, B.C. on May 25, 2005

Secretary - Certification Board

Chairman - Certification Board

CERTIFICATE NO. 1126

eocp

MEMBER OF ASSOCIATION OF BOARDS OF CERTIFICATION
AFFILIATE OF B.C. WATER AND WASTE ASSOCIATION
A Society Incorporated under the Society Act, S.B.C. S-28724

4. OPERATOR CERTIFICATION/TRAINING

4.1 Operators have the following certification:

3 certified in Small Water Systems
2 certified in Water Distribution Level 1
1 certified in Cross Connection Control

Operators will be attending additional training courses as required.

5. WATER QUALITY RESULTS

5.1 Chlorine/Turbidity

Chlorine and Turbidity levels are obtained daily from 5 areas in the distribution system. Generally when free chlorine residuals drop below the minimum acceptable requirements of 0.2mg/L or the turbidity levels rise above allowable limits of 1.0 NTU or more the Interior Health Drinking Water Officer is informed of the situation. After consultation, the appropriate notification is distributed to all users on the villages' water distribution system, informing them of a potential hazard. This is done via mail out, fax and notices posted at the Village Office, Canada Post Office and village bulletin boards. This procedure would also be followed if there were other incidents of possible contamination of the villages' water system. When the event has ended, a Rescind notice is issued to residents.

Maintaining chlorine residuals in the distribution system is a challenge when Spring Freshet (Spring Runoff) or heavy rain events occur. Also having only one point of chlorine treatment at the beginning of the line (at the upper reservoirs), along with having some dead end water lines makes it somewhat difficult to maintain an adequate free chlorine residual throughout the distribution system. The chlorine residual will be higher for those living closer to the upper reservoirs, in order to maintain the minimum acceptable free chlorine residual required for disinfection at the far ends in the distribution system. There were 2 days in 2011, when the chorine levels dropped below the minimum acceptable requirement of 0.2 mg/L free chlorine residual in the distribution system, due to a malfunction with the chlorine pump.

5.2 Bacteriological

Operators collect samples from 4 zones, every Wednesday throughout the year from January to December, weather and holiday dependant. These are then sent to CARO Analytical Services in Kelowna for testing. Out of all the samples collected in 2011, one sample contained 1 total coliform. The October 5th sample tested positive for 1 total coliform and zero for Ecoli. That location was re-sampled and the results were good. Sample procedures were reviewed and operators reminded to ensure proper sterilization techniques to minimize contamination of samples from elements outside of the distribution system.

6. 2011 UPGRADES & FUTURE PLANS

6.1 2011 Upgrades/Changes

Water Upgrade Project

In April of 2010 a Request for Quote (RFQ) for a Project Manager was issued to oversee Lytton's water upgrade project. In November 2010, the project management contract was awarded to FOCUS Engineering from Kamloops. In June 2011 BA Site Services from Chilliwack was awarded the contract to construct 2 new reservoirs, install an altitude valve and approximately 1200 feet of new pipe. Work began at the lower 265 reservoir by building a 360 cubic meter concrete dual cell reservoir with 180 cubic meters of water volume per side. The idea behind the design is to enable maintenance on the reservoirs without having to interrupt water distribution. Additional valving and pipe were installed in the event of possible future expansion of the distribution system. An 8 inch altitude valve was also installed at that location to control filling the 265 reservoir from the upper reservoirs. It also replaced the old Pressure Reducing Valve (PRV) that was due for an upgrade. A 480 cubic meter reservoir was built approximately 20 feet southeast of the old reservoir. This reservoir is filled in conjunction with the old reservoir and water levels balancing out in both reservoirs. Once again the idea is to maintain water distribution without interruption while performing normal maintenance procedures. 1200 feet of new 8 and 6 inch water mainline was installed from the dam intake down to the 345 reservoirs. The new water main replaces old Asbestos Cement (A/C) pipe that has become outdated. The pipe was installed on the north side of the access road from the reservoirs to the dam intake. New gate valves were also installed to tie into the old system.

6.2 Future Planning

The Village of Lytton has retained FOCUS Engineering Services for future works and upgrades to the villages' infrastructure. The first priority is to move forward with design plans for a slow sand filtration system on the Lytton Creek water source to improve water quality. On behalf of Lytton, FOCUS has submitted grant applications for infrastructure planning with possible upgrades to the following.

1. Lytton Creek gabion baskets / flow direction for bank stabilization and to improve settlement and reduce solids reaching intake screen.

2. Repair to the intake dam.

3. Hydro upgrade to upper reservoir / treatment location.

4. SCADA upgrade to allow for additional and remote monitoring of system operations.

5. Addition of secondary treatment (UV, ozone, etc.) to system as add-on to slow sand filtration structure.

6. Reconfiguration of water mains/valves adjacent to new treatment and upper reservoirs.

7. Ultrasonic water level sensors for reservoirs.

8. Water main looping at locations in distribution system where flows/residual levels would benefit.

9. Installation of automated blow offs on dead-end water mains where looping is not practical.

7. OPINION OF THE PROGRAM

General

The Drinking Water Quality Monitoring program generates a much needed report card for all water purveyors. The program is effective because it links compliance of conditions to the operating permit. The Village of Lytton has struggled with major changes in staff turnover from administration to public works. Also with elected officials over the past few years, while trying to meet timelines in accordance with the operating permit. We are now getting closer to the end of the list of conditions and imagine that if all purveyors comply with their operating permits, drinking water quality should continue to improve and remain safe for consumers. The Village of Lytton is responsible for providing safe drinking water and notifying the public and health authorities about water quality problems.

8. APPENDICES

Appendix A	Chlorine & Bacterial Sampling Results
Appendix B	Chemical Summary
Appendix C	Flow/Use
Appendix D	Certificates

Appendix A Chlorine & Bacterial Sampling Results

September 13, 2012
03:50:06 PM

Interior Health Authority

Sample History: Sample Parameter Report

Filtered by: Sample Date From: 1/1/2011, Sample Date To: 12/31/2011, Facility Number: 0660236

Lytton Community Water System

Site: 380 Main Street , Lytton, BC
Owner: Village of Lytton

Drinking Water - Bacteriological

Sample Parameter	Sample Identifier	Date Collected	Result	UOM	
5/25/2011					
Free Chlorine					
	1716	5/25/2011	0.08	mg/l	Unacceptable
	1717	5/25/2011	0.19	mg/l	Unacceptable
				Free Chlorine Total:	2
				5/25/2011 Total:	2
8/31/2011					
Free Chlorine					
	6366	8/31/2011	0.06	mg/l	Unacceptable
	6367	8/31/2011	0.06	mg/l	Unacceptable
	6368	8/31/2011	0.07	mg/l	Unacceptable
				Free Chlorine Total:	3
				8/31/2011 Total:	3
10/5/2011					
Total Coliform					
	7683	10/5/2011	1	100ml	Unacceptable
				Total Coliform Total:	1
				10/5/2011 Total:	1
				Report Total:	6

Appendix B Chemical Summary

CERTIFICATE OF ANALYSIS

CARO ANALYTICAL SERVICES

CLIENT	**McElhanney Consulting Services Ltd. - Kamloops** 293 1st Ave Kamloops BC V2C 3J3	TEL FAX	1-250-374-2200 1-250-374-2314
ATTENTION	**Dale Karst**		
RECEIVED / TEMP	Jul-13-11 08:55 / 5.0 °C	**WORK ORDER**	K1G0427
REPORTED	Aug-04-11	**PROJECT**	INAC - Village of Lytton
COC #(s)	32122		

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted.
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
  mg/L = milligrams per litre, equivalent to parts per million (ppm)
  ug/L = micrograms per litre, equivalent to parts per billion (ppb)
  ug/g = micrograms per gram, equivalent to parts per million (ppm)
  ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

Final Review Per: **Sarah Speier, B.Sc. For Jennifer Shanko, ASc1**
Administration Coordinator

CARO Analytical Services
#120 12791 Clarke Place
Richmond, BC V6V 2H9
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-3893

9523 42 Avenue
Edmonton, AB T6E 5R2
Tel: 780-628-3737

www.caro.ca

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	McElhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
General Parameters							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Alkalinity, Total as CaCO3	**27.6**		1.0	mg/L	Jul-13-11	Jul-13-11	
Carbon, Total Organic	**2.3**		0.5	mg/L	Jul-13-11	Jul-18-11	
Chloride	< 0.10	AO ≤ 250	0.10	mg/L	Jul-13-11	Jul-13-11	
Colour, True	**14**	AO ≤ 15	5	Color Unit	Jul-14-11	Jul-14-11	
Conductivity (EC)	**48**		2	uS/cm	Jul-13-11	Jul-13-11	
Cyanide (total)	< 0.01	MAC = 0.2	0.01	mg/L	Jul-19-11	Jul-19-11	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Jul-13-11	Jul-13-11	
Nitrilotriacetic Acid	**0.14**	MAC = 0.4	0.05	mg/L	Jul-13-11	Jul-19-11	
Nitrogen, Ammonia as N	< 0.02		0.02	mg/L	Jul-13-11	Jul-15-11	
Nitrogen, Nitrate as N	< 0.01	MAC = 10	0.01	mg/L	Jul-13-11	Jul-13-11	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Jul-13-11	Jul-13-11	
Solids, Total Dissolved	**31**	AO ≤ 500	5	mg/L	Jul-14-11	Jul-15-11	
Solids, Total Suspended	< 1		1	mg/L	Jul-13-11	Jul-15-11	
Sulfate	**1.3**	AO ≤ 500	1.0	mg/L	Jul-13-11	Jul-13-11	
Sulfide	< 0.05	AO ≤ 0.05	0.05	mg/L	Jul-13-11	Jul-13-11	
Turbidity	**0.2**	Varies, See Guidelines	0.1	NTU	Jul-14-11	Jul-14-11	
UV Transmittance @ 254nm	**79.2**		0.1	%	Jul-14-11	Jul-15-11	
Lytton Creek Dam Intake Raw Water (THMFP) (K1G0427-02) Matrix: Water Sampled: Jul-12-11 11:20 To Jul-19-11 11:20							
pH	**7.47**	AO = 6.5 - 8.5	0.01	pH Units	Jul-13-11	Jul-13-11	
Field Parameters							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Temperature	**9.0**	AO ≤ 15		C	N/A	Jul-12-11	
Radioactivity Parameters							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Gross Alpha	**0.04**	MAC = 0.5	0.03	Bq/L	Jul-14-11	Aug-03-11	
Lead-210	< 0.020	MAC = 0.1	0.020	Bq/L	Jul-14-11	Aug-03-11	
Polonium-210	< 0.005	MAC = 0.2	0.005	Bq/L	Jul-14-11	Aug-03-11	
Radium-226	< 0.02	MAC = 0.6	0.02	Bq/L	Jul-14-11	Aug-03-11	
Gross Beta	**0.05**	MAC = 1	0.02	Bq/L	Jul-14-11	Aug-03-11	
Radium-228	< 0.01		0.01	Bq/L	Jul-14-11	Aug-03-11	
Microbiological Parameters							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Iron Related Bacteria	**8800**		2.0	CFU/mL	Jul-13-11	Jul-27-11	
Microcystin-LR	**Not Detected**	MAC = 1.5	2		Jul-14-11	Jul-22-11	
Haloacetic Acids							

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	McElhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
Haloacetic Acids, Continued							
Lytton Creek Dam Intake Raw Water (THMFP) (K1G0427-02) Matrix: Water Sampled: Jul-12-11 11:20 To Jul-19-11 11:20							
Monochloroacetic Acid	< 0.002		0.002	mg/L	Jul-28-11	Jul-28-11	
Monobromoacetic Acid	< 0.002		0.002	mg/L	Jul-28-11	Jul-28-11	
Dichloroacetic Acid	**0.113**		0.002	mg/L	Jul-28-11	Jul-28-11	
Trichloroacetic Acid	**0.179**		0.010	mg/L	Jul-28-11	Jul-28-11	RA2
Dibromoacetic Acid	< 0.002		0.002	mg/L	Jul-28-11	Jul-28-11	
Total Haloacetic Acids (HAA5)	**0.291**	MAC = 0.08	0.022	mg/L	Jul-28-11	Jul-28-11	
Surrogate: 2-Bromopropionic Acid	*129 %*		*99-165*		*Jul-28-11*	*Jul-28-11*	
Trihalomethane Formation Potential (APHA 5710B)							
Lytton Creek Dam Intake Raw Water (THMFP) (K1G0427-02) Matrix: Water Sampled: Jul-12-11 11:20 To Jul-19-11 11:20							
Incubation Temperature	**20.0**			C	Jul-13-11	Jul-13-11	
Incubation Time	**7**			Days	Jul-13-11	Jul-13-11	
Free Chlorine, Initial Dose	**7.30**		0.05	mg/L	Jul-13-11	Jul-13-11	
Free Chlorine, Final	**4.00**		0.05	mg/L	Jul-13-11	Jul-13-11	
Total Trihalomethanes (as CHCl3)	**0.18**		0.012	mg/L	Jul-21-11	Jul-22-11	
Chlorine Demand, Free	**3.30**			mg/L	Jul-13-11	Jul-13-11	
Volatile Organic Compounds by GCMS							
Lytton Creek Dam Intake Raw Water (THMFP) (K1G0427-02) Matrix: Water Sampled: Jul-12-11 11:20 To Jul-19-11 11:20							
Bromodichloromethane	< 0.001		0.001	mg/L	Jul-21-11	Jul-22-11	
Bromoform	< 0.001		0.001	mg/L	Jul-21-11	Jul-22-11	
Chloroform	**0.18**		0.010	mg/L	Jul-21-11	Jul-22-11	RA2
Dibromochloromethane	< 0.001		0.001	mg/L	Jul-21-11	Jul-22-11	
Trihalomethanes (total)	**0.18**	MAC = 0.1	0.040	mg/L	Jul-21-11	Jul-22-11	RA2
Surrogate: 4-Bromofluorobenzene	*93 %*		*80-120*		*Jul-21-11*	*Jul-22-11*	
General Parameters							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Hardness, Total (Total as CaCO3)	**22.8**		1.25	mg/L	Jul-18-11	Jul-19-11	
Dissolved Metals by ICPMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Iron, dissolved	< 0.01		0.01	mg/L	Jul-18-11	Jul-19-11	
Manganese, dissolved	**0.0003**		0.0002	mg/L	Jul-18-11	Jul-19-11	
Total Recoverable Metals by ICPMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Aluminum	**0.053**	AO = 0.1	0.005	mg/L	Jul-19-11	Jul-19-11	
Antimony	**0.0002**	MAC = 0.006	0.0001	mg/L	Jul-18-11	Jul-19-11	

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	McElhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
Total Recoverable Metals by ICPMS, Continued							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20, Continued							
Arsenic	< 0.0005	MAC = 0.01	0.0005	mg/L	Jul-18-11	Jul-19-11	
Barium	**0.007**	MAC = 1	0.005	mg/L	Jul-18-11	Jul-19-11	
Beryllium	< 0.0001		0.0001	mg/L	Jul-18-11	Jul-19-11	
Bismuth	< 0.0001		0.0001	mg/L	Jul-18-11	Jul-19-11	
Boron	< 0.004	MAC = 5	0.004	mg/L	Jul-18-11	Jul-19-11	
Cadmium	< 0.00001	MAC = 0.005	0.00001	mg/L	Jul-18-11	Jul-19-11	
Calcium	**7.8**		0.5	mg/L	Jul-18-11	Jul-19-11	
Chromium	**0.0009**	MAC = 0.05	0.0005	mg/L	Jul-18-11	Jul-19-11	
Cobalt	< 0.00005		0.00005	mg/L	Jul-18-11	Jul-19-11	
Copper	**0.0008**	AO ≤ 1	0.0002	mg/L	Jul-18-11	Jul-19-11	
Iron	**0.01**	AO ≤ 0.3	0.01	mg/L	Jul-18-11	Jul-19-11	
Lead	**0.0002**	MAC = 0.01	0.0001	mg/L	Jul-18-11	Jul-19-11	
Lithium	**0.0003**		0.0001	mg/L	Jul-18-11	Jul-19-11	
Magnesium	**0.78**		0.01	mg/L	Jul-18-11	Jul-19-11	
Manganese	**0.0005**	AO ≤ 0.05	0.0002	mg/L	Jul-18-11	Jul-19-11	
Mercury	**0.00010**	MAC = 0.001	0.00002	mg/L	Jul-18-11	Jul-19-11	
Molybdenum	**0.0005**		0.0001	mg/L	Jul-18-11	Jul-19-11	
Nickel	< 0.0002		0.0002	mg/L	Jul-18-11	Jul-19-11	
Phosphorus	**0.03**		0.02	mg/L	Jul-18-11	Jul-19-11	
Potassium	**0.16**		0.02	mg/L	Jul-18-11	Jul-19-11	
Selenium	< 0.0005	MAC = 0.01	0.0005	mg/L	Jul-18-11	Jul-19-11	
Silicon	**3.7**		0.5	mg/L	Jul-18-11	Jul-19-11	
Silver	**0.00006**		0.00005	mg/L	Jul-18-11	Jul-19-11	
Sodium	**1.21**	AO ≤ 200	0.02	mg/L	Jul-18-11	Jul-19-11	
Strontium	**0.030**		0.001	mg/L	Jul-18-11	Jul-19-11	
Tellurium	< 0.0002		0.0002	mg/L	Jul-18-11	Jul-19-11	
Thallium	< 0.00002		0.00002	mg/L	Jul-18-11	Jul-19-11	
Thorium	< 0.0001		0.0001	mg/L	Jul-18-11	Jul-19-11	
Tin	< 0.0002		0.0002	mg/L	Jul-18-11	Jul-19-11	
Titanium	< 0.005		0.005	mg/L	Jul-18-11	Jul-19-11	
Uranium	**0.00023**	MAC = 0.02	0.00002	mg/L	Jul-18-11	Jul-19-11	
Vanadium	**0.001**		0.001	mg/L	Jul-18-11	Jul-19-11	
Zinc	**0.005**	AO ≤ 5	0.004	mg/L	Jul-18-11	Jul-19-11	
Zirconium	< 0.0001		0.0001	mg/L	Jul-18-11	Jul-19-11	
Carbamates by HPLC							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Aldicarb	< 0.0050	MAC = 0.009	0.0050	mg/L	Jul-15-11	Jul-21-11	
Bendiocarb	< 0.0100	MAC = 0.04	0.0100	mg/L	Jul-15-11	Jul-21-11	
Carbaryl	< 0.0100	MAC = 0.09	0.0100	mg/L	Jul-15-11	Jul-21-11	
Carbofuran	< 0.0100	MAC = 0.09	0.0100	mg/L	Jul-15-11	Jul-21-11	
Surrogate: 4-Bromo-3,5-dimethylphenyl N-methylcarbamate	*130 %*		*70-130*		*Jul-15-11*	*Jul-21-11*	

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	McElhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
Acid Herbicides by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
2,4-D	< 0.00010	MAC = 0.1	0.00010	mg/L	Jul-16-11	Jul-16-11	
Dicamba	< 0.00010	MAC = 0.1	0.00010	mg/L	Jul-16-11	Jul-16-11	
Dinoseb	< 0.00005	MAC = 0.01	0.00005	mg/L	Jul-16-11	Jul-16-11	
MCPA	< 0.00030	MAC = 0.1	0.00030	mg/L	Jul-16-11	Jul-16-11	
Picloram	< 0.00010	MAC = 0.2	0.00010	mg/L	Jul-16-11	Jul-16-11	
Surrogate: 2,4-DCAA	*78 %*		*60-130*		*Jul-16-11*	*Jul-16-11*	
Miscellaneous Herbicides by HPLC							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Diquat	< 0.0100	MAC = 0.07	0.0100	mg/L	Jul-15-11	Aug-02-11	
Paraquat	< 0.0050	MAC = 0.01	0.0050	mg/L	Jul-15-11	Aug-02-11	
Glyphosate	< 0.050	MAC = 0.28	0.050	mg/L	Jul-15-11	Jul-28-11	
Organochlorine Pesticides by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Aldrin	< 0.00004	MAC = 0.0007	0.00004	mg/L	Jul-14-11	Jul-14-11	
Diclofop-methyl	< 0.00010	MAC = 0.009	0.00010	mg/L	Jul-14-11	Jul-14-11	
Dieldrin	< 0.00004	MAC = 0.0007	0.00004	mg/L	Jul-14-11	Jul-14-11	
Methoxychlor	< 0.00005	MAC = 0.9	0.00005	mg/L	Jul-14-11	Jul-14-11	
Organonitrogen Herbicides by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Atrazine	< 0.0001	MAC = 0.005	0.0001	mg/L	Jul-14-11	Jul-14-11	
Bromoxynil	< 0.0002	MAC = 0.005	0.0002	mg/L	Jul-14-11	Jul-14-11	
Cyanazine	< 0.0002	MAC = 0.01	0.0002	mg/L	Jul-14-11	Jul-14-11	
Diuron	< 0.0002	MAC = 0.2	0.0002	mg/L	Jul-14-11	Jul-14-11	
Metolachlor	< 0.0001	MAC = 0.05	0.0001	mg/L	Jul-14-11	Jul-14-11	
Metribuzin	< 0.0002	MAC = 0.08	0.0002	mg/L	Jul-14-11	Jul-14-11	
Simazine	< 0.0002	MAC = 0.01	0.0002	mg/L	Jul-14-11	Jul-14-11	
Tebuthiuron	< 0.0002		0.0002	mg/L	Jul-14-11	Jul-14-11	
Organophosphorus Pesticides by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
Azinphos-methyl	< 0.00020	MAC = 0.02	0.00020	mg/L	Jul-14-11	Jul-14-11	
Chlorpyrifos	< 0.00020	MAC = 0.09	0.00020	mg/L	Jul-14-11	Jul-14-11	
Diazinon	< 0.00003	MAC = 0.02	0.00003	mg/L	Jul-14-11	Jul-14-11	
Dimethoate	< 0.00020	MAC = 0.02	0.00020	mg/L	Jul-14-11	Jul-14-11	
Malathion	< 0.00010	MAC = 0.2	0.00010	mg/L	Jul-14-11	Jul-14-11	
Parathion	< 0.00010	MAC = 0.05	0.00010	mg/L	Jul-14-11	Jul-14-11	
Phorate	< 0.00010	MAC = 0.002	0.00010	mg/L	Jul-14-11	Jul-14-11	
Terbufos	< 0.00010	MAC = 0.001	0.00010	mg/L	Jul-14-11	Jul-14-11	
Chlorinated and Non-Chlorinated Phenols							

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	Ni Elhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
Chlorinated and Non-Chlorinated Phenols, Continued							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
2,4-Dichlorophenol	< 0.0003	MAC = 0.0009	0.0003	mg/L	Jul-19-11	Jul-21-11	
2,4,6-Trichlorophenol	< 0.0005	MAC = 0.005	0.0005	mg/L	Jul-19-11	Jul-21-11	
2,3,4,6-Tetrachlorophenol	< 0.0005	MAC = 0.001	0.0005	mg/L	Jul-19-11	Jul-21-11	
Pentachlorophenol	< 0.0005	MAC = 0.00006	0.0005	mg/L	Jul-19-11	Jul-21-11	
Polycyclic Aromatic Hydrocarbons by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							HT
Acenaphthene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Acenaphthylene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Acridine	< 0.00010		0.00010	mg/L	Jul-27-11	Jul-30-11	
Anthracene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Benzo (a) anthracene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Benzo (a) pyrene	< 0.00001	MAC = 0.00001	0.00001	mg/L	Jul-27-11	Jul-30-11	
Benzo (b) fluoranthene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Benzo (g,h,i) perylene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Benzo (k) fluoranthene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Chrysene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Dibenz (a,h) anthracene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Fluoranthene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Fluorene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Indeno (1,2,3-cd) pyrene	< 0.00005		0.00005	mg/L	Jul-27-11	Jul-30-11	
Naphthalene	< 0.00030		0.00030	mg/L	Jul-27-11	Jul-30-11	
Phenanthrene	< 0.00010		0.00010	mg/L	Jul-27-11	Jul-30-11	
Pyrene	< 0.00010		0.00010	mg/L	Jul-27-11	Jul-30-11	
Quinoline	< 0.00010		0.00010	mg/L	Jul-27-11	Jul-30-11	
Surrogate: Naphthalene-d8	*67 %*		*50-100*		*Jul-27-11*	*Jul-30-11*	
Surrogate: Acenaphthene-d10	*74 %*		*50-104*		*Jul-27-11*	*Jul-30-11*	
Surrogate: Phenanthrene-d10	*78 %*		*60-104*		*Jul-27-11*	*Jul-30-11*	
Surrogate: Chrysene-d12	*86 %*		*60-108*		*Jul-27-11*	*Jul-30-11*	
Surrogate: Perylene-d12	*88 %*		*60-109*		*Jul-27-11*	*Jul-30-11*	
Volatile Organic Compounds by GCMS							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20							
1,1,1-Trichloroethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,1,2,2-Tetrachloroethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,1,2-Trichloroethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,1-Dichloroethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,1-Dichloroethene	< 0.0010	MAC = 0.01	0.0010	mg/L	Jul-19-11	Jul-19-11	
1,2-Dibromoethane	< 0.00030		0.00030	mg/L	Jul-19-11	Jul-19-11	
1,2-Dichlorobenzene	< 0.00050	MAC = 0.2	0.00050	mg/L	Jul-19-11	Jul-19-11	
1,2-Dichloroethane	< 0.0010	MAC = 0.005	0.0010	mg/L	Jul-19-11	Jul-19-11	
1,2-Dichloropropane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,3-Dichlorobenzene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
1,4-Dichlorobenzene	< 0.0010	MAC = 0.005	0.0010	mg/L	Jul-19-11	Jul-19-11	

SAMPLE DATA

CARO ANALYTICAL SERVICES

CLIENT	Mi Ehianney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	INAC - Village of Lytton	**REPORTED**	Aug-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
Volatile Organic Compounds by GCMS, Continued							
Lytton Creek Dam Intake Raw Water (K1G0427-01) Matrix: Water Sampled: Jul-12-11 11:20, Continued							
cis-1,3-Dichloropropene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Benzene	< 0.00050	MAC = 0.005	0.00050	mg/L	Jul-19-11	Jul-19-11	
Bromodichloromethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Bromoform	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Carbon tetrachloride	< 0.0010	MAC = 0.005	0.0010	mg/L	Jul-19-11	Jul-19-11	
trans-1,3-Dichloropropene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Chlorobenzene	< 0.0010	MAC = 0.08	0.0010	mg/L	Jul-19-11	Jul-19-11	
Chloroethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Chloroform	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
cis-1,2-Dichloroethene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Dibromochloromethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Dibromomethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Ethylbenzene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Methyl tert-butyl ether	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Dichloromethane	< 0.0030	MAC = 0.05	0.0030	mg/L	Jul-19-11	Jul-19-11	
Styrene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Tetrachloroethylene	< 0.0010	MAC = 0.03	0.0010	mg/L	Jul-19-11	Jul-19-11	
Toluene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
trans-1,2-Dichloroethene	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Trichloroethylene	< 0.0010	MAC = 0.005	0.0010	mg/L	Jul-19-11	Jul-19-11	
Trichlorofluoromethane	< 0.0010		0.0010	mg/L	Jul-19-11	Jul-19-11	
Vinyl chloride	< 0.0010	MAC = 0.002	0.0010	mg/L	Jul-19-11	Jul-19-11	
Xylenes (total)	< 0.0020		0.0020	mg/L	Jul-19-11	Jul-19-11	
Surrogate: Toluene-d8	*92 %*		*80-120*		*Jul-19-11*	*Jul-19-11*	
Surrogate: 4-Bromofluorobenzene	*96 %*		*80-120*		*Jul-19-11*	*Jul-19-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*89 %*		*80-120*		*Jul-19-11*	*Jul-19-11*	

Sample Qualifiers:

HT	Parameter(s) analyzed outside of the EPA/BCMOE/APHA recommended holding time.
RA2	Reported Detection Limit (RDL) for this analyte has been raised because initial result was over the calibration range. The sample was diluted and re-analyzed.

ANALYSIS / REPORT INFORMATION

CARO ANALYTICAL SERVICES

CLIENT	McElhanney Consulting Services Ltd. - Kamloops	**WORK ORDER #**	K1G0427
PROJECT	TNAC - Village of Lytton	**REPORTED**	Aug-04-11

Analysis Description	Method Reference (* = modified from)	LAB
Acid Herbicides in Water	EPA 8151A *	RMD
Carbamates by HPLC	EPA 531.2	RMD
Chlorinated Phenols in Water	EPA 3510C/8270D	RMD
Dissolved Metals by ICPMS	EPA 6020A	RMD
Temperature (field)	Field Testing	SITE
Alkalinity, total	APHA 2320 B	KEL
Total Organic Carbon	APHA 5310 B	KEL
Chloride by IC	APHA 4110 B	KEL
True Colour	APHA 2120 B	KEL
Conductivity-Water	APHA 2510 B	KEL
Cyanide, SAD	APHA 4500-CN	KEL
Fluoride by IC	APHA 4110 B	KEL
Nitrilotriacetic Acid (NTA)	RCINOE B	KEL
Ammonia-N	APHA 4500-NH3 G	KEL
Nitrate by IC	APHA 4110 B	KEL
Nitrite by IC	APHA 4110 B	KEL
pH	APHA 4500-H+ B	KEL
Total Dissolved Solids (180C)	APHA 2540 C	KEL
Total Suspended Solids (105C)	APHA 2540 D	KEL
Sulfate by IC	APHA 4110 B	KEL
Sulfide	APHA 4500-S D	KEL
UV Transmittance at 254nm	APHA 5910B	KEL
Turbidity	APHA 2130 B	KEL
Haloacetic Acids	EPA 552.3	RMD
Iron Related Bacteria	DBISOP06	KEL
Cyanobacterial Toxins- Microcystin	In-House	SUB
Diquat and Paraquat in water	EPA 549.2 / Restek 580006	RMD
Glyphosate + AMPA in Water	EPA 547 *	RMD
Organochlorine Pesticides in Water by GCMS	EPA 3510C/8270D *	RMD
Organonitrogen Herbicides in Water by GCMS	EPA 3510C/8270D *	RMD
Organophosphorus Pesticides in Water by GCMS	EPA 3510C/8270D *	RMD
PAH in Water	EPA 3510C/8270D	RMD
Gross Alpha/Beta	APHA 7110	SUB
Lead -210	CANMET 78-22	SUB
Polonium- 210	SRC	SUB
Radium- 226	APHA 7500-Ra	SUB
Radium- 228	APHA 7500-Ra	SUB
Total Recoverable Metals by ICPMS	EPA 6020A	RMD
Chlorine Demand	APHA 5710 B	KEL
Free Chlorine, Final Dose	APHA 5710 B	KEL
Free Chlorine, Initial Dose	APHA 5710 B	KEL
Incubation Temperature	Thermometer	KEL
Incubation Time	N/A	KEL
Trihalomethanes	[CALC]	RMD
VOC in Water	EPA 5030B/8260B	RMD
Trihalomethanes	EPA 5030B/8260B	RMD

Appendix C – Flow/Use

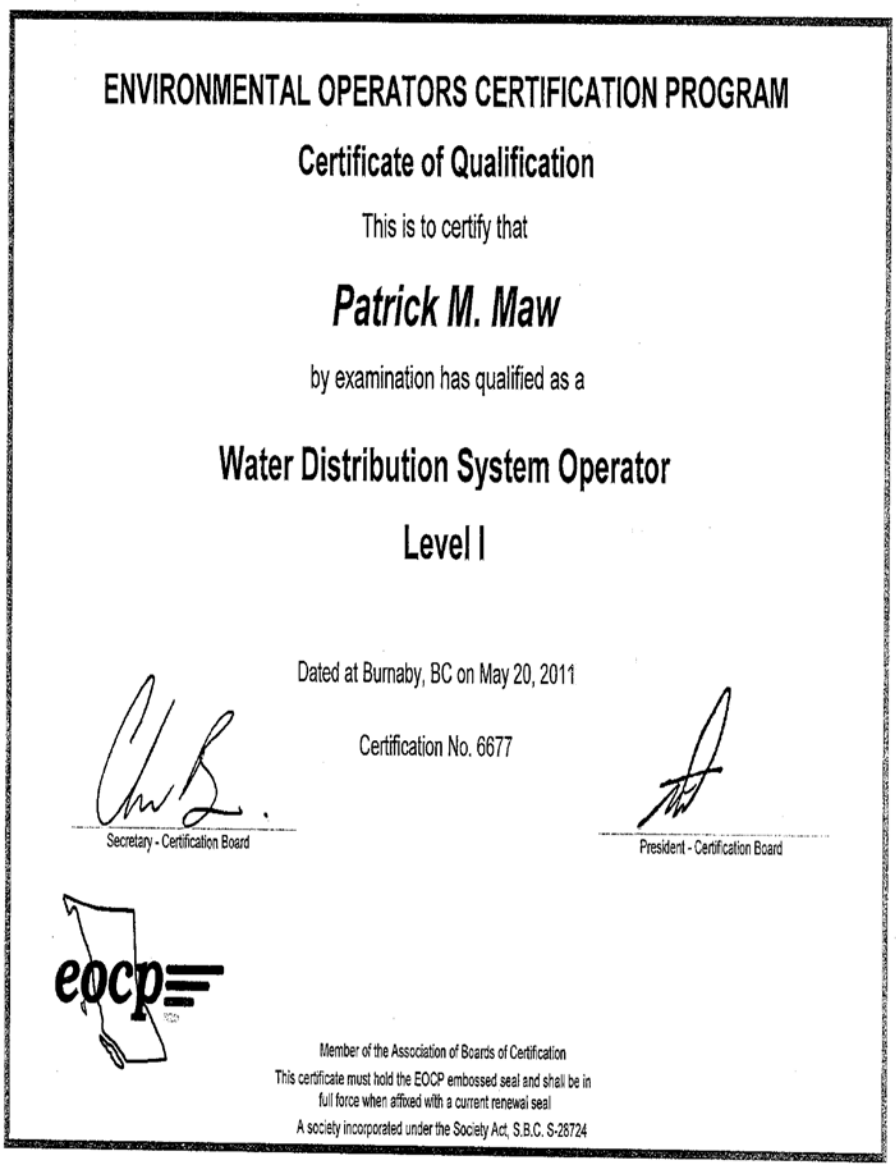
YEAR TO DATE SUMMARY AS OF DECEMBER 31, 2011 IN IMPERIAL GALLONS

2011	
Jan.	3814000
Feb.	3405000
Mar.	4060000
Apr.	3943000
May	6273000
Jun.	7452000
Jul.	8689000
Aug.	9176000
Sep.	6734000
Oct.	4595000
Nov.	3873000
Dec.	4073000
YEARLY	66087000

2010	
Jan.	3958000
Feb.	3073000
Mar.	3365000
Apr.	4134000
May	6047000
Jun.	6494000
Jul.	8244000
Aug.	7077000
Sep.	4803000
Oct.	3854000
Nov.	3553000
Dec.	3354000
YEARLY	57956000

2009	
Jan.	3937000
Feb.	4005000
Mar.	3913000
Apr.	5217000
May	7654000
Jun.	8048000
Jul.	8064000
Aug.	4548000
Sep.	3787000
Oct.	3443000
Nov.	3812000
Dec.	4015000
YEARLY	60443000

Appendix D Certificates



ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that

Patrick M. Maw

by examination has qualified as a

Water Distribution System Operator

Level I

Dated at Burnaby, BC on May 20, 2011

Certification No. 6677

Secretary - Certification Board

President - Certification Board

eocp

Member of the Association of Boards of Certification
This certificate must hold the EOCP embossed seal and shall be in full force when affixed with a current renewal seal
A society incorporated under the Society Act, S.B.C. S-28724

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that:

Patrick M. Maw

By Examination Has Qualified As A

Small Water System Operator

and certifies that he/she has met the established qualifications and has the ability to efficiently operate and maintain a specified maximum size and type of water facility designated as follows:

Small Water System

Secretary - Certification Board

Chairman - Certification Board

September 9 2008

Certificate No: 6677

eocp

Members of Association of Boards of Certification

This certificate shall be in full force and effect when accompanied by an annual renewal seal

This certificate must hold the EOCP seal

A Society Incorporated under the Society Act, S.B.C. S-28724

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that:

Tom F. McPhail

By Examination Has Qualified As A

Small Water System Operator

and certifies that he/she has metthe established qualifications and has the ability to efficiently operate and maintain a specified maximum size and type of water facility designated as follows:

Small Water System

Secretary - Certification Board

President - Certification Board

March 16, 2010

Certificate No: 7216

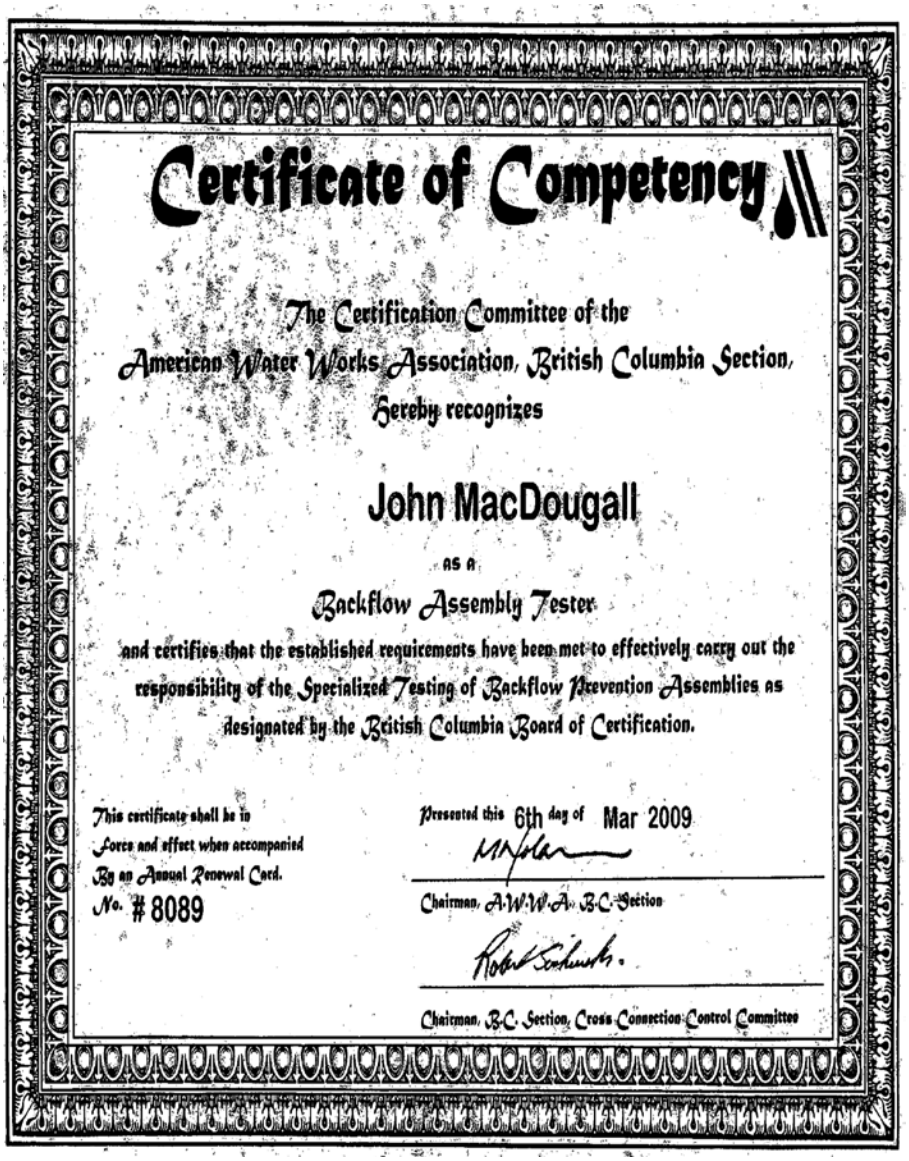
eocp

Members of Association of Boards of Certification

This certificate shall be in full force and effect when accompanied by an annual renewal seal

This certificate must hold the EOCP seal

A Society Incorporated under the Society Act, S.B.C. S-28724



Certificate of Competency

The Certification Committee of the
American Water Works Association, British Columbia Section,
Hereby recognizes

John MacDougall

AS A

Backflow Assembly Tester

and certifies that the established requirements have been met to effectively carry out the responsibility of the Specialized Testing of Backflow Prevention Assemblies as designated by the British Columbia Board of Certification.

This certificate shall be in Force and effect when accompanied By an Annual Renewal Card.
No. # 8089

Presented this 6th day of Mar 2009

Chairman, A.W.W.A. B.C. Section

Chairman, B.C. Section, Cross Connection Control Committee

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that

John W. MacDougall

by examination has qualified as a

Water Distribution System Operator

Level I

Dated at Burnaby, BC on February 25, 2011

Certification No. 6749

Secretary - Certification Board

President - Certification Board

eocp

Member of the Association of Boards of Certification

This certificate must hold the EOCP embossed seal and shall be in full force when affixed with a current renewal seal

A society incorporated under the Society Act, S.B.C. S-28724

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that:

John W. Mac Dougall

By Examination Has Qualified As A

Small Water System Operator

and certifies that he/she has met the established qualifications and has the ability to efficiently operate and maintain a specified maximum size and type of water facility designated as follows:

Small Water System

Secretary - Certification Board

Chairman - Certification Board

November 25, 2008

Certificate No: 6749

eocp

Members of Association of Boards of Certification

This certificate shall be in full force and effect when accompanied by an annual renewal seal

This certificate must hold the EOCP seal

A Society Incorporated under the Society Act, S.B.C. S-28724