June 20, 2016
14-27

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC, V9T 6N2

(Via email)

Attention: Randy Alexander, Manager, Regional and Community Utilities

Re: Rating and water quality of the proposed community well (B1) at 2729 Parker Road after a 72H constant rate test; and, results of a 1-year baseline monitoring of 15 wells

This report includes the rating of the proposed community well B1 at 2729 Parker Road according to the BC Guidelines and water quality assessment. It also presents the results of a 1-year baseline monitoring of 15 wells and surface water.

Site location and description

The location of the proposed community well, labeled as B1, is shown in Figure 1. Figure 1 also shows 15 nearby wells where dataloggers have been installed and programmed to monitor the fluctuation of water levels both for the establishment of a one-year baseline and for collection of data during pumping tests; this includes wells labelled as B2 to B9 for monitoring wells located in the bedrock aquifer and wells labelled as O1 to O7 for monitoring wells located in the overburden aquifer. O1 is located in a shallow unconfined aquifer, whereas O2 to O7 are located in a confined sand and gravel aquifer.

Three monitoring stations (STN1 through 3) have also been installed in Melstrom Creek to assess the influence of the proposed community well on surface water (Figure 1).

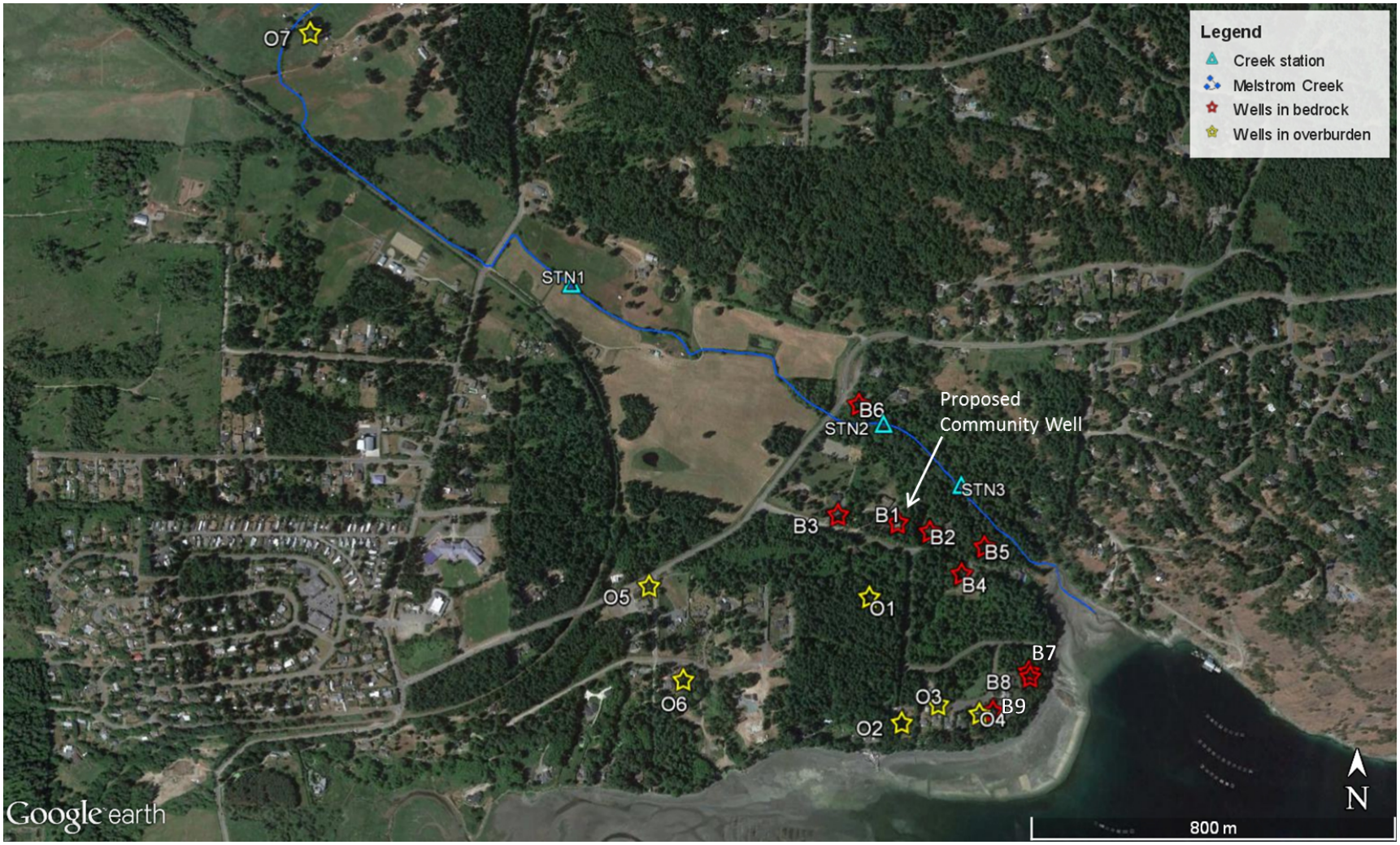

Figure 1. Location of the proposed community well, the 15 monitoring wells and the surface water gauges

Proposed Community Well (B1) description

The proposed community well (B1) is 97.5 m deep, and has a diameter of 20 cm (8”). The well log is shown in Figure 2. B1 is cased through the unconsolidated deposits until reaching the bedrock at a depth of 35 m. The bedrock consists of basalt, and four fractures have been reported as water-bearing by the driller, respectively at depths of 67 m (F1), 79.2 m (F2), 82.3 m (F3) and 88.4 m (F4) below ground surface. Their estimated yield is respectively of 1 USgpm, 2 USgpm, 17 USgpm and 80 USgpm.

Water level in B1, as well as electrical conductivity, were continuously monitored for baseline from April 2015 to the present day with a data logger installed at 88.54 m below ground (Figure 3). Between April 2015 and April 2016, when data were collected for the last time, the water level yearly fluctuation was close to 6 m, between 38.9 m and 33.04 m below ground surface, with higher water levels recorded in March 2016 and lower water levels recorded mid-July 2015. The water level in B1 is higher in April 2016 than in April 2015 probably due to a higher amount of precipitation in winter 2016. The precipitation events are illustrated in Figure 3.

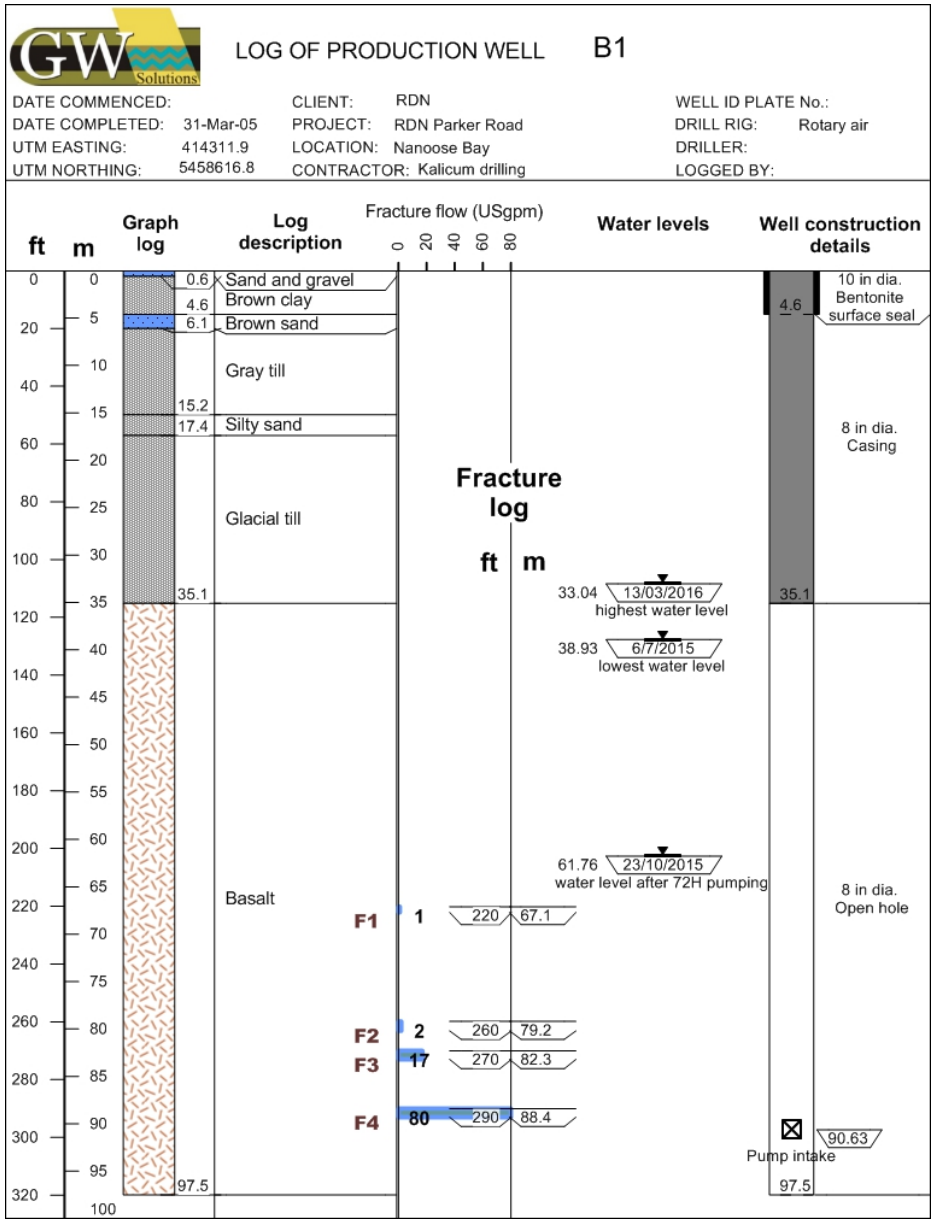

Figure 2. Well log for B1 (Proposed Community Well)

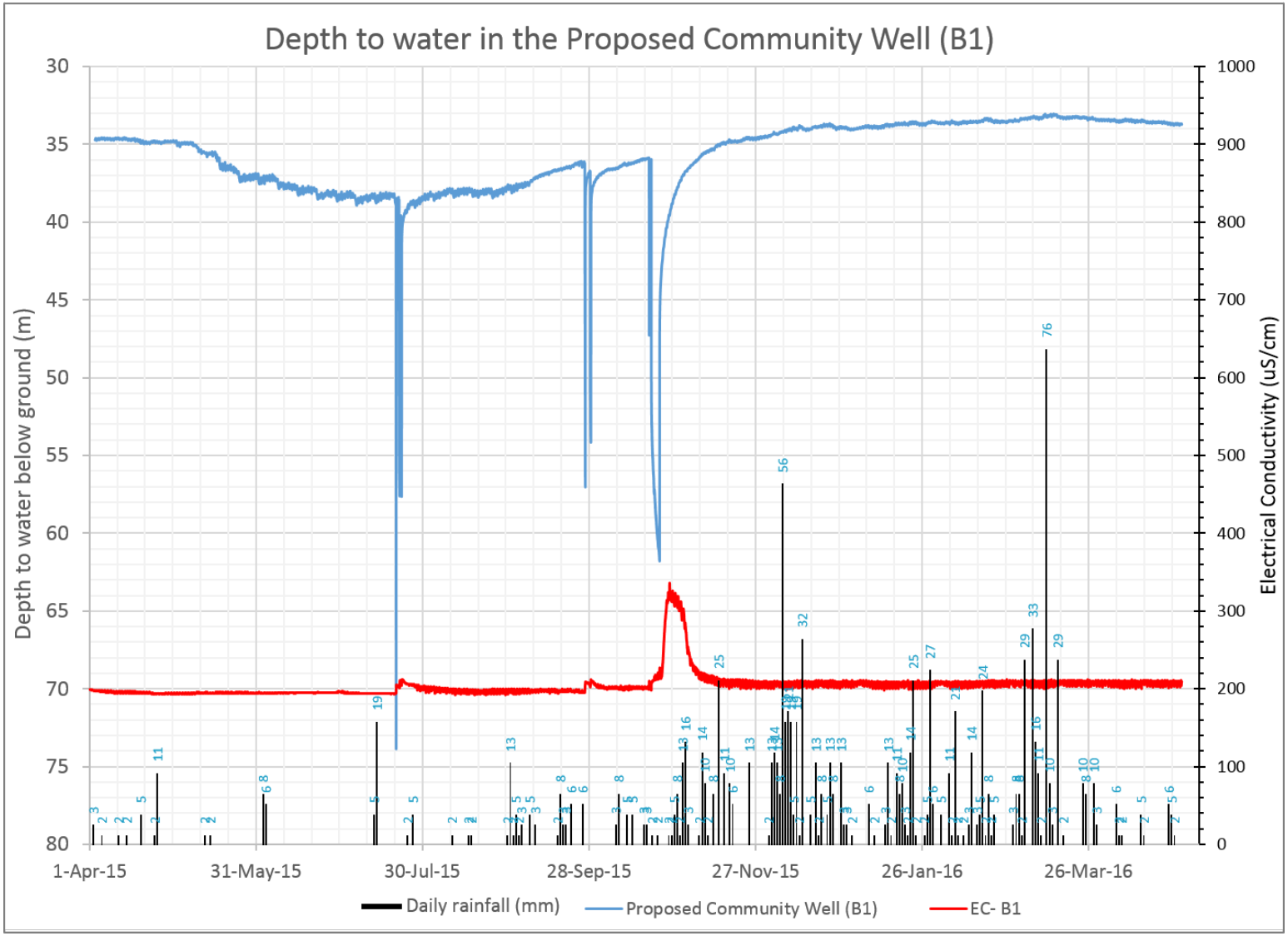

Figure 3. Depth to water and electrical conductivity recorded in B1

Rating of the proposed community well (B1)

Long term pumping test

The 72 hours pumping test performed in B1 started on October 20th at 10 am. The well was pumped at a rate of 105 USgpm (6.62 L/s) for the duration of the test. The "static" water level before pumping was 35.98 m below ground (or 6.09 m above mean sea level) which is around 1 m below the top of bedrock. During pumping and recovery, the drawdown was also monitored manually for back-up and calibration purpose. The drawdowns recorded in B1 during pumping and recovery are shown in Figure 4.

The drawdown at the end of the pumping was 25.78 m (Figure 2 and 4).

The recovery curve on Figure 4 shows that complete recovery occurs (recovery curve crossing x-axis – drawdown equals 0), with the water level returning to its original level after 13.7 days.

Rating the proposed community well (B1) using BC guidelines

The existing BC Guidelines to rate wells are based on a method that applies to both overburden (sand and gravel) aquifers and fracture bedrock aquifers. A 72-hour (minimum) pumping test is necessary to properly rate a bedrock well. The method is also known as the 100-day straight-line projection method. Figure 4 shows the extrapolated drawdown (42 m) using this method, considering the well is pumping continuously for 100 days at the rate of 105 USgpm.

The determination of the available water column (or available drawdown) is critical for the rating of the well. It is defined as the difference between the "static" level (depth to water before pumping) and the depth to the uppermost major water-bearing fracture. Using F4 as the major producing fracture, the safe yield for the production well is 75 USgpm (Table 1). By completing an iterative calculation of the projected drawdown with the well pumping at 75 USgpm, the drawdown at 100 days would be 30 m corresponding to a water level of around 69 mbg, which would not dewater F3 located at 82.3 mbg. Therefore, we can consider that 75 USgpm is an acceptable safe yield for B1.

This rating assumes a seasonal impact of 2 m to account for dry conditions (i.e., the low levels will drop 2 m lower than monitored to date). Also an additional safety margin of 15% has been included to follow RDN's practices.

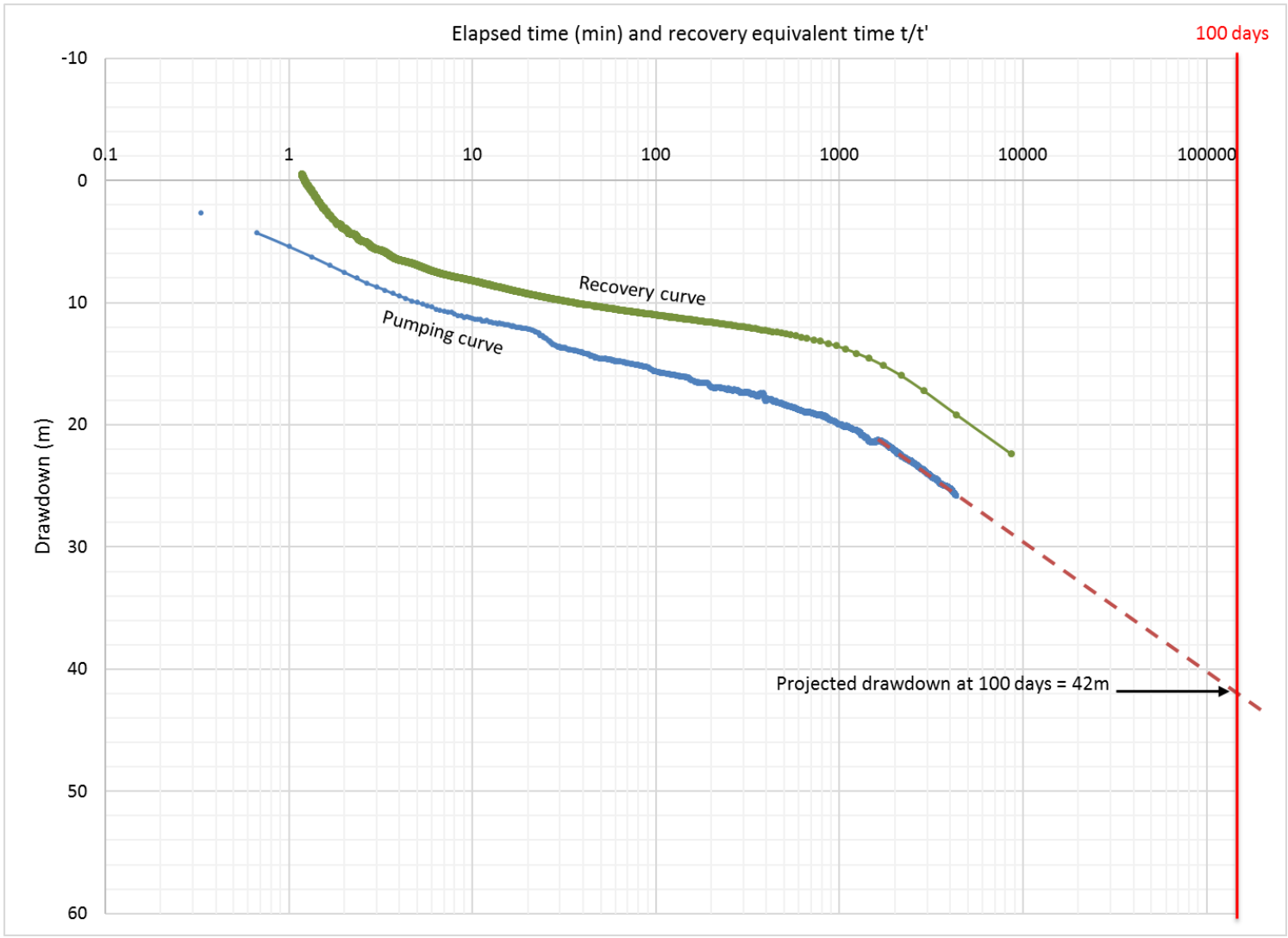

Figure 4. Pumping and recovery curve of the proposed community well for the 72H test and extrapolated 100-days drawdown. t' is the time after pumping ceased.

Table 1: Calculated Safe Yield

Parameter	Unit	Key	100 days approach
			F4
Pumping rate	Usgpm		105
Drawdown (100 days)	m		42
Projected specific capacity (100 days)	Usgpm/m		2.5
Depth to top of producing fracture	mbg	b	88.4
Stickup or sounder pipe	m	c	0.86
"Static" water level (Oct 20, 2015)	mbTOC	d	36.84
Seasonal impact	m	e	2
Safety factor (70% BCMoE)	-	f	0.7
Available drawdown	m	g = b+c-d-e	50.42
Safe available drawdown	m	h = f x g	35.29
Safe aquifer estimated sustainable yield	USgpm		88.2
Additional RDN safety factor (15%)	-		0.85
Safe estimated sustainable yield	Usgpm		75.0
Maximum recommended yield	**USgpm**		**75**

Observable drawdowns in the 15 monitoring wells after the 72 hour constant rate test

The drawdowns recorded in the production well and in the monitoring wells are shown in Figure 5 for the bedrock wells and Figure 6 for the overburden wells.

The numerous spikes of water levels appearing on the groundwater elevation curves result from the independent pumping of each well. Water levels in O2, O3, O4, B7, B8 and B9 show tidal influence as they are closer to the ocean.

In 5 of the 6 monitored wells located in the bedrock aquifer (B2, B3, B4, B5, B7, B8, B9), drawdowns ranging between 7.4 and 13.2 m were recorded after 72H pumping (Figure 5 and Table 2). The water level curve of these wells is very similar to the curve of B1 during pumping and recovery (Figure 5). We infer these wells are connected to the same fracture network that controls the water flow supplying B1. B2 is the closest well and where the largest drawdown was monitored.

The drawdown in B6 is smaller (around 2 m) and responds with a time lag (Figure 5). This well shows less connectivity to B1.

Table 2 includes the drawdown in the bedrock wells after 72 hours of pumping in B1. The drawdown is also shown as a percentage of total available water column in the observation wells. The available water column is defined as the difference between the natural water level (or static water level) and either the depth to the producing fracture, to the pump, or to the sounder pipe, depending on which information was available (Figure 7).

There was no observable drawdown in the 7 monitoring wells located in the overburden during the test (Figure 6). Therefore, there is no apparent connection with the other wells and the bedrock aquifer at the time scale used for this study. If a hydraulic connection exists between the bedrock aquifer and the confined overburden aquifer, this connection is poor. Therefore, no further consideration is given to monitoring wells in overburden in this report.

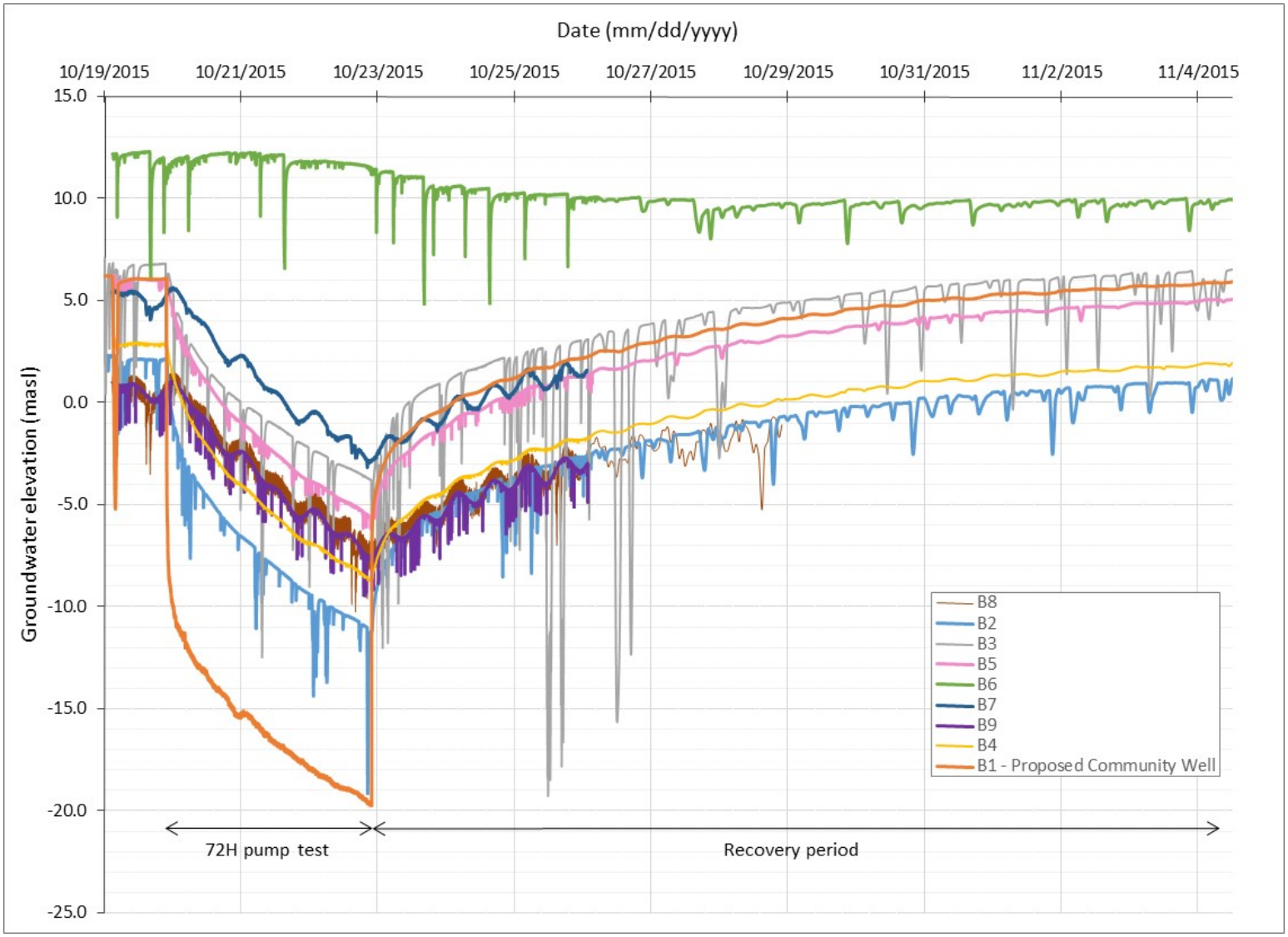

Figure 5. Groundwater elevation during the 72 hours pumping test and recovery in B1 and 8 bedrock monitoring wells

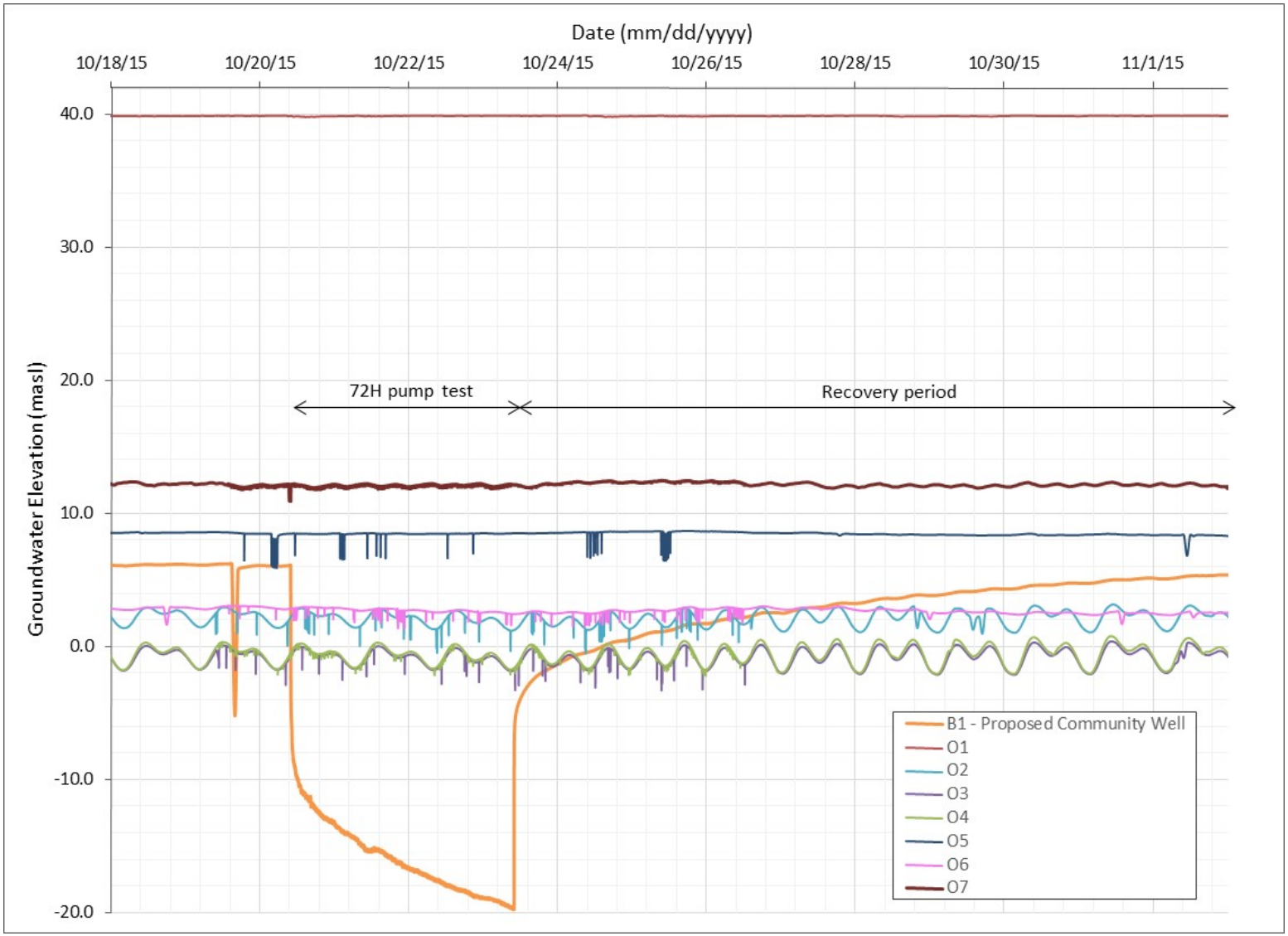

Figure 6. Groundwater elevation during the 72 hours pumping test and recovery in B1 and 7 overburden monitoring wells

Table 2. Observable drawdowns in the monitored residential wells located in bedrock and corresponding percentage of available water column

Parameter	B1	B2	B3	B4	B5	B6	B7	B8	B9
Depth of Water-bearing Fracture or Pump (underlined) or Sounder Pipe (in grey) (mbg)	88.4	65.23	118	60	68.6	56.4	60	60	82
Static water level before pumping (mbg)	35.98	32.36	35.16	21	15.27	22.19	14.3	14.05	22.89
Available water column (m)	52.4	32.9	82.8	39.0	53.3	34.2	45.7	46.0	59.1
Drawdown at 72H (m)	25.78	13.2	10.2	11.6	11.7	2	7.5	7.4	7.6
% of available water column used by B1	49%	40%	12%	30%	22%	6%	16%	16%	13%

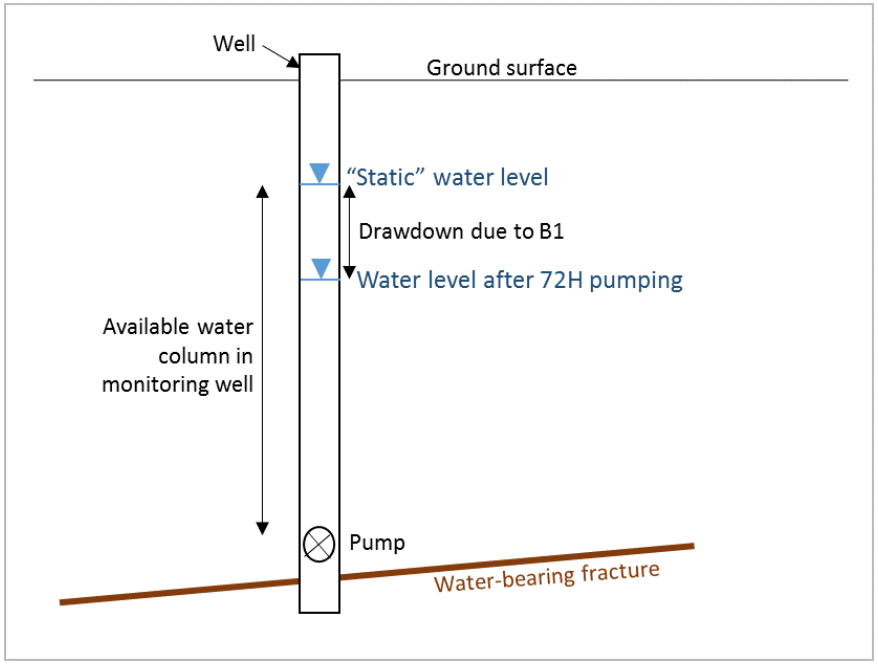

Figure 7. Conceptual sketch of available drawdown in a residential well in bedrock

Connection with surface water

Three monitoring stations were installed in Melstrom Creek (Figure 1) to assess surface water and groundwater interaction. They have continuously recorded water levels since April 2015. Figure 8 shows the water levels above the level logger (installed at the bottom of the creek) for the 3 stations during the pumping test, as well as the groundwater elevation in B1.

Figure 8 does not show obvious indications of surface water and groundwater interactions during the pumping test because the water level in the creek does not suddenly and significantly drop or rise at the beginning or end of pumping. The sudden rise in water level in Station 3 is likely due to the discharge of the pumped water. Although no direct runoff to the creek was observed, this recharge is likely due to subsurface runoff.

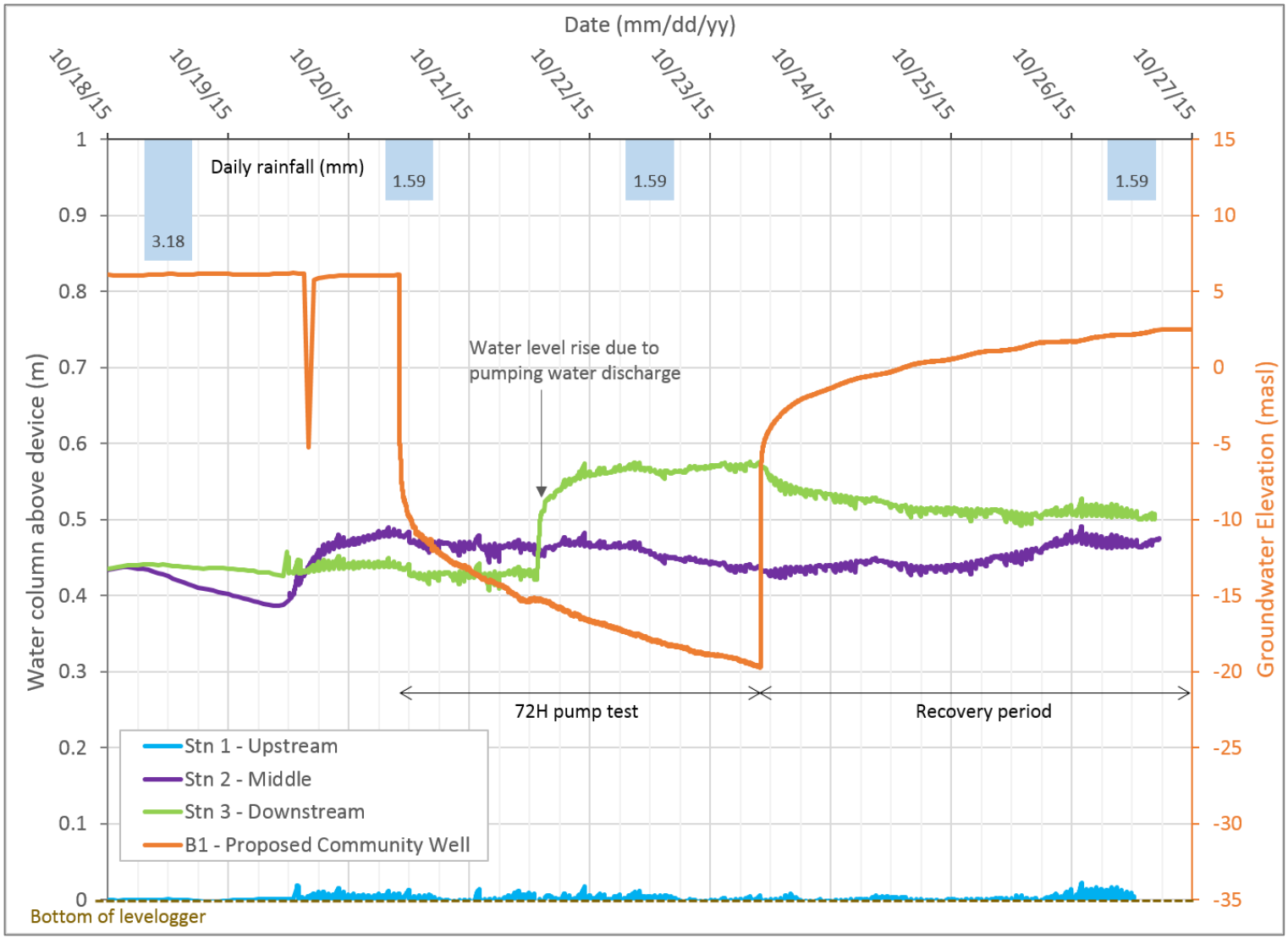

Figure 8. Water levels in Melstrom Creek during pumping test in B1

Groundwater Quality

Water quality in B1

Physico-chemical parameters including temperature (T), pH, oxido-reduction potential (ORP), dissolved oxygen (DO), specific conductivity (SPC) and total dissolved solids (TDS) were monitored *in-situ* during the pumping test. Figure 9 shows that temperature, pH, dissolved oxygen and ORP remained stable during the test. TDS and specific conductivity (SPC) slightly increased during the test. The specific conductivity increased by approximately 20 uS/cm to reach a value of 290 uS/cm at the end of pumping. These two parameters give an indication of the salinity of the water, their values remained largely within the fresh water classification (SPC < 1,000 uS/cm). The visible increase observable in Figure 9 is first due to the removal of stagnant water in the borehole, then due to the activation of water particles that were stagnant before pumping in the aquifer and therefore slightly richer in minerals. Figure 9 shows there is no important change in water quality during the pumping.

Three (3) water samples were collected in B1:

- 1 sample after 2 hours of pumping on Oct 20, 2015; and
- 2 samples 1 hour prior to the end of pumping on Oct 23, 2015 (one duplicate sample was collected for quality control).

The samples were submitted to Maxxam Laboratories for chemical analysis (drinking water package). The lab reports are presented in Appendix 2. There is no significant change in elements concentration with pumping except for aluminum and copper. These parameters are commonly attributed to pipes and plumbing materials, not related to aquifer water quality. Figure 10 shows the proportion of major elements in the water at B1. The water type is determined by listing the most frequent cation and the most frequent anion encountered in the water. The major chemical constituents in groundwater are usually Calcium (Ca), Potassium (K), Sodium (Na), and Magnesium (Mg) for the cations; Bicarbonate (HCO_3), Sulfate (SO_4), and Chloride (Cl) for the anions. Water type at B1 is sodium-bicarbonate (Na-HCO3) which is typical of deep groundwater influenced by ion exchange.

For the sample collected prior to the end of the test, parameters concentrations were compared to the current and applicable Canadian Drinking Water Quality Guidelines (CDWQG). All analyzed parameters are below the guidelines, except for fluoride that is just at the guideline threshold (i.e., 1.5 mg/L).

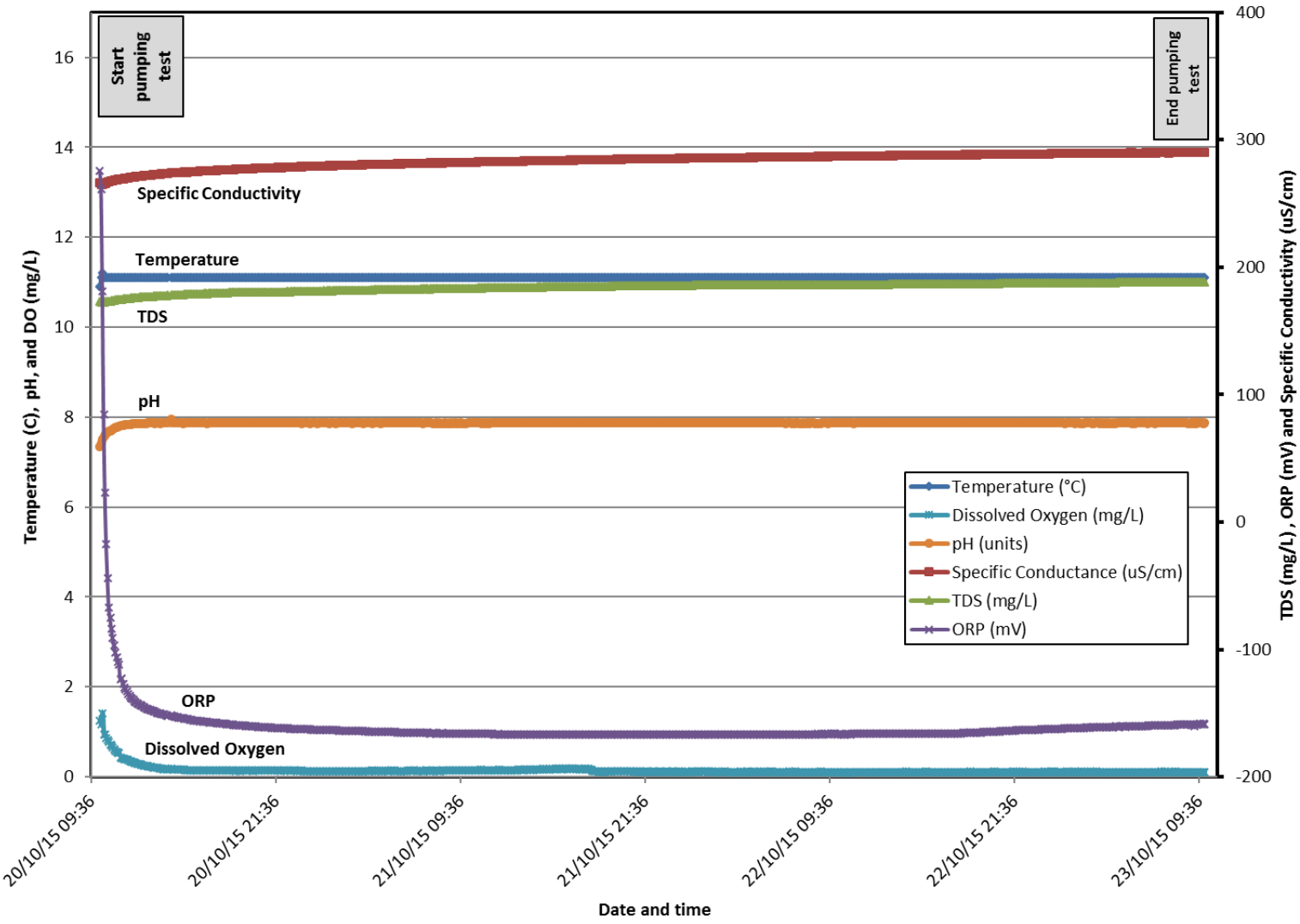

Figure 9. Evolution of *in-situ* parameters during pumping in B1

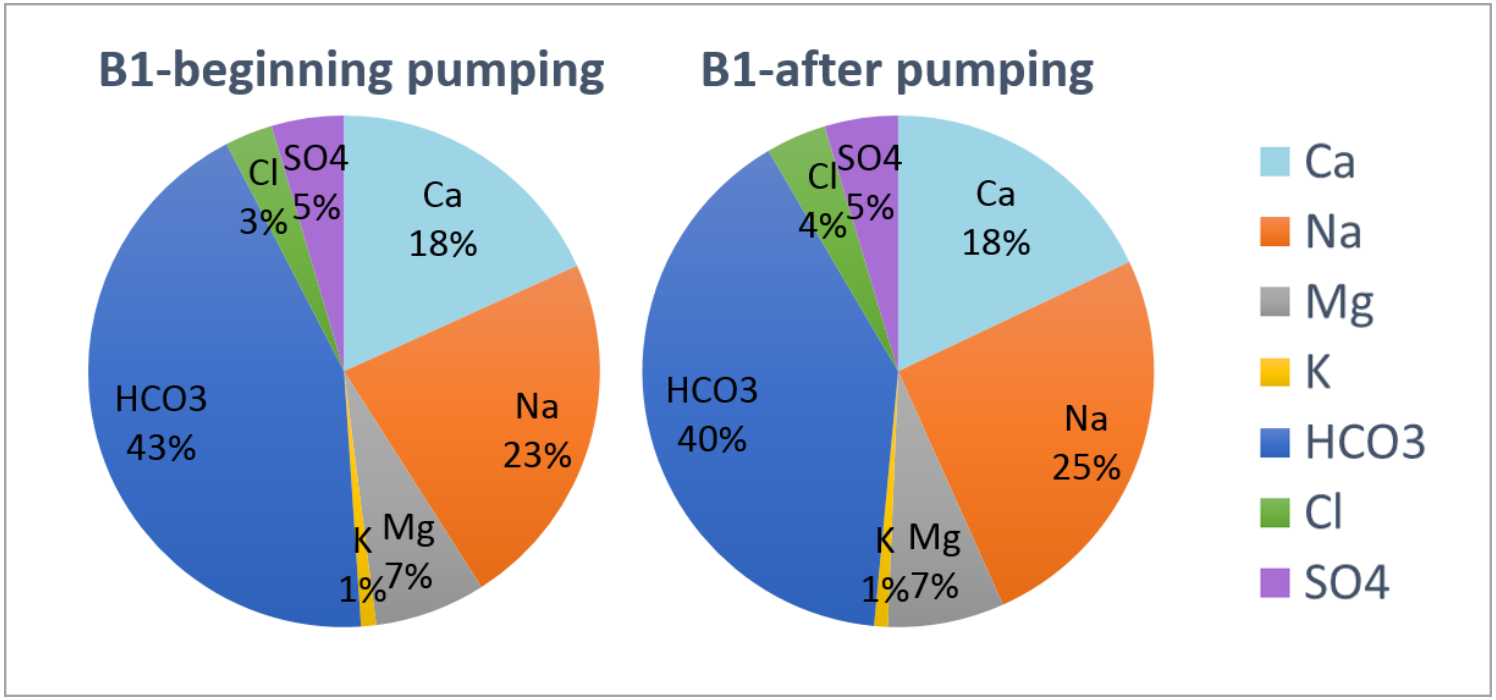

Figure 10. Proportion of major ions in water in the proposed community well (B1) before and after pumping

Conclusions

Based on the completed work and the data compiled and analysed to date, GW Solutions draws the following conclusions:

1. The safe pumping yield considering B1 operating alone is 75 USgpm.
2. At the rated capacity (75 USgpm), pumping of B1 would affect neighbouring wells located in bedrock. It would not affect wells in the sand and gravel overburden aquifer.
3. There is no observed change in water quality during pumping, although electrical conductivity slightly increased in B1 due to the mobilisation of water particles that were stagnant before pumping in the aquifer.
4. At the proposed community well (B1), water quality for all the analysed parameters is within the applicable guidelines (GCDWQ) except for fluoride (concentration equals the guideline value of 1.5 mg/L).
5. There is no evidence of surface water and groundwater interaction.

Recommendations

GW Solutions understands that the RDN needs to set up operation rules in order to safely operate the community well. GW Solutions makes the following recommendations:

1. Undertake further pumping test during the summer and fall of 2016 to assist in developing the safe system operating rules and to further assess the hydrogeological behaviour of the aquifer and the effects on neighbouring residential wells. We recommend starting pumping at a low rate of approximately 30 USgpm in early July. GW Solutions understands that the pumping of B1 will be cyclical because its operation is a function of the water level in the Fairwinds reservoir.
2. Monitoring the water levels in the 15 observation wells, and electrical conductivity in the bedrock wells located close to the ocean.
3. Possibly increasing the pumping rate, in steps, based on the data collected in July and August.

Closure

Conclusions and recommendations presented herein are based on available information at the time of the study. The work has been carried out in accordance with generally accepted engineering practice. No other warranty is made, either expressed or implied. Engineering judgement has been applied in producing this letter-report.

This letter report was prepared by personnel with professional experience in the fields covered. Reference should be made to the General Conditions and Limitations attached in Appendix 1.

GW Solutions was pleased to produce this document. If you have any questions, please contact me.

Yours truly,
GW Solutions Inc.

Sandra Richard, Ph.D.
Hydrogeologist

Gilles Wendling, Ph.D., P.Eng. (BC and Alberta)
President

Appendices

Appendix 1. GW Solutions Inc. General Conditions and Limitations

Appendix 2. Water quality reports for B1

APPENDIX 1

GW SOLUTIONS INC. GENERAL CONDITIONS AND LIMITATIONS

This report incorporates and is subject to these “General Conditions and Limitations”.

1.0 USE OF REPORT

This report pertains to a specific area, a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment. This report and the assessments and recommendations contained in it are intended for the sole use of GW SOLUTIONS’s client. GW SOLUTIONS does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than GW SOLUTIONS’s client unless otherwise authorized in writing by GW SOLUTIONS. Any unauthorized use of the report is at the sole risk of the user. This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of GW SOLUTIONS. Additional copies of the report, if required, may be obtained upon request.

2.0 LIMITATIONS OF REPORT

This report is based solely on the conditions which existed within the study area or on site at the time of GW SOLUTIONS’s investigation. The client, and any other parties using this report with the express written consent of the client and GW SOLUTIONS, acknowledge that conditions affecting the environmental assessment of the site can vary with time and that the conclusions and recommendations set out in this report are time sensitive. The client, and any other party using this report with the express written consent of the client and GW SOLUTIONS, also acknowledge that the conclusions and recommendations set out in this report are based on limited observations and testing on the area or subject site and that conditions may vary across the site which, in turn, could affect the conclusions and recommendations made. The client acknowledges that GW SOLUTIONS is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the client.

2.1 INFORMATION PROVIDED TO GW SOLUTIONS BY OTHERS

During the performance of the work and the preparation of this report, GW SOLUTIONS may have relied on information provided by persons other than the client. While GW SOLUTIONS endeavours to verify the accuracy of such information when instructed to do so by the client, GW SOLUTIONS accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

3.0 LIMITATION OF LIABILITY

The client recognizes that property containing contaminants and hazardous wastes creates a high risk of claims brought by third parties arising out of the presence of those materials. In consideration of these risks, and in consideration of GW SOLUTIONS providing the services requested, the client agrees that GW SOLUTIONS’s liability to the client, with respect to any issues relating to contaminants or other hazardous wastes located on the subject site shall be limited as follows:

(1) With respect to any claims brought against GW SOLUTIONS by the client arising out of the provision or failure to provide services hereunder shall be limited to the amount of fees paid by the client to GW SOLUTIONS under this Agreement, whether the action is based on breach of contract or tort;

(2) With respect to claims brought by third parties arising out of the presence of contaminants or hazardous wastes on the subject site, the client agrees to indemnify, defend and hold harmless GW SOLUTIONS from and against any and all claim or claims, action or actions, demands, damages, penalties, fines, losses, costs and expenses of every nature and kind whatsoever, including solicitor-client costs, arising or alleged to arise either in whole or part out of services provided by GW SOLUTIONS, whether the claim be brought against GW SOLUTIONS for breach of contract or tort.

4.0 JOB SITE SAFETY
GW SOLUTIONS is only responsible for the activities of its employees on the job site and is not responsible for the supervision of any other persons whatsoever. The presence of GW SOLUTIONS personnel on site shall not be construed in any way to relieve the client or any other persons on site from their responsibility for job site safety.

5.0 DISCLOSURE OF INFORMATION BY CLIENT
The client agrees to fully cooperate with GW SOLUTIONS with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The client acknowledges that in order for GW SOLUTIONS to properly provide the service, GW SOLUTIONS is relying upon the full disclosure and accuracy of any such information.

6.0 STANDARD OF CARE
Services performed by GW SOLUTIONS for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

7.0 EMERGENCY PROCEDURES
The client undertakes to inform GW SOLUTIONS of all hazardous conditions, or possible hazardous conditions which are known to it. The client recognizes that the activities of GW SOLUTIONS may uncover previously unknown hazardous materials or conditions and that such discovery may result in the necessity to undertake emergency procedures to protect GW SOLUTIONS employees, other persons and the environment. These procedures may involve additional costs outside of any budgets previously agreed upon. The client agrees to pay GW SOLUTIONS for any expenses incurred as a result of such discoveries and to compensate GW SOLUTIONS through payment of additional fees and expenses for time spent by GW SOLUTIONS to deal with the consequences of such discoveries.

8.0 NOTIFICATION OF AUTHORITIES
The client acknowledges that in certain instances the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by GW SOLUTIONS in its reasonably exercised discretion.

9.0 OWNERSHIP OF INSTRUMENTS OF SERVICE
The client acknowledges that all reports, plans, and data generated by GW SOLUTIONS during the performance of the work and other documents prepared by GW SOLUTIONS are considered its professional work product and shall remain the copyright property of GW SOLUTIONS.

10.0 ALTERNATE REPORT FORMAT
Where GW SOLUTIONS submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed GW SOLUTIONS's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by GW SOLUTIONS shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by GW SOLUTIONS shall be deemed to be the overall

original for the Project. The Client agrees that both electronic file and hard copy versions of GW SOLUTIONS's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except GW SOLUTIONS. The Client warrants that GW SOLUTIONS's instruments of professional service will be used only and exactly as submitted by GW SOLUTIONS. The Client recognizes and agrees that electronic files submitted by GW SOLUTIONS have been prepared and submitted using specific software and hardware systems. GW SOLUTIONS makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

APPENDIX 2

WATER QUALITY REPORTS FOR B1

Water quality report B1 – Beginning of pumping

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411792

Attention:SANDRA RICHARD

GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/10/28
Report #: R2067310
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B593370
Received: 2015/10/21, 14:20

Sample Matrix: DRINKING WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water	1	2015/10/26	2015/10/26	BBY6SOP-00026	SM 22 2320 B m
Anions in Water by Ion Chromatography (1, 2)	1	N/A	2015/10/23	VIC SOP-00020	Based on SM-4110B
Conductance - water	1	N/A	2015/10/26	BBY6SOP-00026	SM 22 2510 B m
Hardness Total (calculated as CaCO3)	1	N/A	2015/10/27	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/10/28	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	1	N/A	2015/10/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	1	2015/10/28	2015/10/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/10/28	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2015/10/27	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2015/10/22	2015/10/27	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	1	2015/10/26	2015/10/26	BBY7SOP-00002	EPA 6020A R1 m
Ammonia-N (Preserved)	1	N/A	2015/10/26	BBY6SOP-00009	SM 22 4500-NH3- G m
Filter and HNO3 Preserve for Metals	1	N/A	2015/10/27	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (3)	1	N/A	2015/10/26	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphide	1	N/A	2015/10/26	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue) (1)	1	N/A	2015/10/26	VIC SOP-00008	Based on SM 2540C
Total Suspended Solids (1)	1	N/A	2015/10/28	VIC SOP-00009	Based on SM2540 D E

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Victoria
(2) Anions in Water by Ion Chromatography: The samples were received and analyzed in Maxxam Victoria. The data was processed and approved in Maxxam Burnaby.
(3) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411792

Attention:SANDRA RICHARD

GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/10/28
Report #: R2067310
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B593370
Received: 2015/10/21, 14:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Debbie Nordbruget, Project Manager
Email: DNordbruget@maxxam.ca
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Maxxam Job #: B593370
Report Date: 2015/10/28

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SF

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Maxxam ID				NL1604		
Sampling Date				2015/10/20 11:30		
COC Number				08411792		
	UNITS	MAC	AO	B1	RDL	QC Batch
CONVENTIONALS						
Dissolved Nitrate (N)	mg/L	**10**	-	<0.010	0.010	8086172
Dissolved Nitrite (N)	mg/L	**1**	-	<0.010	0.010	8086172
Misc. Inorganics						
Dissolved Chloride (Cl)	mg/L	-	250	7.04	0.50	8086172
Dissolved Fluoride (F)	mg/L	**1.5**	-	1.49	0.010	8086172
Dissolved Sulphate (SO4)	mg/L	-	500	14.5	0.50	8086172
Calculated Parameters						
Filter and HNO3 Preservation	N/A	-	-	FIELD	N/A	ONSITE
Total Hardness (CaCO3)	mg/L	-	-	90.5	0.50	8083950
Misc. Inorganics						
Dissolved Hardness (CaCO3)	mg/L	-	-	83.2	0.50	8084026
Alkalinity (Total as CaCO3)	mg/L	-	-	143	0.50	8089604
Alkalinity (PP as CaCO3)	mg/L	-	-	<0.50	0.50	8089604
Bicarbonate (HCO3)	mg/L	-	-	175	0.50	8089604
Carbonate (CO3)	mg/L	-	-	<0.50	0.50	8089604
Hydroxide (OH)	mg/L	-	-	<0.50	0.50	8089604
Total Suspended Solids	mg/L	-	-	<2	2	8086401
Nutrients						
Total Ammonia (N)	mg/L	-	-	0.22	0.0050	8089667
Physical Properties						
Conductivity	uS/cm	-	-	323	1.0	8089608
pH	pH	-	6.5:8.5	8.18	N/A	8089607
Physical Properties						
Total Dissolved Solids	mg/L	-	500	192	10	8088922

RDL = Reportable Detection Limit
N/A = Not Applicable

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Site Location: NANOOSE
Sampler Initials: SF

MERCURY BY COLD VAPOR (DRINKING WATER)

Maxxam ID			NL1604		
Sampling Date			2015/10/20 11:30		
COC Number			08411792		
	UNITS	MAC	B1	RDL	QC Batch
Elements					
Dissolved Mercury (Hg)	ug/L	1	<0.010	0.010	8092592
Total Mercury (Hg)	ug/L	1	<0.010	0.010	8092168
RDL = Reportable Detection Limit					

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Sampler Initials: SF

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID					NL1604		
Sampling Date					2015/10/20 11:30		
COC Number					08411792		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	-	-	100	<3.0	3.0	8089028
Dissolved Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8089028
Dissolved Arsenic (As)	ug/L	**10**	-	-	1.05	0.10	8089028
Dissolved Barium (Ba)	ug/L	**1000**	-	-	133	1.0	8089028
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8089028
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8089028
Dissolved Boron (B)	ug/L	**5000**	-	-	379	50	8089028
Dissolved Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8089028
Dissolved Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8089028
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8089028
Dissolved Copper (Cu)	ug/L	-	1000	-	<0.20	0.20	8089028
Dissolved Iron (Fe)	ug/L	-	300	-	164	5.0	8089028
Dissolved Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8089028
Dissolved Lithium (Li)	ug/L	-	-	-	43.1	5.0	8089028
Dissolved Manganese (Mn)	ug/L	-	50	-	11.8	1.0	8089028
Dissolved Molybdenum (Mo)	ug/L	-	-	-	2.5	1.0	8089028
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8089028
Dissolved Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8089028
Dissolved Silicon (Si)	ug/L	-	-	-	7210	100	8089028
Dissolved Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8089028
Dissolved Strontium (Sr)	ug/L	-	-	-	462	1.0	8089028
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8089028
Dissolved Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8089028
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8089028
Dissolved Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8089028
Dissolved Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8089028
Dissolved Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8089028
Dissolved Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8089028
Dissolved Calcium (Ca)	mg/L	-	-	-	24.1	0.050	8084027
Dissolved Magnesium (Mg)	mg/L	-	-	-	5.63	0.050	8084027
Dissolved Potassium (K)	mg/L	-	-	-	2.45	0.050	8084027
Dissolved Sodium (Na)	mg/L	-	200	-	34.5	0.050	8084027
Dissolved Sulphur (S)	mg/L	-	-	-	4.9	3.0	8084027

RDL = Reportable Detection Limit

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ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID					NL1604		
Sampling Date					2015/10/20 11:30		
COC Number					08411792		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	59.4	3.0	8088926
Total Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8088926
Total Arsenic (As)	ug/L	**10**	-	-	0.99	0.10	8088926
Total Barium (Ba)	ug/L	**1000**	-	-	153	1.0	8088926
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8088926
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8088926
Total Boron (B)	ug/L	**5000**	-	-	448	50	8088926
Total Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8088926
Total Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8088926
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8088926
Total Copper (Cu)	ug/L	-	1000	-	1.08	0.50	8088926
Total Iron (Fe)	ug/L	-	300	-	279	10	8088926
Total Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8088926
Total Lithium (Li)	ug/L	-	-	-	44.6	5.0	8088926
Total Manganese (Mn)	ug/L	-	50	-	15.2	1.0	8088926
Total Molybdenum (Mo)	ug/L	-	-	-	2.6	1.0	8088926
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8088926
Total Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8088926
Total Silicon (Si)	ug/L	-	-	-	8170	100	8088926
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8088926
Total Strontium (Sr)	ug/L	-	-	-	495	1.0	8088926
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8088926
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8088926
Total Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8088926
Total Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8088926
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8088926
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8088926
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8088926
Total Calcium (Ca)	mg/L	-	-	-	26.4	0.050	8083951
Total Magnesium (Mg)	mg/L	-	-	-	5.96	0.050	8083951
Total Potassium (K)	mg/L	-	-	-	2.39	0.050	8083951
Total Sodium (Na)	mg/L	-	200	-	37.4	0.050	8083951
Total Sulphur (S)	mg/L	-	-	-	6.5	3.0	8083951
RDL = Reportable Detection Limit							

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MISCELLANEOUS (DRINKING WATER)

Maxxam ID			NL1604		
Sampling Date			2015/10/20 11:30		
COC Number			08411792		
	UNITS	AO	B1	RDL	QC Batch
MISCELLANEOUS					
Sulphide	mg/L	0.05	0.0124	0.0050	8089143
RDL = Reportable Detection Limit					

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GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, October 2014.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

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Site Location: NANOOSE
Sampler Initials: SF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8086172	Dissolved Chloride (Cl)	2015/10/23	NC	80 - 120	102	80 - 120	<0.50	mg/L		
8086172	Dissolved Fluoride (F)	2015/10/23	106	80 - 120	104	80 - 120	<0.010	mg/L		
8086172	Dissolved Nitrate (N)	2015/10/23	100	80 - 120	98	80 - 120	<0.010	mg/L		
8086172	Dissolved Nitrite (N)	2015/10/23	91	80 - 120	111	80 - 120	<0.010	mg/L		
8086172	Dissolved Sulphate (SO4)	2015/10/23	NC	80 - 120	102	80 - 120	<0.50	mg/L		
8086401	Total Suspended Solids	2015/10/28			99	80 - 120	<1	mg/L	NC	20
8088922	Total Dissolved Solids	2015/10/26			99	80 - 120	<10	mg/L	3.0	20
8088926	Total Aluminum (Al)	2015/10/26	112	80 - 120	114	80 - 120	<3.0	ug/L	NC	20
8088926	Total Antimony (Sb)	2015/10/26	108	80 - 120	103	80 - 120	<0.50	ug/L		
8088926	Total Arsenic (As)	2015/10/26	104	80 - 120	100	80 - 120	<0.10	ug/L		
8088926	Total Barium (Ba)	2015/10/26	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8088926	Total Beryllium (Be)	2015/10/26	107	80 - 120	98	80 - 120	<0.10	ug/L		
8088926	Total Bismuth (Bi)	2015/10/26	104	80 - 120	105	80 - 120	<1.0	ug/L		
8088926	Total Boron (B)	2015/10/26					<50	ug/L		
8088926	Total Cadmium (Cd)	2015/10/26	103	80 - 120	102	80 - 120	<0.010	ug/L		
8088926	Total Chromium (Cr)	2015/10/26	106	80 - 120	102	80 - 120	<1.0	ug/L		
8088926	Total Cobalt (Co)	2015/10/26	NC	80 - 120	104	80 - 120	<0.50	ug/L		
8088926	Total Copper (Cu)	2015/10/26	98	80 - 120	107	80 - 120	<0.50	ug/L		
8088926	Total Iron (Fe)	2015/10/26	NC	80 - 120	113	80 - 120	<10	ug/L	0.044	20
8088926	Total Lead (Pb)	2015/10/26	102	80 - 120	102	80 - 120	<0.20	ug/L		
8088926	Total Lithium (Li)	2015/10/26	NC	80 - 120	90	80 - 120	<5.0	ug/L		
8088926	Total Manganese (Mn)	2015/10/26	NC	80 - 120	103	80 - 120	<1.0	ug/L	0.50	20
8088926	Total Molybdenum (Mo)	2015/10/26	112	80 - 120	100	80 - 120	<1.0	ug/L		
8088926	Total Nickel (Ni)	2015/10/26	97	80 - 120	104	80 - 120	<1.0	ug/L		
8088926	Total Selenium (Se)	2015/10/26	101	80 - 120	103	80 - 120	<0.10	ug/L		
8088926	Total Silicon (Si)	2015/10/26					<100	ug/L		
8088926	Total Silver (Ag)	2015/10/26	102	80 - 120	98	80 - 120	<0.020	ug/L		
8088926	Total Strontium (Sr)	2015/10/26	NC	80 - 120	98	80 - 120	<1.0	ug/L		
8088926	Total Thallium (Tl)	2015/10/26	106	80 - 120	92	80 - 120	<0.050	ug/L		
8088926	Total Tin (Sn)	2015/10/26	NC	80 - 120	103	80 - 120	<5.0	ug/L		
8088926	Total Titanium (Ti)	2015/10/26	116	80 - 120	105	80 - 120	<5.0	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

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Sampler Initials: SF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8088926	Total Uranium (U)	2015/10/26	107	80 - 120	105	80 - 120	<0.10	ug/L		
8088926	Total Vanadium (V)	2015/10/26	106	80 - 120	103	80 - 120	<5.0	ug/L		
8088926	Total Zinc (Zn)	2015/10/26	NC	80 - 120	106	80 - 120	<5.0	ug/L		
8088926	Total Zirconium (Zr)	2015/10/26					<0.50	ug/L		
8089028	Dissolved Aluminum (Al)	2015/10/27	106	80 - 120	111	80 - 120	<3.0	ug/L	NC	20
8089028	Dissolved Antimony (Sb)	2015/10/27	99	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
8089028	Dissolved Arsenic (As)	2015/10/27	99	80 - 120	101	80 - 120	<0.10	ug/L	8.7	20
8089028	Dissolved Barium (Ba)	2015/10/27	NC	80 - 120	104	80 - 120	<1.0	ug/L	6.4	20
8089028	Dissolved Beryllium (Be)	2015/10/27	100	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
8089028	Dissolved Bismuth (Bi)	2015/10/27	92	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
8089028	Dissolved Boron (B)	2015/10/27					<50	ug/L	9.8	20
8089028	Dissolved Cadmium (Cd)	2015/10/27	95	80 - 120	99	80 - 120	<0.010	ug/L	NC	20
8089028	Dissolved Chromium (Cr)	2015/10/27	95	80 - 120	95	80 - 120	<1.0	ug/L	NC	20
8089028	Dissolved Cobalt (Co)	2015/10/27	92	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
8089028	Dissolved Copper (Cu)	2015/10/27	90	80 - 120	91	80 - 120	<0.20	ug/L	NC	20
8089028	Dissolved Iron (Fe)	2015/10/27	NC	80 - 120	102	80 - 120	<5.0	ug/L	0.74	20
8089028	Dissolved Lead (Pb)	2015/10/27	94	80 - 120	97	80 - 120	<0.20	ug/L	NC	20
8089028	Dissolved Lithium (Li)	2015/10/27	NC	80 - 120	105	80 - 120	<5.0	ug/L	4.1	20
8089028	Dissolved Manganese (Mn)	2015/10/27	NC	80 - 120	101	80 - 120	<1.0	ug/L	3.3	20
8089028	Dissolved Molybdenum (Mo)	2015/10/27	NC	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
8089028	Dissolved Nickel (Ni)	2015/10/27	90	80 - 120	94	80 - 120	<1.0	ug/L	NC	20
8089028	Dissolved Selenium (Se)	2015/10/27	93	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
8089028	Dissolved Silicon (Si)	2015/10/27					<100	ug/L	4.5	20
8089028	Dissolved Silver (Ag)	2015/10/27	100	80 - 120	105	80 - 120	<0.020	ug/L	NC	20
8089028	Dissolved Strontium (Sr)	2015/10/27	NC	80 - 120	102	80 - 120	<1.0	ug/L	3.0	20
8089028	Dissolved Thallium (Tl)	2015/10/27	93	80 - 120	96	80 - 120	<0.050	ug/L	NC	20
8089028	Dissolved Tin (Sn)	2015/10/27	98	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
8089028	Dissolved Titanium (Ti)	2015/10/27	100	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
8089028	Dissolved Uranium (U)	2015/10/27	86	80 - 120	83	80 - 120	<0.10	ug/L	NC	20
8089028	Dissolved Vanadium (V)	2015/10/27	95	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
8089028	Dissolved Zinc (Zn)	2015/10/27	92	80 - 120	105	80 - 120	<5.0	ug/L	NC	20

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QUALITY ASSURANCE REPORT(CONT'D)

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Site Location: NANOOSE
Sampler Initials: SF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8089028	Dissolved Zirconium (Zr)	2015/10/27					<0.50	ug/L	NC	20
8089143	Sulphide	2015/10/26	7.4 (1)	80 - 120	96	80 - 120	<0.0050	mg/L	NC	20
8089604	Alkalinity (PP as CaCO3)	2015/10/26					<0.50	mg/L		
8089604	Alkalinity (Total as CaCO3)	2015/10/26	NC	80 - 120	100	80 - 120	0.52, RDL=0.50	mg/L		
8089604	Bicarbonate (HCO3)	2015/10/26					0.63, RDL=0.50	mg/L		
8089604	Carbonate (CO3)	2015/10/26					<0.50	mg/L		
8089604	Hydroxide (OH)	2015/10/26					<0.50	mg/L		
8089607	pH	2015/10/26			101	97 - 103			0.40	N/A
8089608	Conductivity	2015/10/26			101	80 - 120	<1.0	uS/cm		
8089667	Total Ammonia (N)	2015/10/26	NC	80 - 120	108	80 - 120	0.0062, RDL=0.0050	mg/L	3.1	20
8092168	Total Mercury (Hg)	2015/10/28	96	80 - 120	97	80 - 120	<0.010	ug/L	NC	20
8092592	Dissolved Mercury (Hg)	2015/10/28	93	80 - 120	95	80 - 120	<0.010	ug/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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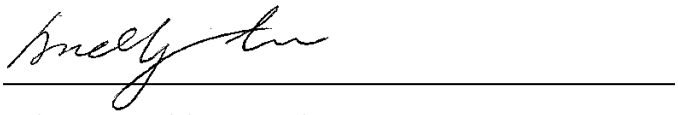
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Data Validation Coordinator

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Water quality report B1 – End of pumping

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411809

Attention:SANDRA RICHARD

GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/11/05
Report #: R2072687
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B594752
Received: 2015/10/26, 07:55

Sample Matrix: DRINKING WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water	1	2015/10/28	2015/10/28	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/10/28	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/10/28	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/10/28	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	1	N/A	2015/11/03	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	1	2015/11/02	2015/11/02	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2015/10/28	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2015/10/26	2015/10/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	1	2015/10/27	2015/10/28	BBY7SOP-00002	EPA 6020A R1 m
Ammonia-N (Preserved)	1	N/A	2015/10/29	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate + Nitrite (N)	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3 I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/10/28	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	1	N/A	2015/10/28	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	1	N/A	2015/10/28	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphide	1	N/A	2015/10/28	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue) (1)	1	N/A	2015/10/27	VIC SOP-00008	Based on SM 2540C
Total Suspended Solids (1)	1	N/A	2015/10/30	VIC SOP-00009	Based on SM2540 D E

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Victoria
(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411809

Attention:SANDRA RICHARD

GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/11/05
Report #: R2072687
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B594752
Received: 2015/10/26, 07:55

Encryption Key

Debbie Nordbruget
05 Nov 2015 18:24:59 -08:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Debbie Nordbruget, Project Manager
Email: DNordbruget@maxxam.ca
Phone# (250)385-6112

==========

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Maxxam ID				NM1471		
Sampling Date				2015/10/23 09:05		
COC Number				08411809		
	UNITS	MAC	AO	B1	RDL	QC Batch
ANIONS						
Nitrite (N)	mg/L	**1**	-	<0.0050 (1)	0.0050	8091145
Calculated Parameters						
Filter and HNO3 Preservation	N/A	-	-	FIELD	N/A	ONSITE
Nitrate (N)	mg/L	**10**	-	<0.020	0.020	8088770
Misc. Inorganics						
Fluoride (F)	mg/L	**1.5**	-	1.50	0.010	8092672
Alkalinity (Total as CaCO3)	mg/L	-	-	144	0.50	8092311
Alkalinity (PP as CaCO3)	mg/L	-	-	<0.50	0.50	8092311
Bicarbonate (HCO3)	mg/L	-	-	175	0.50	8092311
Carbonate (CO3)	mg/L	-	-	<0.50	0.50	8092311
Hydroxide (OH)	mg/L	-	-	<0.50	0.50	8092311
Total Suspended Solids	mg/L	-	-	<2	2	8094159
Anions						
Dissolved Sulphate (SO4)	mg/L	-	500	16.0	0.50	8093019
Dissolved Chloride (Cl)	mg/L	-	250	9.7	0.50	8093018
Nutrients						
Total Ammonia (N)	mg/L	-	-	0.22	0.0050	8094816
Nitrate plus Nitrite (N)	mg/L	-	-	<0.020 (1)	0.020	8091144
Physical Properties						
Conductivity	uS/cm	-	-	347	1.0	8092310
pH	pH	-	6.5:8.5	8.22	N/A	8092305
Physical Properties						
Total Dissolved Solids	mg/L	-	500	207	10	8090895

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

MISCELLANEOUS (DRINKING WATER)

Maxxam ID			NM1471		
Sampling Date			2015/10/23 09:05		
COC Number			08411809		
	UNITS	AO	B1	RDL	QC Batch
MISCELLANEOUS					
Sulphide	mg/L	0.05	0.0078	0.0050	8091872
RDL = Reportable Detection Limit					

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR DISSOLVED METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1471		
Sampling Date					2015/10/23 09:05		
COC Number					08411809		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	-	-	-	91.0	0.50	8088841
Elements							
Dissolved Mercury (Hg)	ug/L	**1**	-	-	<0.010	0.010	8099603
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	-	-	100	4.9	3.0	8092134
Dissolved Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8092134
Dissolved Arsenic (As)	ug/L	**10**	-	-	1.04	0.10	8092134
Dissolved Barium (Ba)	ug/L	**1000**	-	-	141	1.0	8092134
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8092134
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8092134
Dissolved Boron (B)	ug/L	**5000**	-	-	391	50	8092134
Dissolved Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8092134
Dissolved Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8092134
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8092134
Dissolved Copper (Cu)	ug/L	-	1000	-	0.41	0.20	8092134
Dissolved Iron (Fe)	ug/L	-	300	-	199	5.0	8092134
Dissolved Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8092134
Dissolved Lithium (Li)	ug/L	-	-	-	42.6	5.0	8092134
Dissolved Manganese (Mn)	ug/L	-	50	-	12.9	1.0	8092134
Dissolved Molybdenum (Mo)	ug/L	-	-	-	2.0	1.0	8092134
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8092134
Dissolved Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8092134
Dissolved Silicon (Si)	ug/L	-	-	-	7450	100	8092134
Dissolved Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8092134
Dissolved Strontium (Sr)	ug/L	-	-	-	475	1.0	8092134
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8092134
Dissolved Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8092134
Dissolved Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8092134
Dissolved Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8092134
Dissolved Calcium (Ca)	mg/L	-	-	-	25.8	0.050	8088842
Dissolved Magnesium (Mg)	mg/L	-	-	-	6.42	0.050	8088842
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR DISSOLVED METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1471		
Sampling Date					2015/10/23 09:05		
COC Number					08411809		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Dissolved Potassium (K)	mg/L	-	-	-	2.40	0.050	8088842
Dissolved Sodium (Na)	mg/L	-	200	-	41.7	0.050	8088842
Dissolved Sulphur (S)	mg/L	-	-	-	6.0	3.0	8088842
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
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GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR TOTAL METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1471		
Sampling Date					2015/10/23 09:05		
COC Number					08411809		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	89.4	0.50	8088768
Elements							
Total Mercury (Hg)	ug/L	**1**	-	-	<0.010	0.010	8098683
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	8.6	3.0	8090970
Total Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8090970
Total Arsenic (As)	ug/L	**10**	-	-	0.90	0.10	8090970
Total Barium (Ba)	ug/L	**1000**	-	-	140	1.0	8090970
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8090970
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8090970
Total Boron (B)	ug/L	**5000**	-	-	389	50	8090970
Total Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8090970
Total Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8090970
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8090970
Total Copper (Cu)	ug/L	-	1000	-	<0.50	0.50	8090970
Total Iron (Fe)	ug/L	-	300	-	205	10	8090970
Total Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8090970
Total Lithium (Li)	ug/L	-	-	-	41.5	5.0	8090970
Total Manganese (Mn)	ug/L	-	50	-	12.4	1.0	8090970
Total Molybdenum (Mo)	ug/L	-	-	-	2.3	1.0	8090970
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8090970
Total Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8090970
Total Silicon (Si)	ug/L	-	-	-	7290	100	8090970
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8090970
Total Strontium (Sr)	ug/L	-	-	-	477	1.0	8090970
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8090970
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8090970
Total Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8090970
Total Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8090970
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8090970
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8090970
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8090970
Total Calcium (Ca)	mg/L	-	-	-	25.3	0.050	8088769
Total Magnesium (Mg)	mg/L	-	-	-	6.36	0.050	8088769
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR TOTAL METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1471		
Sampling Date					2015/10/23 09:05		
COC Number					08411809		
	UNITS	MAC	AO	OG	B1	RDL	QC Batch
Total Potassium (K)	mg/L	-	-	-	2.34	0.050	8088769
Total Sodium (Na)	mg/L	-	200	-	40.3	0.050	8088769
Total Sulphur (S)	mg/L	-	-	-	6.1	3.0	8088769
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

GENERAL COMMENTS

Samples arrived on date of expiry for Nitrate and Nitrite analysis, and could not be performed within hold time due to instrumentation issues in our Victoria lab. Analysis processed past hold time per client request. DN3
MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, October 2014.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

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Maxxam Job #: B594752
Report Date: 2015/11/05

QUALITY ASSURANCE REPORT

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8090895	Total Dissolved Solids	2015/10/27			114	80 - 120	10, RDL=10	mg/L	1.2	20
8090970	Total Aluminum (Al)	2015/10/28	103	80 - 120	103	80 - 120	<3.0	ug/L		
8090970	Total Antimony (Sb)	2015/10/28	101	80 - 120	101	80 - 120	<0.50	ug/L		
8090970	Total Arsenic (As)	2015/10/28	99	80 - 120	100	80 - 120	<0.10	ug/L		
8090970	Total Barium (Ba)	2015/10/28	NC	80 - 120	99	80 - 120	<1.0	ug/L		
8090970	Total Beryllium (Be)	2015/10/28	99	80 - 120	101	80 - 120	<0.10	ug/L		
8090970	Total Bismuth (Bi)	2015/10/28	97	80 - 120	99	80 - 120	<1.0	ug/L		
8090970	Total Boron (B)	2015/10/28					<50	ug/L		
8090970	Total Cadmium (Cd)	2015/10/28	97	80 - 120	97	80 - 120	<0.010	ug/L		
8090970	Total Chromium (Cr)	2015/10/28	99	80 - 120	101	80 - 120	<1.0	ug/L		
8090970	Total Cobalt (Co)	2015/10/28	96	80 - 120	101	80 - 120	<0.50	ug/L		
8090970	Total Copper (Cu)	2015/10/28	95	80 - 120	102	80 - 120	<0.50	ug/L		
8090970	Total Iron (Fe)	2015/10/28	NC	80 - 120	104	80 - 120	<10	ug/L		
8090970	Total Lead (Pb)	2015/10/28	96	80 - 120	99	80 - 120	<0.20	ug/L		
8090970	Total Lithium (Li)	2015/10/28	95	80 - 120	98	80 - 120	<5.0	ug/L		
8090970	Total Manganese (Mn)	2015/10/28	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8090970	Total Molybdenum (Mo)	2015/10/28	97	80 - 120	92	80 - 120	<1.0	ug/L		
8090970	Total Nickel (Ni)	2015/10/28	95	80 - 120	102	80 - 120	<1.0	ug/L		
8090970	Total Selenium (Se)	2015/10/28	94	80 - 120	96	80 - 120	<0.10	ug/L		
8090970	Total Silicon (Si)	2015/10/28					<100	ug/L		
8090970	Total Silver (Ag)	2015/10/28	93	80 - 120	96	80 - 120	<0.020	ug/L		
8090970	Total Strontium (Sr)	2015/10/28	NC	80 - 120	98	80 - 120	<1.0	ug/L		
8090970	Total Thallium (Tl)	2015/10/28	97	80 - 120	97	80 - 120	<0.050	ug/L		
8090970	Total Tin (Sn)	2015/10/28	97	80 - 120	103	80 - 120	<5.0	ug/L		
8090970	Total Titanium (Ti)	2015/10/28	100	80 - 120	100	80 - 120	<5.0	ug/L		
8090970	Total Uranium (U)	2015/10/28	98	80 - 120	101	80 - 120	<0.10	ug/L		
8090970	Total Vanadium (V)	2015/10/28	95	80 - 120	100	80 - 120	<5.0	ug/L		
8090970	Total Zinc (Zn)	2015/10/28	93	80 - 120	104	80 - 120	<5.0	ug/L		
8090970	Total Zirconium (Zr)	2015/10/28					<0.50	ug/L		
8091144	Nitrate plus Nitrite (N)	2015/10/27			102	80 - 120	<0.020	mg/L		
8091145	Nitrite (N)	2015/10/27			96	80 - 120	<0.0050	mg/L		

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Maxxam Job #: B594752
Report Date: 2015/11/05

QUALITY ASSURANCE REPORT(CONT'D)

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8091872	Sulphide	2015/10/28	89	80 - 120	100	80 - 120	<0.0050	mg/L	NC	20
8092134	Dissolved Aluminum (Al)	2015/10/28	108	80 - 120	107	80 - 120	<3.0	ug/L		
8092134	Dissolved Antimony (Sb)	2015/10/28	100	80 - 120	100	80 - 120	<0.50	ug/L		
8092134	Dissolved Arsenic (As)	2015/10/28	105	80 - 120	100	80 - 120	<0.10	ug/L		
8092134	Dissolved Barium (Ba)	2015/10/28	96	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
8092134	Dissolved Beryllium (Be)	2015/10/28	104	80 - 120	98	80 - 120	<0.10	ug/L		
8092134	Dissolved Bismuth (Bi)	2015/10/28	101	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Boron (B)	2015/10/28					<50	ug/L		
8092134	Dissolved Cadmium (Cd)	2015/10/28	101	80 - 120	98	80 - 120	<0.010	ug/L		
8092134	Dissolved Chromium (Cr)	2015/10/28	102	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Cobalt (Co)	2015/10/28	101	80 - 120	105	80 - 120	<0.50	ug/L		
8092134	Dissolved Copper (Cu)	2015/10/28	101	80 - 120	100	80 - 120	<0.20	ug/L		
8092134	Dissolved Iron (Fe)	2015/10/28	102	80 - 120	106	80 - 120	<5.0	ug/L		
8092134	Dissolved Lead (Pb)	2015/10/28	99	80 - 120	101	80 - 120	<0.20	ug/L		
8092134	Dissolved Lithium (Li)	2015/10/28	102	80 - 120	97	80 - 120	<5.0	ug/L		
8092134	Dissolved Manganese (Mn)	2015/10/28	99	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Molybdenum (Mo)	2015/10/28	99	80 - 120	99	80 - 120	<1.0	ug/L		
8092134	Dissolved Nickel (Ni)	2015/10/28	100	80 - 120	102	80 - 120	<1.0	ug/L		
8092134	Dissolved Selenium (Se)	2015/10/28	103	80 - 120	97	80 - 120	<0.10	ug/L		
8092134	Dissolved Silicon (Si)	2015/10/28					<100	ug/L		
8092134	Dissolved Silver (Ag)	2015/10/28	98	80 - 120	96	80 - 120	<0.020	ug/L		
8092134	Dissolved Strontium (Sr)	2015/10/28	93	80 - 120	96	80 - 120	<1.0	ug/L		
8092134	Dissolved Thallium (Tl)	2015/10/28	94	80 - 120	99	80 - 120	<0.050	ug/L		
8092134	Dissolved Tin (Sn)	2015/10/28	101	80 - 120	99	80 - 120	<5.0	ug/L		
8092134	Dissolved Titanium (Ti)	2015/10/28	100	80 - 120	99	80 - 120	<5.0	ug/L		
8092134	Dissolved Uranium (U)	2015/10/28	99	80 - 120	101	80 - 120	<0.10	ug/L		
8092134	Dissolved Vanadium (V)	2015/10/28	100	80 - 120	103	80 - 120	<5.0	ug/L		
8092134	Dissolved Zinc (Zn)	2015/10/28	107	80 - 120	106	80 - 120	<5.0	ug/L		
8092134	Dissolved Zirconium (Zr)	2015/10/28					<0.50	ug/L		
8092305	pH	2015/10/28			102	97 - 103			1.5	N/A
8092310	Conductivity	2015/10/28			101	80 - 120	<1.0	uS/cm	0	20

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Maxxam Job #: B594752
Report Date: 2015/11/05

QUALITY ASSURANCE REPORT(CONT'D)

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8092311	Alkalinity (PP as CaCO3)	2015/10/28					<0.50	mg/L	NC	20
8092311	Alkalinity (Total as CaCO3)	2015/10/28	NC	80 - 120	94	80 - 120	<0.50	mg/L	3.2	20
8092311	Bicarbonate (HCO3)	2015/10/28					<0.50	mg/L	3.2	20
8092311	Carbonate (CO3)	2015/10/28					<0.50	mg/L	NC	20
8092311	Hydroxide (OH)	2015/10/28					<0.50	mg/L	NC	20
8092672	Fluoride (F)	2015/10/28	NC	80 - 120	100	80 - 120	0.013, RDL=0.010	mg/L	2.1	20
8093018	Dissolved Chloride (Cl)	2015/10/28	88	80 - 120	103	80 - 120	<0.50	mg/L	0.74	20
8093019	Dissolved Sulphate (SO4)	2015/10/28	NC	80 - 120	93	80 - 120	<0.50	mg/L	3.6	20
8094159	Total Suspended Solids	2015/10/30			99	80 - 120	<1	mg/L	NC	20
8094816	Total Ammonia (N)	2015/10/29	101	80 - 120	106	80 - 120	0.0068, RDL=0.0050	mg/L	NC	20
8098683	Total Mercury (Hg)	2015/11/02	99	80 - 120	97	80 - 120	<0.010	ug/L	NC	20
8099603	Dissolved Mercury (Hg)	2015/11/03	98	80 - 120	95	80 - 120	<0.010	ug/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B594752
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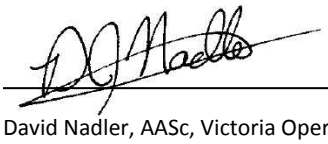
GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



David Nadler, AASc, Victoria Operations Manager

Rob Reinert, Data Validation Coordinator

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Water quality report B1 – End of pumping (Duplicate)

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411809

Attention:SANDRA RICHARD

GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/11/05
Report #: R2072693
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B594752
Received: 2015/10/26, 07:55

Sample Matrix: DRINKING WATER
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water	1	2015/10/28	2015/10/28	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/10/28	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/10/28	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/10/28	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	1	N/A	2015/11/03	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	1	2015/11/02	2015/11/02	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/10/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2015/10/28	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2015/10/26	2015/10/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	1	2015/10/27	2015/10/28	BBY7SOP-00002	EPA 6020A R1 m
Ammonia-N (Preserved)	1	N/A	2015/10/29	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate + Nitrite (N)	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/10/27	BBY6SOP-00010	SM 22 4500-NO3 I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/10/28	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	1	N/A	2015/10/28	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	1	N/A	2015/10/28	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphide	1	N/A	2015/10/28	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue) (1)	1	N/A	2015/10/27	VIC SOP-00008	Based on SM 2540C
Total Suspended Solids (1)	1	N/A	2015/10/30	VIC SOP-00009	Based on SM2540 D E

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Victoria
(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Your C.O.C. #: 08411809

Attention:SANDRA RICHARD

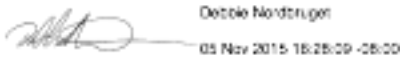
GW SOLUTIONS
UNIT 201 - 5180 DUBLIN WAY
NANAIMO, BC
CANADA V9T 0H2

Report Date: 2015/11/05
Report #: R2072693
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B594752
Received: 2015/10/26, 07:55

Encryption Key



Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Debbie Nordbruget, Project Manager
Email: DNordbruget@maxxam.ca
Phone# (250)385-6112
==========
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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Maxxam ID				NM1472		
Sampling Date				2015/10/23 09:30		
COC Number				08411809		
	UNITS	MAC	AO	B0	RDL	QC Batch
ANIONS						
Nitrite (N)	mg/L	**1**	-	<0.0050 (1)	0.0050	8091145
Calculated Parameters						
Filter and HNO3 Preservation	N/A	-	-	FIELD	N/A	ONSITE
Nitrate (N)	mg/L	**10**	-	<0.020	0.020	8088770
Misc. Inorganics						
Fluoride (F)	mg/L	**1.5**	-	1.50	0.010	8092672
Alkalinity (Total as CaCO3)	mg/L	-	-	144	0.50	8092311
Alkalinity (PP as CaCO3)	mg/L	-	-	<0.50	0.50	8092311
Bicarbonate (HCO3)	mg/L	-	-	176	0.50	8092311
Carbonate (CO3)	mg/L	-	-	<0.50	0.50	8092311
Hydroxide (OH)	mg/L	-	-	<0.50	0.50	8092311
Total Suspended Solids	mg/L	-	-	<2	2	8094159
Anions						
Dissolved Sulphate (SO4)	mg/L	-	500	16.6	0.50	8093019
Dissolved Chloride (Cl)	mg/L	-	250	10	0.50	8093018
Nutrients						
Total Ammonia (N)	mg/L	-	-	0.23	0.0050	8094816
Nitrate plus Nitrite (N)	mg/L	-	-	<0.020 (1)	0.020	8091144
Physical Properties						
Conductivity	uS/cm	-	-	347	1.0	8092310
pH	pH	-	6.5:8.5	8.17	N/A	8092305
Physical Properties						
Total Dissolved Solids	mg/L	-	500	206	10	8090895

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

MISCELLANEOUS (DRINKING WATER)

Maxxam ID			NM1472		
Sampling Date			2015/10/23 09:30		
COC Number			08411809		
	UNITS	AO	B0	RDL	QC Batch
MISCELLANEOUS					
Sulphide	mg/L	0.05	0.0107	0.0050	8091872
RDL = Reportable Detection Limit					

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR DISSOLVED METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1472		
Sampling Date					2015/10/23 09:30		
COC Number					08411809		
	UNITS	MAC	AO	OG	B0	RDL	QC Batch
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	-	-	-	90.7	0.50	8088841
Elements							
Dissolved Mercury (Hg)	ug/L	**1**	-	-	<0.010	0.010	8099603
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	-	-	100	5.2	3.0	8092134
Dissolved Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8092134
Dissolved Arsenic (As)	ug/L	**10**	-	-	1.15	0.10	8092134
Dissolved Barium (Ba)	ug/L	**1000**	-	-	140	1.0	8092134
Dissolved Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8092134
Dissolved Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8092134
Dissolved Boron (B)	ug/L	**5000**	-	-	431	50	8092134
Dissolved Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8092134
Dissolved Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8092134
Dissolved Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8092134
Dissolved Copper (Cu)	ug/L	-	1000	-	0.23	0.20	8092134
Dissolved Iron (Fe)	ug/L	-	300	-	200	5.0	8092134
Dissolved Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8092134
Dissolved Lithium (Li)	ug/L	-	-	-	42.7	5.0	8092134
Dissolved Manganese (Mn)	ug/L	-	50	-	12.1	1.0	8092134
Dissolved Molybdenum (Mo)	ug/L	-	-	-	2.4	1.0	8092134
Dissolved Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8092134
Dissolved Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8092134
Dissolved Silicon (Si)	ug/L	-	-	-	7310	100	8092134
Dissolved Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8092134
Dissolved Strontium (Sr)	ug/L	-	-	-	482	1.0	8092134
Dissolved Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8092134
Dissolved Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8092134
Dissolved Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8092134
Dissolved Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8092134
Dissolved Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8092134
Dissolved Calcium (Ca)	mg/L	-	-	-	25.5	0.050	8088842
Dissolved Magnesium (Mg)	mg/L	-	-	-	6.54	0.050	8088842
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR DISSOLVED METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1472		
Sampling Date					2015/10/23 09:30		
COC Number					08411809		
	UNITS	MAC	AO	OG	B0	RDL	QC Batch
Dissolved Potassium (K)	mg/L	-	-	-	2.33	0.050	8088842
Dissolved Sodium (Na)	mg/L	-	200	-	40.4	0.050	8088842
Dissolved Sulphur (S)	mg/L	-	-	-	6.3	3.0	8088842
RDL = Reportable Detection Limit							

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GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR TOTAL METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1472		
Sampling Date					2015/10/23 09:30		
COC Number					08411809		
	UNITS	MAC	AO	OG	B0	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	89.2	0.50	8088768
Elements							
Total Mercury (Hg)	ug/L	**1**	-	-	<0.010	0.010	8098683
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	8.3	3.0	8090970
Total Antimony (Sb)	ug/L	**6**	-	-	<0.50	0.50	8090970
Total Arsenic (As)	ug/L	**10**	-	-	0.96	0.10	8090970
Total Barium (Ba)	ug/L	**1000**	-	-	142	1.0	8090970
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8090970
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8090970
Total Boron (B)	ug/L	**5000**	-	-	412	50	8090970
Total Cadmium (Cd)	ug/L	**5**	-	-	<0.010	0.010	8090970
Total Chromium (Cr)	ug/L	**50**	-	-	<1.0	1.0	8090970
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8090970
Total Copper (Cu)	ug/L	-	1000	-	<0.50	0.50	8090970
Total Iron (Fe)	ug/L	-	300	-	194	10	8090970
Total Lead (Pb)	ug/L	**10**	-	-	<0.20	0.20	8090970
Total Lithium (Li)	ug/L	-	-	-	41.3	5.0	8090970
Total Manganese (Mn)	ug/L	-	50	-	13.0	1.0	8090970
Total Molybdenum (Mo)	ug/L	-	-	-	2.2	1.0	8090970
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8090970
Total Selenium (Se)	ug/L	**50**	-	-	<0.10	0.10	8090970
Total Silicon (Si)	ug/L	-	-	-	7000	100	8090970
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8090970
Total Strontium (Sr)	ug/L	-	-	-	479	1.0	8090970
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8090970
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8090970
Total Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8090970
Total Uranium (U)	ug/L	**20**	-	-	<0.10	0.10	8090970
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8090970
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8090970
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8090970
Total Calcium (Ca)	mg/L	-	-	-	25.4	0.050	8088769
Total Magnesium (Mg)	mg/L	-	-	-	6.23	0.050	8088769
RDL = Reportable Detection Limit							

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Maxxam Job #: B594752
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GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

CSR TOTAL METALS IN WATER WITH CV HG (DRINKING WATER)

Maxxam ID					NM1472		
Sampling Date					2015/10/23 09:30		
COC Number					08411809		
	UNITS	MAC	AO	OG	B0	RDL	QC Batch
Total Potassium (K)	mg/L	-	-	-	2.25	0.050	8088769
Total Sodium (Na)	mg/L	-	200	-	38.4	0.050	8088769
Total Sulphur (S)	mg/L	-	-	-	5.6	3.0	8088769
RDL = Reportable Detection Limit							

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Report Date: 2015/11/05

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
Sampler Initials: SR

GENERAL COMMENTS

Samples arrived on date of expiry for Nitrate and Nitrite analysis, and could not be performed within hold time due to instrumentation issues in our Victoria lab. Analysis processed past hold time per client request. DN3
MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, October 2014.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
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			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8090895	Total Dissolved Solids	2015/10/27			114	80 - 120	10, RDL=10	mg/L	1.2	20
8090970	Total Aluminum (Al)	2015/10/28	103	80 - 120	103	80 - 120	<3.0	ug/L		
8090970	Total Antimony (Sb)	2015/10/28	101	80 - 120	101	80 - 120	<0.50	ug/L		
8090970	Total Arsenic (As)	2015/10/28	99	80 - 120	100	80 - 120	<0.10	ug/L		
8090970	Total Barium (Ba)	2015/10/28	NC	80 - 120	99	80 - 120	<1.0	ug/L		
8090970	Total Beryllium (Be)	2015/10/28	99	80 - 120	101	80 - 120	<0.10	ug/L		
8090970	Total Bismuth (Bi)	2015/10/28	97	80 - 120	99	80 - 120	<1.0	ug/L		
8090970	Total Boron (B)	2015/10/28					<50	ug/L		
8090970	Total Cadmium (Cd)	2015/10/28	97	80 - 120	97	80 - 120	<0.010	ug/L		
8090970	Total Chromium (Cr)	2015/10/28	99	80 - 120	101	80 - 120	<1.0	ug/L		
8090970	Total Cobalt (Co)	2015/10/28	96	80 - 120	101	80 - 120	<0.50	ug/L		
8090970	Total Copper (Cu)	2015/10/28	95	80 - 120	102	80 - 120	<0.50	ug/L		
8090970	Total Iron (Fe)	2015/10/28	NC	80 - 120	104	80 - 120	<10	ug/L		
8090970	Total Lead (Pb)	2015/10/28	96	80 - 120	99	80 - 120	<0.20	ug/L		
8090970	Total Lithium (Li)	2015/10/28	95	80 - 120	98	80 - 120	<5.0	ug/L		
8090970	Total Manganese (Mn)	2015/10/28	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8090970	Total Molybdenum (Mo)	2015/10/28	97	80 - 120	92	80 - 120	<1.0	ug/L		
8090970	Total Nickel (Ni)	2015/10/28	95	80 - 120	102	80 - 120	<1.0	ug/L		
8090970	Total Selenium (Se)	2015/10/28	94	80 - 120	96	80 - 120	<0.10	ug/L		
8090970	Total Silicon (Si)	2015/10/28					<100	ug/L		
8090970	Total Silver (Ag)	2015/10/28	93	80 - 120	96	80 - 120	<0.020	ug/L		
8090970	Total Strontium (Sr)	2015/10/28	NC	80 - 120	98	80 - 120	<1.0	ug/L		
8090970	Total Thallium (Tl)	2015/10/28	97	80 - 120	97	80 - 120	<0.050	ug/L		
8090970	Total Tin (Sn)	2015/10/28	97	80 - 120	103	80 - 120	<5.0	ug/L		
8090970	Total Titanium (Ti)	2015/10/28	100	80 - 120	100	80 - 120	<5.0	ug/L		
8090970	Total Uranium (U)	2015/10/28	98	80 - 120	101	80 - 120	<0.10	ug/L		
8090970	Total Vanadium (V)	2015/10/28	95	80 - 120	100	80 - 120	<5.0	ug/L		
8090970	Total Zinc (Zn)	2015/10/28	93	80 - 120	104	80 - 120	<5.0	ug/L		
8090970	Total Zirconium (Zr)	2015/10/28					<0.50	ug/L		
8091144	Nitrate plus Nitrite (N)	2015/10/27			102	80 - 120	<0.020	mg/L		
8091145	Nitrite (N)	2015/10/27			96	80 - 120	<0.0050	mg/L		

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QUALITY ASSURANCE REPORT(CONT'D)

GW SOLUTIONS
Client Project #: 14-27 RDN PARKER ROAD
Site Location: NANOOSE
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			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8091872	Sulphide	2015/10/28	89	80 - 120	100	80 - 120	<0.0050	mg/L	NC	20
8092134	Dissolved Aluminum (Al)	2015/10/28	108	80 - 120	107	80 - 120	<3.0	ug/L		
8092134	Dissolved Antimony (Sb)	2015/10/28	100	80 - 120	100	80 - 120	<0.50	ug/L		
8092134	Dissolved Arsenic (As)	2015/10/28	105	80 - 120	100	80 - 120	<0.10	ug/L		
8092134	Dissolved Barium (Ba)	2015/10/28	96	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
8092134	Dissolved Beryllium (Be)	2015/10/28	104	80 - 120	98	80 - 120	<0.10	ug/L		
8092134	Dissolved Bismuth (Bi)	2015/10/28	101	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Boron (B)	2015/10/28					<50	ug/L		
8092134	Dissolved Cadmium (Cd)	2015/10/28	101	80 - 120	98	80 - 120	<0.010	ug/L		
8092134	Dissolved Chromium (Cr)	2015/10/28	102	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Cobalt (Co)	2015/10/28	101	80 - 120	105	80 - 120	<0.50	ug/L		
8092134	Dissolved Copper (Cu)	2015/10/28	101	80 - 120	100	80 - 120	<0.20	ug/L		
8092134	Dissolved Iron (Fe)	2015/10/28	102	80 - 120	106	80 - 120	<5.0	ug/L		
8092134	Dissolved Lead (Pb)	2015/10/28	99	80 - 120	101	80 - 120	<0.20	ug/L		
8092134	Dissolved Lithium (Li)	2015/10/28	102	80 - 120	97	80 - 120	<5.0	ug/L		
8092134	Dissolved Manganese (Mn)	2015/10/28	99	80 - 120	101	80 - 120	<1.0	ug/L		
8092134	Dissolved Molybdenum (Mo)	2015/10/28	99	80 - 120	99	80 - 120	<1.0	ug/L		
8092134	Dissolved Nickel (Ni)	2015/10/28	100	80 - 120	102	80 - 120	<1.0	ug/L		
8092134	Dissolved Selenium (Se)	2015/10/28	103	80 - 120	97	80 - 120	<0.10	ug/L		
8092134	Dissolved Silicon (Si)	2015/10/28					<100	ug/L		
8092134	Dissolved Silver (Ag)	2015/10/28	98	80 - 120	96	80 - 120	<0.020	ug/L		
8092134	Dissolved Strontium (Sr)	2015/10/28	93	80 - 120	96	80 - 120	<1.0	ug/L		
8092134	Dissolved Thallium (Tl)	2015/10/28	94	80 - 120	99	80 - 120	<0.050	ug/L		
8092134	Dissolved Tin (Sn)	2015/10/28	101	80 - 120	99	80 - 120	<5.0	ug/L		
8092134	Dissolved Titanium (Ti)	2015/10/28	100	80 - 120	99	80 - 120	<5.0	ug/L		
8092134	Dissolved Uranium (U)	2015/10/28	99	80 - 120	101	80 - 120	<0.10	ug/L		
8092134	Dissolved Vanadium (V)	2015/10/28	100	80 - 120	103	80 - 120	<5.0	ug/L		
8092134	Dissolved Zinc (Zn)	2015/10/28	107	80 - 120	106	80 - 120	<5.0	ug/L		
8092134	Dissolved Zirconium (Zr)	2015/10/28					<0.50	ug/L		
8092305	pH	2015/10/28			102	97 - 103			1.5	N/A
8092310	Conductivity	2015/10/28			101	80 - 120	<1.0	uS/cm	0	20

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QUALITY ASSURANCE REPORT(CONT'D)

GW SOLUTIONS
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			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8092311	Alkalinity (PP as CaCO3)	2015/10/28					<0.50	mg/L	NC	20
8092311	Alkalinity (Total as CaCO3)	2015/10/28	NC	80 - 120	94	80 - 120	<0.50	mg/L	3.2	20
8092311	Bicarbonate (HCO3)	2015/10/28					<0.50	mg/L	3.2	20
8092311	Carbonate (CO3)	2015/10/28					<0.50	mg/L	NC	20
8092311	Hydroxide (OH)	2015/10/28					<0.50	mg/L	NC	20
8092672	Fluoride (F)	2015/10/28	NC	80 - 120	100	80 - 120	0.013, RDL=0.010	mg/L	2.1	20
8093018	Dissolved Chloride (Cl)	2015/10/28	88	80 - 120	103	80 - 120	<0.50	mg/L	0.74	20
8093019	Dissolved Sulphate (SO4)	2015/10/28	NC	80 - 120	93	80 - 120	<0.50	mg/L	3.6	20
8094159	Total Suspended Solids	2015/10/30			99	80 - 120	<1	mg/L	NC	20
8094816	Total Ammonia (N)	2015/10/29	101	80 - 120	106	80 - 120	0.0068, RDL=0.0050	mg/L	NC	20
8098683	Total Mercury (Hg)	2015/11/02	99	80 - 120	97	80 - 120	<0.010	ug/L	NC	20
8099603	Dissolved Mercury (Hg)	2015/11/03	98	80 - 120	95	80 - 120	<0.010	ug/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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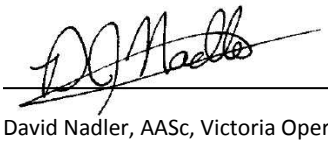
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



David Nadler, AASc, Victoria Operations Manager

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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