



District of Invermere  
Water Treatment & Distribution System  
Quarterly Report  
April – June 2017

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*This report is available online at [www.invermerewater.ca](http://www.invermerewater.ca)*

## Introduction

The District of Invermere Water Operators monitor water quality parameters on a daily, weekly, bi-weekly, monthly, quarterly, and annual basis depending on the parameter (see Appendix A for monitoring schedule). This report summarizes the water quality parameters as well as water demand from April 1 to June 30, 2017.

Invermere gets the majority of its drinking water from Paddy Ryan Lakes, a set of three reservoirs southwest of town. This is supplemented with a groundwater well in Athalmer, where water is pumped up to the Mount Nelson water treatment plant for distribution. These two water sources are tested for various parameters and so is the distribution system.

Results were compared to the guidelines for each parameter; *there were no parameters that exceeded the allowable limit* this reporting period. When this occurred, District Water Operators informed Interior Health Authority.



Figure 1. Paddy Ryan Reservoirs (Invermere's main source for drinking water)

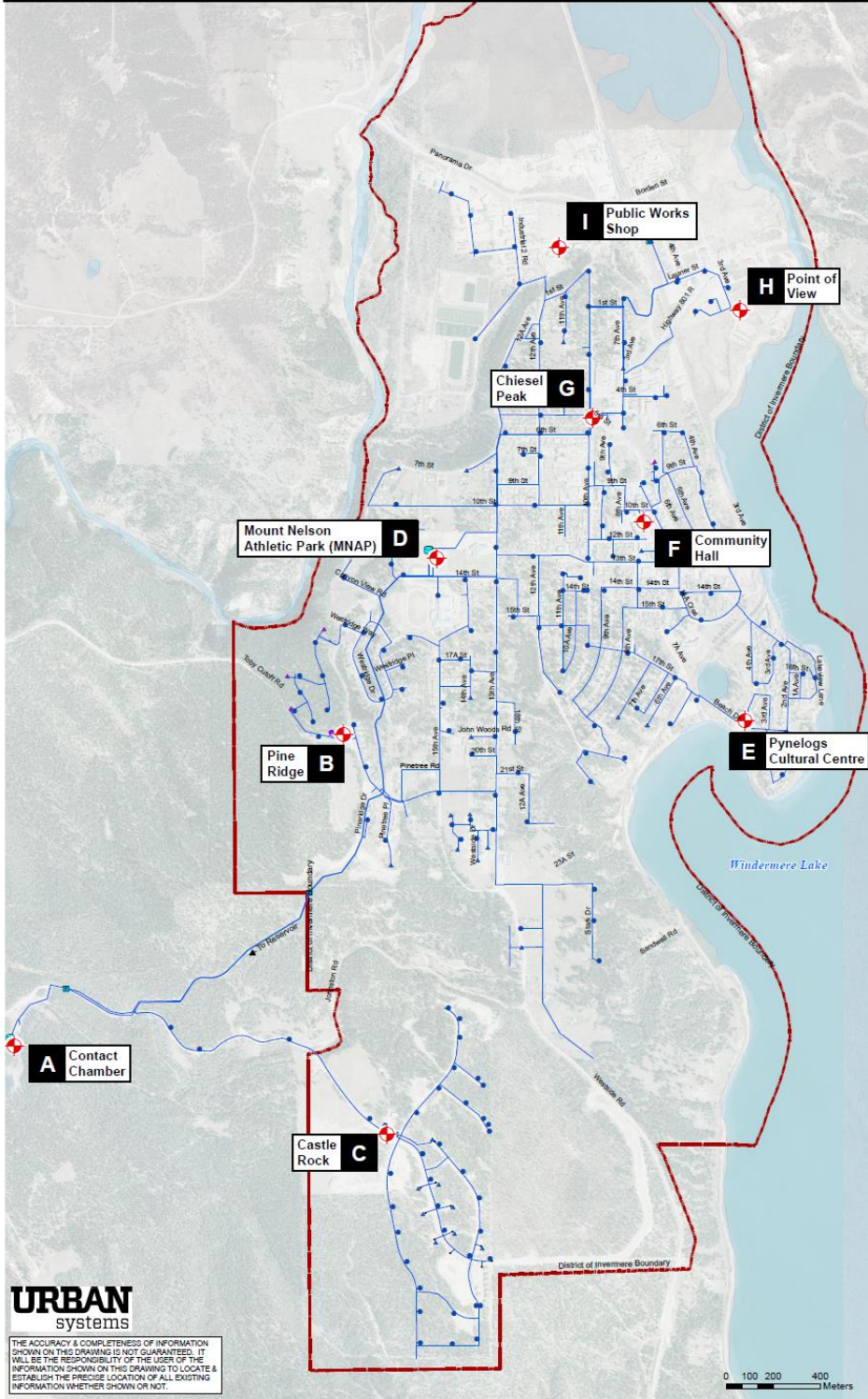


# DISTRICT OF INVERMERE DISTRIBUTION SAMPLING LOCATIONS



1:15,000

- Legend**
- Monitoring Locations
  - Reservoir
  - Invermere Booster
  - Private Booster
  - Well
  - PRVs
  - Fire Hydrants
  - Watermains



**URBAN**  
systems

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

**INVERMERE WATER SYSTEM**



Figure 2. Invermere's Distribution System

## Water Quality Monitoring Results

### *Paddy Ryan Lakes Water Quality - treated*

Parameters	Guideline	# of Samples	Average	Minimum	Maximum
Total Coliforms, No./100mL	0	3	<1	<1	<1
<i>Escherichia coli</i> , No./100mL	0	3	<1	<1	<1
Chlorine residual, mg/L	>0.2	55	0.99	0.82	1.19
Turbidity, NTU	<1	51	0.46	0.35	0.73
Temperature, C	None	55	14.93	9.2	21.2
pH	6.5-8.5	55	8.18	7.39	8.43
Alkalinity, mg CaCO <sub>3</sub> /L	None	3	169.3	161	180
Total Hardness, mg CaCO <sub>3</sub> /L	None	3	205.3	195	220

### *Paddy Ryan Lake Water Quality - raw*

Parameters	Guideline	# of Samples	Average	Minimum	Maximum
True Color, C.U.	<15	3	<5	<5	<5
TOC, mg/L	None	3	1.62	0.9	2.37
UVT, %	None	3	>97.7%	95.50%	>97.7%

### *Athalmer Well Water Quality - treated*

Parameters	Guideline	# of Samples	Average	Minimum	Maximum
Chlorine residual, mg/L	>0.2	53	0.38	0.21	0.59
Turbidity, NTU	<1	51	0.22	0.13	0.59
Temperature, C	None	52	11.88	8.7	14.7
pH	6.5-8.5	52	8.02	7.45	8.32
Alkalinity, mg CaCO <sub>3</sub> /L	None	1	171	171	171
Total Hardness, mg CaCO <sub>3</sub> /L	None	1	207	207	207

### *Athalmer Well Water Quality - raw*

Parameters	Guideline	# of Samples	Average	Minimum	Maximum
TSS, mg/L	None	1	<2	<2	<2
Alkalinity, mg CaCO <sub>3</sub> /L	None	1	167	167	167
Total Hardness, mg CaCO <sub>3</sub> /L	None	1	204	204	204

### *Chlorine By-products in Distribution System*

Parameters	Guideline	# of Samples	Average	Minimum	Maximum
HAA5s, mg/L	0.08	4	<0.002	<0.002	0.0214
TTHMs, mg/L	0.1	4	0.0127475	0.00534	0.0268

## Water Consumption

Invermere residents consumed approximately 270 million liters between April 1 and June 30 in 2017. Consumption consistently increased during spring months, when residents likely began to water their lawns and the population of Invermere increased.

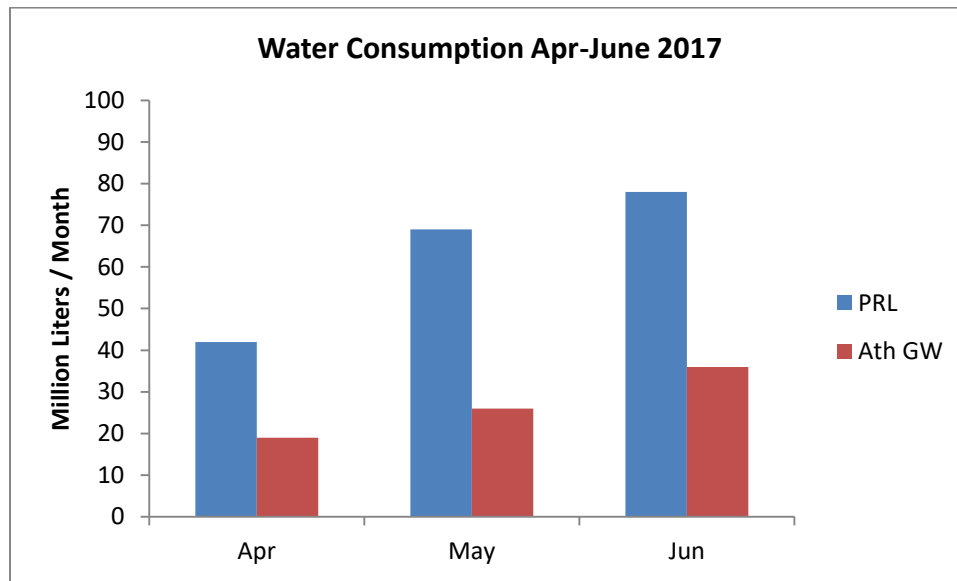


Figure 3. Water consumption in Invermere for April, May and June 2017. PRL refers to water taken from Paddy Ryan Lakes while Ath GW refers to water taken from the well in Athalmer, treated at MNAP water treatment plant.

## Appendix A

Water Quality Monitoring Schedule for water operators in Invermere; note that total and dissolved metals are measured quarterly for Paddy Ryan Lakes and annually for Athalmer well water.

Parameter	Distribution System	Goldie Creek & Res1&2	Res 3 - raw	Res 3 - treated	Ath - raw	Ath - treated
Temperature (C)	Daily	Bi-weekly	Daily	Daily	Daily	Daily
pH	Daily	Bi-weekly	Daily	Daily	Daily	Daily
Turbidity (NTU)	Daily	Bi-weekly	Daily	Daily	Daily	Daily
Dissolved Oxygen/DO (mg/L)		Bi-weekly	Bi-weekly	Bi-weekly		
Oxygen Reduction Potential/ORP (mV)		Bi-weekly	Bi-weekly	Bi-weekly		
Total Coliforms (per 100mL)	Monthly	Bi-weekly	Bi-weekly	Monthly	Annually	Annually
E. Coli (per 100mL)	Monthly	Bi-weekly	Bi-weekly	Monthly	Annually	Annually
Background Coli (per 100mL)		Bi-weekly, seasonal	Bi-weekly			
F. Coli (per 100mL)						
Chlorine residual/Free Chlorine	Daily			Daily		Daily
Hardness Total (mg CaCO3/L)	Monthly	Quarterly	Monthly	Monthly	Annually	Annually
Hardness Dissolved (mg CaCO3/L)		Annually	Annually	Annually		
Calcium Total (mg/L)			Bi-Monthly	Bi-Monthly	Annually	Annually
Magnesium Total (mg/L)			Bi-Monthly	Bi-Monthly	Annually	Annually
True Colour (CU)		Quarterly	Monthly		Annually	
Apparent Colour		Quarterly	Monthly		Annually	
Total Organic Carbon/TOC (mg/L)	Quarterly	Quarterly	Bi-weekly		Annually	
Dissolved Organic Carbon/DOC (mg/L)	Quarterly	Quarterly	Bi-weekly		Annually	
UV Transmittance/UVT Filtered (%)		Quarterly	Bi-weekly		Annually	
UV Transmittance/UVT Un-Filtered (%)		Quarterly	Bi-weekly		Annually	
Total Suspended Solids/TSS (mg/L)	Monthly, seasonal	Quarterly	Monthly	Monthly		
Total Dissolved Solids/TDS (mg/L)	Monthly, seasonal				Annually	Annually
Total Haloacetic Acids/HAA5s (mg/L)	Quarterly	Bi-annually				
Total Trihalomethanes/TTHMs (mg/L)	Quarterly	Bi-annually				
Total Trihalomethanes as CHCl3 (mg/L)						
Monochloroacetic Acid (mg/L)	Quarterly					
Monobromoacetic Acid (mg/L)	Quarterly					
Dichloroacetic Acid (mg/L)	Quarterly					
Trichloroacetic Acid (mg/L)	Quarterly					
Dibromoacetic Acid (mg/L)	Quarterly					
Bromodichloromethane (mg/L)	Quarterly					
Bromoform (mg/L)	Quarterly					
Chloroform (mg/L)	Quarterly					
Dibromochloromethane (mg/L)	Quarterly					

Ammonia (mg-N/L)		Quarterly		Quarterly	Annually	Annually
N-Nitrite (mg-N/L)					Annually	
N-Nitrate (mg-N/L)					Annually	
Conductivity (uS/cm)	Quarterly	Annually	Monthly		Annually	
Sulphide (mg/L)					Annually	Annually
Magnesium Total (mg/L)						
Alkalinity (mg/L)	Monthly					
Alkalinity (mg CaCO3/L)		Quarterly	Monthly	Monthly	Annually	Annually
Alkalinity Phenolphthalein (mg/L)						
Alkalinity Carbonate (mg/L)						
Alkalinity Bicarbonate (mg/L)						
Alkalinity Hydroxide (mg/L)						
Phenolics (mg/L)					Annually	
CCME PHC F1 (C6-10) (ug/L)					Annually	
CCME PHC F2 (C10-16) (ug/L)					Annually	
CCME PHC F3 (C6-10) (ug/L)					Annually	
CCME PHC F4 (C10-16) (ug/L)					Annually	
Benzene (ug/L)					Annually	
Ethylbenz. (ug/L)					Annually	
Toluene (ug/L)					Annually	
Xylenes (ug/L)					Annually	
F1 BTEX					Annually	