



# Mount Polley Mining Corporation

an Imperial Metals company

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September 16, 2015

## **2015 Second Quarter Report for Post-TSF Breach Monitoring – Cover Memorandum**

Under the Amended Pollution Abatement Order 107461, issued to Mount Polley Mining Corporation (MPMC) by the BC Ministry of Environment (MoE) following a failure of the Mount Polley Mine Tailings Storage Facility on August 4, 2015, MPMC is required to provide quarterly data reports to MoE.

This quarterly report includes data collected in the second quarter of 2015 (April – June) under the “2015 Post-TSF Breach Monitoring Plan”, which was submitted to and approved by MoE in the first quarter of 2015. It is important to note that only raw data are presented in this report. MPMC has made this information public in an effort to continue open and transparent communication; however, it is recommended that data interpretation only be completed by Qualified Professionals.

A [Post-Event Environmental Impact Assessment Report](#) (PEEIAR) was submitted to MoE on June 6, 2015 containing interpreted data and detailing preliminary findings from environmental monitoring results following the tailings dam failure. The scope of the PEEIAR included chemical, physical and biological impacts. Interpretation of the data presented in this report, in addition to other data collected since submission of the PEEIAR, will be provided in a Progress Report to MoE, which is due December 31, 2015.

Additional information on activities related to the tailings dam failure response, including rehabilitation work and environmental monitoring, is available on the Imperial Metals Corporation [Mount Polley Updates](#) webpage.

Please direct any questions to [inquiries@imperialmetals.com](mailto:inquiries@imperialmetals.com).



## Mount Polley Mining Corporation

IMPERIAL METALS CORPORATION

September 9, 2015

Via Email: Hubert Bunce  
A/Director, Mount Polley  
BC Ministry of Environment  
Environmental Protection, Regional Operations

### **RE: Second Quarter 2015 Report for Post TSF-Breach Monitoring Plan**

Mount Polley Mining Corporation (MPMC) is pleased to present this second quarter Post TSF-Breach Monitoring report for 2015 as required under Pollution Abatement Order 107461, May 27, 2015. Surface water monitoring was conducted throughout this time period as specified in the *2015 Post TSF- Breach Monitoring Plan*. Sampling events are outlined in Table 1.

With regard to the *2015 Post TSF- Breach Monitoring Plan* the following items should be noted:

- Hydrological monitoring was conducted at four stations (Polley Lake Weir, Upper Hazeltine, Lower Hazeltine, and Lower Edney).
- Climate data including temperature, wind direction, rainfall, wind speed, and snowpack were collected. Solar radiation and relative humidity data were also collected to allow for calculation of evaporation rates. These data will be reported in the 2015 Progress Report.
- There were 150 surface water quality sampling events.
- Quality assurance monitoring included nine duplicate samples, three field blanks, and two travel blanks. In May, quality assurance monitoring began incorporating all water quality samples taken, including Permit 11678 sites. These data will be reported in the 2015 Progress Report.
- Supplemental monitoring results will be presented in the December 31, 2015 Progress Report.

- For water balance information, refer to the “Second Quarter 2015 Report for Permit 11678”.

This report includes the following sections for water quality:

- Appendix 1: Water quality analysis
- Appendix 2: In-situ data
- Appendix 3: Hydrology results

Table 1: Sampling events in the second quarter 2015

Site Name	BC EMS Code	Full Sample Suite Frequency	Required	Completed
HAC-10	E303010	Monthly	3	5
HAC-05	E303012	Monthly	3	5
HAC-08	E303013	Monthly	3	7
HAC-01b	E301410	Monthly	3	14
EDC-01	E303014	Monthly	3	7
EDC-02	E303015	Weekly	12	15
QUL-54	E303016	Profile Only *	12	14
QUL-55	E303017	Weekly	12	15
QUL-56	E303018	Profile Only *	12	14
QUL-18	E303019	Weekly/Monthly <sup>a</sup>	5	5
QUL-2a	E303020	Weekly/Monthly <sup>a</sup>	5	5
QUL-40a	E303021	Monthly	3	3
QUL-120a	E303022	Monthly	3	3
QUL-21a	E303023	Profile Only <sup>b</sup>	8	5
QUL-66a	E303024	Profile Only <sup>b</sup>	8	8
QUL-79	E303025	Profile Only <sup>b</sup>	8	8
QUR-1	E303026	Weekly/bi-weekly <sup>c</sup>	10	11
P1		Monthly	3	3
P2		Monthly	3	3

\* Only sample if in-situ parameters are different than QUL-55, profile weekly

<sup>a</sup> Weekly during spring overturn, monthly after spring overturn

<sup>b</sup> Weekly during spring overturn, bi-monthly after spring overturn

<sup>c</sup> Weekly during spring overturn, bi-weekly after spring overturn

Sincerely,



Colleen Hughes, EP  
 Environmental Coordinator  
 Mount Polley Mining Corporation  
 250-790-2617

# Appendix 1

Appendix 1  
EDC-01 (Edney Creek Upstream of Confluence with Hazeltine)

Date Sampled	1-Apr-15	7-Apr-15	14-Apr-15	21-Apr-15	28-Apr-15	4-May-15	2-Jun-15
<b>Physical Tests</b>							
Conductivity (µS/cm)	88.8	94.7	99.3	99.8	108	113	225
Hardness (as CaCO3)	47.4	48.3	50.3	52.0	54.8	55.5	119
pH (pH)	7.89	7.84	7.82	7.97	7.94	7.97	8.17
Total Suspended Solids	391	9.5	13.9	48.1	4.0	51.4	5.4
Total Dissolved Solids	103	89	93	93	101	97	162
Turbidity (ntu)	126	5.13	2.72	2.70	2.85	2.29	0.86
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	46.5	45.7	50.7	50.4	56.3	51.8	110
Ammonia, Total (as N)	0.0062	0.0056	0.0059	0.0059	0.0061	<0.0050	0.0084
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62
Fluoride (F)	0.037	0.037	0.041	0.039	0.042	0.040	0.078
Nitrate and Nitrite (as N)	0.0237	0.0182	0.0143	0.0140	0.0109	0.0093	0.0182
Nitrate (as N)	0.0237	0.0182	0.0143	0.0140	0.0109	0.0093	0.0182
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.582	0.495	0.468	0.471	0.494	0.475	0.368
Orthophosphate-Dissolved (as P)	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Phosphorus (P)-Total Dissolved	0.0105	0.0079	0.0072	0.0079	0.0080	0.0066	0.0051
Phosphorus (P)-Total	0.299	0.0187	0.0137	0.0140	0.0159	0.0138	0.0065
Sulfate (SO4)	1.30	1.83	1.79	1.93	2.09	2.44	12.2
<b>Organic / Inorganic Carbon</b>							
Dissolved Organic Carbon	26.7	19.7	19.6	18.2	19.4	17.2	11.2
<b>Total Metals</b>							
Aluminum (Al)-Total	5.92	0.439	0.273	0.235	0.197	0.226	0.0512
Antimony (Sb)-Total	0.00016	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00284	0.00050	0.00044	0.00045	0.00046	0.00058	0.00096
Barium (Ba)-Total	0.0487	0.0103	0.00929	0.00970	0.0100	0.0111	0.0210
Beryllium (Be)-Total	0.00018	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	0.000066	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017
Cadmium (Cd)-Total	0.0000813	0.0000085	0.0000057	0.0000076	0.0000072	0.0000089	0.0000065
Calcium (Ca)-Total	21.4	13.3	14.5	14.8	14.9	16.0	33.0
Chromium (Cr)-Total	0.0131	0.00137	0.00103	<0.0010	0.00133	0.00105	<0.00050
Cobalt (Co)-Total	0.00466	0.00026	0.00015	0.00014	0.00014	0.00014	<0.00010
Copper (Cu)-Total	0.0199	0.00520	0.00382	0.00372	0.00422	0.00450	0.00843
Iron (Fe)-Total	10.2	0.549	0.330	0.327	0.304	0.325	0.080
Lead (Pb)-Total	0.00308	0.000153	0.000075	0.000082	0.000077	0.000093	<0.000050
Lithium (Li)-Total	0.0076	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	5.81	3.56	3.87	4.00	3.97	4.36	8.62
Manganese (Mn)-Total	0.171	0.0165	0.0107	0.0105	0.0109	0.0127	0.0164
Molybdenum (Mo)-Total	0.000528	0.000372	0.000474	0.000577	0.000510	0.000554	0.00263
Nickel (Ni)-Total	0.0132	0.00165	0.00132	0.00119	0.00148	0.00135	0.00090
Potassium (K)-Total	1.25	0.563	0.523	0.507	0.502	0.588	1.02
Selenium (Se)-Total	0.000222	0.000118	0.000148	0.000144	0.000114	0.000144	0.000252
Silicon (Si)-Total	13.6	4.49	4.21	4.14	3.87	4.04	4.39
Silver (Ag)-Total	0.000043	<0.000010	0.000012	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	2.01	1.90	2.09	2.02	2.20	2.43	5.81
Strontium (Sr)-Total	0.124	0.0780	0.0905	0.0967	0.0904	0.102	0.213
Thallium (Tl)-Total	0.000056	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	0.252	0.016	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000276	0.000078	0.000081	0.000093	0.000090	0.000105	0.000298
Vanadium (V)-Total	0.0147	0.00139	0.00095	0.00093	0.00099	0.00114	0.00080
Zinc (Zn)-Total	0.0223	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>							
Aluminum (Al)-Dissolved	0.136	0.167	0.137	0.0921	0.0935	0.0885	0.0157
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00044	0.00036	0.00039	0.00039	0.00038	0.00044	0.00100
Barium (Ba)-Dissolved	0.00627	0.00821	0.00818	0.00858	0.00928	0.00930	0.0223
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.016
Cadmium (Cd)-Dissolved	0.0000120	0.0000065	0.0000059	0.0000056	0.0000063	<0.0000050	0.0000054
Calcium (Ca)-Dissolved	13.8	13.5	14.1	14.5	15.3	15.4	33.3
Chromium (Cr)-Dissolved	0.00076	0.00077	0.00071	0.00064	0.00065	0.00077	<0.00050
Cobalt (Co)-Dissolved	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00373	0.00322	0.00306	0.00315	0.00345	0.00360	0.00791
Iron (Fe)-Dissolved	0.210	0.184	0.157	0.128	0.139	0.133	0.035
Lead (Pb)-Dissolved	0.000061	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	3.17	3.53	3.69	3.85	4.02	4.15	8.76
Manganese (Mn)-Dissolved	0.00918	0.00702	0.00524	0.00134	0.00400	0.00581	0.0127
Molybdenum (Mo)-Dissolved	0.000380	0.000350	0.000403	0.000449	0.000479	0.000499	0.00255
Nickel (Ni)-Dissolved	0.00127	0.00117	0.00112	0.00113	0.00109	0.00114	0.00091
Potassium (K)-Dissolved	0.514	0.535	0.495	0.508	0.520	0.540	1.09
Selenium (Se)-Dissolved	0.000121	0.000093	0.000122	0.000146	0.000125	0.000128	0.000214
Silicon (Si)-Dissolved	4.04	4.10	3.83	3.82	3.79	3.65	4.42
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	1.63	1.99	2.01	2.16	2.27	2.35	6.03
Strontium (Sr)-Dissolved	0.0748	0.0793	0.0885	0.0864	0.0918	0.0963	0.210
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000088	0.000071	0.000074	0.000078	0.000089	0.000096	0.000294
Vanadium (V)-Dissolved	0.00097	0.00064	0.00058	0.00074	0.00062	0.00064	0.00065
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
EDC-02 (Edney Creek Below Confluence with Hazeltine)

Date Sampled	26-May-15	02-Jun-15	09-Jun-15	16-Jun-15	29-Jun-15	22-Jun-15
<b>Physical Tests</b>						
Conductivity (µS/cm)	283	312	310	336	372	119
Hardness (as CaCO <sub>3</sub> )	123	140	149	166	181	62.4
pH	8.23	8.37	8.21	8.25	8.35	7.97
Total Suspended Solids	11.4	4.6	5.4	9.9	7.1	<3.0
Total Dissolved Solids	199	196	213	226	225	75
Turbidity (ntu)	7.09	2.41	3.59	5.79	3.71	0.96
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	115	112	123	138	143	52.9
Ammonia, Total (as N)	0.0076	0.0073	0.0058	0.0072	0.0098	<0.0050
Chloride (Cl)	1.05	1.24	1.36	1.30	1.41	<0.50
Fluoride (F)	0.091	0.104	0.113	0.108	0.128	0.040
Nitrate and Nitrite (as N)	0.0523	0.0424	0.0719	0.0509	0.0743	0.0936
Nitrate (as N)	0.0506	0.0413	0.0704	0.0509	0.0722	0.0936
Nitrite (as N)	0.0017	0.0011	0.0015	<0.0010	0.0020	<0.0010
Total Nitrogen	0.387	0.309	0.354	0.303	0.281	0.155
Orthophosphate-Dissolved (as P)	0.0015	0.0016	0.0018	<0.0010	0.0014	0.0030
Phosphorus (P)-Total Dissolved	0.0074	0.0063	0.0064	0.0043	0.0046	0.0025
Phosphorus (P)-Total	0.0196	0.0119	0.0198	0.0164	0.0112	0.0042
Sulfate (SO <sub>4</sub> )	35.2	44.2	47.8	44.8	51.9	8.82
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	10.6	6.25	6.11	5.55	6.11	2.35
<b>Total Metals</b>						
Aluminum (Al)-Total	0.233	0.125	0.223	0.300	0.175	0.0521
Antimony (Sb)-Total	0.00013	0.00018	0.00021	0.00021	0.00024	<0.00010
Arsenic (As)-Total	0.00126	0.00116	0.00133	0.00133	0.00149	0.00021
Barium (Ba)-Total	0.0265	0.0280	0.0341	0.0364	0.0402	0.00818
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	0.000055	<0.000050	<0.000050
Boron (B)-Total	0.020	0.028	0.032	0.031	0.033	<0.010
Cadmium (Cd)-Total	0.0000131	0.0000120	0.0000168	0.0000129	0.0000079	<0.0000050
Calcium (Ca)-Total	34.6	44.1	48.6	49.8	55.2	19.8
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	0.00023	0.00013	0.00020	0.00027	0.00014	<0.00010
Copper (Cu)-Total	0.0211	0.0203	0.0236	0.0251	0.0193	0.00392
Iron (Fe)-Total	0.249	0.154	0.249	0.341	0.144	0.053
Lead (Pb)-Total	0.000110	0.000072	0.000115	0.000175	<0.00010	<0.000050
Lithium (Li)-Total	<0.0010	0.0012	0.0016	0.0017	0.0014	0.0012
Magnesium (Mg)-Total	7.01	7.73	8.45	9.71	10.5	2.67
Manganese (Mn)-Total	0.0557	0.0571	0.0726	0.0884	0.0748	0.00813
Molybdenum (Mo)-Total	0.00623	0.0104	0.0110	0.00969	0.0115	0.00120
Nickel (Ni)-Total	0.00090	0.00055	0.00073	0.00085	0.00065	<0.00050
Potassium (K)-Total	1.20	1.44	1.68	1.62	1.72	0.537
Selenium (Se)-Total	0.000616	0.000851	0.000961	0.000923	0.00124	0.000224
Silicon (Si)-Total	3.96	3.91	4.51	4.95	5.23	1.95
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	7.10	9.37	10.3	10.5	11.9	1.58
Strontium (Sr)-Total	0.266	0.357	0.377	0.386	0.425	0.142
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	0.000011	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	0.013	<0.010	0.012	0.017	<0.010	<0.010
Uranium (U)-Total	0.000472	0.000595	0.000644	0.000876	0.00104	0.000197
Vanadium (V)-Total	0.00161	0.00139	0.00181	0.00198	0.00177	<0.00050
Zinc (Zn)-Total	<0.0030	0.0046	0.0058	0.0061	0.0058	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0188	0.0118	0.0115	0.0494	0.0100	0.0096
Antimony (Sb)-Dissolved	0.00012	0.00019	0.00021	0.00021	0.00020	<0.00010
Arsenic (As)-Dissolved	0.00105	0.00115	0.00117	0.00126	0.00132	0.00019
Barium (Ba)-Dissolved	0.0248	0.0264	0.0304	0.0327	0.0373	0.00785
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.021	0.027	0.032	0.027	0.028	<0.010
Cadmium (Cd)-Dissolved	0.0000122	0.0000083	0.0000106	0.0000098	0.0000150	<0.0000050
Calcium (Ca)-Dissolved	37.2	43.5	46.4	50.4	55.2	20.4
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.0151	0.0152	0.0155	0.0133	0.0145	0.00205
Iron (Fe)-Dissolved	0.035	<0.030	<0.030	0.066	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0010	0.0010	0.0014	0.0014	0.0014	0.0012
Magnesium (Mg)-Dissolved	7.38	7.59	7.98	9.78	10.5	2.78
Manganese (Mn)-Dissolved	0.0459	0.0391	0.0437	0.0108	0.0612	0.00652
Molybdenum (Mo)-Dissolved	0.00644	0.0101	0.0104	0.00974	0.0105	0.00111
Nickel (Ni)-Dissolved	0.00077	<0.00050	0.00061	0.00052	<0.00050	<0.00050
Potassium (K)-Dissolved	1.25	1.45	1.53	1.61	1.64	0.560
Selenium (Se)-Dissolved	0.000594	0.000956	0.000907	0.00108	0.00113	0.000217
Silicon (Si)-Dissolved	3.81	3.65	3.93	4.85	4.99	1.91
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	7.70	9.31	9.72	10.7	11.5	1.69
Strontium (Sr)-Dissolved	0.274	0.350	0.362	0.391	0.419	0.141
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000475	0.000582	0.000616	0.000776	0.000943	0.000189
Vanadium (V)-Dissolved	0.00095	0.00112	0.00115	0.00120	0.00134	<0.00050
Zinc (Zn)-Dissolved	<0.0030	0.0036	0.0038	<0.0030	0.0044	<0.0030

Note: Units are mg/L unless otherwise stated





Appendix 1  
HAC-01b (Mouth of Hazeltine Creek at Quesnel Lake)

Date Sampled	2-Jun-15	9-Jun-15	16-Jun-15	29-Jun-15	22-Jun-15
<b>Physical Tests</b>					
Conductivity (µS/cm)	332	316	348	382	343
Hardness (as CaCO <sub>3</sub> )	148	155	170	185	180
pH	8.38	8.28	8.25	8.35	8.26
Total Suspended Solids	6.5	7.5	5.9	32.1	4.4
Total Dissolved Solids	204	220	252	231	245
Turbidity (ntu)	2.76	3.03	3.05	3.37	4.26
<b>Anions and Nutrients</b>					
Alkalinity, Total (as CaCO <sub>3</sub> )	117	128	141	148	132
Ammonia, Total (as N)	0.0091	<0.0050	<0.0050	<0.0050	0.0063
Chloride (Cl)	1.36	1.39	1.40	1.47	1.47
Fluoride (F)	0.110	0.115	0.114	0.130	0.119
Nitrate and Nitrite (as N)	0.0476	0.0781	0.0659	0.0775	0.272
Nitrate (as N)	0.0464	0.0766	0.0646	0.0755	0.270
Nitrite (as N)	0.0012	0.0014	0.0013	0.0020	0.0019
Total Nitrogen	0.456	0.353	0.306	0.275	0.492
Orthophosphate-Dissolved (as P)	0.0016	0.0020	<0.0010	<0.0010	0.0014
Phosphorus (P)-Total Dissolved	0.0068	0.0101	0.0047	0.0038	0.0059
Phosphorus (P)-Total	0.0143	0.0140	0.0112	0.0115	0.0129
Sulfate (SO <sub>4</sub> )	48.7	49.2	49.4	53.6	54.4
<b>Organic / Inorganic Carbon</b>					
Dissolved Organic Carbon	6.07	6.18	5.22	6.07	6.11
<b>Total Metals</b>					
Aluminum (Al)-Total	0.144	0.160	0.172	0.125	0.209
Antimony (Sb)-Total	0.00020	0.00023	0.00021	0.00025	0.00023
Arsenic (As)-Total	0.00128	0.00139	0.00143	0.00212	0.00138
Barium (Ba)-Total	0.0306	0.0360	0.0369	0.0426	0.0373
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.031	0.032	0.034	0.051	0.032
Cadmium (Cd)-Total	0.0000107	0.0000116	0.0000202	0.0000336	0.0000151
Calcium (Ca)-Total	46.6	50.1	52.4	55.9	55.2
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	0.00015	0.00017	0.00018	0.00016	0.00020
Copper (Cu)-Total	0.0218	0.0232	0.0245	0.0215	0.0230
Iron (Fe)-Total	0.184	0.197	0.198	0.143	0.253
Lead (Pb)-Total	0.000081	0.000103	0.000105	0.000086	0.000108
Lithium (Li)-Total	0.0012	0.0015	0.0016	0.0020	0.0019
Magnesium (Mg)-Total	8.10	8.54	9.81	10.8	9.80
Manganese (Mn)-Total	0.0659	0.0729	0.110	0.0966	0.0830
Molybdenum (Mo)-Total	0.0114	0.0119	0.0112	0.0123	0.0124
Nickel (Ni)-Total	0.00056	0.00062	0.00073	0.00065	0.00072
Potassium (K)-Total	1.55	1.56	1.71	1.91	1.60
Selenium (Se)-Total	0.000982	0.000988	0.000977	0.00118	0.00141
Silicon (Si)-Total	4.02	4.44	4.85	5.34	5.00
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	10.2	11.8	11.4	12.5	11.2
Strontium (Sr)-Total	0.387	0.409	0.428	0.462	0.418
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	0.000013	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	0.012
Uranium (U)-Total	0.000631	0.000693	0.000942	0.00107	0.000818
Vanadium (V)-Total	0.00156	0.00178	0.00169	0.00202	0.00176
Zinc (Zn)-Total	0.0051	0.0071	0.0070	0.0077	0.0100
<b>Dissolved Metals</b>					
Aluminum (Al)-Dissolved	0.0102	0.0100	0.0409	0.0108	0.0087
Antimony (Sb)-Dissolved	0.00018	0.00020	0.00022	0.00024	0.00021
Arsenic (As)-Dissolved	0.00118	0.00123	0.00135	0.00152	0.00116
Barium (Ba)-Dissolved	0.0286	0.0306	0.0333	0.0401	0.0337
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.029	0.030	0.028	0.035	0.028
Cadmium (Cd)-Dissolved	0.0000126	0.0000111	0.0000070	0.0000181	0.0000159
Calcium (Ca)-Dissolved	46.0	48.3	51.8	56.6	55.8
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.0163	0.0160	0.0140	0.0157	0.0162
Iron (Fe)-Dissolved	<0.030	<0.030	0.049	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	0.0011	0.0012	0.0015	0.0018	0.0017
Magnesium (Mg)-Dissolved	7.93	8.30	9.76	10.6	9.85
Manganese (Mn)-Dissolved	0.0499	0.0474	0.0126	0.0725	0.0728
Molybdenum (Mo)-Dissolved	0.0112	0.0113	0.0110	0.0114	0.0116
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	0.00051
Potassium (K)-Dissolved	1.52	1.41	1.68	1.83	1.55
Selenium (Se)-Dissolved	0.000915	0.00105	0.00113	0.00130	0.00134
Silicon (Si)-Dissolved	3.74	4.02	4.79	5.02	4.57
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	10.1	11.2	11.4	12.1	11.2
Strontium (Sr)-Dissolved	0.376	0.377	0.418	0.444	0.415
Thallium (Tl)-Dissolved	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000620	0.000638	0.000826	0.000998	0.000777
Vanadium (V)-Dissolved	0.00115	0.00121	0.00126	0.00146	0.00123
Zinc (Zn)-Dissolved	0.0039	0.0042	<0.0030	0.0063	0.0080

Note: Units are mg/L unless otherwise stated

Appendix 1  
HAC-05 (Hazeltn Creek at Gavin Lake Bridge)

Date Sampled	14-Apr-15	21-Apr-15	28-Apr-15	4-May-15	2-Jun-15
<b>Physical Tests</b>					
Conductivity (µS/cm)	305	294	426	297	283
Hardness (as CaCO3)	136	129	207	131	132
pH (pH)	8.12	8.23	8.35	8.25	8.63
Total Suspended Solids	33.9	26.9	9.0	12.6	7.2
Total Dissolved Solids	188	189	264	201	180
Turbidity (ntu)	8.02	8.67	9.46	6.74	2.01
<b>Anions and Nutrients</b>					
Alkalinity, Total (as CaCO3)	109	100	148	100	99.2
Ammonia, Total (as N)	0.0320	0.0126	0.0211	0.0073	0.0140
Chloride (Cl)	1.50	1.47	2.22	1.42	1.39
Fluoride (F)	0.095	0.097	0.131	0.094	0.096
Nitrate and Nitrite (as N)	0.359	0.206	0.155	0.0964	0.0366
Nitrate (as N)	0.355	0.203	0.151	0.0938	0.0343
Nitrite (as N)	0.0041	0.0037	0.0045	0.0026	0.0023
Total Nitrogen	0.688	0.600	0.485	0.506	0.383
Orthophosphate-Dissolved (as P)	0.0262	0.0024	0.0012	0.0020	0.0020
Phosphorus (P)-Total Dissolved	0.0320	0.0090	0.0051	0.0083	0.0094
Phosphorus (P)-Total	0.136	0.0914	0.0545	0.0502	0.0369
Sulfate (SO4)	50.4	49.2	49.5	48.0	47.4
<b>Organic / Inorganic Carbon</b>					
Dissolved Organic Carbon	7.30	6.61	9.62	6.61	6.50
<b>Total Metals</b>					
Aluminum (Al)-Total	0.685	0.577	0.844	0.394	0.143
Antimony (Sb)-Total	0.00017	0.00018	0.00023	0.00018	0.00017
Arsenic (As)-Total	0.00137	0.00128	0.00154	0.00115	0.00099
Barium (Ba)-Total	0.0289	0.0285	0.0564	0.0247	0.0187
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.028	0.028	0.028	0.028	0.028
Cadmium (Cd)-Total	0.0000108	0.0000112	0.0000356	0.0000054	<0.0000050
Calcium (Ca)-Total	44.4	41.9	65.2	45.1	41.4
Chromium (Cr)-Total	0.00064	<0.00060	0.00102	<0.00050	<0.00050
Cobalt (Co)-Total	0.00063	0.00048	0.00102	0.00033	0.00015
Copper (Cu)-Total	0.0334	0.0332	0.0514	0.0193	0.0102
Iron (Fe)-Total	0.677	0.562	1.22	0.337	0.142
Lead (Pb)-Total	0.000242	0.000239	0.000420	0.000143	0.000081
Lithium (Li)-Total	0.0015	0.0011	0.0016	0.0014	<0.0010
Magnesium (Mg)-Total	6.48	6.10	11.7	6.40	6.08
Manganese (Mn)-Total	0.149	0.0979	0.358	0.0552	0.0374
Molybdenum (Mo)-Total	0.0111	0.0113	0.0121	0.0118	0.0107
Nickel (Ni)-Total	0.00094	0.00090	0.00160	0.00056	<0.00050
Potassium (K)-Total	1.49	1.47	1.83	1.48	1.38
Selenium (Se)-Total	0.00101	0.000911	0.000843	0.000992	0.000957
Silicon (Si)-Total	5.31	4.69	6.89	4.74	3.47
Silver (Ag)-Total	0.000016	<0.000010	0.000015	<0.000010	<0.000010
Sodium (Na)-Total	10.2	9.80	13.6	10.0	9.30
Strontium (Sr)-Total	0.373	0.356	0.572	0.355	0.320
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	0.039	0.030	0.053	0.019	<0.010
Uranium (U)-Total	0.000394	0.000380	0.000903	0.000381	0.000339
Vanadium (V)-Total	0.00283	0.00247	0.00388	0.00196	0.00146
Zinc (Zn)-Total	<0.0030	<0.0030	0.0040	<0.0030	<0.0030
<b>Dissolved Metals</b>					
Aluminum (Al)-Dissolved	0.0117	0.0069	0.0124	0.0058	0.0064
Antimony (Sb)-Dissolved	0.00015	0.00016	0.00022	0.00015	0.00014
Arsenic (As)-Dissolved	0.00091	0.00092	0.00098	0.00088	0.00099
Barium (Ba)-Dissolved	0.0181	0.0186	0.0395	0.0166	0.0166
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.028	0.027	0.027	0.025	0.029
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	0.0000173	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	44.0	41.9	64.2	42.8	42.6
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.00014	<0.00010	0.00035	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00956	0.00857	0.0225	0.00680	0.00618
Iron (Fe)-Dissolved	0.059	<0.030	0.054	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	<0.000050	0.000093	<0.000050	<0.000050
Lithium (Li)-Dissolved	0.0010	0.0011	0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	6.23	5.89	11.4	5.93	6.19
Manganese (Mn)-Dissolved	0.0818	0.00028	0.297	0.0355	0.0220
Molybdenum (Mo)-Dissolved	0.0114	0.0114	0.0119	0.0114	0.0112
Nickel (Ni)-Dissolved	<0.00050	<0.00050	0.00070	<0.00050	<0.00050
Potassium (K)-Dissolved	1.36	1.38	1.67	1.38	1.40
Selenium (Se)-Dissolved	0.000985	0.000940	0.000821	0.000912	0.000857
Silicon (Si)-Dissolved	4.14	3.59	5.27	3.76	3.30
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	10.1	10.2	13.6	10.1	9.53
Strontium (Sr)-Dissolved	0.368	0.345	0.554	0.335	0.330
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000367	0.000364	0.000861	0.000353	0.000352
Vanadium (V)-Dissolved	0.00084	0.00099	0.00101	0.00091	0.00109
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated

Appendix 1  
HAC-08 (Hazeltine Creek upstream of Ditch Road Bridge)

Date Sampled	1-Apr-15	7-Apr-15	14-Apr-15	21-Apr-15	28-Apr-15	4-May-15	2-Jun-15
<b>Physical Tests</b>							
Conductivity (µS/cm)	201	282	299	307	392	312	302
Hardness (as CaCO3)	104	129	135	145	188	139	142
pH (pH)	8.06	8.20	8.16	8.30	8.38	8.29	8.45
Total Suspended Solids	1930	1270	3190	372	82.8	557	11.6
Total Dissolved Solids	203	208	203	205	244	212	201
Turbidity (ntu)	1410	372	1090	45.6	57.0	65.1	2.08
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	88.3	111	114	116	162	125	111
Ammonia, Total (as N)	0.0890	0.0513	0.0501	0.0141	0.0158	0.0090	0.0073
Chloride (Cl)	0.78	1.19	1.37	1.42	1.49	1.41	1.39
Fluoride (F)	0.073	0.089	0.101	0.108	0.124	0.106	0.110
Nitrate and Nitrite (as N)	0.163	0.249	0.302	0.197	0.161	0.119	0.0555
Nitrate (as N)	0.161	0.247	0.298	0.193	0.157	0.117	0.0541
Nitrite (as N)	0.0021	0.0020	0.0036	0.0039	0.0041	0.0026	0.0014
Total Nitrogen	0.877	0.624	0.650	0.549	0.417	0.519	0.330
Orthophosphate-Dissolved (as P)	0.0036	0.0051	0.0139	0.0031	0.0047	0.0029	0.0026
Phosphorus (P)-Total Dissolved	0.0127	0.0101	0.0197	0.0100	0.0095	0.0087	0.0079
Phosphorus (P)-Total	2.03	1.85	5.58	0.600	0.123	1.75	0.0413
Sulfate (SO4)	26.1	40.5	46.5	48.4	46.9	48.8	49.8
<b>Organic / Inorganic Carbon</b>							
Dissolved Organic Carbon	17.2	10.4	8.45	7.63	8.85	6.33	6.07
<b>Total Metals</b>							
Aluminum (Al)-Total	37.5	19.8	42.4	3.54	2.39	6.42	0.227
Antimony (Sb)-Total	0.00050	0.00048	0.00048	0.00028	0.00031	0.00031	0.00018
Arsenic (As)-Total	0.0177	0.0125	0.0317	0.00470	0.00283	0.00977	0.00137
Barium (Ba)-Total	0.388	0.243	0.605	0.0859	0.0653	0.123	0.0280
Beryllium (Be)-Total	0.00114	0.00057	0.00174	0.00014	<0.00010	0.00029	<0.00010
Bismuth (Bi)-Total	0.00038	0.000134	0.00024	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.022	0.028	0.050	0.031	0.027	0.030	0.029
Cadmium (Cd)-Total	0.000527	0.000496	0.000533	0.0000657	0.0000413	0.000124	0.0000061
Calcium (Ca)-Total	88.0	75.2	142	53.8	58.6	69.5	44.5
Chromium (Cr)-Total	0.0636	0.0259	0.0341	0.00362	0.00450	0.00535	<0.00050
Cobalt (Co)-Total	0.0311	0.0147	0.0357	0.00287	0.00205	0.00523	0.00018
Copper (Cu)-Total	0.582	0.397	1.67	0.202	0.0616	0.466	0.0241
Iron (Fe)-Total	62.3	25.5	56.8	4.23	3.63	8.76	0.252
Lead (Pb)-Total	0.0215	0.00891	0.0191	0.00232	0.00123	0.00682	0.000443
Lithium (Li)-Total	0.0471	0.0201	0.0484	0.0041	0.0037	0.0063	0.0013
Magnesium (Mg)-Total	29.5	16.7	37.1	8.66	12.5	10.6	7.28
Manganese (Mn)-Total	1.52	0.911	1.78	0.269	0.155	0.384	0.0162
Molybdenum (Mo)-Total	0.00599	0.00906	0.0131	0.0115	0.00988	0.0110	0.0113
Nickel (Ni)-Total	0.0718	0.0282	0.0360	0.00473	0.00540	0.00659	<0.00050
Potassium (K)-Total	5.62	4.19	7.35	2.17	1.94	2.64	1.53
Selenium (Se)-Total	0.00121	0.00129	0.00249	0.000969	0.00112	0.00118	0.000993
Silicon (Si)-Total	63.7	36.1	70.4	9.70	10.2	15.0	4.08
Silver (Ag)-Total	0.000368	0.000190	0.000780	0.000058	0.000035	0.000162	<0.000010
Sodium (Na)-Total	7.66	10.3	13.1	10.7	12.4	11.3	10.2
Strontium (Sr)-Total	0.589	0.571	0.898	0.473	0.502	0.487	0.370
Thallium (Tl)-Total	0.000228	0.000100	0.000122	0.000018	0.000021	0.000027	<0.000010
Tin (Sn)-Total	0.00050	0.00043	0.00145	0.00011	<0.00010	0.00025	<0.00010
Titanium (Ti)-Total	1.65	1.04	2.82	0.177	0.133	0.373	0.013
Uranium (U)-Total	0.00233	0.00156	0.00287	0.000903	0.00143	0.00117	0.000520
Vanadium (V)-Total	0.0984	0.0588	0.170	0.0130	0.00866	0.0280	0.00193
Zinc (Zn)-Total	0.140	0.0625	0.138	0.0126	0.0094	0.0225	<0.0030
<b>Dissolved Metals</b>							
Aluminum (Al)-Dissolved	0.184	0.0522	0.0790	0.0312	0.0271	0.0162	0.0106
Antimony (Sb)-Dissolved	0.00023	0.00018	0.00021	0.00020	0.00023	0.00019	0.00017
Arsenic (As)-Dissolved	0.00111	0.00094	0.00118	0.00111	0.00138	0.00113	0.00123
Barium (Ba)-Dissolved	0.0279	0.0283	0.0320	0.0293	0.0391	0.0264	0.0254
Beryllium (Be)-Dissolved	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.00010	<0.000050	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.020	0.022	0.026	0.026	0.027	0.026	0.030
Cadmium (Cd)-Dissolved	0.000021	0.0000119	0.000011	0.0000154	0.0000084	0.0000112	<0.0000050
Calcium (Ca)-Dissolved	31.5	39.9	42.5	45.4	56.8	44.0	44.6
Chromium (Cr)-Dissolved	0.00070	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.00033	0.00031	0.00025	<0.00010	0.00018	0.00013	<0.00010
Copper (Cu)-Dissolved	0.0352	0.0248	0.0369	0.0297	0.0226	0.0200	0.0150
Iron (Fe)-Dissolved	0.326	0.098	0.051	0.060	0.041	<0.030	<0.030
Lead (Pb)-Dissolved	0.00019	0.000059	<0.00010	0.000054	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0020	0.0013	<0.0020	0.0013	0.0016	0.0014	0.0012
Magnesium (Mg)-Dissolved	6.19	7.07	6.93	7.58	11.2	7.12	7.32
Manganese (Mn)-Dissolved	0.186	0.177	0.104	0.0301	0.0692	0.0484	0.00328
Molybdenum (Mo)-Dissolved	0.00653	0.00928	0.0108	0.0118	0.00998	0.0114	0.0117
Nickel (Ni)-Dissolved	0.0020	0.00139	0.0013	0.00091	0.00120	0.00060	<0.00050
Potassium (K)-Dissolved	1.18	1.31	1.60	1.49	1.54	1.49	1.48
Selenium (Se)-Dissolved	0.00076	0.000878	0.00107	0.00124	0.00110	0.000961	0.00103
Silicon (Si)-Dissolved	4.66	4.35	4.44	4.29	5.46	4.10	3.72
Silver (Ag)-Dissolved	<0.000020	<0.000010	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	5.86	8.97	9.71	10.8	12.6	10.5	10.1
Strontium (Sr)-Dissolved	0.256	0.381	0.410	0.393	0.478	0.385	0.373
Thallium (Tl)-Dissolved	<0.000020	<0.000010	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000815	0.000751	0.000657	0.000631	0.00137	0.000614	0.000518
Vanadium (V)-Dissolved	0.0023	0.00139	0.0019	0.00116	0.00129	0.00103	0.00113
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated

Appendix 1  
HAC-10 (Outlet of Polley Lake at Weir)

Date Sampled	14-Apr-15	21-Apr-15	28-Apr-15	4-May-15	2-Jun-15
<b>Physical Tests</b>					
Conductivity (µS/cm)	285	270	290	282	269
Hardness (as CaCO3)	126	129	131	123	126
pH (pH)	8.05	8.17	8.06	8.35	8.65
Total Suspended Solids	3.2	12.9	3.6	10.3	<3.0
Total Dissolved Solids	187	182	186	182	187
Turbidity (ntu)	1.92	9.20	4.43	6.23	0.61
<b>Anions and Nutrients</b>					
Alkalinity, Total (as CaCO3)	81.4	86.6	87.2	99.0	93.1
Ammonia, Total (as N)	0.0205	0.0054	0.0103	<0.0050	0.0695
Chloride (Cl)	1.36	1.34	1.37	1.34	1.33
Fluoride (F)	0.088	0.089	0.083	0.088	0.090
Nitrate and Nitrite (as N)	0.357	0.184	0.103	0.0618	0.0147
Nitrate (as N)	0.353	0.180	0.101	0.0588	0.0132
Nitrite (as N)	0.0040	0.0033	0.0029	0.0030	0.0015
Total Nitrogen	0.659	0.657	0.521	0.538	0.432
Orthophosphate-Dissolved (as P)	0.0372	0.0029	0.0026	<0.0010	0.0058
Phosphorus (P)-Total Dissolved	0.0420	0.0105	0.0119	0.0066	0.0138
Phosphorus (P)-Total	0.0499	0.0453	0.0360	0.0539	0.0212
Sulfate (SO4)	48.3	48.0	44.5	47.7	47.9
<b>Organic / Inorganic Carbon</b>					
Dissolved Organic Carbon	6.31	6.22	9.42	6.46	6.87
<b>Total Metals</b>					
Aluminum (Al)-Total	0.0639	0.486	0.225	0.342	0.0452
Antimony (Sb)-Total	0.00015	0.00015	0.00016	0.00016	0.00015
Arsenic (As)-Total	0.00097	0.00126	0.00119	0.00107	0.00099
Barium (Ba)-Total	0.0144	0.0200	0.0216	0.0177	0.0130
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.027	0.028	0.025	0.030	0.028
Cadmium (Cd)-Total	<0.000050	0.000093	0.000082	<0.000050	<0.000050
Calcium (Ca)-Total	42.6	41.1	42.3	42.4	41.5
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	0.00038	0.00033	0.00026	<0.00010
Copper (Cu)-Total	0.00375	0.0227	0.0125	0.0124	0.00393
Iron (Fe)-Total	0.051	0.493	0.295	0.241	0.042
Lead (Pb)-Total	<0.000050	0.000239	0.000099	0.000087	<0.000050
Lithium (Li)-Total	0.0010	0.0013	<0.0010	0.0016	<0.0010
Magnesium (Mg)-Total	5.67	5.58	5.60	5.62	5.68
Manganese (Mn)-Total	0.0644	0.0433	0.0787	0.0189	0.0215
Molybdenum (Mo)-Total	0.0112	0.0114	0.0102	0.0117	0.0110
Nickel (Ni)-Total	<0.00050	0.00054	0.00066	<0.00050	<0.00050
Potassium (K)-Total	1.35	1.42	1.35	1.42	1.35
Selenium (Se)-Total	0.000970	0.000911	0.000834	0.00106	0.000866
Silicon (Si)-Total	4.21	4.45	3.32	4.33	3.40
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	9.51	9.48	9.25	9.65	9.27
Strontium (Sr)-Total	0.341	0.339	0.309	0.326	0.318
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	0.025	0.013	0.015	<0.010
Uranium (U)-Total	0.000297	0.000310	0.000317	0.000320	0.000299
Vanadium (V)-Total	0.00098	0.00217	0.00155	0.00176	0.00107
Zinc (Zn)-Total	<0.0030	<0.0030	0.0138	<0.0030	<0.0030
<b>Dissolved Metals</b>					
Aluminum (Al)-Dissolved	0.0050	0.0062	0.0169	0.0053	0.0077
Antimony (Sb)-Dissolved	0.00014	0.00017	0.00013	0.00013	0.00013
Arsenic (As)-Dissolved	0.00096	0.00101	0.00092	0.00091	0.00093
Barium (Ba)-Dissolved	0.0125	0.0132	0.0170	0.0123	0.0124
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.027	0.029	0.025	0.026	0.028
Cadmium (Cd)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Dissolved	41.5	42.5	43.2	40.7	41.0
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00231	0.00364	0.00696	0.00282	0.00290
Iron (Fe)-Dissolved	<0.030	<0.030	0.063	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	5.50	5.56	5.57	5.28	5.65
Manganese (Mn)-Dissolved	0.00042	0.00661	0.0296	0.00197	0.0162
Molybdenum (Mo)-Dissolved	0.0110	0.0111	0.0103	0.0110	0.0110
Nickel (Ni)-Dissolved	<0.00050	<0.00050	0.00058	<0.00050	<0.00050
Potassium (K)-Dissolved	1.32	1.40	1.35	1.30	1.34
Selenium (Se)-Dissolved	0.000968	0.000922	0.000826	0.000896	0.000865
Silicon (Si)-Dissolved	3.98	3.66	2.95	3.54	3.31
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	9.40	9.83	9.44	9.22	9.24
Strontium (Sr)-Dissolved	0.335	0.337	0.311	0.309	0.310
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000289	0.000279	0.000327	0.000298	0.000298
Vanadium (V)-Dissolved	0.00081	0.00092	0.00086	0.00087	0.00088
Zinc (Zn)-Dissolved	<0.0030	<0.0030	0.0099	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated











Appendix 1  
 QUL-55 (Quesnel Lake 200m Beyond Hazeltine Creek (Centre))

Date Sampled	24-Jun-15	24-Jun-15	24-Jun-15	29-Jun-15	29-Jun-15	29-Jun-15
Depth	0m	15m	30m	0m	15m	30m
<b>Physical Tests</b>						
Conductivity (µS/cm)	100	104	109	103	107	111
Hardness (as CaCO3)	51.9	53.4	55.0	51.5	53.1	55.1
pH (pH)	7.95	7.95	7.94	7.97	7.95	7.91
Total Suspended Solids	<3.0	<3.0	<3.0	4	<3.0	54.1
Total Dissolved Solids	68	76	76	62	63	64
Turbidity (ntu)	0.27	0.30	0.21	0.29	0.36	0.29
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO3)	47.4	50.1	51.9	46.9	48.7	49.8
Ammonia, Total (as N)	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.031	0.032	0.034	0.030	0.031	0.032
Nitrate and Nitrite (as N)	0.079	0.107	0.138	0.073	0.105	0.139
Nitrate (as N)	0.079	0.107	0.138	0.073	0.105	0.139
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.136	0.165	0.182	0.131	0.165	0.189
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total	<0.0020	0.0022	<0.0020	<0.0020	<0.0020	0.0054
Sulfate (SO4)	5.97	6.18	6.56	5.81	5.98	6.27
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	2.00	1.83	1.82	1.92	1.80	1.79
<b>Total Metals</b>						
Aluminum (Al)-Total	0.0152	0.0166	0.0153	0.0143	0.0146	0.0140
Antimony (Sb)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00012	0.00011	0.00012	0.00013	0.00012	0.00012
Barium (Ba)-Total	0.00513	0.00527	0.00555	0.00520	0.00521	0.00546
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	17.4	17.8	18.7	17.2	17.3	18.4
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00063	0.00074	0.00101	0.00065	0.00071	0.00080
Iron (Fe)-Total	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	<0.000050	0.000137	0.000058	<0.000050	<0.00010	<0.000060
Lithium (Li)-Total	0.0013	0.0012	0.0014	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	1.97	2.00	2.09	1.99	1.89	2.05
Manganese (Mn)-Total	0.00169	0.00165	0.00102	0.00153	0.00154	0.00098
Molybdenum (Mo)-Total	0.000368	0.000374	0.000492	0.000327	0.000340	0.000398
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	0.476	0.478	0.502	0.471	0.471	0.488
Selenium (Se)-Total	0.000113	0.000107	0.000101	0.000135	0.000107	0.000098
Silicon (Si)-Total	1.70	1.71	1.80	1.69	1.66	1.78
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	0.89	0.94	1.05	0.86	0.91	0.98
Strontium (Sr)-Total	0.125	0.137	0.142	0.117	0.125	0.129
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000156	0.000176	0.000182	0.000151	0.000159	0.000167
Vanadium (V)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	0.0035	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0120	0.0077	0.0058	0.0289	0.0073	0.0064
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00011	0.00011	0.00011	0.00013	<0.00010	0.00011
Barium (Ba)-Dissolved	0.00521	0.00526	0.00536	0.00599	0.00510	0.00521
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	17.5	18.1	18.6	17.4	18.0	18.7
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00060	0.00071	0.00082	0.00136	0.00071	0.00075
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	0.000154	0.000112	0.000080	0.000159	0.000111
Lithium (Li)-Dissolved	0.0014	0.0014	0.0014	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	1.99	2.01	2.08	1.98	1.97	2.02
Manganese (Mn)-Dissolved	0.00096	0.00041	0.00011	0.00164	0.00019	0.00015
Molybdenum (Mo)-Dissolved	0.000310	0.000323	0.000435	0.000313	0.000311	0.000353
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	0.479	0.480	0.490	0.470	0.473	0.491
Selenium (Se)-Dissolved	0.000096	0.000084	0.000096	0.000109	0.000096	0.000092
Silicon (Si)-Dissolved	1.69	1.68	1.76	1.68	1.69	1.73
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	0.89	0.95	1.02	0.88	0.90	0.99
Strontium (Sr)-Dissolved	0.120	0.131	0.136	0.118	0.123	0.136
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000147	0.000158	0.000170	0.000145	0.000150	0.000157
Vanadium (V)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
 QUL-18 (Quesnel Lake Deep Site in Middle of West Arm)

Date Sampled	6-May-15	6-May-15	6-May-15	3-Jun-15	3-Jun-15	3-Jun-15
Depth	0m	40m	80m	0m	40m	80m
<b>Physical Tests</b>						
Conductivity (µS/cm)	113	115	115	111	115	115
Hardness (as CaCO <sub>3</sub> )	52.3	52.2	53.1	52.9	54.6	55.3
pH (pH)	8.04	8.05	8.06	7.96	8.02	8.03
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	69	70	69	73	66	69
Turbidity (ntu)	0.42	0.86	0.83	0.50	0.40	0.38
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	49.7	51.5	50.9	46.9	39.6	52.0
Ammonia, Total (as N)	<0.0050	0.0178	<0.0050	<0.0050	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.036	0.036	0.037	0.035	0.036	0.035
Nitrate and Nitrite (as N)	0.133	0.137	0.138	0.113	0.139	0.139
Nitrate (as N)	0.133	0.137	0.138	0.113	0.139	0.139
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.172	0.178	0.183	0.168	0.187	0.186
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020	0.0022	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total	0.0026	0.0027	0.0027	<0.0020	<0.0020	<0.0020
Sulfate (SO <sub>4</sub> )	6.84	7.11	7.18	6.46	6.97	7.00
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	2.20	2.28	2.23	2.34	2.37	2.31
<b>Total Metals</b>						
Aluminum (Al)-Total	0.0267	0.0488	0.0567	0.0168	0.0270	0.0323
Antimony (Sb)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00016	0.00018	0.00019	0.00014	0.00015	0.00015
Barium (Ba)-Total	0.00618	0.00686	0.00697	0.00539	0.00607	0.00624
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	18.2	18.2	18.4	17.9	18.3	18.2
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00144	0.00183	0.00190	0.00101	0.00143	0.00153
Iron (Fe)-Total	<0.030	0.036	0.038	<0.030	<0.030	<0.030
Lead (Pb)-Total	0.000090	0.000524	<0.000050	<0.000050	0.000077	0.000086
Lithium (Li)-Total	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	2.05	2.05	2.07	2.07	2.07	2.11
Manganese (Mn)-Total	0.00149	0.00206	0.00224	0.00141	0.00133	0.00142
Molybdenum (Mo)-Total	0.000556	0.000709	0.000755	0.000453	0.000663	0.000686
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	0.537	0.576	0.577	0.521	0.551	0.551
Selenium (Se)-Total	0.000118	0.000134	0.000129	0.000120	0.000100	0.000116
Silicon (Si)-Total	1.75	1.80	1.84	1.75	1.79	1.81
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	1.10	1.18	1.22	1.05	1.16	1.17
Strontium (Sr)-Total	0.146	0.152	0.143	0.135	0.139	0.138
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000174	0.000185	0.000190	0.000159	0.000184	0.000184
Vanadium (V)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0082	0.0077	0.0078	0.0083	0.0067	0.0072
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00013	0.00016	0.00016	0.00013	0.00013	0.00013
Barium (Ba)-Dissolved	0.00576	0.00639	0.00637	0.00525	0.00574	0.00577
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	0.0000065	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	17.7	17.7	18.0	17.8	18.4	18.6
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00096	0.00130	0.00145	0.00091	0.00117	0.00119
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	0.000086	0.000083	0.000175	0.000123	0.000122
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	1.98	1.98	2.01	2.03	2.06	2.13
Manganese (Mn)-Dissolved	0.00051	0.00043	0.00052	0.00072	0.00014	0.00016
Molybdenum (Mo)-Dissolved	0.000522	0.000688	0.000738	0.000402	0.000627	0.000626
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	0.531	0.555	0.574	0.529	0.548	0.540
Selenium (Se)-Dissolved	0.000091	0.000122	0.000118	0.000101	0.000096	0.000100
Silicon (Si)-Dissolved	1.72	1.72	1.75	1.73	1.74	1.80
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	1.08	1.18	1.21	1.04	1.15	1.14
Strontium (Sr)-Dissolved	0.142	0.149	0.145	0.131	0.137	0.138
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000166	0.000177	0.000171	0.000156	0.000179	0.000177
Vanadium (V)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
 QUL-2a (Quesnel Lake Between Cariboo Island and Hazeltine Creek)

Date Sampled	6-May-15	6-May-15	6-May-15	3-Jun-15	3-Jun-15	3-Jun-15
Depth	0m	40m	60m	0m	40m	60m
<b>Physical Tests</b>						
Conductivity (µS/cm)	114	113	114	103	113	113
Hardness (as CaCO3)	51.9	51.5	52.8	49.9	54.5	54.5
pH	8.01	8.03	8.03	7.98	8.01	8.00
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	77	70	73	65	72	68
Turbidity (ntu)	0.42	0.46	0.59	0.22	0.22	0.18
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO3)	41.7	51.4	51.5	35.8	48.7	47.0
Ammonia, Total (as N)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.035	0.035	0.036	0.033	0.035	0.035
Nitrate and Nitrite (as N)	0.135	0.135	0.137	0.0992	0.139	0.143
Nitrate (as N)	0.135	0.135	0.137	0.0992	0.139	0.143
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.186	0.182	0.183	0.164	0.179	0.178
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total	0.0027	0.0041	0.0026	0.0020	<0.0020	<0.0020
Sulfate (SO4)	6.70	6.69	6.95	5.99	6.71	6.69
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	2.23	2.03	2.18	2.32	2.16	2.04
<b>Total Metals</b>						
Aluminum (Al)-Total	0.0324	0.0297	0.0490	0.0278	0.0196	0.0224
Antimony (Sb)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00014	0.00014	0.00018	0.00014	0.00012	0.00014
Barium (Ba)-Total	0.00602	0.00582	0.00647	0.00556	0.00559	0.00559
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	18.1	18.1	18.2	16.0	18.2	18.2
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00116	0.00173	0.00159	0.00079	0.00102	0.00108
Iron (Fe)-Total	<0.030	<0.030	0.034	0.041	<0.030	<0.030
Lead (Pb)-Total	<0.000050	0.000914	0.000134	<0.000050	<0.000050	0.000083
Lithium (Li)-Total	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	2.03	2.04	2.05	1.90	2.05	2.06
Manganese (Mn)-Total	0.00164	0.00155	0.00204	0.00268	0.00118	0.00127
Molybdenum (Mo)-Total	0.000532	0.000521	0.000627	0.000379	0.000494	0.000553
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	0.519	0.508	0.534	0.501	0.514	0.524
Selenium (Se)-Total	0.000101	0.000092	0.000122	0.000110	0.000083	0.000103
Silicon (Si)-Total	1.79	1.77	1.81	1.72	1.77	1.80
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	1.06	1.03	1.11	0.915	1.04	1.06
Strontium (Sr)-Total	0.150	0.147	0.154	0.119	0.139	0.140
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000175	0.000172	0.000181	0.000142	0.000174	0.000175
Vanadium (V)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0069	0.0069	0.0078	0.0098	0.0064	0.0060
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00012	0.00011	0.00013	0.00010	0.00011	0.00011
Barium (Ba)-Dissolved	0.00556	0.00546	0.00601	0.00533	0.00538	0.00537
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	17.5	17.4	17.8	16.8	18.5	18.5
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00082	0.00110	0.00118	0.00063	0.00090	0.00088
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	0.000157	0.000134	<0.000050	0.000130	0.000086
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	1.97	1.95	2.00	1.93	2.04	2.04
Manganese (Mn)-Dissolved	0.00049	0.00036	0.00040	0.00091	0.00015	0.00014
Molybdenum (Mo)-Dissolved	0.000486	0.000475	0.000619	0.000343	0.000422	0.000436
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	0.501	0.511	0.541	0.508	0.518	0.521
Selenium (Se)-Dissolved	0.000118	0.000099	0.000113	0.000117	0.000089	0.000098
Silicon (Si)-Dissolved	1.73	1.70	1.72	1.76	1.77	1.77
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	1.05	1.03	1.11	0.921	1.02	1.04
Strontium (Sr)-Dissolved	0.145	0.144	0.146	0.117	0.131	0.136
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000167	0.000164	0.000174	0.000143	0.000158	0.000161
Vanadium (V)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
 QUL-40a (Quesnel Lake Horsefly Bay)

Date Sampled	19-May-15	18-Jun-15	18-Jun-15	18-Jun-15	18-Jun-15	18-Jun-15
Sample ID	140m	0m	40m	80m	120m	140m
<b>Physical Tests</b>						
Conductivity (µS/cm)	110	98.9	107	106	108	107
Hardness (as CaCO3)	55.1	49.5	52.1	52.8	53.3	53.2
pH	7.98	7.97	7.92	7.92	7.92	7.90
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	67	70	72	71	75	73
Turbidity (ntu)	0.40	0.31	0.21	0.18	0.15	0.22
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO3)	40.2	48.0	51.1	51.6	51.7	52.1
Ammonia, Total (as N)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.034	0.032	0.034	0.033	0.034	0.034
Nitrate and Nitrite (as N)	0.140	0.0928	0.139	0.143	0.145	0.146
Nitrate (as N)	0.140	0.0928	0.139	0.143	0.145	0.146
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.177	0.180	0.169	0.174	0.175	0.171
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total	0.0027	0.0033	<0.0020	<0.0020	<0.0020	<0.0020
Sulfate (SO4)	6.35	6.06	6.48	6.50	6.51	6.49
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	2.56	1.85	1.82	1.72	1.76	1.94
<b>Total Metals</b>						
Aluminum (Al)-Total	0.0191	0.0228	0.0163	0.0157	0.0155	0.0183
Antimony (Sb)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00012	0.00011	0.00011	0.00010	0.00011	0.00012
Barium (Ba)-Total	0.00536	0.00512	0.00513	0.00529	0.00516	0.00535
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	0.000066	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	18.0	16.9	18.3	18.6	18.5	18.5
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00082	0.00059	0.00076	0.00078	0.00065	0.00083
Iron (Fe)-Total	<0.030	<0.030	<0.030	<0.030	<0.030	0.062
Lead (Pb)-Total	<0.000050	<0.000050	0.000445	<0.00025	<0.00015	<0.00010
Lithium (Li)-Total	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	2.07	1.87	2.03	2.04	2.03	2.06
Manganese (Mn)-Total	0.00128	0.00154	0.00126	0.00145	0.00112	0.00521
Molybdenum (Mo)-Total	0.000351	0.000339	0.000330	0.000353	0.000332	0.000426
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	0.499	0.509	0.516	0.540	0.527	0.536
Selenium (Se)-Total	0.000087	0.000275	0.000161	0.000154	0.000123	0.000117
Silicon (Si)-Total	1.00	1.65	1.77	1.78	1.77	1.84
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	0.901	0.888	0.946	0.976	0.961	0.975
Strontium (Sr)-Total	0.134	0.118	0.131	0.132	0.130	0.133
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000165	0.000151	0.000161	0.000162	0.000165	0.000164
Vanadium (V)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0057	0.0103	0.0062	0.0058	0.0060	0.0057
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010
Barium (Ba)-Dissolved	0.00511	0.00500	0.00511	0.00520	0.00506	0.00524
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	18.6	16.7	17.6	17.9	18.0	18.0
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00095	0.00053	0.00084	0.00076	0.00062	0.00072
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	0.000095	<0.000050	0.000369	0.000225	0.000151	0.000138
Lithium (Li)-Dissolved	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	2.11	1.87	1.96	1.99	2.01	2.02
Manganese (Mn)-Dissolved	0.00023	0.00064	0.00032	0.00036	0.00030	0.00283
Molybdenum (Mo)-Dissolved	0.000353	0.000311	0.000330	0.000335	0.000330	0.000322
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	0.502	0.501	0.515	0.520	0.519	0.534
Selenium (Se)-Dissolved	0.000087	0.000181	0.000118	0.000114	0.000104	0.000107
Silicon (Si)-Dissolved	1.78	1.61	1.68	1.71	1.73	1.77
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	0.919	0.862	0.949	0.952	0.952	0.955
Strontium (Sr)-Dissolved	0.133	0.118	0.129	0.130	0.131	0.131
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000164	0.000144	0.000157	0.000160	0.000157	0.000155
Vanadium (V)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated





Appendix 1  
QUL-120a (Quesnel Lake Beyond Cariboo Island)

Date Sampled	13-May-15	10-Jun-15	10-Jun-15	10-Jun-15	10-Jun-15	10-Jun-15
Depth	190m	0m	40m	80m	120m	190m
<b>Physical Tests</b>						
Conductivity (µS/cm)	110	95.1	106	107	106	106
Hardness (as CaCO3)	50.6	47.9	53.2	53.0	53.7	54.2
pH	7.93	7.94	7.91	7.91	7.93	7.90
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	68	66	66	65	66	65
Turbidity (ntu)	0.29	0.49	0.17	0.15	0.23	0.24
<b>Anions and Nutrients</b>						
Alkalinity, Total (as CaCO3)	50.5	45.1	50.5	50.1	50.9	51.0
Ammonia, Total (as N)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.033	0.032	0.034	0.034	0.034	0.034
Nitrate and Nitrite (as N)	0.141	0.0818	0.140	0.143	0.143	0.143
Nitrate (as N)	0.141	0.0818	0.140	0.143	0.143	0.143
Nitrite (as N)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Nitrogen	0.188	0.150	0.184	0.181	0.179	0.182
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Total	0.0026	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Sulfate (SO4)	6.27	5.69	6.25	6.28	6.27	6.24
<b>Organic / Inorganic Carbon</b>						
Dissolved Organic Carbon	2.10	2.09	1.58	1.55	1.68	1.71
<b>Total Metals</b>						
Aluminum (Al)-Total	0.0181	0.0250	0.0186	0.0129	0.0138	0.0188
Antimony (Sb)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00011	0.00015	0.00010	<0.00010	0.00012	0.00011
Barium (Ba)-Total	0.00540	0.00554	0.00514	0.00495	0.00500	0.00521
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	0.000060	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	17.2	16.1	18.0	17.6	17.8	18.2
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00072	0.00095	0.00069	0.00075	0.00083	0.00076
Iron (Fe)-Total	<0.030	0.032	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	0.000137	<0.000050	0.000182	0.000074	0.000099	0.000177
Lithium (Li)-Total	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	1.93	1.90	2.01	1.96	2.00	2.05
Manganese (Mn)-Total	0.00138	0.00261	0.00093	0.00086	0.00089	0.00121
Molybdenum (Mo)-Total	0.000319	0.000475	0.000344	0.000324	0.000326	0.000340
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	0.493	0.516	0.511	0.495	0.499	0.516
Selenium (Se)-Total	0.000095	0.000148	0.000100	0.000070	0.000083	0.000069
Silicon (Si)-Total	1.72	1.72	1.66	1.62	1.67	1.76
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	0.988	0.926	0.968	0.946	0.962	0.986
Strontium (Sr)-Total	0.129	0.113	0.135	0.131	0.133	0.135
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000155	0.000138	0.000158	0.000154	0.000157	0.000159
Vanadium (V)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>						
Aluminum (Al)-Dissolved	0.0059	0.0111	0.0060	0.0059	0.0060	0.0059
Antimony (Sb)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	0.00011
Barium (Ba)-Dissolved	0.00527	0.00529	0.00498	0.00497	0.00508	0.00502
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	17.1	16.1	18.0	18.0	18.1	18.3
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00066	0.00064	0.00073	0.00061	0.00077	0.00060
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	0.000155	<0.000050	0.000218	0.000137	0.000117	0.000117
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	1.90	1.88	2.00	1.98	2.03	2.06
Manganese (Mn)-Dissolved	0.00021	0.00140	0.00019	0.00019	0.00021	0.00021
Molybdenum (Mo)-Dissolved	0.000293	0.000350	0.000294	0.000309	0.000312	0.000334
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	0.472	0.516	0.500	0.499	0.515	0.506
Selenium (Se)-Dissolved	0.000063	0.000133	0.000076	0.000090	0.000083	0.000100
Silicon (Si)-Dissolved	1.69	1.71	1.65	1.66	1.68	1.76
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	0.963	0.945	0.956	0.954	0.987	0.971
Strontium (Sr)-Dissolved	0.130	0.111	0.132	0.132	0.135	0.132
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000145	0.000134	0.000155	0.000153	0.000155	0.000153
Vanadium (V)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
P1 (Polley Lake North)

Date Sampled	14-May-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15
Depth	Bottom	Surface	5m	10m	15m	20m	Bottom
<b>Physical Tests</b>							
Conductivity (µS/cm)	285	270	272	275	276	276	275
Hardness (as CaCO3)	126	130	129	130	130	132	129
pH	8.12	8.46	8.44	8.08	8.00	7.95	8.01
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	183	187	185	185	189	183	185
Turbidity (ntu)	1.02	0.45	0.37	0.29	0.24	0.30	0.33
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	91.9	96.7	95.9	96.7	96.1	95.8	95.3
Ammonia, Total (as N)	0.0218	0.0733	0.0824	0.0689	0.0266	0.0134	0.0593
Chloride (Cl)	1.32	1.32	1.32	1.35	1.35	1.36	1.35
Fluoride (F)	0.085	0.089	0.088	0.087	0.088	0.087	0.088
Nitrate and Nitrite (as N)	0.312	0.0132	0.0168	0.136	0.257	0.352	0.278
Nitrate (as N)	0.295	0.0119	0.0154	0.132	0.254	0.350	0.273
Nitrite (as N)	0.0174	0.0013	0.0014	0.0047	0.0032	0.0017	0.0048
Total Nitrogen	0.608	0.406	0.422	0.476	0.510	0.606	0.470
Orthophosphate-Dissolved (as P)	0.0299	0.0025	0.0076	0.0189	0.0214	0.0371	0.0346
Phosphorus (P)-Total Dissolved	0.0357	0.0025	0.0079	0.0186	0.0220	0.0382	0.0316
Phosphorus (P)-Total	0.0404	0.0121	0.0161	0.0249	0.0278	0.0367	0.030
Sulfate (SO4)	47.5	47.8	47.7	47.9	48.0	48.1	48.1
<b>Organic / Inorganic Carbon</b>							
Dissolved Organic Carbon	6.47	6.00	6.47	6.13	5.78	5.86	6.07
<b>Total Metals</b>							
Aluminum (Al)-Total	0.0353	0.0105	0.0095	0.0074	0.0066	0.0110	0.0084
Antimony (Sb)-Total	0.00017	0.00015	0.00016	0.00015	0.00015	0.00015	0.00016
Arsenic (As)-Total	0.00098	0.00093	0.00098	0.00095	0.00094	0.00099	0.00095
Barium (Ba)-Total	0.0131	0.0114	0.0121	0.0124	0.0118	0.0123	0.0118
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.029	0.032	0.033	0.032	0.028	0.033	0.032
Cadmium (Cd)-Total	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	41.4	41.4	42.3	42.9	42.0	42.6	41.9
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00290	0.00259	0.00266	0.00222	0.00228	0.00233	0.00244
Iron (Fe)-Total	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	<0.000050	<0.000050	0.000052	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	5.54	5.47	5.58	5.58	5.50	5.56	5.50
Manganese (Mn)-Total	0.0337	0.0205	0.0200	0.0175	0.0147	0.0318	0.0201
Molybdenum (Mo)-Total	0.0111	0.0105	0.0113	0.0111	0.0111	0.0113	0.0115
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	1.32	1.23	1.28	1.26	1.35	1.30	1.25
Selenium (Se)-Total	0.000986	0.000829	0.000949	0.000878	0.000897	0.000891	0.000889
Silicon (Si)-Total	4.04	3.27	3.42	3.81	3.80	3.95	3.48
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	9.16	8.65	9.11	8.90	9.58	9.31	8.94
Strontium (Sr)-Total	0.316	0.297	0.321	0.317	0.310	0.322	0.324
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000316	0.000269	0.000298	0.000291	0.000289	0.000293	0.000294
Vanadium (V)-Total	0.00098	0.00104	0.00108	0.00095	0.00092	0.00094	0.00099
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>							
Aluminum (Al)-Dissolved	0.0063	0.0047	0.0031	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)-Dissolved	0.00014	0.00014	0.00015	0.00015	0.00013	0.00015	0.00014
Arsenic (As)-Dissolved	0.00094	0.00093	0.00093	0.00095	0.00089	0.00099	0.00092
Barium (Ba)-Dissolved	0.0125	0.0119	0.0117	0.0125	0.0118	0.0122	0.0117
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.027	0.031	0.031	0.031	0.025	0.031	0.029
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	41.5	42.8	42.3	42.7	42.8	43.7	42.5
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00229	0.00244	0.00235	0.00198	0.00205	0.00206	0.00224
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	0.000132	<0.000050	0.000084	0.000071	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	5.45	5.62	5.56	5.57	5.58	5.66	5.58
Manganese (Mn)-Dissolved	0.00590	0.0180	0.0167	0.0151	0.0120	0.0257	0.0169
Molybdenum (Mo)-Dissolved	0.0106	0.0110	0.0110	0.0110	0.0103	0.0109	0.0108
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	1.35	1.27	1.28	1.28	1.36	1.30	1.24
Selenium (Se)-Dissolved	0.000888	0.000882	0.000927	0.000889	0.000884	0.000887	0.000877
Silicon (Si)-Dissolved	3.94	3.35	3.39	3.80	3.85	3.98	3.49
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	9.11	9.10	9.21	9.11	9.57	9.24	8.93
Strontium (Sr)-Dissolved	0.307	0.314	0.316	0.323	0.306	0.322	0.313
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000292	0.000271	0.000271	0.000280	0.000273	0.000272	0.000271
Vanadium (V)-Dissolved	0.00084	0.00095	0.00097	0.00087	0.00080	0.00078	0.00088
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030



Appendix 1  
P2 (Polley Lake South)

Date Sampled	14-May-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15	11-Jun-15
Sample ID	Bottom	Surface	5m	10m	15m	20m	Bottom
<b>Physical Tests</b>							
Conductivity (µS/cm)	283	268	270	274	276	276	291
Hardness (as CaCO3)	128	129	129	130	131	131	130
pH	8.14	8.45	8.46	8.01	7.94	7.90	8.06
Total Suspended Solids	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	182	185	180	193	192	190	192
Turbidity (ntu)	0.79	0.49	0.40	0.26	0.26	0.60	1.12
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	93.9	97.2	96.3	96.7	96.3	96.6	90.2
Ammonia, Total (as N)	0.0173	0.0737	0.0743	0.0062	0.0107	0.0277	0.0423
Chloride (Cl)	1.32	1.32	1.31	1.35	1.35	1.36	1.37
Fluoride (F)	0.086	0.089	0.089	0.088	0.088	0.088	0.088
Nitrate and Nitrite (as N)	0.310	0.0141	0.0135	0.299	0.336	0.397	0.382
Nitrate (as N)	0.296	0.0128	0.0122	0.299	0.335	0.393	0.376
Nitrite (as N)	0.0146	0.0013	0.0013	<0.0010	0.0014	0.0043	0.0060
Total Nitrogen	0.590	0.409	0.421	0.554	0.588	0.677	0.672
Orthophosphate-Dissolved (as P)	0.0269	0.0030	0.0029	0.0262	0.0376	0.0476	0.0542
Phosphorus (P)-Total Dissolved	0.0322	0.0031	<0.0020	0.0280	0.0363	0.0505	0.0549
Phosphorus (P)-Total	0.0381	0.0133	0.0147	0.0279	0.0359	0.0534	0.102
Sulfate (SO4)	47.7	48.0	47.9	48.0	48.1	48.1	48.1
<b>Organic / Inorganic Carbon</b>							
Dissolved Organic Carbon	6.12	6.39	5.92	5.92	6.05	5.97	6.05
<b>Total Metals</b>							
Aluminum (Al)-Total	0.0332	0.0155	0.0085	0.0065	0.0081	0.0220	0.0366
Antimony (Sb)-Total	0.00016	0.00016	0.00015	0.00014	0.00016	0.00016	0.00016
Arsenic (As)-Total	0.00098	0.00097	0.00088	0.00093	0.00097	0.00099	0.00094
Barium (Ba)-Total	0.0126	0.0120	0.0110	0.0118	0.0124	0.0124	0.0118
Beryllium (Be)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.030	0.031	0.029	0.030	0.029	0.028	0.027
Cadmium (Cd)-Total	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Total	41.8	42.5	42.5	41.9	43.0	42.7	41.4
Chromium (Cr)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00312	0.00293	0.00250	0.00222	0.00221	0.00290	0.00304
Iron (Fe)-Total	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	0.000120	0.000054	0.000302	0.000113	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	5.56	5.62	5.63	5.47	5.63	5.63	5.47
Manganese (Mn)-Total	0.0188	0.0226	0.0194	0.0128	0.0306	0.0491	0.0705
Molybdenum (Mo)-Total	0.0112	0.0114	0.0107	0.0111	0.0116	0.0112	0.0108
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Total	1.31	1.25	1.17	1.21	1.28	1.29	1.20
Selenium (Se)-Total	0.000929	0.000909	0.000843	0.000847	0.000910	0.000882	0.000819
Silicon (Si)-Total	4.06	3.39	3.40	3.78	3.95	4.04	3.93
Silver (Ag)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	9.11	8.91	8.37	8.71	9.28	9.26	8.62
Strontium (Sr)-Total	0.323	0.320	0.302	0.315	0.331	0.322	0.313
Thallium (Tl)-Total	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	0.000315	0.000293	0.000278	0.000299	0.000305	0.000303	0.000279
Vanadium (V)-Total	0.00099	0.00105	0.00097	0.00084	0.00091	0.00097	0.00095
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>							
Aluminum (Al)-Dissolved	0.0031	0.0059	<0.0030	0.0031	0.0090	0.0032	0.0036
Antimony (Sb)-Dissolved	0.00015	0.00014	0.00014	0.00015	0.00015	0.00014	0.00014
Arsenic (As)-Dissolved	0.00099	0.00094	0.00083	0.00094	0.00102	0.00096	0.00090
Barium (Ba)-Dissolved	0.0124	0.0114	0.0102	0.0125	0.0128	0.0118	0.0119
Beryllium (Be)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.027	0.029	0.027	0.027	0.027	0.026	0.026
Cadmium (Cd)-Dissolved	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Dissolved	42.1	42.5	42.5	42.9	43.1	43.0	42.8
Chromium (Cr)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00233	0.00239	0.00220	0.00219	0.00223	0.00234	0.00231
Iron (Fe)-Dissolved	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Dissolved	0.000169	<0.000050	0.000372	0.000108	0.000101	0.000072	0.000057
Lithium (Li)-Dissolved	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	5.58	5.61	5.62	5.59	5.63	5.63	5.58
Manganese (Mn)-Dissolved	0.00229	0.0191	0.0159	0.0121	0.0269	0.0386	0.0562
Molybdenum (Mo)-Dissolved	0.0106	0.0108	0.00998	0.0110	0.0109	0.0106	0.0107
Nickel (Ni)-Dissolved	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Potassium (K)-Dissolved	1.34	1.24	1.14	1.31	1.32	1.27	1.22
Selenium (Se)-Dissolved	0.000945	0.000859	0.000834	0.000874	0.000882	0.000860	0.000798
Silicon (Si)-Dissolved	4.00	3.35	3.34	3.87	3.95	3.97	3.93
Silver (Ag)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	9.15	8.95	8.32	8.71	9.21	9.22	8.66
Strontium (Sr)-Dissolved	0.311	0.313	0.291	0.328	0.321	0.313	0.315
Thallium (Tl)-Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.000293	0.000268	0.000248	0.000296	0.000284	0.000274	0.000273
Vanadium (V)-Dissolved	0.00086	0.00086	0.00083	0.00083	0.00080	0.00081	0.00082
Zinc (Zn)-Dissolved	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated



Appendix 1  
 QUR-1 (Quesnel River at Research Centre)

Date Sampled	16-Jun-15	30-Jun-15
<b>Physical Tests</b>		
Conductivity (µS/cm)	111	106
Hardness (as CaCO <sub>3</sub> )	55.9	52.4
pH	7.93	7.99
Total Suspended Solids	<3.0	<3.0
Total Dissolved Solids	79	59
Turbidity (ntu)	0.47	0.36
<b>Anions and Nutrients</b>		
Alkalinity, Total (as CaCO <sub>3</sub> )	51.2	47.4
Ammonia, Total (as N)	<0.0050	<0.0050
Chloride (Cl)	<0.50	<0.50
Fluoride (F)	0.032	0.031
Nitrate and Nitrite (as N)	0.130	0.076
Nitrate (as N)	0.130	0.0760
Nitrite (as N)	<0.0010	<0.0010
Total Nitrogen	0.187	0.141
Orthophosphate-Dissolved (as P)	<0.0010	<0.0010
Phosphorus (P)-Total Dissolved	<0.0020	<0.0020
Phosphorus (P)-Total	0.0035	0.0025
Sulfate (SO <sub>4</sub> )	6.55	6.23
<b>Organic / Inorganic Carbon</b>		
Dissolved Organic Carbon	1.80	2.69
<b>Total Metals</b>		
Aluminum (Al)-Total	0.0674	0.0189
Antimony (Sb)-Total	<0.00010	<0.00010
Arsenic (As)-Total	0.00026	0.00015
Barium (Ba)-Total	0.00585	0.00539
Beryllium (Be)-Total	<0.00010	<0.00010
Bismuth (Bi)-Total	<0.000050	<0.000050
Boron (B)-Total	<0.010	<0.010
Cadmium (Cd)-Total	0.0000061	<0.0000050
Calcium (Ca)-Total	18.1	17.4
Chromium (Cr)-Total	<0.00050	<0.00050
Cobalt (Co)-Total	<0.00010	<0.00010
Copper (Cu)-Total	0.00150	0.00088
Iron (Fe)-Total	0.100	<0.030
Lead (Pb)-Total	<0.000050	<0.000050
Lithium (Li)-Total	<0.0010	<0.0010
Magnesium (Mg)-Total	2.04	1.94
Manganese (Mn)-Total	0.00397	0.00184
Molybdenum (Mo)-Total	0.000472	0.000452
Nickel (Ni)-Total	<0.00050	<0.00050
Potassium (K)-Total	0.462	0.510
Selenium (Se)-Total	0.000104	0.000119
Silicon (Si)-Total	1.81	1.65
Silver (Ag)-Total	<0.000010	<0.000010
Sodium (Na)-Total	0.992	0.962
Strontium (Sr)-Total	0.133	0.124
Thallium (Tl)-Total	<0.000010	<0.000010
Tin (Sn)-Total	<0.00010	<0.00010
Titanium (Ti)-Total	<0.010	<0.010
Uranium (U)-Total	0.000182	0.000156
Vanadium (V)-Total	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030
<b>Dissolved Metals</b>		
Aluminum (Al)-Dissolved	0.0061	0.0081
Antimony (Sb)-Dissolved	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00012	0.00012
Barium (Ba)-Dissolved	0.00529	0.00500
Beryllium (Be)-Dissolved	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	<0.000050	<0.000050
Boron (B)-Dissolved	<0.010	<0.010
Cadmium (Cd)-Dissolved	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	18.9	17.8
Chromium (Cr)-Dissolved	<0.00050	<0.00050
Cobalt (Co)-Dissolved	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00085	0.00078
Iron (Fe)-Dissolved	<0.030	<0.030
Lead (Pb)-Dissolved	<0.000050	<0.000050
Lithium (Li)-Dissolved	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	2.09	1.96
Manganese (Mn)-Dissolved	0.00033	0.00046
Molybdenum (Mo)-Dissolved	0.000445	0.000300
Nickel (Ni)-Dissolved	<0.00050	<0.00050
Potassium (K)-Dissolved	0.464	0.473
Selenium (Se)-Dissolved	0.000097	0.000100
Silicon (Si)-Dissolved	1.76	1.62
Silver (Ag)-Dissolved	<0.000010	<0.000010
Sodium (Na)-Dissolved	1.00	0.892
Strontium (Sr)-Dissolved	0.136	0.121
Thallium (Tl)-Dissolved	<0.000010	<0.000010
Tin (Sn)-Dissolved	<0.00010	<0.00010
Titanium (Ti)-Dissolved	<0.010	<0.010
Uranium (U)-Dissolved	0.000168	0.000141
Vanadium (V)-Dissolved	<0.00050	<0.00050
Zinc (Zn)-Dissolved	<0.0030	<0.0030

Note: Units are mg/L unless otherwise stated

## Appendix 2



Appendix 2  
Field Data

Site Name	Date	Temp °C	Cond µS/cm	ODO mg/L	pH	Turbidity FNU	Secchi Depth (m)
<b>Polley Lake</b>							
P1-S	11-Jun-15	18.028	246.3	9.02	8.51	0.29	6
P1-S	22-Jun-15	18.738	250.2	9.81	8.58	0.57	5.75
P1-5M	11-Jun-15	16.427	238	9.18	8.53	0.3	
P1-10M	11-Jun-15	7.835	191.4	9.31	7.99	0.29	
P1-15M	11-Jun-15	6.246	181.5	8.48	7.68	0.36	
P1-20M	11-Jun-15	5.75	179.7	7.55	7.53	0.42	
P1-B	11-Jun-15	5.679	180	6.27	7.41	0.7	
P2-S	11-Jun-15	18	247.4	8.85	8.43	0.4	6.9
P2-S	22-Jun-15	18.721	249.4	9.77	8.62	1.1	3.5
P2-5M	11-Jun-15	17.819	246.1	8.9	8.45	0.32	
P2-10M	11-Jun-15	7.438	190.4	9.4	8.04	0.28	
P2-15M	11-Jun-15	5.935	180.5	8.17	7.64	0.37	
P2-20M	11-Jun-15	5.769	180.1	7.06	7.46	0.38	
P2-B	11-Jun-15	5.685	180.8	5.35	7.34	1.07	
<b>Quesnel Lake</b>							
QUL-120a-0m	10-Jun-15	15.04	87.5	10.1	7.83	2.74	6.5
QUL-120a-0m	13-May-15						11.5
QUL-120a-0m	20-May-15						6.2
QUL-120a-40m	10-Jun-15	4.77	74.4	11.03	7.78	2.32	
QUL-120a-40m	13-May-15						
QUL-120a-80m	10-Jun-15	4.097	72.1	11.01	7.55	2.34	
QUL-120a-80m	13-May-15						
QUL-120a-120m	10-Jun-15	3.878	71.9	10.96	7.47	2.34	
QUL-120a-120m	13-May-15						
QUL-120a-190m	10-Jun-15	3.656	72	10.85	7.51	2.31	
QUL-120a-190m	13-May-15						
QUL-18-0m	1-Apr-15						3
QUL-18-0m	19-May-15						
QUL-18-0m	3-Jun-15	12.052	87.4	9.72	7.95	0.82	8.2
QUL-18-0m	10-Jun-15	10.941	87.1	10.03	7.7	1.14	7.5
QUL-18-40m	1-Apr-15						
QUL-18-40m	3-Jun-15	4.699	73.7	11.22	7.16	0.99	
QUL-18-80m	1-Apr-15						
QUL-18-80m	3-Jun-15	4.306	73.6	11.25	7.17	1.15	
QUL-2a-0m	1-Apr-15						7.4
QUL-2a-0m	19-May-15	11.234	74.2	11.25	7.5	0.38	
QUL-2a-0m	3-Jun-15	12.79	85.9	9.61	7.85	2.88	7.8
QUL-2a-0m	10-Jun-15	15.127	93	9.67	7.98	2.49	7.5
QUL-2a-40m	1-Apr-15						
QUL-2a-40m	3-Jun-15	4.528	72.3	11.1	7.53	2.36	
QUL-2a-60m	1-Apr-15						
QUL-2a-60m	3-Jun-15	4.309	72.3	11.1	7.47	2.48	
QUL-40a-0m	19-May-15	12.16	82.1	9.56	7.97	0.2	
QUL-40a-0m	10-Jun-15	15.229	72.4	9.46	7.83	3.32	4.75
QUL-40a-0m	18-Jun-15	15.749	91.8	9.64	7.87	0.45	7.25
QUL-40a-120m	19-May-15	3.892	67.9	11.15	7.53	0.25	
QUL-40a-120m	18-Jun-15	4.415	71.6	10.99	7.54	0.33	
QUL-40a-140m	19-May-15	3.832	67.7	11.16	7.56	0.32	
QUL-40a-140m	18-Jun-15	4.131	71.2	11.03	7.51	0.32	
QUL-40a-40m	19-May-15	4.658	69.5	11.15	7.68	0.37	
QUL-40a-40m	18-Jun-15	6.266	78.1	10.85	7.84	0.29	
QUL-40a-80m	19-May-15	4.123	68.2	11.17	7.58	0.26	
QUL-40a-80m	18-Jun-15	4.768	73.4	10.99	7.63	0.32	
QUL-55-0m	1-Apr-15						3.6
QUL-55-0m	12-May-15	7.258	79	11.77	7.75	0.6	7.5
QUL-55-0m	13-May-15						6.9
QUL-55-0m	19-May-15	11.673	84.8	9.5	7.85	0.42	
QUL-55-0m	26-May-15	11.562	81	10.91	7.49	1.18	7.63
QUL-55-0m	1-Jun-15	10.393	78.2	11.51	7.68	0.93	8.4
QUL-55-0m	9-Jun-15	13.909	84.1	10.23	7.62	2.83	2.5
QUL-55-0m	16-Jun-15	12.774	76.7	11.18	7.48	0.36	8.75
QUL-55-15m	1-Apr-15						
QUL-55-15m	12-May-15	6.312	76.8	11.48	7.78	0.61	
QUL-55-15m	13-May-15						
QUL-55-15m	19-May-15	7.513	76.7	10.55	7.86	0.57	
QUL-55-15m	26-May-15	4.956	72.4	11.17	7.55	1.38	
QUL-55-15m	1-Jun-15	4.678	76.8	11.09	7.7	1.06	
QUL-55-15m	9-Jun-15	4.859	74.7	10.54	7.7	2.1	
QUL-55-15m	16-Jun-15	4.822	72.4	10.93	7.52	0.33	
QUL-55-30m	1-Apr-15						
QUL-55-30m	12-May-15	5.007	74.5	11.6	7.76	0.78	
QUL-55-30m	13-May-15						
QUL-55-30m	19-May-15	4.924	71.5	11.07	7.78	0.71	
QUL-55-30m	26-May-15	4.608	72.1	11.07	7.58	1.46	
QUL-55-30m	1-Jun-15	4.612	76.7	11	7.72	1.07	
QUL-55-30m	9-Jun-15	4.632	74.4	10.34	7.8	2.1	
QUL-55-30m	16-Jun-15	4.753	72.4	10.76	7.59	0.32	

Appendix 2  
Field Data

Site Name	Date	Temp °C	Cond µS/cm	ODO mg/L	pH	Turbidity FNU	Secchi Depth (m)
Quesnel River							
QUR-1	16-Apr-15	4.163	81.2	11.95	7.82	2.19	
QUR-1	21-Apr-15	5.118	83.5	11.94	7.88	1.67	
QUR-1	5-May-15	5.809	84.8	11.81	7.87	1.66	
QUR-1	11-May-15	8.637	93.1	11.32	7.88	1.09	
QUR-1	25-May-15	8.872	91	11.36	8.06	1.37	
QUR-1	1-Jun-15	6.676	84	11.62	7.88	2.63	
QUR-1	16-Jun-15	5.821	81.7	11.59	7.8	2.59	

## Appendix 3

Appendix 2  
Hydrology Monitoring Results

Sample Point	Date	Staff Gauge (m)	Q (m <sup>3</sup> /s)
<b>LOWER EDNEY</b>			
Lower Edney	7-Apr-15	0.66	
Lower Edney	8-Apr-15	0.598	1.9278
Lower Edney	17-Apr-15	0.519	1.0441
Lower Edney	20-Apr-15	0.504	1.4062
Lower Edney	27-Apr-15	0.468	1.1281
Lower Edney	5-May-15	0.363	0.6271
Lower Edney	11-May-15	0.23	
Lower Edney	14-May-15	0.142	0.1385
Lower Edney	21-May-15	0.104	0.0927
Lower Edney	28-May-15	0.11	0.0993
Lower Edney	4-Jun-15	0.07	0.0531
Lower Edney	8-Jun-15	0.046	0.0232
Lower Edney	15-Jun-15	0.026	0.0112
Lower Edney	29-Jun-15	0.021	0.0104
<b>LOWER HAZELTINE</b>			
Lower Hazeltine	7-Apr-15	0.44	
Lower Hazeltine	8-Apr-15	0.532	0.5120
Lower Hazeltine	17-Apr-15	0.535	0.5281
Lower Hazeltine	17-Apr-15	0.5	0.4651
Lower Hazeltine	17-Apr-15	0.46	0.3691
Lower Hazeltine	17-Apr-15	0.4	0.2520
Lower Hazeltine	17-Apr-15	0.328	0.1377
Lower Hazeltine	20-Apr-15	0.451	0.4069
Lower Hazeltine	27-Apr-15	0.237	0.0651
Lower Hazeltine	4-May-15	0.43	
Lower Hazeltine	5-May-15	0.415	0.3360
Lower Hazeltine	11-May-15	0.183	
Lower Hazeltine	14-May-15	0.249	0.0692
Lower Hazeltine	21-May-15	0.47	0.3994
Lower Hazeltine	28-May-15	0.428	0.3310
Lower Hazeltine	4-Jun-15	0.382	0.2475
Lower Hazeltine	8-Jun-15	0.352	0.1990
Lower Hazeltine	15-Jun-15	0.218	0.0466
Lower Hazeltine	23-Jun-15	0.249	0.7570
Lower Hazeltine	29-Jun-15	0.232	0.0590
<b>UPPER HAZELTINE</b>			
Upper Hazeltine	7-Apr-15	0.2	
Upper Hazeltine	17-Apr-15	0.495	0.4011
Upper Hazeltine	17-Apr-15	0.467	0.3376
Upper Hazeltine	17-Apr-15	0.464	0.3288
Upper Hazeltine	17-Apr-15	0.435	0.2691
Upper Hazeltine	17-Apr-15	0.35	0.1111
Upper Hazeltine	17-Apr-15	0.305	0.0515
Upper Hazeltine	20-Apr-15	0.462	
Upper Hazeltine	23-Apr-15	0.525	0.4550
Upper Hazeltine	28-Apr-15	0.271	
Upper Hazeltine	4-May-15	0.442	
Upper Hazeltine	7-May-15	0.439	0.2489
Upper Hazeltine	11-May-15	0.258	
Upper Hazeltine	26-May-15	0.472	0.3266
Upper Hazeltine	4-May-15	0.422	0.2097
Upper Hazeltine	15-Jun-15	0.0301	0.2740
Upper Hazeltine	23-Jun-15	0.329	0.0691
Upper Hazeltine	29-Jun-15	0.3	0.5040
<b>POLLEY LAKE WEIR</b>			
Polley Lake Weir	13-Apr-15	1.42	0.3412
Polley Lake Weir	20-Apr-15	1.42	0.294
Polley Lake Weir	29-Apr-15	0.449	0.0084
Polley Lake Weir	7-May-15		0.2509
Polley Lake Weir	21-May-15	1.27	0.3457
Polley Lake Weir	28-May-15	1.152	0.2996
Polley Lake Weir	4-Jun-15	0.95	0.2188