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SUMMER 2009 WATER QUALITY SURVEY

Baseline Monitoring at Proposed Finnerty Cove Outfall Study Area: Data Report

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REPORT

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1.0 INTRODUCTION

1.1 Background

The Capital Regional District (CRD) has proposed to construct new wastewater treatment plants (WWTP) in two areas near Victoria, BC: Finnerty Cove (the proposed Saanich East WWTP) and Albert Head (the proposed West Shore WWTP). However, the exact location of the WWTPs and their respective outfalls is presently unknown. Based on Ministry of Environment (MoE) guidance, Golder prepared a Stage 1 Environmental Impact Study (EIS) for the effluent discharge from the proposed WWTPs (Golder 2009a). This served as a preliminary evaluation at the planning stage to assess the acceptability of a proposed treated sewage discharge before detailed studies and designs were undertaken, and to assist in focusing those detailed studies. Existing data available for the Finnerty Cove and Albert Head study areas were used in the evaluation, which was reasonable for the purpose of a Stage 1 EIS. However, the data were considered to be insufficient for a Stage 2 EIS, and a site-specific baseline characterization program was therefore recommended. At the CRD's request, Golder prepared recommendations for the structure of the baseline program (Golder 2009b) and a 2-year baseline monitoring program was recommended for Spring 2009 through Winter 2011. Golder undertook the first seasonal (Spring – Year 1) water quality baseline monitoring survey in May 2009, the results of which were reported in Golder (2009c), and the second seasonal (Summer – Year 1) water quality baseline monitoring survey in September-October 2009. Results of the Summer 2009 water quality survey are reported here.

1.2 Study Objective and Deliverables

The objective of the Summer 2009 water quality monitoring program was to undertake the second seasonal sampling event of a multi-year baseline monitoring program outlined for the proposed Saanich East and West Shore WWTP outfalls. At CRD's request, the Summer 2009 monitoring program was limited to the Finnerty Cove (proposed Saanich East WWTP outfall) study area. The deliverables for the Summer 2009 monitoring program were:

- Collection of water samples five times during a 30-day period;
- Review and validation of analytical data; and,
- Data analysis (summary statistics) and preparation of a data report with methods and sample locations described, tabulated data summaries, assessment of data quality, and electronic data files as provided by the analytical laboratories.

The present report is a data report only. It has been prepared based on the understanding that a more detailed report, encompassing the whole baseline monitoring program, will be prepared when that project is carried out.

2.0 METHODS

The Summer 2009 survey consisted of five sampling events within a 30-d period (MoE 2006), in the vicinity of the proposed outfall location offshore of Finnerty Cove (the proposed Saanich East WWTP) near Victoria, BC (Figure 1). Baseline water quality was monitored at three stations in this study area, in terms of *in situ* water quality profiling measurements and collection of water quality samples for laboratory analysis. The three stations were evenly spaced approximately 500 m apart within the study area; station coordinates are provided in Table 1.

Sampling was conducted on September 14, 21, 23, 28 and October 5, 2009. Copies of the field notes are provided in Appendix I. No delays or rescheduling of sampling occurred as a result of unsuitable weather conditions (*e.g.,* high winds), and all target sampling was completed during each event. Field sampling activities were conducted aboard Golder's research vessel, the *Pacific GAL*. This vessel is equipped with onboard electronics, including 'Wide Area Augmentation System' and 'Differential' enabled GPS (WAAS/dGPS), an onboard computer with navigational and position plotting software (Nobeltec), and a depth sounder. The WAAS/dGPS is a positioning system that interfaces with the onboard Nobeltec navigational software to provide real-time position fixing, allowing for accurate locating and logging of sample sites.

2.1 *In Situ* Water Quality Depth Profiles

During each of the five sampling events, the vertical profile of the water column at each of the three stations was characterized by *in situ* measurements of water depth, temperature, pH, dissolved oxygen (DO), conductivity, salinity, total chlorophyll (a proxy measure of algal productivity)[1] and turbidity. Measurements were made using a YSI 6-Series Multi-parameter Water Quality Sonde (YSI Sonde)[2]. Water quality data were logged at regular periods throughout the YSI Sonde deployment. Typically, the YSI Sonde was lowered to depth at about 1 m above the ocean bottom (approximately 50 m below the water surface), and then raised through the water column slowly (to allow for probe response time) to provide profile data at two-second intervals.

The YSI Sonde was calibrated prior to each week's sampling program for the various parameters to be measured (conductivity, pH, turbidity, chlorophyll and DO), according to the manufacturer's instructions. The calibration records demonstrate that the YSI Sonde instrument sensors were consistently within the accepted range (Appendix I).

Water quality data were downloaded from the YSI Sonde using EcoWatch software (YSI EcoWatch for Windows). The data were exported to Microsoft Excel worksheets for subsequent processing, including quality assurance/quality control (QA/QC) review of the datasets. Data recorded by the instrument above and at the water surface were removed from the data sets[3].

[1] The YSI chlorophyll sensor estimates total chlorophyll by *in vivo* fluorescence. Although this provides a surrogate measure of algal productivity and the majority of the fluorescence is due to plankton chlorophyll, other chemical or biological forms that fluoresce when irradiated with blue light (centered at 470 nm) may contribute to the observed *in vivo* measurements.

[2] In addition to the target water quality parameters listed above, the YSI Sonde also recorded data for pH (as millivolts), oxidation reduction potential (ORP), dissolved oxygen (as percent saturation), and conductivity (without temperature compensation).

[3] The retained data typically extended to approximately 0.3 m below the water surface.

2.2 Water Quality Samples

Water samples were collected at each of the three sampling stations for a suite of physical, microbiological and chemical water quality parameters (Table 2). At each station, discrete water samples were collected at three depths (approximately 1 m above the ocean bottom, mid-depth, and 1 m below the water surface) using a Van Dorn water sampler. Water samples for the analysis of conventional, microbiological and nutrient parameters were collected at all three sampling stations; samples for total and dissolved metals were only collected from one station (Station 2) during each sampling event. These parameters were selected because they were considered necessary to characterize water quality in the study area and/or they were identified to be of potential concern in the Stage 1 EIS for the proposed WWTP outfall.

One equipment blank was collected during the first sampling event and one station was sampled in triplicate on one occasion (Station 2 during the third sampling event) to satisfy field QA/QC requirements. Additional QA/QC protocols included the decontamination of equipment, appropriate documentation, and the analysis of laboratory duplicate samples, reference materials or spiked samples, and laboratory method blanks. These QA/QC measures were intended to facilitate the detection of systematic and random errors potentially associated with field sampling and laboratory procedures.

Water quality samples were stored at approximately ~4ºC and submitted to CanTest Ltd., Maxxam Analytics, and ALS Environmental Laboratories for the requested analyses (Table 2). Samples were analysed within the recommended maximum hold times and reportable detection limits (RDLs) were sufficiently low for comparison to British Columbia (BC) ambient water quality guidelines for the protection of aquatic life in the marine environment. Descriptions of the analytical methods used by each laboratory are provided in the laboratory reports (Appendix IV).

Water quality data reports were reviewed upon receipt and corresponding water quality data compiled according to sampling location. Compiled analytical data for the equipment blank and three sets of triplicate samples (one station; three water depths) were evaluated as part of the QA/QC assessment. Parameters detected in the equipment blank at >5 times the RDL were flagged. Precision of the field triplicate samples was estimated by calculating the percent relative standard deviation (RSD) for each set of triplicate samples. If the RSD exceeded 20% (Golder 2007) when any of the replicate concentrations was >5 times the RDL, the exceedence was flagged).

The compiled data for each station were summarised statistically to calculate 30-d average[4] values for each parameter, as well as the standard deviation (SD), standard error (SE), minimum and maximum values. Data values below RDLs were included in all statistical calculations by using half the RDL. Summary data were then screened against approved and working BC water quality guidelines for protection of aquatic life in marine waters (MoE, 2006a, 2006b).

[4] Arithmetic means were calculated for all parameters, except that geometric means were calculated for the microbiological parameters.

3.0 RESULTS

3.1 *In Situ* Water Quality Depth Profiles

The *in situ* depth profile data for temperature, DO, pH, conductivity[5], salinity, total chlorophyll and turbidity, collected at each sampling station during the five sampling events, are presented in tabular and graphical form in Appendix II. Data for additional parameters recorded by the YSI Sonde, pH (as millivolts), oxidation reduction potential (ORP), dissolved oxygen (as percent saturation), and conductivity (without temperature compensation), are also presented in Appendix II (in tabular form only).

The pH readings recorded by the YSI meter were consistently about 0.3 pH units lower than the laboratory measurements reported by Cantest. There are a number of potential reasons for this, including differences in temperature of the field and laboratory measurements. No issues were apparent during weekly pre-deployment calibration checks of the YSI meter. The pH millivolt (MV) readings of the probe were subsequently checked in pH 7 and pH 10 buffer solutions, and found to be slightly offset relative to pH 10 buffer leading to an offset in the calibration slope (this cannot be corrected through re-calibration of the instrument and can only be corrected by replacing the probe). The accuracy of a new pH probe is ± 0.2 pH units, which may account for some of the difference between field and laboratory measurements. The manufacturer advised that the shift in the pH probe was not due to poor maintenance or instrument misuse, but an indication that the probe may require replacement to achieve the desired level of accuracy (lifespan of this pH probe is typically one to two years).

Chlorophyll readings were low during summer sampling (indicating low phytoplankton concentrations), with some negative ('-') values recorded by the YSI meter. The manufacturer advises that the chlorophyll sensor has difficulty stabilizing on a '0' chlorophyll solution and therefore these negative readings are expected (and can be considered equivalent to zero).The range of negative values observed should therefore be interpreted as zero chlorophyll, and data presented in Appendix II have been corrected to reflect this.

3.2 Water Quality Samples

The summarized water quality data for the three Finnerty Cove sampling locations are presented in Tables 3 to 5, along with comparisons to approved and working BCWQGs. The raw data for each station and sampling event are provided in Appendix III (Tables III-1 to III-3) and Appendix IV (analytical laboratory reports). The results for the field QC samples (*i.e.,* equipment blank and triplicate analyses) are presented in Table 6. Total Nitrogen concentrations were calculated by summing the measured concentrations of Total Kjeldahl Nitrogen (TKN) and Nitrate+Nitrate; where TKN was undetected, a value equal to half the RDL was used for this calculation.

Laboratory QC data (*i.e.,* method blanks, laboratory duplicates, spikes, and standards or reference materials) were reviewed for acceptability. The laboratory QC data were within the performance limits established by the analytical laboratories, with one exception. Total suspended solids (TSS) were detected in one method blank at a concentration of 1.3 mg/L; this was close to the RDL (1.0 mg/L) and not considered to be of concern with

[5] The YSI instrument allows for reporting of conductivity as "conductivity", without temperature compensation, and as "specific conductance", which incorporates temperature compensation to 25°C. Both sets of conductivity measurements have been reported in Appendix II, but only the "specific conductance" data were graphed. The equation for temperature compensation is:

Specific Conductance at 25°C (mS/cm) = Conductivity / (1 + 0.0191 [temperature – 25])

respect to data quality. There were a number of instances where a dissolved metal concentration was higher than the corresponding total metal concentration. Maxxam applies the same data quality objective (DQO) used for comparing laboratory duplicates, that the RPD be ≤25% when the parameter concentration is at least five times the RDL. Although there were a few cases where the RPD was >25%, the dissolved and/or total metal concentrations were at or less than five times the applicable RDL and therefore these occurrences of a dissolved metal exceeding the corresponding total metal concentration were attributed to analytical variability.

Field QC data were also reviewed for acceptability. The equipment blank was generated during the first sampling event, by collecting the laboratory-supplied deionized water used to rinse the sampling equipment. A few parameters were measured at concentrations above their respective RDLs, but nitrate was the only parameter with a concentration more than five times higher than its RDL (*i.e.,* 0.019 mg/L N versus 0.002 mg/L N). A comparison of the three sets of field triplicate samples collected at Station 2 indicated that triplicate measurements for the majority of parameters were similar, with RSDs ≤20%. A number of parameters had RSDs above 20% but with the exception of dissolved nickel and fecal coliforms, replicate concentrations were less than five times higher than the RDL.

4.0 STUDY LIMITATIONS

This report was prepared for the exclusive use of the Capital Regional District Scientific Programs (CRD-SP) and is intended to provide an assessment of water quality associated with the summer 2009 baseline survey conducted in the vicinity of Finnerty Cove (Victoria, BC). Any use that a third party may make of this report, or any reliance on or decisions made based on it, is the responsibility of the third parties. We disclaim responsibility for consequential financial effects on site management, or requirements for follow-up actions and costs.

The report is based solely on data and information collected and/or compiled by Golder Associates Ltd. as described in this report. In evaluating the study site, we have relied in good faith on information provided by the CRD-SP. We assume that the information provided is factual and accurate, subject to the application of the quality assurance procedures developed for the monitoring program. We accept no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or errors of persons interviewed or contacted. Assessment has been made using the results of discrete chemical analyses of water samples from discrete locations, and therefore, results cannot necessarily be extrapolated to all portions of Finnerty Cove. Additional study can reduce the inherent uncertainties associated with this type of study.

The services performed as described in this report were conducted in a manner consistent with the level of care and skill normally exercised by other members of the science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services. The content of this report is based on our present understanding of site conditions, the assumptions stated in this report, and our professional judgement in light of such information at the time of this report. This report provides professional opinion and, therefore, no warranty is expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws or regulations.

The findings and conclusions of this report are valid only as of the date of the report. If new information is discovered in future work, or if the assumptions stated in this report are not met, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

5.0 CLOSURE

We trust that the information in this data report is sufficient for your purposes; however, if you have any questions, please do not hesitate to contact the undersigned at 604-296-4200.

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Table 1: Sampling Locations for the Summer 2009 Water Quality Baseline Survey for the Proposed Finnerty Cove Outfall Study Area

Station	Latitude (dd° mm.mmm') N	Longitude (ddd° mm.mmm') W
Station 1	48° 29.149'	123° 16.601'
Station 2	48° 29.164'	123° 16.187'
Station 3	48° 28.893'	123° 16.113'

Table 2: Suite of Water Quality Parameters Analysed in Summer 2009 at Finnerty Cove Study Area

Parameter Type	Parameters	Laboratory
Conventional	pH Conductivity[1] Salinity Alkalinity Total Organic Carbon (TOC) Dissolved Organic Carbon (DOC) Total Suspended Solids (TSS) Major Cations and Anions Hardness	CanTest Ltd. (TOC and DOC subcontracted to ALS Environmental) Maxxam Analytics (Hardness and Major Cations)
Bacteriological	Enterococci Fecal Coliforms	CanTest Ltd.
Nutrients	Total Ammonia (as N) Total Kjeldahl Nitrogen (TKN) Nitrate and Nitrite (as N) Nitrate (calculated as N) Nitrite (as N) Total Nitrogen (calculated as N) Total Phosphate (as P) Orthophosphate (as P; dissolved)	CanTest Ltd.
Metals	Total and Dissolved Metals Total Mercury	Maxxam Analytics CanTest Ltd.

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[1] Conductivity data reported by CanTest were temperature-compensated to 25°C, and therefore correspond to the specific conductance data obtained from the *in situ* water quality profiles.

Parameter	BCWQGs (Marine)	Units	Finnerty Cove Station 1 - Below the Water Surface						Finnerty Cove Station 1 - Middle of the Water Column						Finnerty Cove Station 1 - Above the Sediment Bottom					
			Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n
Conventional																				
Alkalinity (Total)	-	mg/L	109	2.6	1.2	104	110	5	109	2.2	1.0	106	111	5	109	2.6	1.2	105	112	5
Bicarbonate Alkalinity (HCO_3)	-	mg/L	132	3.0	1.4	127	134	5	133	2.5	1.1	129	135	5	133	3.3	1.5	128	137	5
Carbonate Alkalinity (CO_3)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
Hydroxide Alkalinity (OH)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
pH, Laboratory	7.0 - 8.7	pH units	7.8	0.1	0.04	7.7	7.9	5	7.8	0.1	0.0	7.7	7.9	5	7.7	0.1	0.0	7.7	7.8	5
Conductivity	-	µS/cm	48400	3861	1727	43500	52000	5	49480	2299	1028	46200	52100	5	49400	2353	1052	46000	52600	5
Salinity	-	g/kg	32	2.8	1.3	28	34.2	5	32	1.7	0.7	30	34.3	5	32	1.7	0.8	29.8	34.6	5
Total Suspended Solids	-	mg/L	1.8	1.4	0.6	<1	4	5	1	0.8	0.3	<1	2	5	2	1.1	0.5	1	4	5
Dissolved Organic Carbon	-	mg/L	0.50	0.16	0.07	<0.50	0.71	5	0.31	0.13	0.06	<0.50	0.55	5	0.48	0.22	0.10	<0.50	0.74	5
Total Organic Carbon	-	mg/L	0.39	0.19	0.09	<0.50	0.64	5	0.32	0.17	0.07	<0.50	0.62	5	0.64	0.08	0.04	0.51	0.72	5
Major Ions																				
Dissolved Fluoride (F)	-	mg/L	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5
Dissolved Chloride (Cl)	-	mg/L	19240	727	325	18300	20100	5	19340	783	350	18500	20400	5	19580	829	371	18600	20700	5
Dissolved Sulphate (SO_4)	-	mg/L	2130	94	42	1980	2220	5	2170	83	37	2050	2250	5	2206	60	27	2120	2270	5
Nutrients																				
Ammonia Nitrogen N	2.4 - 5.0[A]	mg/L as N	0.03	0.01	0.01	0.02	0.05	5	0.03	0.02	0.01	0.01	0.05	5	0.03	0.02	0.01	0.02	0.06	5
Total Kjeldahl Nitrogen N	-	mg/L as N	0.4	0.1	0.04	0.3	0.5	5	0.3	0.2	0.1	<0.2	0.4	5	0.3	0.2	0.1	<0.2	0.5	5
Nitrate N	-	mg/L as N	0.290	0.031	0.014	0.257	0.342	5	0.31	0.03	0.01	0.28	0.337	5	0.320	0.036	0.016	0.279	0.372	5
Nitrite N	-	mg/L as N	0.005	0.0004	0.0002	0.005	0.006	5	0.005	0.001	0.000	0.005	0.006	5	0.005	0.001	0.000	0.004	0.005	5
Nitrate and Nitrite N	-	mg/L as N	0.295	0.031	0.014	0.262	0.347	5	0.314	0.026	0.011	0.285	0.342	5	0.324	0.036	0.016	0.284	0.376	5
Total Nitrogen (calc as N)	-	mg/L as N	0.695	0.123	0.055	0.562	0.847	5	0.574	0.170	0.076	0.385	0.742	5	0.604	0.193	0.086	0.384	0.804	5
Ortho Phosphorus P	-	mg/L as P	0.067	0.009	0.004	0.056	0.078	5	0.068	0.007	0.003	0.058	0.076	5	0.072	0.007	0.003	0.062	0.082	5
Total Phosphorus P	-	mg/L as P	0.080	0.010	0.005	0.064	0.089	5	0.079	0.010	0.005	0.067	0.092	5	0.081	0.007	0.003	0.074	0.089	5
Microbiological																				
Enterococci	-	Col./100 mL	<1	0.2	0.1	<1	1	5	1	2.0	0.9	<1	5	5	1	0.7	0.3	<1	2	5
Fecal Coliform	-	Col./100 mL	<1	0.3	0.1	<1	1	5	3	6.3	2.8	1	16	5	1	3.6	1.6	<1	9	5

Notes

BCWQGs (Marine) = Approved and Working British Columbia Water Quality Guidelines for the Protection of Aquatic Life (MoE 2006a, 2006b) - working guidelines are shown in *italics;* SD = Standard Deviation; SE = Standard Error.

Bolded Shaded Values Exceeds the British Columbia Water Quality Guidelines for Protection of Aquatic Life

\- No value available

A. 30-day average (for ammonia, the WQG is based on 30 g/kg Salinity; 7.8 pH; 5 to 15°C)

Parameter	BCWQGs (Marine)	Units	Finnerty Cove Station 2 - Below the Water Surface						Finnerty Cove Station 2 - Middle of the Water Column						Finnerty Cove Station 2 - Above the Sediment Bottom					
			Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n
Conventional																				
Alkalinity (Total)	-	mg/L	107	3.6	1.6	101	110	5	110	1.9	0.8	108	112	5	111	0.9	0.4	110	112	5
Bicarbonate Alkalinity (HCO_3)	-	mg/L	130	4.4	2.0	123	134	5	134	2.6	1.2	131	137	5	135	1.3	0.6	134	137	5
Carbonate Alkalinity (CO_3)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
Hydroxide Alkalinity (OH)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
Dissolved Hardness ($CaCO_3$)	-	mg/L	6328	344	154	5900	6640	5	6508	155	69	6270	6670	5	6886	161	72	6710	7080	5
pH, Laboratory	7.0 - 8.7	pH units	7.8	0.1	0.0	7.7	7.9	5	7.8	0.1	0.0	7.7	7.9	5	7.7	0.1	0.0	7.7	7.8	5
Conductivity	-	µS/cm	48660	1740	778	46600	51200	5	49100	2424	1084	46100	51600	5	49820	2457	1099	47300	52500	5
Salinity	-	Salinity	32	1.3	0.6	30.3	33.6	5	32	1.8	0.8	29.9	33.9	5	33	1.8	0.8	30.8	34.6	5
Total Suspended Solids	-	mg/L	2	1.9	0.8	<1	5	5	2	0.7	0.3	1	3	5	3	2.1	0.9	<1	6	5
Dissolved Organic Carbon	-	mg/L	0.50	0.23	0.10	<0.50	0.71	5	0.39	0.19	0.08	<0.50	0.61	5	0.37	0.16	0.07	<0.50	0.57	5
Total Organic Carbon	-	mg/L	0.47	0.20	0.09	<0.50	0.64	5	0.48	0.34	0.15	<0.50	0.99	5	0.49	0.23	0.10	<0.50	0.76	5
Major Ions																				
Dissolved Fluoride (F)	-	mg/L	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5
Dissolved Chloride (Cl)	-	mg/L	19100	735	329	18400	20200	5	19160	750	336	18400	20400	5	19420	1078	482	17800	20700	5
Dissolved Sulphate (SO_4)	-	mg/L	2138	54	24	2070	2210	5	2148	80	36	2020	2230	5	2196	82	37	2070	2290	5
Dissolved Calcium (Ca)	-	mg/L	430	14	6	411	444	5	441	14	6	422	460	5	461	13	6	448	481	5
Dissolved Magnesium (Mg)	-	mg/L	1276	72	32	1190	1340	5	1312	29	13	1270	1340	5	1392	33	15	1360	1440	5
Dissolved Potassium (K)	-	mg/L	384	18	8	363	402	5	394	9	4	380	401	5	416	8	4	407	425	5
Dissolved Sodium (Na)	-	mg/L	10570	750	335	9730	11300	5	10860	251	112	10500	11200	5	11520	319	143	11300	12000	5
Dissolved Sulphur (S)	-	mg/L	1062	41	18	1020	1110	5	1092	42	19	1030	1140	5	1152	36	16	1110	1190	5
Total Calcium (Ca)	-	mg/L	415	24	11	374	437	5	438	17	8	418	456	5	456	17	8	442	478	5
Total Magnesium (Mg)	-	mg/L	1252	103	46	1100	1360	5	1316	52	23	1230	1370	5	1382	50	22	1350	1470	5
Total Potassium (K)	-	mg/L	371	26	11	333	400	5	392	13	6	374	409	5	409	14	6	400	432	5
Total Sodium (Na)	-	mg/L	10386	903	404	9170	11400	5	10940	439	196	10300	11500	5	10962	654	292	9810	11400	5
Total Sulphur (S)	-	mg/L	1028	61	27	932	1090	5	1094	44	20	1030	1140	5	1138	47	21	1100	1210	5
Nutrients																				
Ammonia Nitrogen N	2.4 - 5.0[A]	mg/L as N	0.03	0.01	0.01	0.02	0.05	5	0.03	0.01	0.01	<0.01	0.04	5	0.03	0.01	0.00	0.02	0.04	5
Total Kjeldahl Nitrogen N	-	mg/L as N	0.2	0.1	0.0	<0.2	0.3	5	0.3	0.2	0.1	<0.2	0.5	5	0.3	0.2	0.1	<0.2	0.6	5
Nitrate N	-	mg/L as N	0.288	0.028	0.013	0.243	0.312	5	0.306	0.025	0.011	0.278	0.328	5	0.349	0.025	0.011	0.312	0.37	5
Nitrite N	-	mg/L as N	0.006	0.001	0.000	0.005	0.007	5	0.006	0.001	0.000	0.005	0.007	5	0.005	0.000	0.000	0.005	0.005	5
Nitrate and Nitrite N	-	mg/L as N	0.294	0.028	0.012	0.25	0.318	5	0.312	0.026	0.012	0.283	0.333	5	0.354	0.025	0.011	0.317	0.375	5
Total Nitrogen (calc as N)	-	mg/L as N	0.494	0.115	0.052	0.389	0.618	5	0.572	0.163	0.073	0.384	0.783	5	0.624	0.183	0.082	0.462	0.917	5
Ortho Phosphorus P	-	mg/L as P	0.066	0.007	0.003	0.057	0.074	5	0.068	0.005	0.002	0.061	0.074	5	0.073	0.005	0.002	0.068	0.082	5
Total Phosphorus P	-	mg/L as P	0.076	0.007	0.003	0.067	0.086	5	0.080	0.016	0.007	0.068	0.105	5	0.081	0.005	0.002	0.076	0.087	5
Microbiological																				
Enterococci	-	Col./100 mL	<1	-	-	<1	<1	5	1	0.2	0.1	<1	1	5	1	0.3	0.1	<1	1	5
Fecal Coliform	-	Col./100 mL	1	0.7	0.3	<1	2	5	2	1.6	0.7	<1	4	5	2	2.3	1.0	1	7	5
Total Metals																				
Total Aluminum (Al)	-	µg/L	13	8.7	3.9	<10	26	5	16	10.7	4.8	<10	31	5	19	10.5	4.7	10	36	5
Total Antimony (Sb)	-	µg/L	<0.5	-	-	<0.5	<0.5	5	<0.5	-	-	<0.5	<0.5	5	<0.5	-	-	<0.5	<0.5	5
Total Arsenic (As)	12.5[B] (interim)	µg/L	1.8	0.2	0.1	1.6	2	5	2.0	0.1	0.0	1.9	2.1	5	2.0	0.1	0.1	1.9	2.2	5
Total Barium (Ba)	*1000[C] / 500[D] / 200[E]*	µg/L	9	0.5	0.2	9	10	5	9	0.4	0.2	9	10	5	9	0.0	0.0	9	9	5
Total Beryllium (Be)	*1500[C] / 100[D]*	µg/L	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5
Total Bismuth (Bi)	-	µg/L	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5
Total Boron (B)	1200[B]	µg/L	**3616**	223	100	**3320**	**3810**	5	**3782**	138	62	**3580**	**3930**	5	**3910**	108	48	**3810**	**4080**	5
Total Cadmium (Cd)	*0.12[B]*	µg/L	0.09	0.00	0.00	0.08	0.09	5	0.09	0.00	0.00	0.08	0.09	5	0.10	0.02	0.01	0.07	0.11	5
Total Chromium (Cr)	*1.5[B] Cr(VI) / 56[B] Cr(III)*	µg/L	<0.5	-	-	<0.5	<0.5	5	0.4	0.2	0.1	<0.5	0.7	5	<0.5	-	-	<0.5	<0.5	5
Total Cobalt (Co)	-	µg/L	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5
Total Copper (Cu)	2[A]	µg/L	0.24	0.04	0.02	0.20	0.28	5	0.20	0.01	0.01	0.19	0.22	5	0.29	0.20	0.09	0.18	0.64	5
Total Iron (Fe)	-	µg/L	6	2.4	1.1	4	10	5	8	2.0	0.9	6	11	5	12	5.4	2.4	7	21	5
Total Lead (Pb)	2[A]	µg/L	0.04	0.03	0.01	<0.05	0.08	5	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5

Parameter	BCWQGs (Marine)	Units	Finnerty Cove Station 2 - Below the Water Surface						Finnerty Cove Station 2 - Middle of the Water Column						Finnerty Cove Station 2 - Above the Sediment Bottom					
			Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n
Total Lithium (Li)	-	µg/L	171	10	4	160	179	5	178	5	2	172	186	5	184	3	1	180	187	5
Total Manganese (Mn)	*100*[F]	µg/L	2.5	0.2	0.1	2.2	2.6	5	2.4	0.1	0.1	2.3	2.6	5	2.6	0.2	0.1	2.3	2.8	5
Total Mercury (Hg)	0.02[A]	µg/L	<0.02	-	-	<0.02	<0.02	5	<0.02	-	-	<0.02	<0.02	5	<0.02	-	-	<0.02	<0.02	5
Total Molybdenum (Mo)	-	µg/L	11	1.1	0.5	9	12	5	11	0.8	0.4	10	12	5	11	0.5	0.2	11	12	5
Total Nickel (Ni)	*75*[G] */ 8.3*[H]	µg/L	0.65	0.05	0.02	0.57	0.72	5	0.58	0.06	0.03	0.51	0.68	5	0.62	0.06	0.03	0.56	0.7	5
Total Selenium (Se)	2[A]	µg/L	0.6	0.2	0.1	<0.5	0.8	5	0.7	0.5	0.2	<0.5	1.4	5	0.63	0.27	0.12	<0.5	1	5
Total Silicon (Si)	-	µg/L	1818	183	82	1600	2040	5	1986	263	118	1820	2440	5	2088	132	59	1910	2280	5
Total Silver (Ag)	1.5[A]	µg/L	0.04	0.02	0.01	<0.05	0.08	5	0.08	0.08	0.04	<0.05	0.22	5	0.05	0.03	0.01	<0.05	0.1	5
Total Strontium (Sr)	-	µg/L	6968	433	194	6480	7470	5	7318	226	101	7060	7590	5	7534	198	89	7290	7810	5
Total Thallium (Tl)	-	µg/L	0.06	0.02	0.01	<0.1	0.1	5	0.10	0.11	0.05	<0.1	0.3	5	0.08	0.07	0.03	<0.1	0.2	5
Total Tin (Sn)	-	µg/L	0.9	0.7	0.3	<1	2	5	1.1	1.1	0.5	<1	3	5	0.9	0.7	0.3	<1	2	5
Total Titanium (Ti)	-	µg/L	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5
Total Uranium (U)	*500*[C] */ 100*[D]	µg/L	2.54	0.26	0.12	2.18	2.8	5	2.72	0.18	0.08	2.44	2.87	5	2.82	0.17	0.08	2.55	2.96	5
Total Vanadium (V)	*50*[I]	µg/L	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5
Total Zinc (Zn)	10[A]	µg/L	0.7	0.1	0.1	0.5	0.8	5	0.3	0.2	0.1	<0.5	0.6	5	0.8	0.4	0.2	0.5	1.5	5
Dissolved Metals																				
Dissolved Aluminum (Al)	-	µg/L	<10	-	-	<10	<10	5	8	6.3	2.8	<10	19	5	<10	-	-	<10	<10	5
Dissolved Antimony (Sb)	-	µg/L	<0.5	-	-	<0.5	<0.5	5	<0.5	-	-	<0.5	<0.5	5	<0.5	-	-	<0.5	<0.5	5
Dissolved Arsenic (As)	-	µg/L	1.8	0.2	0.1	1.6	2.1	5	1.9	0.1	0.1	1.7	2	5	2.0	0.2	0.1	1.8	2.1	5
Dissolved Barium (Ba)	-	µg/L	9	0.5	0.2	9	10	5	9	0	0	9	9	5	9	0.4	0.2	9	10	5
Dissolved Beryllium (Be)	-	µg/L	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5
Dissolved Bismuth (Bi)	-	µg/L	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5
Dissolved Boron (B)	-	µg/L	3726	182	82	3530	3890	5	3824	76	34	3720	3930	5	3984	67	30	3920	4070	5
Dissolved Cadmium (Cd)	-	µg/L	0.09	0.01	0.00	0.08	0.1	5	0.09	0.01	0.00	0.09	0.1	5	0.09	0.00	0.00	0.09	0.1	5
Dissolved Chromium (Cr)	-	µg/L	<0.5	-	-	<0.5	<0.5	5	<0.5	-	-	<0.5	<0.5	5	0.32	0.16	0.07	<0.5	0.6	5
Dissolved Cobalt (Co)	-	µg/L	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5
Dissolved Copper (Cu)	-	µg/L	0.2	0.0	0.0	0.2	0.3	5	0.24	0.03	0.01	0.21	0.28	5	0.23	0.10	0.04	0.16	0.41	5
Dissolved Iron (Fe)	-	µg/L	2	1.1	0.5	1	4	5	2	0.7	0.3	1	3	5	2	0.8	0.4	1	3	5
Dissolved Lead (Pb)	-	µg/L	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5	<0.05	-	-	<0.05	<0.05	5
Dissolved Lithium (Li)	-	µg/L	174	9	4	161	182	5	179	5	2	174	186	5	186	2.3	1.0	183	189	5
Dissolved Manganese (Mn)	-	µg/L	2	0.2	0.1	2	2.5	5	2	0.2	0.1	1.8	2.3	5	2	0.3	0.1	1.8	2.4	5
Dissolved Molybdenum (Mo)	-	µg/L	10	0.9	0.4	9	11	5	11	0.5	0.2	10	11	5	12	0.9	0.4	10	12	5
Dissolved Nickel (Ni)	-	µg/L	0.60	0.07	0.03	0.49	0.67	5	0.58	0.10	0.05	0.4	0.64	5	0.49	0.08	0.04	0.41	0.61	5
Dissolved Selenium (Se)	-	µg/L	0.50	0.25	0.11	<0.50	0.8	5	0.57	0.27	0.12	<0.50	1	5	0.51	0.17	0.07	<0.50	0.7	5
Dissolved Silicon (Si)	-	µg/L	1886	189	84	1640	2170	5	1922	91	41	1820	2040	5	2008	65	29	1930	2080	5
Dissolved Silver (Ag)	-	µg/L	0.03	0.02	0.01	<0.050	0.06	5	0.05	0.05	0.02	<0.050	0.14	5	0.04	0.02	0.01	<0.050	0.06	5
Dissolved Strontium (Sr)	-	µg/L	7150	327	146	6670	7410	5	7314	157	70	7180	7580	5	7676	155	70	7470	7890	5
Dissolved Thallium (Tl)	-	µg/L	<0.1	-	-	<0.1	<0.1	5	<0.1	-	-	<0.1	<0.1	5	<0.1	-	-	<0.1	<0.1	5
Dissolved Tin (Sn)	-	µg/L	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5	<1	-	-	<1	<1	5
Dissolved Titanium (Ti)	-	µg/L	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5
Dissolved Uranium (U)	-	µg/L	2.59	0.18	0.08	2.29	2.75	5	2.69	0.10	0.04	2.59	2.81	5	2.83	0.14	0.06	2.60	2.97	5
Dissolved Vanadium (V)	-	µg/L	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5	<10	-	-	<10	<10	5
Dissolved Zinc (Zn)	-	µg/L	0.9	0.5	0.2	0.5	1.7	5	0.9	0.2	0.1	0.7	1.1	5	2	0.8	0.4	<0.5	2.5	5

Notes

BCWQGs (Marine) = Approved and Working British Columbia Water Quality Guidelines for the Protection of Aquatic Life (MoE 2006a, 2006b) - working guidelines are shown in *italics;* SD = Standard Deviation; SE = Standard Error.

Bolded Shaded Values Exceeds the British Columbia Water Quality Guidelines for Protection of Aquatic Life

\- No value available

A. 30-day average (for ammonia, the WQG is based on 30 g/kg Salinity; 7.8 pH; 5 to 15°C)
B. Maximum concentration
C. Hazard
D. Minimal risk
E. Adverse effects on a bivalve
F. Protect consumers of shellfish
G. 1-hour average
H. 4-day average
I. Trigger value for 99% level of protection

Parameter	BCWQGs (Marine)	Units	Finnerty Cove Station 3 - Below the Water Surface						Finnerty Cove Station 3 - Middle of the Water Column						Finnerty Cove Station 3 - Above the Sediment Bottom					
			Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n	Mean	SD	SE	Min	Max	n
Conventional																				
Alkalinity (Total)	-	mg/L	109	2.6	1.2	105	112	5	109	1.3	0.6	108	111	5	111	0.9	0.4	110	112	5
Bicarbonate Alkalinity (HCO_3)	-	mg/L	132	3.4	1.5	128	137	5	134	1.7	0.7	132	136	5	136	1.3	0.6	134	137	5
Carbonate Alkalinity (CO_3)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
Hydroxide Alkalinity (OH)	-	mg/L	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5	<2	-	-	<2	<2	5
pH, Laboratory	7.0 - 8.7	pH units	7.8	0.0	0.0	7.8	7.9	5	7.8	0.1	0.0	7.7	7.9	5	7.7	0.0	0.0	7.7	7.8	5
Conductivity	-	µS/cm	48880	2517	1126	45300	52200	5	49640	2493	1115	46800	52200	5	49620	2853	1276	46100	52600	5
Salinity	-	g/kg	31.9	1.8	0.8	29.3	34.3	5	32.5	1.8	0.8	30.4	34.3	5	32.5	2.1	0.9	29.9	34.6	5
Total Suspended Solids	-	mg/L	2	1.5	0.7	<1	4	5	1	1.5	0.7	<1	4	5	3	2.2	1.0	<1	6	5
Dissolved Organic Carbon	-	mg/L	0.54	0.16	0.07	<0.50	0.64	5	0.50	0.23	0.10	<0.50	0.69	5	0.39	0.20	0.09	<0.50	0.68	5
Total Organic Carbon	-	mg/L	0.57	0.19	0.08	<0.50	0.73	5	0.45	0.18	0.08	<0.50	0.6	5	0.39	0.20	0.09	<0.50	0.65	5
Major Ions																				
Dissolved Fluoride (F)	-	mg/L	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5	<25	-	-	<25	<25	5
Dissolved Chloride (Cl)	-	mg/L	18920	705	315	18200	20000	5	19640	445	199	19100	20300	5	19660	598	268	19000	20600	5
Dissolved Sulphate (SO_4)	-	mg/L	2124	74	33	2020	2180	5	2218	15	7	2200	2240	5	2226	34	15	2190	2270	5
Nutrients																				
Ammonia Nitrogen N	2.4 - 5.0[A]	mg/L as N	0.03	0.01	0.01	0.02	0.05	5	0.03	0.01	0.01	0.02	0.05	5	0.03	0.02	0.01	0.01	0.06	5
Total Kjeldahl Nitrogen N	-	mg/L as N	0.2	0.1	0.0	<0.2	0.3	5	0.3	0.2	0.1	<0.2	0.4	5	0.2	0.1	0.1	<0.2	0.4	5
Nitrate N	-	mg/L as N	0.284	0.010	0.005	0.266	0.29	5	0.325	0.029	0.013	0.288	0.365	5	0.342	0.028	0.013	0.309	0.381	5
Nitrite N	-	mg/L as N	0.006	0.001	0.000	0.005	0.007	5	0.005	0.001	0.000	0.004	0.006	5	0.005	0.000	0.000	0.004	0.005	5
Nitrate and Nitrite N	-	mg/L as N	0.289	0.011	0.005	0.271	0.297	5	0.331	0.029	0.013	0.294	0.369	5	0.347	0.028	0.012	0.314	0.385	5
Total Nitrogen (calc as N)	-	mg/L as N	0.469	0.078	0.035	0.39	0.571	5	0.591	0.137	0.061	0.42	0.721	5	0.507	0.118	0.053	0.427	0.714	5
Ortho Phosphorus P	-	mg/L as P	0.066	0.005	0.002	0.061	0.073	5	0.070	0.006	0.003	0.065	0.08	5	0.073	0.004	0.002	0.068	0.079	5
Total Phosphorus P	-	mg/L as P	0.076	0.007	0.003	0.068	0.086	5	0.083	0.011	0.005	0.074	0.098	5	0.083	0.005	0.002	0.078	0.088	5
Microbiological																				
Enterococci	-	Col./100 mL	1	0.2	0.1	<1	1	5	1	0.2	0.1	<1	1	5	1	3.2	1.4	<1	8	5
Fecal Coliform	-	Col./100 mL	1	0.0	0.0	<1	0.5	5	2	2.0	0.9	<1	6	5	2	1.8	0.8	<1	5	5

Notes

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Bolded Shaded Values Exceeds the British Columbia Water Quality Guidelines for Protection of Aquatic Life

\- No value available

A. 30-day average (for ammonia, the WQG is based on 30 g/kg Salinity; 7.8 pH; 5 to 15°C)

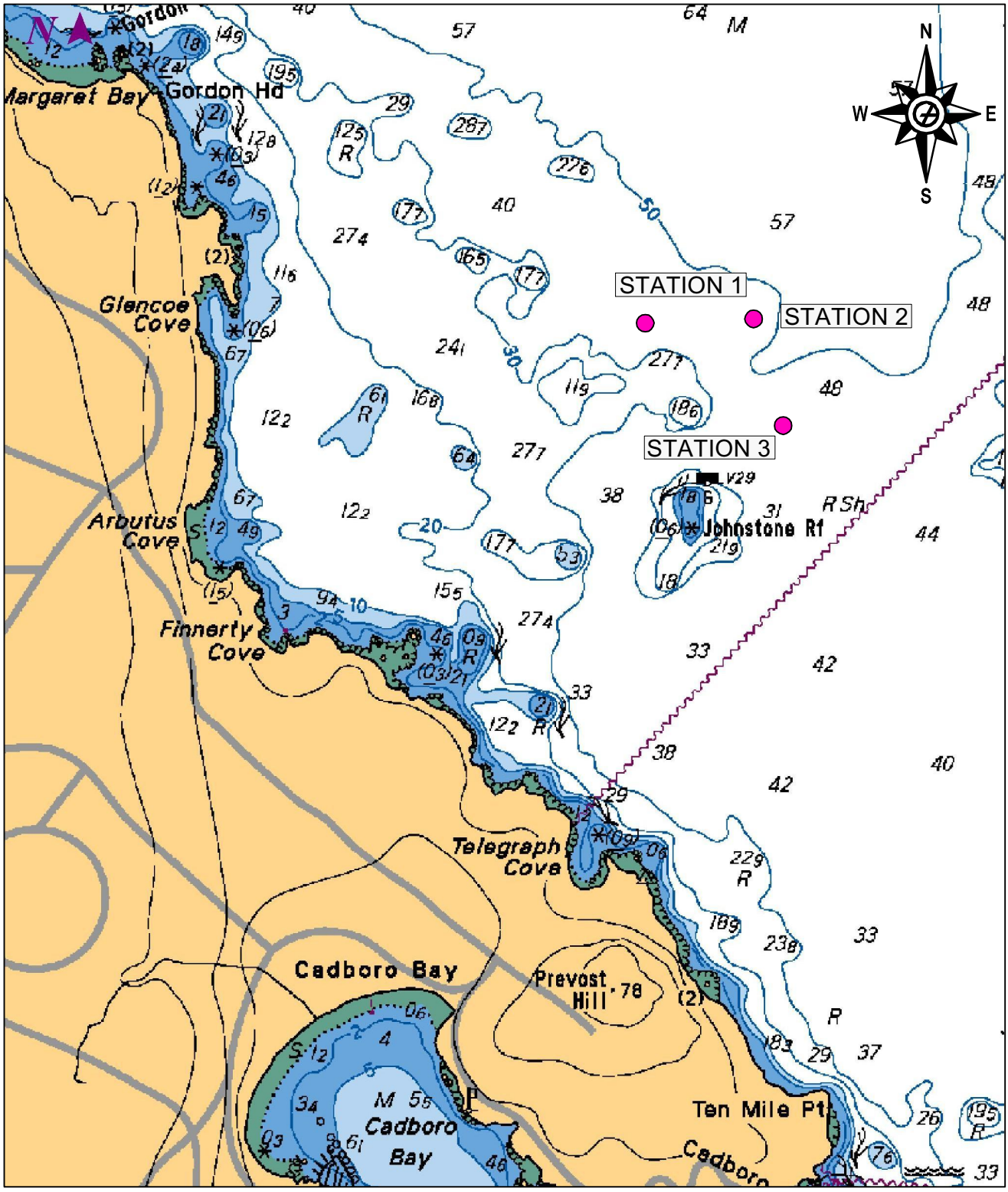
Analyte	Units	RDL	Equip Blank	Finnerty Cove Station 2 - Below the Water Surface				Finnerty Cove Station 2 - Middle of the Water Column				Finnerty Cove Station 2 - Above the Sediment Bottom			
				Original	Duplicate	Triplicate	RSD (%)	Original	Duplicate	Triplicate	RSD (%)	Original	Duplicate	Triplicate	RSD (%)
			21388-10	21391-01	21391-02	21391-03		21391-04	21391-05	21391-06		21391-07	21391-08	21391-09	
			21387-04	21397-01	21397-02	21397-03		21397-04	21397-05	21397-06		21397-07	21397-08	21397-09	
			09/14/2009	09/23/2009	09/23/2009	09/23/2009		09/23/2009	09/23/2009	09/23/2009		09/23/2009	09/23/2009	09/23/2009	
Conventional															
Alkalinity (Total)	mg/L	2	< 2	110	110	110	0%	111	110	110	1%	111	111	111	0%
Bicarbonate Alkalinity (HCO_3)	mg/L	2	< 2	134	134	134	0%	135	135	134	0%	135	135	135	0%
Carbonate Alkalinity (CO_3)	mg/L	2	< 2	< 2	< 2	< 2	NC	< 2	< 2	< 2	NC	< 2	< 2	< 2	NC
Hydroxide Alkalinity (OH)	mg/L	2	< 2	< 2	< 2	< 2	NC	< 2	< 2	< 2	NC	< 2	< 2	< 2	NC
Dissolved Hardness ($CaCO_3$)	mg/L	0.5	<0.5	6440	6350	6420	1%	6490	6590	6640	1%	6930	6840	7010	1%
pH, Laboratory	pH units	-	5.4	7.7	7.8	7.8	1%	7.8	7.8	7.8	0%	7.8	7.8	7.8	0%
Conductivity	µS/cm	1	2	48700	48300	50000	2%	48100	49300	49200	1%	49900	51400	50300	2%
Salinity	Salinity	0.1	< 0.1	31.8	31.5	32.7	2%	31.4	32.2	32.2	1%	32.7	33.8	33	2%
Total Suspended Solids	mg/L	1	< 1	2	1	1	**43%**	2	4	2	**43%**	2	2	2	0%
Dissolved Organic Carbon	mg/L	0.5	<0.50	<0.50	<0.50	<0.50	NC	<0.50	<0.50	<0.50	NC	<0.50	<0.50	<0.50	NC
Total Organic Carbon	mg/L	0.5	<0.50	<0.50	<0.50	0.56	NC	<0.50	0.83	<0.50	NC	<0.50	<0.50	0.54	NC
Major Ions															
Dissolved Fluoride (F)	mg/L	25	< 0.05	< 25	< 25	< 25	NC	< 25	< 25	< 25	NC	< 25	< 25	< 25	NC
Dissolved Chloride (Cl)	mg/L	0.2	< 0.2	19400	19600	19600	1%	18400	19400	19200	3%	20000	20100	18900	3%
Dissolved Sulphate (SO_4)	mg/L	0.5	< 0.5	2150	2200	2190	1%	2020	2160	2140	4%	2240	2260	2100	4%
Dissolved Calcium (Ca)	mg/L	1	<1	431	427	431	1%	450	440	442	1%	461	454	465	1%
Dissolved Magnesium (Mg)	mg/L	1	<1	1300	1280	1300	1%	1300	1330	1340	2%	1400	1390	1420	1%
Dissolved Potassium (K)	mg/L	1	<1	391	383	389	1%	401	401	402	0%	418	410	421	1%
Dissolved Sodium (Na)	mg/L	1	<1	10800	10700	10800	1%	10900	11100	11200	1%	11700	11600	11800	1%
Dissolved Sulphur (S)	mg/L	20	<20	1070	1060	1060	1%	1120	1100	1110	1%	1160	1140	1170	1%
Total Calcium (Ca)	mg/L	1	<1	437	437	427	1%	456	443	447	1%	478	451	447	4%
Total Magnesium (Mg)	mg/L	1	<1	1360	1350	1250	5%	1370	1350	1370	1%	1470	1400	1360	4%
Total Potassium (K)	mg/L	1	<1	400	395	382	2%	409	397	405	2%	432	413	404	3%
Total Sodium (Na)	mg/L	1	<1	11400	11300	10400	5%	11500	11300	11400	1%	9810	11600	11400	9%
Total Sulphur (S)	mg/L	20	<20	1090	1090	1070	1%	1140	1100	1140	2%	1210	1130	1110	5%
Nutrients															
Ammonia Nitrogen N	mg/L as N	0.01	< 0.01	0.02	0.01	0.02	**35%**	0.02	0.02	0.03	**25%**	0.02	0.02	0.02	0%
Total Kjeldahl Nitrogen N	mg/L as N	0.2	< 0.2	0.2	< 0.2	< 0.2	NC	0.5	0.5	0.5	0%	0.6	0.3	0.4	**35%**
Nitrate N	mg/L as N	0.002	**0.019**	0.243	0.263	0.257	4%	0.278	0.282	0.299	4%	0.312	0.312	0.306	1%
Nitrite N	mg/L as N	0.002	< 0.002	0.007	0.006	0.006	9%	0.005	0.006	0.005	11%	0.005	0.005	0.005	0%
Nitrate and Nitrite N	mg/L as N	0.002	**0.019**	0.25	0.269	0.263	4%	0.283	0.288	0.304	4%	0.317	0.317	0.311	1%
Total Nitrogen (calc as N)	mg/L as N	-	0.169	0.45	0.369	0.363	12%	0.783	0.788	0.804	1%	0.917	0.617	0.711	**21%**
Ortho Phosphorus P	mg/L as P	0.003	< 0.003	0.074	0.07	0.07	3%	0.074	0.078	0.078	3%	0.082	0.076	0.077	4%
Total Phosphorus P	mg/L as P	0.003	< 0.003	0.08	0.079	0.081	1%	0.085	0.083	0.085	1%	0.086	0.087	0.089	2%
Microbiological															
Enterococci	Col./100 mL	1	< 1	< 1	< 1	< 1	NC	< 1	< 1	< 1	NC	< 1	< 1	2	NC
Fecal Coliform	Col./100 mL	1	< 1	2	< 1	2	NC	2	1	7	**96%**	2	2	3	**25%**
Total Metals															
Total Aluminum (Al)	µg/L	10	<10	15	11	10	**22%**	10	11	10	6%	17	16	<10	4%
Total Antimony (Sb)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC
Total Arsenic (As)	µg/L	0.5	<0.5	1.9	2.2	2.0	8%	2.0	2.0	2.2	6%	2.1	2.1	2.1	0%
Total Barium (Ba)	µg/L	1	<1	10	10	9	6%	9	9	9	0%	9	9	9	0%
Total Beryllium (Be)	µg/L	1	<1	<1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Total Bismuth (Bi)	µg/L	1	<1	<1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Total Boron (B)	µg/L	50	<50	3810	3940	3690	3%	3800	3860	3930	2%	3950	4010	3960	1%
Total Cadmium (Cd)	µg/L	0.01	<0.01	0.09	0.09	0.09	0%	0.09	0.11	0.09	12%	0.10	0.09	0.10	6%
Total Chromium (Cr)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC
Total Cobalt (Co)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC
Total Copper (Cu)	µg/L	0.05	<0.05	0.20	0.22	0.26	13%	0.19	0.16	0.20	11%	0.20	0.19	0.17	8%
Total Iron (Fe)	µg/L	1	<1	7	7	9	15%	7	7	7	0%	12	11	13	8%
Total Lead (Pb)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC

Analyte	Units	RDL	Equip Blank	Finnerty Cove Station 2 - Below the Water Surface				Finnerty Cove Station 2 - Middle of the Water Column				Finnerty Cove Station 2 - Above the Sediment Bottom			
				Original	Duplicate	Triplicate	RSD (%)	Original	Duplicate	Triplicate	RSD (%)	Original	Duplicate	Triplicate	RSD (%)
			21388-10	21391-01	21391-02	21391-03		21391-04	21391-05	21391-06		21391-07	21391-08	21391-09	
			21387-04	21397-01	21397-02	21397-03		21397-04	21397-05	21397-06		21397-07	21397-08	21397-09	
			09/14/2009	09/23/2009	09/23/2009	09/23/2009		09/23/2009	09/23/2009	09/23/2009		09/23/2009	09/23/2009	09/23/2009	
Total Lithium (Li)	µg/L	20	<20	179	186	176	3%	180	184	186	2%	187	190	187	1%
Total Manganese (Mn)	µg/L	0.2	<0.2	2.5	2.4	2.4	2%	2.3	2.4	2.4	2%	2.6	2.4	2.7	6%
Total Mercury (Hg)	µg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	NC	< 0.02	< 0.02	< 0.02	NC	< 0.02	< 0.02	< 0.02	NC
Total Molybdenum (Mo)	µg/L	1	<1	12	12	11	5%	12	11	12	5%	12	12	12	0%
Total Nickel (Ni)	µg/L	0.05	<0.05	0.65	0.62	0.51	12%	0.58	0.65	0.74	12%	0.58	0.70	0.65	9%
Total Selenium (Se)	µg/L	0.5	<0.5	0.6	0.6	1.5	**58%**	0.6	0.6	0.6	0%	0.6	0.6	0.5	10%
Total Silicon (Si)	µg/L	100	<100	2040	2090	1820	7%	2440	2290	2000	10%	2100	2130	1890	6%
Total Silver (Ag)	µg/L	0.05	<0.05	<0.05	<0.05	0.12	NC	0.07	<0.05	<0.05	NC	0.05	<0.05	<0.05	NC
Total Strontium (Sr)	µg/L	10	<10	7470	7650	7320	2%	7510	7490	7540	0%	7810	7840	7660	1%
Total Thallium (Tl)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	NC	<0.1	<0.1	<0.1	NC	<0.1	<0.1	<0.1	NC
Total Tin (Sn)	µg/L	1	<1	1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Total Titanium (Ti)	µg/L	10	<10	<10	<10	<10	NC	<10	<10	<10	NC	<10	<10	<10	NC
Total Uranium (U)	µg/L	0.05	<0.05	2.80	3.01	2.80	4%	2.87	2.85	2.88	1%	2.96	3.08	2.91	3%
Total Vanadium (V)	µg/L	10	<10	<10	<10	<10	NC	<10	<10	<10	NC	<10	<10	<10	NC
Total Zinc (Zn)	µg/L	0.5	1.6	0.5	1.0	0.8	**33%**	0.6	0.6	0.6	0%	0.6	0.6	0.8	17%
Dissolved Metals															
Dissolved Aluminum (Al)	µg/L	10	<10	<10	<10	<10	NC	<10	<10	<10	NC	<10	<10	15	NC
Dissolved Antimony (Sb)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC
Dissolved Arsenic (As)	µg/L	0.5	<0.5	1.9	2.1	2.0	5%	2.0	2.3	1.9	10%	2.1	2.1	1.9	6%
Dissolved Barium (Ba)	µg/L	1	<1	9	9	9	0%	9	9	9	0%	9	9	9	0%
Dissolved Beryllium (Be)	µg/L	1	<1	<1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Dissolved Bismuth (Bi)	µg/L	1	<1	<1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Dissolved Boron (B)	µg/L	50	<50	3890	3800	3800	1%	3810	3840	3690	2%	4040	3920	3970	2%
Dissolved Cadmium (Cd)	µg/L	0.01	<0.01	0.09	0.10	0.09	6%	0.10	0.09	0.09	6%	0.10	0.10	0.08	12%
Dissolved Chromium (Cr)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<0.5	NC
Dissolved Cobalt (Co)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC
Dissolved Copper (Cu)	µg/L	0.05	0.09	0.22	0.21	0.26	12%	0.23	0.19	0.17	16%	0.19	0.23	0.22	10%
Dissolved Iron (Fe)	µg/L	1	<1	1	1	4	**87%**	1	1	1	0%	2	2	1	**35%**
Dissolved Lead (Pb)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC	<0.05	<0.05	<0.05	NC
Dissolved Lithium (Li)	µg/L	20	<20	182	179	177	1%	186	180	172	4%	189	184	186	1%
Dissolved Manganese (Mn)	µg/L	0.2	<0.2	2.3	2.1	2.1	5%	1.8	1.8	1.8	0%	2.0	2.1	2.0	3%
Dissolved Molybdenum (Mo)	µg/L	1	<1	11	11	11	0%	11	11	11	0%	12	12	11	5%
Dissolved Nickel (Ni)	µg/L	0.05	<0.05	0.67	0.50	0.43	**23%**	0.40	0.57	0.59	20%	0.41	0.41	0.69	**32%**
Dissolved Selenium (Se)	µg/L	0.5	<0.5	0.5	<0.5	0.6	NC	1.0	<0.5	<0.5	NC	0.7	<0.5	<0.5	NC
Dissolved Silicon (Si)	µg/L	100	<100	1880	1850	1910	2%	2040	1990	1930	3%	2070	2030	2020	1%
Dissolved Silver (Ag)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	NC	0.14	0.09	<0.05	NC	0.06	0.06	0.05	NC
Dissolved Strontium (Sr)	µg/L	10	<10	7380	7320	7490	1%	7580	7460	7190	3%	7890	7690	7740	1%
Dissolved Thallium (Tl)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	NC	<0.1	<0.1	<0.1	NC	<0.1	<0.1	<0.1	NC
Dissolved Tin (Sn)	µg/L	1	<1	<1	<1	<1	NC	<1	<1	<1	NC	<1	<1	<1	NC
Dissolved Titanium (Ti)	µg/L	10	<10	<10	<10	<10	NC	<10	<10	<10	NC	<10	<10	<10	NC
Dissolved Uranium (U)	µg/L	0.05	<0.05	2.75	2.69	2.65	2%	2.81	2.78	2.65	3%	2.97	2.82	2.93	3%
Dissolved Vanadium (V)	µg/L	10	<10	<10	<10	<10	NC	<10	<10	<10	NC	<10	<10	<10	NC
Dissolved Zinc (Zn)	µg/L	0.5	1.5	0.9	0.9	1.1	12%	0.8	0.9	0.8	7%	1.6	0.9	1.1	**30%**

Notes

NC = Not Calculated; RDL = Reportable Detection Limit; RSD = Relative Standard Deviation

Bolded Values	RSD for target analyte is >20%, but replicate analyte concentrations are <5 times the RDL
Bolded Shaded Values	RSD for target analyte is >20% and replicate analyte concentrations are >5 times the RDL, or equipment blank is >5 times the RDL



LEGEND

SAMPLING STATION

0 1

APPROXIMATE SCALE (km)

NOTE

DEPTH UNITS: METRES

REFERENCE

CHART #344001 PROVIDED BY NOBELTECH VISUAL NAVIGATION SUITE
(NAUTICAL DATA INTERNATIONAL ELECTRONIC CHARTS) ORIGINAL SCALE 1:82,200.

PROJECT

CAPITAL REGIONAL DISTRICT
SUMMER 2009 WATER QUALITY MONITORING SURVEY

TITLE

LOCATION OF SAMPLING STATIONS FOR THE PROPOSED OUTFALL IN THE VICINITY OF FINNERTY COVE

Golder Associates
Victoria, BC

PROJECT No. 09-1421-0028			FILE No. P0914210028-3.dwg	
DESIGN	JM	08 JUL 09	SCALE AS SHOWN	REV. 0
CADD	JEF	08 JUL 09		
CHECK	CAM	27 OCT 09		
REVIEW				

FIGURE 1

Drawing file: P0914210028-3.dwg Oct 27, 2009 - 10:21am

APPENDIX I

Field Notes and Calibration Records

09-1421-0028 WATER SAMPLING (1)

CRD

SEPT 14/09
JM

FINNERTY COVE

CALM - LIGHT WIND
J/MODERATE GUSTS

STATION 1

WATER SAMPLES (TIMES DEPTH)
WATER BLANK @ 0915

YSI (TIME & DEPTH)

48 29.149N
123 16.601W

FC-S1 48.5m

water sample @ top
FC/S1/Top

@ 1m below surface
1050 / 1105

YSI @ 1110

FC-S1 MID WATER (FC/S1/M)
@ 24m @ 1115 / 1130

FC-S1 - BOTTOM (FC/S1/B)
@ 46m @ 1140 / ~~1145~~ 1154

09-1421-0028 (2)

CRD WATER SAMPLING

FC-S2 – 47m

48.29.164N
123.16.187W

YSI @ 12[13]

Water sample @ 1m below surface (FC-S2-T)

@ 12[14] & 12[23]

FC-S2-MID WATER (FC-S2-M)

@ 24m @ 12[31] / 12[57]

FC-S2-BOTTOM (FC-S2-B)

@ 45m @ 13[00] / 13[21]

09-1421-0028 SEPT 14/09 (3) QM

FC-53

FC-53 - ~~Top~~ (FC-53-~~T~~B)

49m 48 28.893 N
123 16.113 W

FC-53 - Top - 1m below surface

FC-53-T @ 1336 / 1352

YSI @ 1344

FC-53-MIDWATER @ 24m

FC-53-M @ 1402

FC-53 Bottom (FC-53-B)

@ 46m @ 1413

09-1421-0028

CI SEP 09 GM

(1)

WATER SAMPLING CRS

FINNERTY COVE

LIGHT WIND IFT CHOP

STATION 1 (FC-S1) 49.5m

FC-S1-T

SURFACE WATER SAMPLE @ 1m BELOW WATER SURFACE @ 0920

FC-S1-M

Mid water sample @ 24m @ 0944 - did not trigger 0950

YSI @ 1000 drifted / current (outflowing tide) - when holding boat station on hold angle on line from YSI - added more weight

CTD water sampling (2)

21 sept 04

09-1421-0028

FC-S1-B

Bottom water sample @ 48m @ 1023

BREEZE INCREASED

LIGHT/MODERATE WIND

09-1421-0028 (3)

25 SEPT 09

CRD WATER SAMPLING

FC-S2

50m

FC-S2-T

SURFACE WATER SAMPLE @ 1m BELOW SURFACE @ 1039 / 1054

FC-S2-M

MID WATER SAMPLE @ 25m @
12[30] - did not trigger
12[41] / 13[01]

YSI @ 12[49]

FC-S2-B

BOTTOM WATER SAMPLE @ 48m
@ 13[10] / 13[24]

09-1421-0028 (4) 21SEPT 09

CRP WATER SAMPLING

FC S3 48m

FC-S3-T

Surface sample @ 1m below Surface @ 1340

YSI @ 1345

FC-S3-M Mid water sample @ 24m @ 1353

FC-S3-B Bottom water sample @ 48m @ 1413

09-1421-0028 (1) SEPT 23/09

CRD WATER SAMPLING

FC-S1 49.5m

FC-S1-T @ 1m below surface @ 0849.

FC-S1-M @ 25m below surface @ 0906
YSI @ 0915

FC-S1-B @ 47m @ 0938

LEVEL

09-1421-0028 (2) SEPT 23/09

CRD WATER SAMPLING

TRIPLICATES FC-S2 50m

FC-S2T@ 1m below surface
@ 0958 / 10^{00} / 10^{05} / 10^{17}

YSI @ 10^{23}

FC-S2-M @ 25m @ 10^{45} /
1106 / 1113 / 1129

FC-S3-B @ 47m @ 1146 / 12^{12}
(2159-09 - Coliform from 2 samples)
12^{23} / 1240 / 1258

DUKSBAK WATERPROOF

LEVEL

04-142-0025 (3) 01 25/04

FC 53 48.5 / 48.8 m

YSI @ 13[11]

FC-53-T - SURFACE WATER SAMPLE @ 1m BELOW SURFACE @ 1341

FC-53-M - MID WATER SAMPLE @ 24 m @ 1404

FC-53-B - BOTTOM WATER SAMPLE @ 46m @ 1425

CRD WATER SAMPLING (1) SEPT 28/09

09-1421-0028

FC S1 48.5m/49m

FC-S1-T @ 0930 @ 1m below surface

FC-S2-M @ 24m @ 0944

YSI @ 0952

FC-S3-B @ 47m @ 1012

09-142-0028 (2) SEPT 28/09

FC-S2 - 49m

FC-S2-T @ 1m below surface
@ 1032/1054
YSI @ 1038

FC-S2-M @ 24m @ 1106/1127

FC-S2-B @ 47m @ 1137/1209

LEVEL

(3)

CRD WATER SAMPLING — SEPT 28/09

FC-S3 — 49m

FC-S3-T @ 1m below surface @ 12[13]

YSI @ 12[20] - pH low? Redo?

FC-S3-M @ 24m below surface @ 12[39]

YSI 'Redo' (a) @ 12[50] - pH "good"

FC-S3-B @ 47m @ 1302

09-1421-0028 (1) 5th Oct 09

CRD WATER SAMPLING

FC-S1 49m

FS-S1-T @ 1m below surface @ 0933

FC-S2-M @ 24m @ 0954

YSI @ 10^13

FC-S3-B @ 46m @ 1036

09-1421-0028 (2) SMOOTH

CRD WATER SAMPLING

FC-S2 48.5m

FC-S2-T @ 1m below surface
@ 10⁵⁸ / 11¹³

FC-S2-M @ 24m @ 1131 / 1146

FCS2-B @ 47m @ 1291 / R32

YSI @ 1213

3

09-1421-0028 5TH OCT 08

CRD WATER SAMPLING

FC-S3 485m

FC-S3-T @ 1m @ 1248

FC-S3-M @ 24m @ 1309

YSI @ 1318.

FC-S3-B @ 47m @ 1347

CALIBRATION WORK SHEET

Date of Calibration: Sept. 13 2009 Technician: Michelle Spani

DO membrane changed? Y N (NA) Note: Should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in. NA

Turbidity wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Chlorophyll wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Record battery voltage: 12.2 volts

Record the following diagnostic numbers after/during calibration.

				Record Calibration Values Actual	After calibration
Conductivity cell constant	5.06698	Range 5.0 ± .5	Conductivity	1411 µS/cm	1413 µS/cm
pH MV Buffer 7	7.008 @ 22.2°C	~~Range 0 MV ± 50 MV~~	pH 7	6.84	7.01
pH MV Buffer 4	10.00 @ 22.2°C	~~Range +177 from 7 buffer MV~~	pH 4	—	—
pH MV Buffer 10		~~Range −177 from 7 buffer MV~~	pH 10	10.09	10.00
NOTE: Span between pH 4 and 7 and 7 and 10 millivolt numbers should be ≈ 165 to 180 MV			ORP	—	—
			Depth	—	—
DO charge		Range 50 ± 25 Distilled H_2O	Turbidity	-0.3 NTU	0.0 NTU
DO gain		Range 1.0 .7 to 1.5 126 NTU	Turbidity	127.5 NTU	126.0 NTU
			Chlorophyll	0-(-1)	+5-(-5)
ressure Offset		Range −14.7 ± 6 (non-vented)	~~Chlorophyll~~	—	—
Pressure Offset		Range 0 ± 6 (vented)	DO	98%	~~98.7~~ 99.2%
ORP mV Offset		Range 0 ± 100			

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

The following tests will confirm the proper operation of your DO sensor. The DO charge and gain must meet spec before proceeding.

610/650– Turn off the 610/650, wait 60 seconds. Power up 610/650 and go to the Run mode, watch the DO % output; it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

PC – Stop discrete and unattended sampling. Confirm that auto-sleep RS-232 is enabled (found in Advanced Menu under Setup). Wait 60 seconds. Start discrete sampling at 4 seconds. Watch the DO % output, it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

The **ACCEPT/REJECT** criteria as follows:
The DO output in % must start at a positive number and decrease during the warm up. Example: 117, 117, 114, 113, 110, 107, 104, 102, 101, 100, 100. Should the output display a negative number or start at a low number and climb up to the cal point, the probe is rejected and must not be deployed.

✓ ACCEPT _____ REJECT

Notes:

CALIBRATION WORK SHEET

Date of Calibration: Sept 20 2009 Technician: Michelle Spani

DO membrane changed? Y (N) Note: Should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Turbidity wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Chlorophyll wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Record battery voltage: 12.2 volts

Record the following diagnostic numbers after/during calibration.

				Record Calibration Values Actual	After calibration
Conductivity cell constant	____	Range 5.0 ± .5	Conductivity	1422 µS/cm C	1413 µS/cm C
pH MV Buffer 7	7.008 @ 22°C	Range 0 MV ± 50 MV	pH 7	7.10	7.01
pH MV Buffer 4	~~4.00~~	Range +177 from 7 buffer MV	pH 4	—	—
pH MV Buffer 10	10.00 @ 22.5°C	Range −177 from 7 buffer MV	pH 10	9.96	10.00
NOTE: Span between pH 4 and 7 and 7 and 10 millivolt numbers should be ≈ 165 to 180 MV			ORP	—	—
			Depth	—	—
DO charge	—	Range 50 ± 25	Turbidity	0.0 NTU	0.0 NTU
DO gain	—	Range 1.0 .7 to 1.5	Turbidity	125.8 NTU	126 NTU
			Chlorophyll	(−1) to 0.8	0 to (−1.5)
ressure Offset	—	Range −14.7 ± 6 (non-vented)	Chlorophyll	—	—
Pressure Offset	—	Range 0 ± 6 (vented)	DO	101.1 %	101.5 %
ORP mV Offset	—	Range 0 ± 100			

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

The following tests will confirm the proper operation of your DO sensor. The DO charge and gain must meet spec before proceeding.

610/650– Turn off the 610/650, wait 60 seconds. Power up 610/650 and go to the Run mode, watch the DO % output; it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

PC – Stop discrete and unattended sampling. Confirm that auto-sleep RS-232 is enabled (found in Advanced Menu under Setup). Wait 60 seconds. Start discrete sampling at 4 seconds. Watch the DO % output, it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

The **ACCEPT/REJECT** criteria as follows:
The DO output in % must start at a positive number and decrease during the warm up. Example: 117, 117, 114, 113, 110, 107, 104, 102, 101, 100, 100. Should the output display a negative number or start at a low number and climb up to the cal point, the probe is rejected and must not be deployed.

✓ ACCEPT _____ REJECT

Notes:

CALIBRATION WORK SHEET

Date of Calibration: Sept 27 2009 Technician: Michelle Spani

DO membrane changed? Y (N) Note: Should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Turbidity wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Chlorophyll wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Record battery voltage: 12.1 volts

Record the following diagnostic numbers after/during calibration.

				Record Calibration Values Actual	After calibration
Conductivity cell constant	1413	Range 5.0 ± .5	Conductivity	1398 uS/cm C	1413 uS/cm C
pH MV Buffer 7	7 @ 20°C	Range 0 MV ± 50 MV	pH 7	6.97	6.99
pH MV Buffer 4	10 @ 20°C	Range +177 from 7 buffer MV	pH 4	10.03	10.00
pH MV Buffer 10		Range −177 from 7 buffer MV	pH 10		
NOTE: Span between pH 4 and 7 and 7 and 10 millivolt numbers should be ≈ 165 to 180 MV			ORP	—	—
			Depth	—	—
DO charge		Range 50 ± 25	Turbidity	0.2 NTU	0.0 NTU
DO gain		Range 1.0 .7 to 1.5	Turbidity	125.4 NTU	126 NTU
			Chlorophyll	(-1.5)→(-0.7)	(-0.5)→(0.5)
Pressure Offset		Range −14.7 ± 6 (non-vented)	Chlorophyll		
Pressure Offset		Range 0 ± 6 (vented)	DO	99.7%	100.1%
ORP mV Offset		Range 0 ± 100			

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

The following tests will confirm the proper operation of your DO sensor. The DO charge and gain must meet spec before proceeding.

610/650– Turn off the 610/650, wait 60 seconds. Power up 610/650 and go to the Run mode, watch the DO % output; it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

PC – Stop discrete and unattended sampling. Confirm that auto-sleep RS-232 is enabled (found in Advanced Menu under Setup). Wait 60 seconds. Start discrete sampling at 4 seconds. Watch the DO % output, it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

The **ACCEPT/REJECT** criteria as follows:
The DO output in % must start at a positive number and decrease during the warm up. Example: 117, 117, 114, 113, 110, 107, 104, 102, 101, 100, 100. Should the output display a negative number or start at a low number and climb up to the cal point, the probe is rejected and must not be deployed.

✓ ACCEPT _____ REJECT

Notes:

CALIBRATION WORK SHEET

Date of Calibration: Oct 4 2009 Technician: Michelle Spani

DO membrane changed? Y (N) Note: Should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Turbidity wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Chlorophyll wiper changed? Y (N) Wiper parks ≈ 180° from optics? (Y) N Note: Change wiper if probe will not park correctly.

Record battery voltage: 12.2 volts

Record the following diagnostic numbers after/during calibration.

				Record Calibration Values Actual	After calibration
Conductivity cell constant	—	Range 5.0 ± .5	Conductivity	1407 uS/cm C	1413 uS/cm C
pH MV Buffer 7	7.01 @ 18.0	Range 0 MV ± 50 MV	pH 7	7.02	7.01
pH MV Buffer 4	—	Range +177 from 7 buffer MV	pH 4	—	—
pH MV Buffer 10	10.0 @ 18°C	Range −177 from 7 buffer MV	pH 10	9.99	10.0
NOTE: Span between pH 4 and 7 and 7 and 10 millivolt numbers should be ≈ 165 to 180 MV			ORP	—	—
			Depth	—	—
DO charge	—	Range 50 ± 25	Turbidity	126.2 NTU	126.0 NTU
DO gain	—	Range 1.0 .7 to 1.5	Turbidity	0.0 NTU	0.0 NTU
			Chlorophyll	(-7) to (1.0)	(-2) to (0.7)
ressure Offset	—	Range −14.7 ± 6 (non-vented)	Chlorophyll	—	—
Pressure Offset	—	Range 0 ± 6 (vented)	DO	99.8%	100.5%
ORP mV Offset	—	Range 0 ± 100			

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

The following tests will confirm the proper operation of your DO sensor. The DO charge and gain must meet spec before proceeding.

610/650– Turn off the 610/650, wait 60 seconds. Power up 610/650 and go to the Run mode, watch the DO % output; it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

PC – Stop discrete and unattended sampling. Confirm that auto-sleep RS-232 is enabled (found in Advanced Menu under Setup). Wait 60 seconds. Start discrete sampling at 4 seconds. Watch the DO % output, it must display a positive number and decrease with each 4 second sample, eventually stabilizing to the calibration value in approximately 60 to 120 seconds. **Note:** You can disregard the first two samples they can be affected by the electronics warm-up.

The **ACCEPT/REJECT** criteria as follows:
The DO output in % must start at a positive number and decrease during the warm up. Example: 117, 117, 114, 113, 110, 107, 104, 102, 101, 100, 100. Should the output display a negative number or start at a low number and climb up to the cal point, the probe is rejected and must not be deployed.

✓ ACCEPT _____ REJECT

Notes:

APPENDIX II

Finnerty Cove WQ Profile Data Output
(Please refer to the Excel Files)

APPENDIX III

Raw Water Quality Data (Summer 2009)

January 19, 2010
Report No. 09-1421-0028

Golder Associates

Parameter	Units	RDL	FC-S1-T	FC-S1-M	FC-S1-B	FC-S1-T	FC-S1-M	FC-S1-B	FC-S1-T	FC-S1-M	FC-S1-B	FC-S1-T	FC-S1-M	FC-S1-B	FC-S1-T	FC-S1-M	FC-S1-B
			21388-01	21388-02	21388-03	21389-01	21389-02	21389-03	21392-01	21392-02	21392-03	21331-01	21331-02	21331-03	21335-01	21335-02	21335-03
			09/14/2009	09/14/2009	09/14/2009	09/21/2009	09/21/2009	09/21/2009	09/23/2009	09/23/2009	09/23/2009	09/28/2009	09/28/2009	09/28/2009	10/05/2009	10/05/2009	10/05/2009
Conventional																	
Alkalinity (Total)	mg/L	2	104	107	110	110	110	110	110	110	110	109	106	105	110	111	112
Bicarbonate Alkalinity (HCO_3)	mg/L	2	127	131	134	134	134	134	134	134	134	133	129	128	134	135	137
Carbonate Alkalinity (CO_3)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Hydroxide Alkalinity (OH)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
pH, Laboratory	pH units		7.8	7.8	7.7	7.7	7.7	7.7	7.8	7.8	7.8	7.7	7.7	7.7	7.9	7.9	7.8
Conductivity	µS/cm	1	52000	50500	49900	51900	52100	52600	49300	50400	49400	43500	46200	46000	45300	48200	49100
Salinity	Salinity	0.1	34.2	33.1	32.7	34.1	34.3	34.6	32.2	33	32.3	28	30	29.8	29.3	31.4	32.1
Total Suspended Solids	mg/L	1	2	< 1	1	< 1	< 1	2	2	1	2	4	2	4	< 1	2	2
Dissolved Organic Carbon	mg/L	0.5	0.52	<0.50	<0.50	0.5	<0.50	0.74	<0.50	<0.50	<0.50	0.53	<0.50	0.59	0.71	0.55	0.59
Total Organic Carbon	mg/L	0.5	0.56	<0.50	0.72	<0.50	<0.50	0.63	<0.50	<0.50	0.51	<0.50	<0.50	0.7	0.64	0.62	0.66
Major Ions																	
Dissolved Fluoride (F)	mg/L	25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dissolved Chloride (Cl)	mg/L	0.2	18700	18700	19100	19600	19300	19400	19500	19800	20100	18300	18500	18600	20100	20400	20700
Dissolved Sulphate (SO_4)	mg/L	0.5	2100	2120	2170	2220	2210	2230	2180	2220	2240	1980	2050	2120	2170	2250	2270
Nutrients																	
Ammonia Nitrogen N	mg/L as N	0.01	0.03	0.03	0.03	0.02	0.01	0.02	0.03	0.02	0.02	0.04	0.05	0.06	0.05	0.04	0.03
Total Kjeldahl Nitrogen N	mg/L as N	0.2	0.4	< 0.2	< 0.2	0.5	0.3	0.4	0.3	0.4	0.5	0.3	< 0.2	< 0.2	0.5	0.4	0.3
Nitrate N	mg/L as N	0.002	0.286	0.295	0.31	0.342	0.336	0.338	0.284	0.297	0.299	0.257	0.28	0.279	0.282	0.337	0.372
Nitrite N	mg/L as N	0.002	0.005	0.006	0.005	0.005	0.005	0.004	0.005	0.006	0.005	0.005	0.005	0.005	0.006	0.005	0.004
Nitrate and Nitrite N	mg/L as N	0.002	0.291	0.301	0.315	0.347	0.341	0.342	0.289	0.303	0.304	0.262	0.285	0.284	0.288	0.342	0.376
Total Nitrogen (calc as N)	mg/L as N		0.691	0.401	0.415	0.847	0.641	0.742	0.589	0.703	0.804	0.562	0.385	0.384	0.788	0.742	0.676
Ortho Phosphorus P	mg/L as P	0.003	0.065	0.066	0.068	0.075	0.074	0.075	0.078	0.076	0.082	0.056	0.058	0.062	0.06	0.067	0.072
Total Phosphorus P	mg/L as P	0.003	0.085	0.067	0.074	0.075	0.075	0.081	0.089	0.092	0.085	0.064	0.075	0.074	0.086	0.087	0.089
Microbiological																	
Enterococci	Col./100 mL	1	< 1	< 1	< 1	< 1	< 1	2	1	5	1	< 1	< 1	< 1	< 1	1	< 1
Fecal Coliform	Col./100 mL	1	1	1	9	< 1	3	3	1	16	1	1	1	< 1	< 1	4	< 1

RDL = Reportable Detection Limit

Parameter	Units	RDL	FC-S2-T	FC-S2-M	FC-S2-B	FC-S2-T	FC-S2-M	FC-S2-B	FC-S2-T	FC-S2-M	FC-S2-B	FC-S2-T	FC-S2-M	FC-S2-B	FC-S2-T	FC-S2-M	FC-S2-B
			21388-04	21388-05	21388-06	21389-04	21389-05	21389-06	21391-01	21391-04	21391-07	21331-04	21331-05	21331-06	21335-04	21335-05	21335-06
			21387-01	21387-02	21387-03	21390-01	21390-02	21390-03	21397-01	21397-04	21397-07	21398-01	21398-02	21398-03	21336-01	21336-02	21336-03
			09/14/2009	09/14/2009	09/14/2009	09/21/2009	09/21/2009	09/21/2009	09/23/2009	09/23/2009	09/23/2009	09/28/2009	09/28/2009	09/28/2009	10/05/2009	10/05/2009	10/05/2009
Conventional																	
Alkalinity (Total)	mg/L	2	101	111	110	105	108	110	110	111	111	108	108	110	109	112	112
Bicarbonate Alkalinity (HCO_3)	mg/L	2	123	136	134	128	132	134	134	135	135	131	131	134	133	137	137
Carbonate Alkalinity (CO_3)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Hydroxide Alkalinity (OH)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Dissolved Hardness ($CaCO_3$)	mg/L	0.5	6030	6670	6980	6640	6490	6710	6440	6490	6930	5900	6270	6730	6630	6620	7080
pH, Laboratory	pH units		7.8	7.7	7.7	7.8	7.7	7.7	7.7	7.8	7.8	7.8	7.8	7.7	7.9	7.9	7.8
Conductivity	µS/cm	1	47600	51600	52000	51200	51600	52500	48700	48100	49900	46600	46100	47300	49200	48100	47400
Salinity	Salinity	0.1	31	33.9	34.2	33.6	33.9	34.6	31.8	31.4	32.7	30.3	29.9	30.8	32.2	31.4	30.8
Total Suspended Solids	mg/L	1	< 1	1	< 1	< 1	3	4	2	2	2	3	2	6	5	2	3
Dissolved Organic Carbon	mg/L	0.5	<0.50	<0.50	0.53	0.71	<0.50	<0.50	<0.50	<0.50	<0.50	0.67	0.61	<0.50	0.64	0.57	0.57
Total Organic Carbon	mg/L	0.5	0.64	0.99	0.6	0.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	0.59	0.66	0.57
Major Ions																	
Dissolved Fluoride (F)	mg/L	25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dissolved Chloride (Cl)	mg/L	0.2	18400	19100	19400	19000	19100	17800	19400	18400	20000	18500	18800	19200	20200	20400	20700
Dissolved Sulphate (SO_4)	mg/L	0.5	2100	2170	2200	2160	2190	2070	2150	2020	2240	2070	2130	2180	2210	2230	2290
Dissolved Calcium (Ca)	mg/L	1	422	460	481	444	436	448	431	450	461	411	422	450	441	439	467
Dissolved Magnesium (Mg)	mg/L	1	1210	1340	1400	1340	1310	1360	1300	1300	1400	1190	1270	1360	1340	1340	1440
Dissolved Potassium (K)	mg/L	1	363	401	421	402	392	407	391	401	418	366	380	407	399	397	425
Dissolved Sodium (Na)	mg/L	1	9730	10800	11300	11200	10900	11300	10800	10900	11700	9820	10500	11300	11300	11200	12000
Dissolved Sulphur (S)	mg/L	20	1020	1140	1190	1110	1080	1110	1070	1120	1160	1020	1030	1120	1090	1090	1180
Total Calcium (Ca)	mg/L	1	414	455	471	427	426	443	437	456	478	374	418	445	423	437	442
Total Magnesium (Mg)	mg/L	1	1200	1330	1360	1310	1320	1370	1360	1370	1470	1100	1230	1360	1290	1330	1350
Total Potassium (K)	mg/L	1	361	395	409	383	386	401	400	409	432	333	374	401	380	395	400
Total Sodium (Na)	mg/L	1	9760	10800	11100	10900	11000	11400	11400	11500	9810	9170	10300	11300	10700	11100	11200
Total Sulphur (S)	mg/L	20	1010	1130	1160	1060	1080	1100	1090	1140	1210	932	1030	1110	1050	1090	1110
Nutrients																	
Ammonia Nitrogen N	mg/L as N	0.01	0.03	0.03	0.03	0.02	< 0.01	0.02	0.02	0.02	0.02	0.05	0.04	0.04	0.03	0.04	0.03
Total Kjeldahl Nitrogen N	mg/L as N	0.2	< 0.2	< 0.2	< 0.2	0.3	0.3	0.3	0.2	0.5	0.6	< 0.2	< 0.2	< 0.2	0.3	0.3	0.2
Nitrate N	mg/L as N	0.002	0.291	0.328	0.357	0.312	0.32	0.37	0.243	0.278	0.312	0.284	0.279	0.337	0.311	0.326	0.369
Nitrite N	mg/L as N	0.002	0.005	0.005	0.005	0.006	0.006	0.005	0.007	0.005	0.005	0.005	0.005	0.005	0.006	0.007	0.005
Nitrate and Nitrite N	mg/L as N	0.002	0.296	0.333	0.362	0.318	0.326	0.375	0.25	0.283	0.317	0.289	0.284	0.342	0.317	0.333	0.374
Total Nitrogen (calc as N)	mg/L as N		0.396	0.433	0.462	0.618	0.626	0.675	0.45	0.783	0.917	0.389	0.384	0.492	0.617	0.633	0.574
Ortho Phosphorus P	mg/L as P	0.003	0.064	0.067	0.071	0.071	0.072	0.074	0.074	0.074	0.082	0.057	0.061	0.068	0.064	0.068	0.071
Total Phosphorus P	mg/L as P	0.003	0.073	0.073	0.076	0.075	0.068	0.078	0.08	0.085	0.086	0.067	0.069	0.079	0.086	0.105	0.087
Microbiological																	
Enterococci	Col./100 mL	1	< 1	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1	1
Fecal Coliform	Col./100 mL	1	< 1	4	1	< 1	4	2	2	2	2	< 1	< 1	3	< 1	1	7
Total Metals																	
Total Aluminum (Al)	µg/L	10	<10	<10	10	26	31	20	15	10	17	14	23	36	<10	11	11
Total Antimony (Sb)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Arsenic (As)	µg/L	0.5	1.7	1.9	1.9	2.0	2.1	1.9	1.9	2.0	2.1	1.6	2.0	2.2	1.9	1.9	1.9
Total Barium (Ba)	µg/L	1	9	9	9	9	9	9	10	9	9	9	9	9	10	10	9
Total Beryllium (Be)	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Bismuth (Bi)	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Boron (B)	µg/L	50	3440	3880	4080	3710	3720	3850	3810	3800	3950	3320	3580	3860	3800	3930	3810

Parameter	Units	RDL	FC-S2-T 21388-04 21387-01 09/14/2009	FC-S2-M 21388-05 21387-02 09/14/2009	FC-S2-B 21388-06 21387-03 09/14/2009	FC-S2-T 21389-04 21390-01 09/21/2009	FC-S2-M 21389-05 21390-02 09/21/2009	FC-S2-B 21389-06 21390-03 09/21/2009	FC-S2-T 21391-01 21397-01 09/23/2009	FC-S2-M 21391-04 21397-04 09/23/2009	FC-S2-B 21391-07 21397-07 09/23/2009	FC-S2-T 21331-04 21398-01 09/28/2009	FC-S2-M 21331-05 21398-02 09/28/2009	FC-S2-B 21331-06 21398-03 09/28/2009	FC-S2-T 21335-04 21336-01 10/05/2009	FC-S2-M 21335-05 21336-02 10/05/2009	FC-S2-B 21335-06 21336-03 10/05/2009
Total Cadmium (Cd)	µg/L	0.01	0.09	0.08	0.09	0.09	0.09	0.11	0.09	0.09	0.10	0.08	0.09	0.07	0.09	0.09	0.11
Total Chromium (Cr)	µg/L	0.5	<0.5	0.6	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Cobalt (Co)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Copper (Cu)	µg/L	0.05	0.26	0.22	0.20	0.21	0.21	0.22	0.20	0.19	0.20	0.28	0.20	0.64	0.27	0.19	0.18
Total Iron (Fe)	µg/L	1	5	7	9	10	9	13	7	7	12	4	11	21	5	6	7
Total Lead (Pb)	µg/L	0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Total Lithium (Li)	µg/L	20	161	176	184	178	177	183	179	180	187	160	172	185	177	186	180
Total Manganese (Mn)	µg/L	0.2	2.5	2.3	2.6	2.6	2.4	2.7	2.5	2.3	2.6	2.2	2.6	2.8	2.5	2.4	2.3
Total Mercury (Hg)	µg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total Molybdenum (Mo)	µg/L	1	9	10	11	11	12	12	12	12	12	10	11	11	11	11	11
Total Nickel (Ni)	µg/L	0.05	0.57	0.51	0.67	0.66	0.56	0.57	0.65	0.58	0.58	0.72	0.68	0.56	0.66	0.57	0.70
Total Selenium (Se)	µg/L	0.5	<0.5	<0.5	<0.5	0.6	0.8	0.7	0.6	0.6	0.6	0.8	1.4	1.0	0.6	<0.5	0.6
Total Silicon (Si)	µg/L	100	1600	1820	1910	1910	1990	2060	2040	2440	2100	1660	1850	2280	1880	1830	2090
Total Silver (Ag)	µg/L	0.05	<0.05	<0.05	<0.05	0.08	0.07	<0.05	<0.05	0.07	0.05	<0.05	0.22	0.10	<0.05	<0.05	<0.05
Total Strontium (Sr)	µg/L	10	6550	7160	7290	7130	7270	7550	7470	7510	7810	6480	7060	7610	7210	7590	7410
Total Thallium (Tl)	µg/L	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1
Total Tin (Sn)	µg/L	1	<1	<1	<1	2	1	1	1	<1	<1	<1	3	2	<1	<1	<1
Total Titanium (Ti)	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Uranium (U)	µg/L	0.05	2.18	2.44	2.55	2.67	2.77	2.89	2.80	2.87	2.96	2.35	2.65	2.95	2.70	2.86	2.76
Total Vanadium (V)	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Zinc (Zn)	µg/L	0.5	0.8	<0.5	0.6	0.7	<0.5	0.5	0.5	0.6	0.6	0.8	<0.5	0.7	0.6	<0.5	1.5
Dissolved Metals																	
Dissolved Aluminum (Al)	µg/L	10	<10	19	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dissolved Antimony (Sb)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Arsenic (As)	µg/L	0.5	1.7	1.7	1.8	1.9	2.0	1.8	1.9	2.0	2.1	1.6	1.8	2.1	2.1	2.0	2.0
Dissolved Barium (Ba)	µg/L	1	9	9	9	9	9	9	9	9	9	10	9	10	10	9	9
Dissolved Beryllium (Be)	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Bismuth (Bi)	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Boron (B)	µg/L	50	3530	3930	4070	3800	3850	3930	3890	3810	4040	3530	3720	3920	3880	3810	3960
Dissolved Cadmium (Cd)	µg/L	0.01	0.08	0.09	0.09	0.09	0.10	0.09	0.09	0.10	0.10	0.08	0.09	0.09	0.10	0.09	0.09
Dissolved Chromium (Cr)	µg/L	0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Cobalt (Co)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved Copper (Cu)	µg/L	0.05	0.30	0.25	0.21	0.22	0.21	0.16	0.22	0.23	0.19	0.25	0.28	0.41	0.20	0.22	0.20
Dissolved Iron (Fe)	µg/L	1	4	2	1	2	2	1	1	1	2	2	3	3	2	2	2
Dissolved Lead (Pb)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved Lithium (Li)	µg/L	20	161	176	186	178	181	184	182	186	189	169	174	183	181	179	186
Dissolved Manganese (Mn)	µg/L	0.2	2.2	2.0	1.8	2.3	2.2	2.0	2.3	1.8	2.0	2.0	2.3	2.4	2.5	2.2	2.4
Dissolved Molybdenum (Mo)	µg/L	1	9	10	10	11	10	12	11	11	12	10	11	12	11	11	12
Dissolved Nickel (Ni)	µg/L	0.05	0.49	0.58	0.46	0.61	0.63	0.42	0.67	0.40	0.41	0.58	0.64	0.61	0.67	0.63	0.53
Dissolved Selenium (Se)	µg/L	0.5	<0.5	<0.5	<0.5	0.7	0.5	0.5	0.5	1.0	0.7	0.8	0.6	0.6	<0.5	0.5	0.5
Dissolved Silicon (Si)	µg/L	100	1640	1820	1930	2170	1920	1970	1880	2040	2070	1850	1980	2080	1890	1850	1990
Dissolved Silver (Ag)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	0.14	0.06	0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved Strontium (Sr)	µg/L	10	6670	7180	7470	7410	7310	7610	7380	7580	7890	6950	7220	7670	7340	7280	7740
Dissolved Thallium (Tl)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Tin (Sn)	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Titanium (Ti)	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dissolved Uranium (U)	µg/L	0.05	2.29	2.59	2.60	2.67	2.78	2.87	2.75	2.81	2.97	2.59	2.61	2.86	2.65	2.68	2.87
Dissolved Vanadium (V)	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dissolved Zinc (Zn)	µg/L	0.5	0.8	1.1	1.7	0.8	0.7	<0.5	0.9	0.8	1.6	0.5	1.1	2.5	1.7	0.7	1.6

RDL = Reportable Detection Limit

Parameter	Units	RDL	FC-S3-T 21388-07 09/14/2009	FC-S3-M 21388-08 09/14/2009	FC-S3-B 21388-09 09/14/2009	FC-S3-T 21389-07 09/21/2009	FC-S3-M 21389-08 09/21/2009	FC-S3-B 21389-09 09/21/2009	FC-S3-T 21392-04 09/23/2009	FC-S3-M 21392-05 09/23/2009	FC-S3-B 21392-06 09/23/2009	FC-S3-T 21331-07 09/28/2009	FC-S3-M 21331-08 09/28/2009	FC-S3-B 21331-09 09/28/2009	FC-S3-T 21335-07 10/05/2009	FC-S3-M 21335-08 10/05/2009	FC-S3-B 21335-09 10/05/2009
Conventional																	
Alkalinity (Total)	mg/L	2	108	111	112	108	108	110	110	110	112	105	108	111	112	110	112
Bicarbonate Alkalinity (HCO_3)	mg/L	2	131	136	137	132	132	134	134	134	136	128	132	135	137	134	137
Carbonate Alkalinity (CO_3)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Hydroxide Alkalinity (OH)	mg/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
pH, Laboratory	pH units		7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.8	7.7	7.8	7.8	7.7	7.9	7.9	7.8
Conductivity	µS/cm	1	49900	52200	52500	52200	52100	52600	48200	49500	48800	45300	46800	48100	48800	47600	46100
Salinity	Salinity	0.1	32.7	34.3	34.6	34.3	34.3	34.6	31.4	32.4	31.9	29.3	30.4	31.4	31.9	31	29.9
Total Suspended Solids	mg/L	1	< 1	< 1	< 1	4	1	3	< 1	4	1	1	< 1	2	2	1	6
Dissolved Organic Carbon	mg/L	0.5	0.64	<0.50	0.51	<0.50	0.64	<0.50	0.57	<0.50	<0.50	0.62	0.69	<0.50	0.60	0.68	0.68
Total Organic Carbon	mg/L	0.5	0.65	0.55	<0.50	0.63	0.6	<0.50	0.6	<0.50	0.57	<0.50	<0.50	<0.50	0.73	0.58	0.65
Major Ions																	
Dissolved Fluoride (F)	mg/L	25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dissolved Chloride (Cl)	mg/L	0.2	18400	19500	19400	19100	19500	19000	18200	19800	19800	18900	19100	19500	20000	20300	20600
Dissolved Sulphate (SO_4)	mg/L	0.5	2070	2220	2190	2180	2210	2200	2020	2220	2220	2180	2200	2270	2170	2240	2250
Nutrients																	
Ammonia Nitrogen N	mg/L as N	0.01	0.02	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.02	0.05	0.05	0.06	0.04	0.03	0.04
Total Kjeldahl Nitrogen N	mg/L as N	0.2	< 0.2	< 0.2	< 0.2	0.2	0.4	< 0.2	0.3	0.4	0.4	< 0.2	< 0.2	< 0.2	0.2	0.3	< 0.2
Nitrate N	mg/L as N	0.002	0.285	0.365	0.381	0.29	0.316	0.346	0.266	0.288	0.309	0.287	0.315	0.352	0.29	0.343	0.322
Nitrite N	mg/L as N	0.002	0.005	0.004	0.004	0.007	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.006	0.006	0.005
Nitrate and Nitrite N	mg/L as N	0.002	0.29	0.369	0.385	0.297	0.321	0.351	0.271	0.294	0.314	0.292	0.32	0.357	0.296	0.349	0.327
Total Nitrogen (calc as N)	mg/L as N		0.39	0.469	0.485	0.497	0.721	0.451	0.571	0.694	0.714	0.392	0.42	0.457	0.496	0.649	0.427
Ortho Phosphorus P	mg/L as P	0.003	0.066	0.072	0.073	0.068	0.069	0.074	0.073	0.08	0.079	0.061	0.065	0.072	0.062	0.065	0.068
Total Phosphorus P	mg/L as P	0.003	0.068	0.077	0.078	0.072	0.075	0.079	0.086	0.098	0.088	0.074	0.074	0.082	0.078	0.09	0.088
Microbiological																	
Enterococci	Col./100 mL	1	1	< 1	< 1	< 1	1	8	< 1	< 1	2	< 1	< 1	< 1	< 1	< 1	1
Fecal Coliform	Col./100 mL	1	< 1	3	< 1	< 1	2	5	< 1	3	2	< 1	6	1	< 1	< 1	3

RDL = Reportable Detection Limit

APPENDIX IV

Analytical Laboratory Reports

CANTEST REPORTS

Analysis Report

CANTEST LTD.

Professional
Analytical
Services

4606 Canada Way
Burnaby, B.C.
V5G 1K5

FAX: 604 731 2386

TEL: 604 734 7276

1 800 665 8566

REPORT ON: Analysis of Water Samples

REPORTED TO: Capital Regional District
Environmental Programs
PO Box 1000
625 Fisgard St
Victoria, BC
V8W 2S6

Att'n: Shirley Lyons

cc: Golder Associates Ltd. 500-4260 Still Creek Dr Burnaby BC V5C 6C6
Att'n: Cathy McPherson

CHAIN OF CUSTODY: 21388
PROJECT NUMBER: 09-1421-0028

NUMBER OF SAMPLES: 10

REPORT DATE: September 21, 2009

DATE SUBMITTED: September 14, 2009

GROUP NUMBER: 100914090

SAMPLE TYPE: Sea Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): -
Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

(Continued)

CANTEST LTD.

David Nadler
Supervisor, CANTEST Victoria

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis may be performed using either the MPN Method (reported as "Most Probable Number") or the Membrane Filtration (MF) Method (reported as "Colonies or CFU per unit volume"). Method selection is dependent upon factors including turbidity, microbial levels, etc.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

TEST RESULTS:

(See following pages)

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21388-01	21388-02	21388-03	21388-04	
DATE SAMPLED:		Sep 14/09	Sep 14/09	Sep 14/09	Sep 14/09	REPORTING LIMIT
CANTEST ID:		909140342	909140368	909140369	909140370	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	18700	18700	19100	18400	100
Dissolved Sulphate	SO4	2100	2120	2170	2100	250
Ammonia Nitrogen	N	0.03	0.03	0.03	0.03	0.01
Total Kjeldahl Nitrogen	N	0.4	<	<	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21388-05	21388-06	21388-07	21388-08	
DATE SAMPLED:		Sep 14/09	Sep 14/09	Sep 14/09	Sep 14/09	REPORTING LIMIT
CANTEST ID:		909140372	909140374	909140375	909140376	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	19100	19400	18400	19500	100
Dissolved Sulphate	SO4	2170	2200	2070	2220	250
Ammonia Nitrogen	N	0.03	0.03	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	<	<	<	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21388-09	21388-10	
DATE SAMPLED:		Sep 14/09	Sep 14/09	REPORTING LIMIT
CANTEST ID:		909140378	909140380	
Dissolved Fluoride	F	< 25	<	0.05
Dissolved Chloride	Cl	19400	<	0.2
Dissolved Sulphate	SO4	2190	<	0.5
Ammonia Nitrogen	N	0.03	<	0.01
Total Kjeldahl Nitrogen	N	<	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Mercury Hg
21388-04	Sep 14/09	909140370	<
21388-05	Sep 14/09	909140372	<
21388-06	Sep 14/09	909140374	<
21388-10	Sep 14/09	909140380	<
REPORTING LIMIT			0.02
UNITS			µg/L

µg/L = micrograms per liter
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Microbiological Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Enterococci
21388-01	Sep 14/09	909140342	<
21388-02	Sep 14/09	909140368	<
21388-03	Sep 14/09	909140369	<
21388-04	Sep 14/09	909140370	<
21388-05	Sep 14/09	909140372	1
21388-06	Sep 14/09	909140374	<
21388-07	Sep 14/09	909140375	1
21388-08	Sep 14/09	909140376	<
21388-09	Sep 14/09	909140378	<
21388-10	Sep 14/09	909140380	<
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21388-01	21388-02	21388-03	21388-04		
DATE SAMPLED:		Sep 14/09	Sep 14/09	Sep 14/09	Sep 14/09	REPORTING LIMIT	UNITS
CANTEST ID:		909140342	909140368	909140369	909140370		
pH, Laboratory		7.8	7.8	7.7	7.8	0.1	pH units
Conductivity		52000	50500	49900	47600	1	µS/cm
Salinity		34.2	33.1	32.7	31.0	0.1	Salinity
Total Suspended Solids		2	<	1	<	1	mg/L
Alkalinity Total 4.5		104	107	110	101	2	mg/L
Bicarbonate Alkalinity	HCO3	127	131	134	123	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.291	0.301	0.315	0.296	0.002	mg/L
Nitrate	N	0.286	0.295	0.310	0.291	0.002	mg/L
Nitrite	N	0.005	0.006	0.005	0.005	0.002	mg/L
Ortho Phosphorus	P	0.065	0.066	0.068	0.064	0.003	mg/L as P
Total Phosphorus	P	0.085	0.067	0.074	0.073	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21388-05	21388-06	21388-07	21388-08		
DATE SAMPLED:		Sep 14/09	Sep 14/09	Sep 14/09	Sep 14/09	REPORTING LIMIT	UNITS
CANTEST ID:		909140372	909140374	909140375	909140376		
pH, Laboratory		7.7	7.7	7.8	7.7	0.1	pH units
Conductivity		51600	52000	49900	52200	1	µS/cm
Salinity		33.9	34.2	32.7	34.3	0.1	Salinity
Total Suspended Solids		1	<	<	<	1	mg/L
Alkalinity Total 4.5		111	110	108	111	2	mg/L
Bicarbonate Alkalinity	HCO3	136	134	131	136	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.333	0.362	0.290	0.369	0.002	mg/L
Nitrate	N	0.328	0.357	0.285	0.365	0.002	mg/L
Nitrite	N	0.005	0.005	0.005	0.004	0.002	mg/L
Ortho Phosphorus	P	0.067	0.071	0.066	0.072	0.003	mg/L as P
Total Phosphorus	P	0.073	0.076	0.068	0.077	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21388-09	21388-10		
DATE SAMPLED:		Sep 14/09	Sep 14/09	REPORTING LIMIT	UNITS
CANTEST ID:		909140378	909140380		
pH, Laboratory		7.7	5.4	0.1	pH units
Conductivity		52500	2	1	µS/cm
Salinity		34.6	<	0.1	Salinity
Total Suspended Solids		<	<	1	mg/L
Alkalinity Total 4.5		112	<	2	mg/L
Bicarbonate Alkalinity	HCO3	137	<	2	mg/L
Carbonate Alkalinity	CO3	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	2	mg/L
Nitrate and Nitrite	N	0.385	0.019	0.002	mg/L
Nitrate	N	0.381	0.019	0.002	mg/L
Nitrite	N	0.004	<	0.002	mg/L
Ortho Phosphorus	P	0.073	<	0.003	mg/L as P
Total Phosphorus	P	0.078	<	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 21, 2009

GROUP NUMBER: 100914090

CANTEST

Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Fecal Coliform
21388-01	Sep 14/09	909140342	1
21388-02	Sep 14/09	909140368	1
21388-03	Sep 14/09	909140369	9
21388-04	Sep 14/09	909140370	<
21388-05	Sep 14/09	909140372	4
21388-06	Sep 14/09	909140374	1
21388-07	Sep 14/09	909140375	<
21388-08	Sep 14/09	909140376	3
21388-09	Sep 14/09	909140378	<
21388-10	Sep 14/09	909140380	<
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21388 page 1 of 1

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Cantest	
Short Title: CRD Summer Baseline WQ Survey		Address: 1104–4464 Markham St., Victoria	
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 250-385-6112 ~~604-291-2007~~	Contact: D. Nadler

Office the final reports should be sent to: Quote : CAP 217-20090427. mjg - 02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Analyses Required: Conventional as per quote	Nutrients as per quote	Major anions as per quote	Biological as per quote	Total Mercury	RUSH	Remarks (over)
21388 -01	FC-S1-T		1m	H_2O	Sept. 14	1050/1105	Discrete			9	✓	✓	✓	✓			DLS as per quote
21388 -02	FC-S1-M		24m	"	"	1115/1130	"			9	✓	✓	✓	✓			"
21388 -03	FC-S1-B		46m	"	"	1140/1154	"			9	✓	✓	✓	✓			"
21388 -04	FC-S2-T		1m	"	"	1214/1223	"			10	✓	✓	✓	✓	✓		"
21388 -05	FC-S2-M		24m	"	"	1231/1251	"			10	✓	✓	✓	✓	✓		"
21388 -06	FC-S2-B		45m	"	"	1324/1321	"			10	✓	✓	✓	✓	✓		"
21388 -07	FC-S3-T		1m	"	"	1336/1352	"			9	✓	✓	✓	✓			"
21388 -08	FC-S3-M		24m	"	"	1402	"			9	✓	✓	✓	✓			"
21388 -09	FC-S3-B		46m	"	"	1413	"			9	✓	✓	✓	✓			"
21388 -10	Blank		N/A	"	"	0915	"	FB		10	✓	✓	✓	✓	✓		"
-11																	
-12																	

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Sept. 14, 09	Time	Received by: Signature	Company	
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company	
Comments:	Method of Shipment: Drop off	Waybill No.:	Received for Lab by:	Date: 14Sep2009	Time: 1615		
	Shipped by:	Shipment Condition: Seal Intact:	Temp (°C)	Cooler opened by:	Date	Time	

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Analysis Report

CANTEST LTD.

Professional
Analytical
Services

4606 Canada Way
Burnaby, B.C.
V5G 1K5

FAX: 604 731 2386

TEL: 604 734 7276

1 800 665 8566

REPORT ON: Analysis of Water Samples

REPORTED TO: Capital Regional District
Environmental Programs
PO Box 1000
625 Fisgard St
Victoria, BC
V8W 2S6

Att'n: Shirley Lyons

cc: Golder Associates Ltd. 500-4260 Still Creek Dr Burnaby BC V5C 6C6
Att'n: Cathy McPherson

CHAIN OF CUSTODY: 21389
PROJECT NUMBER: 09-1421-0028

NUMBER OF SAMPLES: 9

REPORT DATE: September 28, 2009

DATE SUBMITTED: September 21, 2009

GROUP NUMBER: 100921108

SAMPLE TYPE: Sea Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): -
Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

(Continued)

CANTEST LTD.

David Nadler
Supervisor, CANTEST Victoria

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis may be performed using either the MPN Method (reported as "Most Probable Number") or the Membrane Filtration (MF) Method (reported as "Colonies or CFU per unit volume"). Method selection is dependent upon factors including turbidity, microbial levels, etc.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

COMMENTS:

Phosphorus - Sample 909210549 had a value for Total Phosphor us less than the Dissolved ortho Phosphorus. The difference was within the analytical uncertainty of the tests. djn, S eptember 25, 2009.

TEST RESULTS:

(See following pages)

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21389-01	21389-02	21389-03	21389-04	
DATE SAMPLED:		Sep 21/09	Sep 21/09	Sep 21/09	Sep 21/09	REPORTING LIMIT
CANTEST ID:		909210545	909210546	909210547	909210548	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	19600	19300	19400	19000	100
Dissolved Sulphate	SO4	2220	2210	2230	2160	250
Ammonia Nitrogen	N	0.02	0.01	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.5	0.3	0.4	0.3	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21389-05	21389-06	21389-07	21389-08	
DATE SAMPLED:		Sep 21/09	Sep 21/09	Sep 21/09	Sep 21/09	REPORTING LIMIT
CANTEST ID:		909210549	909210550	909210551	909210552	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	19100	17800	19100	19500	100
Dissolved Sulphate	SO4	2190	2070	2180	2210	250
Ammonia Nitrogen	N	<	0.02	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.3	0.3	0.2	0.4	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21389-09	
DATE SAMPLED:		Sep 21/09	REPORTING LIMIT
CANTEST ID:		909210553	
Dissolved Fluoride	F	<	25
Dissolved Chloride	Cl	19000	100
Dissolved Sulphate	SO4	2200	250
Ammonia Nitrogen	N	0.01	0.01
Total Kjeldahl Nitrogen	N	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Mercury Hg
21389-04	Sep 21/09	909210548	<
21389-05	Sep 21/09	909210549	<
21389-06	Sep 21/09	909210550	<
REPORTING LIMIT			0.02
UNITS			µg/L

µg/L = micrograms per liter
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Microbiological Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Enterococci
21389-01	Sep 21/09	909210545	<
21389-02	Sep 21/09	909210546	<
21389-03	Sep 21/09	909210547	2
21389-04	Sep 21/09	909210548	<
21389-05	Sep 21/09	909210549	<
21389-06	Sep 21/09	909210550	<
21389-07	Sep 21/09	909210551	<
21389-08	Sep 21/09	909210552	1
21389-09	Sep 21/09	909210553	8
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21389-01	21389-02	21389-03	21389-04		
DATE SAMPLED:		Sep 21/09	Sep 21/09	Sep 21/09	Sep 21/09	REPORTING LIMIT	UNITS
CANTEST ID:		909210545	909210546	909210547	909210548		
pH, Laboratory		7.7	7.7	7.7	7.8	0.1	pH units
Conductivity		51900	52100	52600	51200	1	µS/cm
Salinity		34.1	34.3	34.6	33.6	0.1	Salinity
Total Suspended Solids		<	<	2	<	1	mg/L
Alkalinity Total 4.5		110	110	110	105	2	mg/L
Bicarbonate Alkalinity	HCO3	134	134	134	128	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.347	0.341	0.342	0.318	0.002	mg/L
Nitrate	N	0.342	0.336	0.338	0.312	0.002	mg/L
Nitrite	N	0.005	0.005	0.004	0.006	0.002	mg/L
Ortho Phosphorus	P	0.075	0.074	0.075	0.071	0.003	mg/L as P
Total Phosphorus	P	0.075	0.075	0.081	0.075	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21389-05	21389-06	21389-07	21389-08		
DATE SAMPLED:		Sep 21/09	Sep 21/09	Sep 21/09	Sep 21/09	REPORTING LIMIT	UNITS
CANTEST ID:		909210549	909210550	909210551	909210552		
pH, Laboratory		7.7	7.7	7.8	7.7	0.1	pH units
Conductivity		51600	52500	52200	52100	1	µS/cm
Salinity		33.9	34.6	34.3	34.3	0.1	Salinity
Total Suspended Solids		3	4	4	1	1	mg/L
Alkalinity Total 4.5		108	110	108	108	2	mg/L
Bicarbonate Alkalinity	HCO3	132	134	132	132	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.326	0.375	0.297	0.321	0.002	mg/L
Nitrate	N	0.320	0.370	0.290	0.316	0.002	mg/L
Nitrite	N	0.006	0.005	0.007	0.005	0.002	mg/L
Ortho Phosphorus	P	0.072	0.074	0.068	0.069	0.003	mg/L as P
Total Phosphorus	P	0.068	0.078	0.072	0.075	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21389-09		
DATE SAMPLED:		Sep 21/09	REPORTING LIMIT	UNITS
CANTEST ID:		909210553		
pH, Laboratory		7.7	0.1	pH units
Conductivity		52600	1	µS/cm
Salinity		34.6	0.1	Salinity
Total Suspended Solids		3	1	mg/L
Alkalinity Total 4.5		110	2	mg/L
Bicarbonate Alkalinity	HCO3	134	2	mg/L
Carbonate Alkalinity	CO3	<	2	mg/L
Hydroxide Alkalinity	OH	<	2	mg/L
Nitrate and Nitrite	N	0.351	0.002	mg/L
Nitrate	N	0.346	0.002	mg/L
Nitrite	N	0.005	0.002	mg/L
Ortho Phosphorus	P	0.074	0.003	mg/L as P
Total Phosphorus	P	0.079	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 28, 2009

GROUP NUMBER: 100921108

Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Fecal Coliform
21389-01	Sep 21/09	909210545	<
21389-02	Sep 21/09	909210546	3
21389-03	Sep 21/09	909210547	3
21389-04	Sep 21/09	909210548	<
21389-05	Sep 21/09	909210549	4
21389-06	Sep 21/09	909210550	2
21389-07	Sep 21/09	909210551	<
21389-08	Sep 21/09	909210552	2
21389-09	Sep 21/09	909210553	5
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21389 page 1 of 1

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Cantest	
Short Title: CRD Summer Baseline WQ Survey		Address: 1104-4464 Markham St., Victoria	
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 250-385-6112	Contact: D. Nadler

Office the final reports should be sent to: Quote: CAP217-20090427.mjg-02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Analyses Required: Conventional as per quote	Nutrients as per quote	Major anions as per quote	Biological as per quote	Total Mercury					RUSH	Remarks (over)
21389 -01	FC-S1-T		1m	H_2O	21/09/09	0920	Discrete			9	✓	✓	✓	✓							DLS as per quote
21389 -02	FC-S1-M		24m	"	"	0950	"			9	✓	✓	✓	✓							"
21389 -03	FC-S1-B		48m	"	"	1023	"			9	✓	✓	✓	✓							"
21389 -04	FC-S2-T		1m	"	"	1039/1054	"			10	✓	✓	✓	✓	✓						"
21389 -05	FC-S2-M		25m	"	"	1241/1301	"			10	✓	✓	✓	✓	✓						"
21389 -06	FC-S2-B		48m	"	"	1310/1324	"			10	✓	✓	✓	✓	✓						"
21389 -07	FC-S3-T		1m	"	"	1340	"			9	✓	✓	✓	✓							"
21389 -08	FC-S3-M		24m	"	"	1353	"			9	✓	✓	✓	✓							"
21389 -09	FC-S3-B		48m	"	"	1413	"			9	✓	✓	✓	✓							"
-10																					
-11																					
-12																					

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Sept. 21/09	Time	Received by: Signature	Company	
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company	
Comments:	Method of Shipment: Dropped off	Waybill No.:	Received for Lab by:	Date: 21 Sep 2009	Time: 1545		
	Shipped by:	Shipment Condition: Seal Intact:	Temp (°C)	Cooler opened by:	Date	Time	

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Analysis Report

CANTEST LTD.

Professional
Analytical
Services

4606 Canada Way
Burnaby, B.C.
V5G 1K5

FAX: 604 731 2386

TEL: 604 734 7276

1 800 665 8566

REPORT ON: Analysis of Water Samples

REPORTED TO: Capital Regional District
Environmental Programs
PO Box 1000
625 Fisgard St
Victoria, BC
V8W 2S6

Att'n: Shirley Lyons

cc: Golder Associates Ltd. 500-4260 Still Creek Dr Burnaby BC V5C 6C6
Att'n: Cathy McPherson

CHAIN OF CUSTODY: 21391, 21392
PROJECT NUMBER: 09-1421-0028

NUMBER OF SAMPLES: 15

REPORT DATE: September 30, 2009

DATE SUBMITTED: September 23, 2009

GROUP NUMBER: 100923135

SAMPLE TYPE: Marine Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): -
Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

(Continued)

CANTEST LTD.

David Nadler
Supervisor, CANTEST Victoria

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis may be performed using either the MPN Method (reported as "Most Probable Number") or the Membrane Filtration (MF) Method (reported as "Colonies or CFU per unit volume"). Method selection is dependent upon factors including turbidity, microbial levels, etc.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

TEST RESULTS:

(See following pages)

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21391-01	21391-02	21391-03	21391-04	
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT
CANTEST ID:		909230590	909230593	909230594	909230595	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	19400	19600	19600	18400	100
Dissolved Sulphate	SO4	2150	2200	2190	2020	250
Ammonia Nitrogen	N	0.02	0.01	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.2	<	<	0.5	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21391-05	21391-06	21391-07	21391-08	
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT
CANTEST ID:		909230596	909230597	909230598	909230599	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	19400	19200	20000	20100	100
Dissolved Sulphate	SO4	2160	2140	2240	2260	250
Ammonia Nitrogen	N	0.02	0.03	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.5	0.5	0.6	0.3	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21391-09	21392-01	21392-02	21392-03	
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT
CANTEST ID:		909230600	909230601	909230602	909230603	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	18900	19500	19800	20100	100
Dissolved Sulphate	SO4	2100	2180	2220	2240	250
Ammonia Nitrogen	N	0.02	0.03	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.4	0.3	0.4	0.5	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21392-04	21392-05	21392-06	
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT
CANTEST ID:		909230604	909230605	909230606	
Dissolved Fluoride	F	<	<	<	25
Dissolved Chloride	Cl	18200	19800	19800	100
Dissolved Sulphate	SO4	2020	2220	2220	250
Ammonia Nitrogen	N	0.02	0.02	0.02	0.01
Total Kjeldahl Nitrogen	N	0.3	0.4	0.4	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Mercury Hg
21391-01	Sep 23/09	909230590	<
21391-02	Sep 23/09	909230593	<
21391-03	Sep 23/09	909230594	<
21391-04	Sep 23/09	909230595	<
21391-05	Sep 23/09	909230596	<
21391-06	Sep 23/09	909230597	<
21391-07	Sep 23/09	909230598	<
21391-08	Sep 23/09	909230599	<
21391-09	Sep 23/09	909230600	<
REPORTING LIMIT			0.02
UNITS			µg/L

µg/L = micrograms per liter
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Microbiological Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Enterococci
21391-01	Sep 23/09	909230590	<
21391-02	Sep 23/09	909230593	<
21391-03	Sep 23/09	909230594	<
21391-04	Sep 23/09	909230595	<
21391-05	Sep 23/09	909230596	<
21391-06	Sep 23/09	909230597	<
21391-07	Sep 23/09	909230598	<
21391-08	Sep 23/09	909230599	<
21391-09	Sep 23/09	909230600	2
21392-01	Sep 23/09	909230601	1
21392-02	Sep 23/09	909230602	5
21392-03	Sep 23/09	909230603	1
21392-04	Sep 23/09	909230604	<
21392-05	Sep 23/09	909230605	<
21392-06	Sep 23/09	909230606	2
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21391-01	21391-02	21391-03	21391-04		
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT	UNITS
CANTEST ID:		909230590	909230593	909230594	909230595		
pH, Laboratory		7.7	7.8	7.8	7.8	0.1	pH units
Conductivity		48700	48300	50000	48100	1	µS/cm
Salinity		31.8	31.5	32.7	31.4	0.1	Salinity
Total Suspended Solids		2	1	1	2	1	mg/L
Alkalinity Total 4.5		110	110	110	111	2	mg/L
Bicarbonate Alkalinity	HCO3	134	134	134	135	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.250	0.269	0.263	0.283	0.002	mg/L
Nitrate	N	0.243	0.263	0.257	0.278	0.002	mg/L
Nitrite	N	0.007	0.006	0.006	0.005	0.002	mg/L
Ortho Phosphorus	P	0.074	0.070	0.070	0.074	0.003	mg/L as P
Total Phosphorus	P	0.080	0.079	0.081	0.085	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21391-05	21391-06	21391-07	21391-08		
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT	UNITS
CANTEST ID:		909230596	909230597	909230598	909230599		
pH, Laboratory		7.8	7.8	7.8	7.8	0.1	pH units
Conductivity		49300	49200	49900	51400	1	µS/cm
Salinity		32.2	32.2	32.7	33.8	0.1	Salinity
Total Suspended Solids		4	2	2	2	1	mg/L
Alkalinity Total 4.5		110	110	111	111	2	mg/L
Bicarbonate Alkalinity	HCO3	135	134	135	135	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.288	0.304	0.317	0.317	0.002	mg/L
Nitrate	N	0.282	0.299	0.312	0.312	0.002	mg/L
Nitrite	N	0.006	0.005	0.005	0.005	0.002	mg/L
Ortho Phosphorus	P	0.078	0.078	0.082	0.076	0.003	mg/L as P
Total Phosphorus	P	0.083	0.085	0.086	0.087	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21391-09	21392-01	21392-02	21392-03	REPORTING LIMIT	UNITS
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	Sep 23/09		
CANTEST ID:		909230600	909230601	909230602	909230603		
pH, Laboratory		7.8	7.8	7.8	7.8	0.1	pH units
Conductivity		50300	49300	50400	49400	1	µS/cm
Salinity		33.0	32.2	33.0	32.3	0.1	Salinity
Total Suspended Solids		2	2	1	2	1	mg/L
Alkalinity Total 4.5		111	110	110	110	2	mg/L
Bicarbonate Alkalinity	HCO3	135	134	134	134	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.311	0.289	0.303	0.304	0.002	mg/L
Nitrate	N	0.306	0.284	0.297	0.299	0.002	mg/L
Nitrite	N	0.005	0.005	0.006	0.005	0.002	mg/L
Ortho Phosphorus	P	0.077	0.078	0.076	0.082	0.003	mg/L as P
Total Phosphorus	P	0.089	0.089	0.092	0.085	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21392-04	21392-05	21392-06		
DATE SAMPLED:		Sep 23/09	Sep 23/09	Sep 23/09	REPORTING LIMIT	UNITS
CANTEST ID:		909230604	909230605	909230606		
pH, Laboratory		7.8	7.8	7.7	0.1	pH units
Conductivity		48200	49500	48800	1	µS/cm
Salinity		31.4	32.4	31.9	0.1	Salinity
Total Suspended Solids		<	4	1	1	mg/L
Alkalinity Total 4.5		110	110	112	2	mg/L
Bicarbonate Alkalinity	HCO3	134	134	136	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.271	0.294	0.314	0.002	mg/L
Nitrate	N	0.266	0.288	0.309	0.002	mg/L
Nitrite	N	0.005	0.006	0.005	0.002	mg/L
Ortho Phosphorus	P	0.073	0.080	0.079	0.003	mg/L as P
Total Phosphorus	P	0.086	0.098	0.088	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: September 30, 2009

GROUP NUMBER: 100923135

CANTEST

Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Fecal Coliform
21391-01	Sep 23/09	909230590	2
21391-02	Sep 23/09	909230593	<
21391-03	Sep 23/09	909230594	2
21391-04	Sep 23/09	909230595	2
21391-05	Sep 23/09	909230596	1
21391-06	Sep 23/09	909230597	7
21391-07	Sep 23/09	909230598	2
21391-08	Sep 23/09	909230599	2
21391-09	Sep 23/09	909230600	3
21392-01	Sep 23/09	909230601	1
21392-02	Sep 23/09	909230602	16
21392-03	Sep 23/09	909230603	1
21392-04	Sep 23/09	909230604	<
21392-05	Sep 23/09	909230605	3
21392-06	Sep 23/09	909230606	2
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21391 page 1 of 2

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Cantest	
Short Title: CRD Summer Baseline WQ Survey		Address: 1104-4464 Markham St. Victoria	
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 250-385-6112	Contact: D. Nadler

Office the final reports should be sent to: Quote: CAP217-20090427.mjg-02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Conventional as per quote	Nutrients as per quote	Major anions as per quote	Biological as per quote	Total Mercury					RUSH	Remarks (over)
21391 -01	FC-S2-T		1m	H_2O	23/09/09	0958/1000	Discrete	FT	21391-03	10	✓	✓	✓	✓	✓						DIS as per quote
21391 -02	FC-S2-T		1m	"	"	1005	"	FT	21391-03	10	✓	✓	✓	✓	✓						"
21391 -03	FC-S2-T		1m	"	"	1017 *	"			10	✓	✓	✓	✓	✓						"
21391 -04	FC-S2-M		25m	"	"	1045/1104	"	FT	21391-06	10	✓	✓	✓	✓	✓						"
21391 -05	FC-S2-M		25m	"	"	1113/1129	"	FT	21391-06	10	✓	✓	✓	✓	✓						"
21391 -06	FC-S2-M		25m	"	"	↓	"			10	✓	✓	✓	✓	✓						"
21391 -07	FC-S2-B		47m	"	"	1146/1223	"	FT	21391-09	10	✓	✓	✓	✓	✓						"
21391 -08	FC-S2-B		47m	"	"	1223/1240	"	FT	2139-09	10	✓	✓	✓	✓	✓						"
21391 -09	FC-S2-B		47m	"	"	1258 ↓	"			10	✓	✓	✓	✓	✓						"
-10																					
-11																					
-12																					

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Sept. 23/09	Time	Received by: Signature	Company	
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company	
Comments:	Method of Shipment: Dropped off	Waybill No.:	Received for Lab by:	Date: 23/Sept/2009	Time: 1555		
	Shipped by:	Shipment Condition: Seal Intact:	Temp (°C)	Cooler opened by:	Date	Time	

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report

* Bill CRD Directly *

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21392 page 2 of 2

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Cantest	
Short Title: CRD Summer Baseline WQ Survey		Address: 1104-4464 Markham St. Victoria	
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 250-385-6112	Contact: D. Nadler

Office the final reports should be sent to: Quote: CAP 217-20090427.mjg-02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Analyses Required: Conventionals as per quote	Nutrients as per quote	Major Ions as per quote	Biological as per quote	Total Mercury					RUSH	Remarks (over)
21392 -01	FC-S1-T		1m	H2O	23/09/09	0849	Discrete			9	✓	✓	✓	✓							DLS as per quote
21392 -02	FC-S1-M		25m	"	23/09/09	0906	"			9	✓	✓	✓	✓							"
21392 -03	FC-S1-B		47m	"	23/09/09	0938	"			9	✓	✓	✓	✓							"
21392 -04	FC-S3-T		1m	"	23/09/09	1341	"			9	✓	✓	✓	✓							"
21392 -05	FC-S3-M		24m	"	23/09/09	1404	"			9	✓	✓	✓	✓							"
21392 -06	FC-S3-B		46m	"	23/09/09	1425	"			9	✓	✓	✓	✓							"
-07																					
-08																					
-09																					
-10																					
-11																					
-12																					

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Sept. 23, 09	Time	Received by: Signature	Company	
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company	
Comments:	Method of Shipment: Dropped off	Waybill No.:	Received for Lab by:	Date: 23Sep2009	Time: 1555		
	Shipped by:	Shipment Condition: Seal Intact:	Temp (°C)	Cooler opened by:	Date	Time	

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Analysis Report

CANTEST LTD.

Professional
Analytical
Services

4606 Canada Way
Burnaby, B.C.
V5G 1K5

FAX: 604 731 2386

TEL: 604 734 7276

1 800 665 8566

REPORT ON: Analysis of Water Samples

REPORTED TO: Capital Regional District
Environmental Programs
PO Box 1000
625 Fisgard St
Victoria, BC
V8W 2S6

Att'n: Shirley Lyons

CHAIN OF CUSTODY: 21331
PROJECT NUMBER: 09-1421-0028

NUMBER OF SAMPLES: 9

REPORT DATE: October 5, 2009

DATE SUBMITTED: September 28, 2009

GROUP NUMBER: 100928089

SAMPLE TYPE: Sea Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): - Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

(Continued)

CANTEST LTD.

David Nadler
Supervisor, CANTEST Victoria

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis may be performed using either the MPN Method (reported as "Most Probable Number") or the Membrane Filtration (MF) Method (reported as "Colonies or CFU per unit volume"). Method selection is dependent upon factors including turbidity, microbial levels, etc.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

TEST RESULTS:

(See following pages)

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21331-01	21331-02	21331-03	21331-04	
DATE SAMPLED:		Sep 28/09	Sep 28/09	Sep 28/09	Sep 28/09	REPORTING LIMIT
CANTEST ID:		909280298	909280299	909280300	909280301	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	18300	18500	18600	18500	100
Dissolved Sulphate	SO4	1980	2050	2120	2070	250
Ammonia Nitrogen	N	0.04	0.05	0.06	0.05	0.01
Total Kjeldahl Nitrogen	N	0.3	<	<	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21331-05	21331-06	21331-07	21331-08	
DATE SAMPLED:		Sep 28/09	Sep 28/09	Sep 28/09	Sep 28/09	REPORTING LIMIT
CANTEST ID:		909280302	909280303	909280304	909280305	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	18800	19200	18900	19100	100
Dissolved Sulphate	SO4	2130	2180	2180	2200	250
Ammonia Nitrogen	N	0.04	0.04	0.05	0.05	0.01
Total Kjeldahl Nitrogen	N	<	<	<	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21331-09	
DATE SAMPLED:		Sep 28/09	REPORTING LIMIT
CANTEST ID:		909280306	
Dissolved Fluoride	F	<	25
Dissolved Chloride	Cl	19500	100
Dissolved Sulphate	SO4	2270	250
Ammonia Nitrogen	N	0.06	0.01
Total Kjeldahl Nitrogen	N	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Mercury Hg
21331-04	Sep 28/09	909280301	<
21331-05	Sep 28/09	909280302	<
21331-06	Sep 28/09	909280303	<
REPORTING LIMIT			0.02
UNITS			µg/L

µg/L = micrograms per liter
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Microbiological Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Enterococci
21331-01	Sep 28/09	909280298	<
21331-02	Sep 28/09	909280299	<
21331-03	Sep 28/09	909280300	<
21331-04	Sep 28/09	909280301	<
21331-05	Sep 28/09	909280302	<
21331-06	Sep 28/09	909280303	1
21331-07	Sep 28/09	909280304	<
21331-08	Sep 28/09	909280305	<
21331-09	Sep 28/09	909280306	<
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21331-01	21331-02	21331-03	21331-04		
DATE SAMPLED:		Sep 28/09	Sep 28/09	Sep 28/09	Sep 28/09	REPORTING LIMIT	UNITS
CANTEST ID:		909280298	909280299	909280300	909280301		
pH, Laboratory		7.7	7.7	7.7	7.8	0.1	pH units
Conductivity		43500	46200	46000	46600	1	µS/cm
Salinity		28.0	30.0	29.8	30.3	0.1	Salinity
Total Suspended Solids		4	2	4	3	1	mg/L
Alkalinity Total 4.5		109	106	105	108	2	mg/L
Bicarbonate Alkalinity	HCO3	133	129	128	131	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.262	0.285	0.284	0.289	0.002	mg/L
Nitrate	N	0.257	0.280	0.279	0.284	0.002	mg/L
Nitrite	N	0.005	0.005	0.005	0.005	0.002	mg/L
Ortho Phosphorus	P	0.056	0.058	0.062	0.057	0.003	mg/L as P
Total Phosphorus	P	0.064	0.075	0.074	0.067	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21331-05	21331-06	21331-07	21331-08		
DATE SAMPLED:		Sep 28/09	Sep 28/09	Sep 28/09	Sep 28/09	REPORTING LIMIT	UNITS
CANTEST ID:		909280302	909280303	909280304	909280305		
pH, Laboratory		7.8	7.7	7.8	7.8	0.1	pH units
Conductivity		46100	47300	45300	46800	1	µS/cm
Salinity		29.9	30.8	29.3	30.4	0.1	Salinity
Total Suspended Solids		2	6	1	<	1	mg/L
Alkalinity Total 4.5		108	110	105	108	2	mg/L
Bicarbonate Alkalinity	HCO3	131	134	128	132	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.284	0.342	0.292	0.320	0.002	mg/L
Nitrate	N	0.279	0.337	0.287	0.315	0.002	mg/L
Nitrite	N	0.005	0.005	0.005	0.005	0.002	mg/L
Ortho Phosphorus	P	0.061	0.068	0.061	0.065	0.003	mg/L as P
Total Phosphorus	P	0.069	0.079	0.074	0.074	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21331-09		
DATE SAMPLED:		Sep 28/09	REPORTING LIMIT	UNITS
CANTEST ID:		909280306		
pH, Laboratory		7.7	0.1	pH units
Conductivity		48100	1	µS/cm
Salinity		31.4	0.1	Salinity
Total Suspended Solids		2	1	mg/L
Alkalinity Total 4.5		111	2	mg/L
Bicarbonate Alkalinity	HCO3	135	2	mg/L
Carbonate Alkalinity	CO3	<	2	mg/L
Hydroxide Alkalinity	OH	<	2	mg/L
Nitrate and Nitrite	N	0.357	0.002	mg/L
Nitrate	N	0.352	0.002	mg/L
Nitrite	N	0.005	0.002	mg/L
Ortho Phosphorus	P	0.072	0.003	mg/L as P
Total Phosphorus	P	0.082	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 5, 2009

GROUP NUMBER: 100928089

CANTEST

Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Fecal Coliform
21331-01	Sep 28/09	909280298	1
21331-02	Sep 28/09	909280299	1
21331-03	Sep 28/09	909280300	<
21331-04	Sep 28/09	909280301	<
21331-05	Sep 28/09	909280302	<
21331-06	Sep 28/09	909280303	3
21331-07	Sep 28/09	909280304	<
21331-08	Sep 28/09	909280305	6
21331-09	Sep 28/09	909280306	1
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21331 page 1 of 1

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028	Laboratory Name: Cantest
Short Title: CRD Summer Baseline WQ Survey	Address: 1104-4464 Markham Street
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com
Tel/Fax: 250-385-6112	Contact: D. Nadler

Office the final reports should be sent to: Quote: CAP217-20090427.mjg-02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Conventionals as per quote	Nutrients as per quote	Major ions as per quote	Biological as per quote	Total Mercury	RUSH	Remarks (over)
21331 -01	FC-S1-T		1m	H2O	28/09/09	0930	Discrete			9	✓	✓	✓	✓			DLS as per quote
21331 -02	FC-S1-M		24m	"	"	0944	"			9	✓	✓	✓	✓			"
21331 -03	FC-S1-B		47m	"	"	1012	"			9	✓	✓	✓	✓			"
21331 -04	FC-S2-T		1m	"	"	1032/1054	"			10	✓	✓	✓	✓	✓		"
21331 -05	FC-S2-M		24m	"	"	1106/1127	"			10	✓	✓	✓	✓	✓		"
21331 -06	FC-S2-B		47m	"	"	1137/1201	"			10	✓	✓	✓	✓	✓		"
21331 -07	FC-S3-T		1m	"	"	1213	"			9	✓	✓	✓	✓			"
21331 -08	FC-S3-M		24m	"	"	1239	"			9	✓	✓	✓	✓			"
21331 -09	FC-S3-B		47m	"	"	1302	"			9	✓	✓	✓	✓			"
-10																	
-11																	
-12																	

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Sept. 28, 09	Time	Received by: Signature / Company
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature / Company
Comments:	Method of Shipment: Dropped off	Waybill No.:	Received for Lab by:	Date: 28 Sep 2009	Time: 1455
	Shipped by:	Shipment Condition: / Seal Intact:	Temp (°C)	Cooler opened by:	Date / Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Analysis Report

CANTEST LTD.

Professional
Analytical
Services

4606 Canada Way
Burnaby, B.C.
V5G 1K5

FAX: 604 731 2386

TEL: 604 734 7276

1 800 665 8566

REPORT ON: Analysis of Water Samples

REPORTED TO: Capital Regional District
Environmental Programs
PO Box 1000
625 Fisgard St
Victoria, BC
V8W 2S6

Att'n: Shirley Lyons

cc: Golder Associates Ltd. 500-4260 Still Creek Dr Burnaby BC V5C 6C6
Att'n: Cathy McPherson

CHAIN OF CUSTODY: 21335
PROJECT NUMBER: 09-1421-0028

NUMBER OF SAMPLES: 9

REPORT DATE: October 13, 2009

DATE SUBMITTED: October 5, 2009

GROUP NUMBER: 101005110

SAMPLE TYPE: Sea Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): -
Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

(Continued)

CANTEST LTD.

David Nadler
Supervisor, CANTEST Victoria

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis may be performed using either the MPN Method (reported as "Most Probable Number") or the Membrane Filtration (MF) Method (reported as "Colonies or CFU per unit volume"). Method selection is dependent upon factors including turbidity, microbial levels, etc.

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

TEST RESULTS:

(See following pages)

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21335-01	21335-02	21335-03	21335-04	
DATE SAMPLED:		Oct 5/09	Oct 5/09	Oct 5/09	Oct 5/09	REPORTING LIMIT
CANTEST ID:		910050336	910050351	910050355	910050358	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	20100	20400	20700	20200	100
Dissolved Sulphate	SO4	2170	2250	2270	2210	250
Ammonia Nitrogen	N	0.05	0.04	0.03	0.03	0.01
Total Kjeldahl Nitrogen	N	0.5	0.4	0.3	0.3	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21335-05	21335-06	21335-07	21335-08	
DATE SAMPLED:		Oct 5/09	Oct 5/09	Oct 5/09	Oct 5/09	REPORTING LIMIT
CANTEST ID:		910050361	910050364	910050366	910050369	
Dissolved Fluoride	F	<	<	<	<	25
Dissolved Chloride	Cl	20400	20700	20000	20300	100
Dissolved Sulphate	SO4	2230	2290	2170	2240	250
Ammonia Nitrogen	N	0.04	0.03	0.04	0.03	0.01
Total Kjeldahl Nitrogen	N	0.3	0.2	0.2	0.3	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:		21335-09	
DATE SAMPLED:		Oct 5/09	REPORTING LIMIT
CANTEST ID:		910050372	
Dissolved Fluoride	F	<	25
Dissolved Chloride	Cl	20600	100
Dissolved Sulphate	SO4	2250	250
Ammonia Nitrogen	N	0.04	0.01
Total Kjeldahl Nitrogen	N	<	0.2

Results expressed as milligrams per liter (mg/L)
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Mercury Hg
21335-04	Oct 5/09	910050358	<
21335-05	Oct 5/09	910050361	<
21335-06	Oct 5/09	910050364	<
REPORTING LIMIT			0.02
UNITS			µg/L

µg/L = micrograms per liter
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Microbiological Analysis in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Enterococci
21335-01	Oct 5/09	910050336	<
21335-02	Oct 5/09	910050351	1
21335-03	Oct 5/09	910050355	<
21335-04	Oct 5/09	910050358	<
21335-05	Oct 5/09	910050361	<
21335-06	Oct 5/09	910050364	1
21335-07	Oct 5/09	910050366	<
21335-08	Oct 5/09	910050369	<
21335-09	Oct 5/09	910050372	1
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21335-01	21335-02	21335-03	21335-04		
DATE SAMPLED:		Oct 5/09	Oct 5/09	Oct 5/09	Oct 5/09	REPORTING LIMIT	UNITS
CANTEST ID:		910050336	910050351	910050355	910050358		
pH, Laboratory		7.9	7.9	7.8	7.9	0.1	pH units
Conductivity		45300	48200	49100	49200	1	µS/cm
Salinity		29.3	31.4	32.1	32.2	0.1	Salinity
Total Suspended Solids		<	2	2	5	1	mg/L
Alkalinity Total 4.5		110	111	112	109	2	mg/L
Bicarbonate Alkalinity	HCO3	134	135	137	133	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.288	0.342	0.376	0.317	0.002	mg/L
Nitrate	N	0.282	0.337	0.372	0.311	0.002	mg/L
Nitrite	N	0.006	0.005	0.004	0.006	0.002	mg/L
Ortho Phosphorus	P	0.060	0.067	0.072	0.064	0.003	mg/L as P
Total Phosphorus	P	0.086	0.087	0.089	0.086	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21335-05	21335-06	21335-07	21335-08	REPORTING LIMIT	UNITS
DATE SAMPLED:		Oct 5/09	Oct 5/09	Oct 5/09	Oct 5/09		
CANTEST ID:		910050361	910050364	910050366	910050369		
pH, Laboratory		7.9	7.8	7.9	7.9	0.1	pH units
Conductivity		48100	47400	48800	47600	1	µS/cm
Salinity		31.4	30.8	31.9	31.0	0.1	Salinity
Total Suspended Solids		2	3	2	1	1	mg/L
Alkalinity Total 4.5		112	112	112	110	2	mg/L
Bicarbonate Alkalinity	HCO3	137	137	137	134	2	mg/L
Carbonate Alkalinity	CO3	<	<	<	<	2	mg/L
Hydroxide Alkalinity	OH	<	<	<	<	2	mg/L
Nitrate and Nitrite	N	0.333	0.374	0.296	0.349	0.002	mg/L
Nitrate	N	0.326	0.369	0.290	0.343	0.002	mg/L
Nitrite	N	0.007	0.005	0.006	0.006	0.002	mg/L
Ortho Phosphorus	P	0.068	0.071	0.062	0.065	0.003	mg/L as P
Total Phosphorus	P	0.105	0.087	0.078	0.090	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:		21335-09		
DATE SAMPLED:		Oct 5/09	REPORTING LIMIT	UNITS
CANTEST ID:		910050372		
pH, Laboratory		7.8	0.1	pH units
Conductivity		46100	1	µS/cm
Salinity		29.9	0.1	Salinity
Total Suspended Solids		6	1	mg/L
Alkalinity Total 4.5		112	2	mg/L
Bicarbonate Alkalinity	HCO3	137	2	mg/L
Carbonate Alkalinity	CO3	<	2	mg/L
Hydroxide Alkalinity	OH	<	2	mg/L
Nitrate and Nitrite	N	0.327	0.002	mg/L
Nitrate	N	0.322	0.002	mg/L
Nitrite	N	0.005	0.002	mg/L
Ortho Phosphorus	P	0.068	0.003	mg/L as P
Total Phosphorus	P	0.088	0.003	mg/L as P

µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
< = Less than reporting limit

Salinity = Salinity Units
mg/L as P = milligrams per liter as P

REPORTED TO: Capital Regional District

REPORT DATE: October 13, 2009

GROUP NUMBER: 101005110

CANTEST

Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Fecal Coliform
21335-01	Oct 5/09	910050336	<
21335-02	Oct 5/09	910050351	4
21335-03	Oct 5/09	910050355	<
21335-04	Oct 5/09	910050358	<
21335-05	Oct 5/09	910050361	1
21335-06	Oct 5/09	910050364	7
21335-07	Oct 5/09	910050366	<
21335-08	Oct 5/09	910050369	<
21335-09	Oct 5/09	910050372	3
REPORTING LIMIT			1
UNITS			Col./100 mL

Col./100 mL = Colonies per 100 mL
< = Less than reporting limit

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

№ 21335 page 1 of 1

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Cantest	
Short Title: CRD Summer Baseline WQ Survey		Address: 1104-4464 Markham Street, Victoria	
Golder Contact: Cathy McPherson	Golder E-mail Address: CMcpherson @golder.com	Tel/Fax: 250-385-6112	Contact: D. Nadler

Office the final reports should be sent to: Quote: ~~AB~~ CAP217-20090427.mjg.02

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Attn David Nadler

Sample Control Number (SCN)	Sample Location	Sa. #	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH:MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Containers	Analyses Required: Conventional as per quote	Nutrients as per quote	Major anions as per quote	Biological as per quote	Total Mercury					RUSH	Remarks (over)
21335 -01	FC-S1-T		1m	H2O	05/10/09	0933	Discrete			9	✓	✓	✓	✓							DLS as per quote
21335 -02	FC-S1-M		24m	"	"	0954	"			9	✓	✓	✓	✓							"
21335 -03	FC-S1-B		46m	"	"	1036	"			9	✓	✓	✓	✓							"
21335 -04	FC-S2-T		1m	"	"	1058/1113	"			10	✓	✓	✓	✓	✓						"
21335 -05	FC-S2-M		24m	"	"	1131/1146	"			10	✓	✓	✓	✓	✓						"
21335 -06	FC-S2-B		47m	"	"	1201/1232	"			10	✓	✓	✓	✓	✓						"
21335 -07	FC-S3-T		1m	"	"	1248	"			9	✓	✓	✓	✓							"
21335 -08	FC-S3-M		24m	"	"	1309	"			9	✓	✓	✓	✓							"
21335 -09	FC-S3-B		47m	"	"	1347	"			9	✓	✓	✓	✓							"
-10																					
-11																					
-12																					

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Oct. 5, 09	Time	Received by: Signature	Company
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company
Comments:	Method of Shipment: Dropped off	Waybill No.:	Received for Lab by:	Date: 05oct2009	Time: 1550	
	Shipped by:	Shipment Condition: Seal Intact:	Temp (°C)	Cooler opened by:	Date	Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report

Bill CRD Directly

MAXXAM REPORTS

Your Project #: 09-1421-0028
Your C.O.C. #: 21387

Attention: Cathy McPherson
Golder Associates Ltd.
4260 Still Creek Drive
Suite 500
Burnaby, BC
CANADA V5C 6C6

Report Date: 2009/09/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A951268
Received: 2009/09/16, 08:16

Sample Matrix: Sea Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness Total (calculated as CaCO3)	4	N/A	2009/09/22		
Hardness (calculated as CaCO3)	4	N/A	2009/09/22		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	4	N/A	2009/09/22	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (dis) (1)	4	N/A	2009/09/18	BRN SOP-00206	Based on EPA 200.8
Elements by CRC ICPMS (dissolved) (1)	4	N/A	2009/09/22	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (tot) (1)	4	N/A	2009/09/18	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	2009/09/22	2009/09/22	BRN SOP-00206 R7.0	Based on EPA 200.8
Elements by CRC ICPMS (total) (1)	4	2009/09/22	2009/09/22	BRN SOP-00206	Based on EPA 200.8
Filter and HNO3 Preserve for Metals	4	N/A	2009/09/22	BRN WI-00006 R1.0	Based on EPA 200.2

* Results relate only to the items tested.

(1) SCC/CAEAL

Encryption Key

Elaine Cousins
23 Sep 2009 17:14:45 -07:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ELAINE COUSINS, BBY CS Manager
Email: elaine.cousins@maxxamanalytics.com
Phone# (604) 444-4808 Ext:276

==========

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. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A951268
Report Date: 2009/09/23

Golder Associates Ltd.
Client Project #: 09-1421-0028

RESULTS OF CHEMICAL ANALYSES OF SEA WATER

Maxxam ID		Q79990	Q79991	Q79992	Q79993		
Sampling Date		2009/09/14	2009/09/14	2009/09/14	2009/09/14		
	Units	**21387-01**	**21387-02**	**21387-03**	**21387-04**	**RDL**	**QC Batch**
Preparation							
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	N/A	ONSITE
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	5990	6610	6770	<0.5	0.5	3422283
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	6030	6670	6980	<0.5	0.5	3422284

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A951268
Report Date: 2009/09/23

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		Q79990	Q79991	Q79992	Q79993		
Sampling Date		2009/09/14	2009/09/14	2009/09/14	2009/09/14		
	Units	**21387-01**	**21387-02**	**21387-03**	**21387-04**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	<10	19	<10	<10	10	3434614
Dissolved Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5	3434614
Dissolved Arsenic (As)	ug/L	1.7	1.7	1.8	<0.5	0.5	3434614
Dissolved Barium (Ba)	ug/L	9	9	9	<1	1	3434614
Dissolved Beryllium (Be)	ug/L	<1	<1	<1	<1	1	3434614
Dissolved Bismuth (Bi)	ug/L	<1	<1	<1	<1	1	3434614
Dissolved Boron (B)	ug/L	3530	3930	4070	<50	50	3434614
Dissolved Cadmium (Cd)	ug/L	0.08	0.09	0.09	<0.01	0.01	3426849
Dissolved Chromium (Cr)	ug/L	<0.5	<0.5	0.6	<0.5	0.5	3434614
Dissolved Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3426849
Dissolved Copper (Cu)	ug/L	0.30	0.25	0.21	0.09	0.05	3426849
Dissolved Iron (Fe)	ug/L	4	2	1	<1	1	3426849
Dissolved Lead (Pb)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3426849
Dissolved Lithium (Li)	ug/L	161	176	186	<20	20	3434614
Dissolved Manganese (Mn)	ug/L	2.2	2.0	1.8	<0.2	0.2	3426849
Dissolved Molybdenum (Mo)	ug/L	9	10	10	<1	1	3434614
Dissolved Nickel (Ni)	ug/L	0.49	0.58	0.46	<0.05	0.05	3426849
Dissolved Selenium (Se)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5	3434614
Dissolved Silicon (Si)	ug/L	1640	1820	1930	<100	100	3434614
Dissolved Silver (Ag)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3434614
Dissolved Strontium (Sr)	ug/L	6670	7180	7470	<10	10	3434614
Dissolved Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	3434614
Dissolved Tin (Sn)	ug/L	<1	<1	<1	<1	1	3434614
Dissolved Titanium (Ti)	ug/L	<10	<10	<10	<10	10	3434614
Dissolved Uranium (U)	ug/L	2.29	2.59	2.60	<0.05	0.05	3434614
Dissolved Vanadium (V)	ug/L	<10	<10	<10	<10	10	3434614
Dissolved Zinc (Zn)	ug/L	0.8	1.1	1.7	1.5	0.5	3426849
Dissolved Calcium (Ca)	mg/L	422	460	481	<1	1	3436593
Dissolved Magnesium (Mg)	mg/L	1210	1340	1400	<1	1	3436593
Dissolved Potassium (K)	mg/L	363	401	421	<1	1	3436593
Dissolved Sodium (Na)	mg/L	9730	10800	11300	<1	1	3436593
Dissolved Sulphur (S)	mg/L	1020	1140	1190	<20	20	3436593

RDL = Reportable Detection Limit

Maxxam Job #: A951268
Report Date: 2009/09/23

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		Q79990	Q79991	Q79992	Q79993		
Sampling Date		2009/09/14	2009/09/14	2009/09/14	2009/09/14		
	Units	**21387-01**	**21387-02**	**21387-03**	**21387-04**	**RDL**	**QC Batch**
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	<10	<10	10	<10	10	3434628
Total Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5	3434628
Total Arsenic (As)	ug/L	1.7	1.9	1.9	<0.5	0.5	3434628
Total Barium (Ba)	ug/L	9	9	9	<1	1	3434628
Total Beryllium (Be)	ug/L	<1	<1	<1	<1	1	3434628
Total Bismuth (Bi)	ug/L	<1	<1	<1	<1	1	3434628
Total Boron (B)	ug/L	3440	3880	4080	<50	50	3434628
Total Cadmium (Cd)	ug/L	0.09	0.08	0.09	<0.01	0.01	3426854
Total Chromium (Cr)	ug/L	<0.5	0.6	<0.5	<0.5	0.5	3434628
Total Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3426854
Total Copper (Cu)	ug/L	0.26	0.22	0.20	<0.05	0.05	3426854
Total Iron (Fe)	ug/L	5	7	9	<1	1	3426854
Total Lead (Pb)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3426854
Total Lithium (Li)	ug/L	161	176	184	<20	20	3434628
Total Manganese (Mn)	ug/L	2.5	2.3	2.6	<0.2	0.2	3426854
Total Molybdenum (Mo)	ug/L	9	10	11	<1	1	3434628
Total Nickel (Ni)	ug/L	0.57	0.51	0.67	<0.05	0.05	3426854
Total Selenium (Se)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5	3434628
Total Silicon (Si)	ug/L	1600	1820	1910	<100	100	3434628
Total Silver (Ag)	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	3434628
Total Strontium (Sr)	ug/L	6550	7160	7290	<10	10	3434628
Total Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	3434628
Total Tin (Sn)	ug/L	<1	<1	<1	<1	1	3434628
Total Titanium (Ti)	ug/L	<10	<10	<10	<10	10	3434628
Total Uranium (U)	ug/L	2.18	2.44	2.55	<0.05	0.05	3434628
Total Vanadium (V)	ug/L	<10	<10	<10	<10	10	3434628
Total Zinc (Zn)	ug/L	0.8	<0.5	0.6	1.6	0.5	3426854
Total Calcium (Ca)	mg/L	414	455	471	<1	1	3436590
Total Magnesium (Mg)	mg/L	1200	1330	1360	<1	1	3436590
Total Potassium (K)	mg/L	361	395	409	<1	1	3436590
Total Sodium (Na)	mg/L	9760	10800	11100	<1	1	3436590
Total Sulphur (S)	mg/L	1010	1130	1160	<20	20	3436590

RDL = Reportable Detection Limit

Maxxam Job #: A951268
Report Date: 2009/09/23

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3426849	Dissolved Cadmium (Cd)	2009/09/18	98	80 - 120	99	80 - 120	<0.01	ug/L	6.1	25
3426849	Dissolved Cobalt (Co)	2009/09/18	98	80 - 120	91	80 - 120	<0.05	ug/L	NC	25
3426849	Dissolved Copper (Cu)	2009/09/18	91	80 - 120	98	80 - 120	<0.05	ug/L	2.4	25
3426849	Dissolved Lead (Pb)	2009/09/18	96	80 - 120	101	80 - 120	<0.05	ug/L	NC	25
3426849	Dissolved Nickel (Ni)	2009/09/18	97	80 - 120	95	80 - 120	<0.05	ug/L	7.8	25
3426849	Dissolved Zinc (Zn)	2009/09/18	96	80 - 120	99	80 - 120	<0.5	ug/L	NC	25
3426849	Dissolved Iron (Fe)	2009/09/18					<1	ug/L	NC	25
3426849	Dissolved Manganese (Mn)	2009/09/18					<0.2	ug/L	12.4	25
3426854	Total Cadmium (Cd)	2009/09/18	101	80 - 120	97	80 - 120	<0.01	ug/L	2.0	25
3426854	Total Cobalt (Co)	2009/09/18	104	80 - 120	95	80 - 120	<0.05	ug/L	NC	25
3426854	Total Copper (Cu)	2009/09/18	100	80 - 120	104	80 - 120	<0.05	ug/L	12.8	25
3426854	Total Lead (Pb)	2009/09/18	97	80 - 120	101	80 - 120	<0.05	ug/L	NC	25
3426854	Total Nickel (Ni)	2009/09/18	99	80 - 120	97	80 - 120	<0.05	ug/L	7.1	25
3426854	Total Zinc (Zn)	2009/09/18	97	80 - 120	96	80 - 120	<0.5	ug/L	NC	25
3426854	Total Iron (Fe)	2009/09/18					<1	ug/L	4.6	25
3426854	Total Manganese (Mn)	2009/09/18					<0.2	ug/L	1	25
3434614	Dissolved Arsenic (As)	2009/09/22	103	75 - 125	96	75 - 125	<0.5	ug/L	NC	25
3434614	Dissolved Barium (Ba)	2009/09/22	107	75 - 125	100	75 - 125	<1	ug/L	0.9	25
3434614	Dissolved Beryllium (Be)	2009/09/22	107	75 - 125	103	75 - 125	<1	ug/L	NC	25
3434614	Dissolved Chromium (Cr)	2009/09/22	113	75 - 125	101	75 - 125	<0.5	ug/L	NC	25
3434614	Dissolved Lithium (Li)	2009/09/22	NC	75 - 125	108	75 - 125	<20	ug/L	0.06	25
3434614	Dissolved Selenium (Se)	2009/09/22	101	75 - 125	102	75 - 125	<0.5	ug/L	NC	25
3434614	Dissolved Strontium (Sr)	2009/09/22	NC	75 - 125	97	75 - 125	<10	ug/L	1.4	25
3434614	Dissolved Titanium (Ti)	2009/09/22	123	75 - 125	99	75 - 125	<10	ug/L	NC	25
3434614	Dissolved Uranium (U)	2009/09/22	110	75 - 125	105	75 - 125	<0.05	ug/L	2.5	25
3434614	Dissolved Vanadium (V)	2009/09/22	117	75 - 125	99	75 - 125	<10	ug/L	NC	25
3434614	Dissolved Aluminum (Al)	2009/09/22					<10	ug/L	NC	25
3434614	Dissolved Antimony (Sb)	2009/09/22					<0.5	ug/L	NC	25
3434614	Dissolved Bismuth (Bi)	2009/09/22					<1	ug/L	NC	25
3434614	Dissolved Boron (B)	2009/09/22					<50	ug/L	2.2	25
3434614	Dissolved Molybdenum (Mo)	2009/09/22					<1	ug/L	3.8	25
3434614	Dissolved Silicon (Si)	2009/09/22					<100	ug/L	3.1	25
3434614	Dissolved Silver (Ag)	2009/09/22					<0.05	ug/L	NC	25
3434614	Dissolved Thallium (Tl)	2009/09/22					<0.1	ug/L	NC	25
3434614	Dissolved Tin (Sn)	2009/09/22					<1	ug/L	NC	25
3434628	Total Arsenic (As)	2009/09/22	106	75 - 125	97	75 - 125	<0.5	ug/L	NC	25
3434628	Total Barium (Ba)	2009/09/22	106	75 - 125	101	75 - 125	<1	ug/L	0.2	25
3434628	Total Beryllium (Be)	2009/09/22	103	75 - 125	98	75 - 125	<1	ug/L	NC	25
3434628	Total Chromium (Cr)	2009/09/22	114	75 - 125	99	75 - 125	<0.5	ug/L	NC	25
3434628	Total Lithium (Li)	2009/09/22	NC	75 - 125	104	75 - 125	<20	ug/L	1.6	25

Maxxam Job #: A951268
Report Date: 2009/09/23

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3434628	Total Selenium (Se)	2009/09/22	99	75 - 125	100	75 - 125	<0.5	ug/L	NC	25
3434628	Total Strontium (Sr)	2009/09/22	NC	75 - 125	96	75 - 125	<10	ug/L	1.6	25
3434628	Total Titanium (Ti)	2009/09/22	117	75 - 125	99	75 - 125	<10	ug/L	NC	25
3434628	Total Uranium (U)	2009/09/22	104	75 - 125	104	75 - 125	<0.05	ug/L	2.1	25
3434628	Total Vanadium (V)	2009/09/22	119	75 - 125	99	75 - 125	<10	ug/L	NC	25
3434628	Total Aluminum (Al)	2009/09/22					<10	ug/L	NC	25
3434628	Total Antimony (Sb)	2009/09/22					<0.5	ug/L	NC	25
3434628	Total Bismuth (Bi)	2009/09/22					<1	ug/L	NC	25
3434628	Total Boron (B)	2009/09/22					<50	ug/L	1.0	25
3434628	Total Molybdenum (Mo)	2009/09/22					<1	ug/L	3.6	25
3434628	Total Silicon (Si)	2009/09/22					<100	ug/L	1.1	25
3434628	Total Silver (Ag)	2009/09/22					<0.05	ug/L	NC	25
3434628	Total Thallium (Tl)	2009/09/22					<0.1	ug/L	NC	25
3434628	Total Tin (Sn)	2009/09/22					<1	ug/L	NC	25
3436590	Total Calcium (Ca)	2009/09/22					<1	mg/L	0.1	25
3436590	Total Magnesium (Mg)	2009/09/22					<1	mg/L	1.0	25
3436590	Total Potassium (K)	2009/09/22					<1	mg/L	1.1	25
3436590	Total Sodium (Na)	2009/09/22					<1	mg/L	0.8	25
3436590	Total Sulphur (S)	2009/09/22					<20	mg/L	2.0	25
3436593	Dissolved Calcium (Ca)	2009/09/22					<1	mg/L	1.2	25
3436593	Dissolved Magnesium (Mg)	2009/09/22					<1	mg/L	2.0	25
3436593	Dissolved Potassium (K)	2009/09/22					<1	mg/L	0.9	25
3436593	Dissolved Sodium (Na)	2009/09/22					<1	mg/L	1.7	25
3436593	Dissolved Sulphur (S)	2009/09/22					<20	mg/L	1.6	25

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

A951268

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

No. 21387 page 1 of 1

Golder Associates

500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Maxxam
[redacted]		Address: 8577 Commerce Ct. Burnaby
Golder Contact: Cathy McPherson	Golder E-mail Address: CMcpherson @golder.com	Tel/Fax: 604-444-4808 / Contact: Elaine Cousins

Office the final reports should be sent to: Quote: A80018

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Sample Control Number (SCN)	[redacted]	Sample Matrix (over)	Date Sampled (D/M/Y)	[redacted]	Number of Containers	Analyses Required: Total Metals	Marine Methods Dissolved Metals	Marine Methods Major Cations Hardness						RUSH	Remarks (over)
21387 -01		H_2O	14/09/09		2	✓	✓	✓							Disc per quote
21387 -02		"	"		2	✓	✓	✓							"
21387 -03		"	"		2	✓	✓	✓							"
21387 -04		H_2O	"		2	✓	✓	✓							"
21387 -05		"	"		2	✓	✓	✓		Hold					Hold " [redacted]
-06															
-07															
-08															
-09															
-10															
-11															
-12															

Attn Elaine Cousins

Sampler's Signature	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company
Virginia Chant	Virginia Chant	Golder	Sept. 15, 09	15:30		
Sample Storage (°C) 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company

Comments:	Method of Shipment:	Waybill No.:	Received for Lab by:	Date	Time
For SCN 21387-05, please archive and only analyse at Golder's request.	Courier	D0078266 14		Sept 16/09	8:30
	Shipped by: DHL	Shipment Condition: Seal Intact:	Temp (°C) 10, 9, 9 / Cooler opened by:	Date	Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Your Project #: 09-1421-0028
Your C.O.C. #: 21390

Attention: Cathy McPherson
Golder Associates Ltd.
4260 Still Creek Drive
Suite 500
Burnaby, BC
CANADA V5C 6C6

Report Date: 2009/10/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A957009
Received: 2009/10/07, 09:20

Sample Matrix: Sea Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness (calculated as CaCO3)	3	N/A	2009/10/26		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (dis) (1)	3	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Elements by CRC ICPMS (dissolved) (1)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (tot) (1)	3	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	2009/10/22	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Elements by CRC ICPMS (total) (1)	3	2009/10/22	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Filter and HNO3 Preserve for Metals	3	N/A	2009/10/13	BRN WI-00006 R1.0	Based on EPA 200.2

* Results relate only to the items tested.

(1) SCC/CAEAL

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ELAINE COUSINS, BBY CS Manager
Email: elaine.cousins@maxxamanalytics.com
Phone# (604) 444-4808 Ext:276

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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. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A957009
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

RESULTS OF CHEMICAL ANALYSES OF SEA WATER

Maxxam ID		R20207	R20208	R20209		
Sampling Date		2009/09/21	2009/09/21	2009/09/21		
	Units	**21390-01**	**21390-02**	**21390-03**	**RDL**	**QC Batch**
Preparation						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	N/A	ONSITE
Misc. Inorganics						
Dissolved Hardness (CaCO3)	mg/L	6640	6490	6710	0.5	3483410

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A957009
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20207	R20208	R20209		
Sampling Date		2009/09/21	2009/09/21	2009/09/21		
	Units	**21390-01**	**21390-02**	**21390-03**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS						
Dissolved Aluminum (Al)	ug/L	<10	<10	<10	10	3507470
Dissolved Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Arsenic (As)	ug/L	1.9	2.0	1.8	0.5	3507470
Dissolved Barium (Ba)	ug/L	9	9	9	1	3507470
Dissolved Beryllium (Be)	ug/L	<1	<1	<1	1	3507470
Dissolved Bismuth (Bi)	ug/L	<1	<1	<1	1	3507470
Dissolved Boron (B)	ug/L	3800	3850	3930	50	3507470
Dissolved Cadmium (Cd)	ug/L	0.09	0.10	0.09	0.01	3504843
Dissolved Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Copper (Cu)	ug/L	0.22	0.21	0.16	0.05	3504843
Dissolved Iron (Fe)	ug/L	2	2	1	1	3504843
Dissolved Lead (Pb)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Lithium (Li)	ug/L	178	181	184	20	3507470
Dissolved Manganese (Mn)	ug/L	2.3	2.2	2.0	0.2	3504843
Dissolved Molybdenum (Mo)	ug/L	11	10	12	1	3507470
Dissolved Nickel (Ni)	ug/L	0.61	0.63	0.42	0.05	3504843
Dissolved Selenium (Se)	ug/L	0.7	0.5	0.5	0.5	3507470
Dissolved Silicon (Si)	ug/L	2170	1920	1970	100	3507470
Dissolved Silver (Ag)	ug/L	<0.05	<0.05	0.05	0.05	3507470
Dissolved Strontium (Sr)	ug/L	7410	7310	7610	10	3507470
Dissolved Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	0.1	3507470
Dissolved Tin (Sn)	ug/L	<1	<1	<1	1	3507470
Dissolved Titanium (Ti)	ug/L	<10	<10	<10	10	3507470
Dissolved Uranium (U)	ug/L	2.67	2.78	2.87	0.05	3507470
Dissolved Vanadium (V)	ug/L	<10	<10	<10	10	3507470
Dissolved Zinc (Zn)	ug/L	0.8	0.7	<0.5	0.5	3504843
Dissolved Calcium (Ca)	mg/L	444	436	448	1	3513297
Dissolved Magnesium (Mg)	mg/L	1340	1310	1360	1	3513297
Dissolved Potassium (K)	mg/L	402	392	407	1	3513297
Dissolved Sodium (Na)	mg/L	11200	10900	11300	1	3513297
Dissolved Sulphur (S)	mg/L	1110	1080	1110	20	3513297

RDL = Reportable Detection Limit

Maxxam Job #: A957009
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20207	R20208	R20209		
Sampling Date		2009/09/21	2009/09/21	2009/09/21		
	Units	**21390-01**	**21390-02**	**21390-03**	**RDL**	**QC Batch**
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	26	31	20	10	3507483
Total Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507483
Total Arsenic (As)	ug/L	2.0	2.1	1.9	0.5	3507483
Total Barium (Ba)	ug/L	9	9	9	1	3507483
Total Beryllium (Be)	ug/L	<1	<1	<1	1	3507483
Total Bismuth (Bi)	ug/L	<1	<1	<1	1	3507483
Total Boron (B)	ug/L	3710	3720	3850	50	3507483
Total Cadmium (Cd)	ug/L	0.09	0.09	0.11	0.01	3504799
Total Chromium (Cr)	ug/L	<0.5	0.7	<0.5	0.5	3507483
Total Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504799
Total Copper (Cu)	ug/L	0.21	0.21	0.22	0.05	3504799
Total Iron (Fe)	ug/L	10	9	13	1	3504799
Total Lead (Pb)	ug/L	0.08	<0.05	<0.05	0.05	3504799
Total Lithium (Li)	ug/L	178	177	183	20	3507483
Total Manganese (Mn)	ug/L	2.6	2.4	2.7	0.2	3504799
Total Molybdenum (Mo)	ug/L	11	12	12	1	3507483
Total Nickel (Ni)	ug/L	0.66	0.56	0.57	0.05	3504799
Total Selenium (Se)	ug/L	0.6	0.8	0.7	0.5	3507483
Total Silicon (Si)	ug/L	1910	1990	2060	100	3507483
Total Silver (Ag)	ug/L	0.08	0.07	<0.05	0.05	3507483
Total Strontium (Sr)	ug/L	7130	7270	7550	10	3507483
Total Thallium (Tl)	ug/L	0.1	<0.1	<0.1	0.1	3507483
Total Tin (Sn)	ug/L	2	1	1	1	3507483
Total Titanium (Ti)	ug/L	<10	<10	<10	10	3507483
Total Uranium (U)	ug/L	2.67	2.77	2.89	0.05	3507483
Total Vanadium (V)	ug/L	<10	<10	<10	10	3507483
Total Zinc (Zn)	ug/L	0.7	<0.5	0.5	0.5	3504799
Total Calcium (Ca)	mg/L	427	426	443	1	3513296
Total Magnesium (Mg)	mg/L	1310	1320	1370	1	3513296
Total Potassium (K)	mg/L	383	386	401	1	3513296
Total Sodium (Na)	mg/L	10900	11000	11400	1	3513296
Total Sulphur (S)	mg/L	1060	1080	1100	20	3513296

RDL = Reportable Detection Limit

Maxxam Job #: A957009
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3504799	Total Cadmium (Cd)	2009/10/23	94	80 - 120	96	80 - 120	<0.01	ug/L	2.8	25
3504799	Total Cobalt (Co)	2009/10/23	99	80 - 120	97	80 - 120	<0.05	ug/L	NC	25
3504799	Total Copper (Cu)	2009/10/23	91	80 - 120	94	80 - 120	<0.05	ug/L	3.8	25
3504799	Total Lead (Pb)	2009/10/23	93	80 - 120	96	80 - 120	<0.05	ug/L	NC	25
3504799	Total Nickel (Ni)	2009/10/23	93	80 - 120	99	80 - 120	<0.05	ug/L	12.5	25
3504799	Total Zinc (Zn)	2009/10/23	92	80 - 120	97	80 - 120	<0.5	ug/L	NC	25
3504799	Total Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504799	Total Manganese (Mn)	2009/10/23					<0.2	ug/L	7.7	25
3504843	Dissolved Cadmium (Cd)	2009/10/23	95	80 - 120	95	80 - 120	<0.01	ug/L	1.3	25
3504843	Dissolved Cobalt (Co)	2009/10/23	101	80 - 120	102	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Copper (Cu)	2009/10/23	90	80 - 120	100	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Lead (Pb)	2009/10/23	94	80 - 120	98	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Nickel (Ni)	2009/10/23	98	80 - 120	104	80 - 120	<0.05	ug/L	0.5	25
3504843	Dissolved Zinc (Zn)	2009/10/23	91	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
3504843	Dissolved Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504843	Dissolved Manganese (Mn)	2009/10/23					<0.2	ug/L	1.3	25
3507470	Dissolved Arsenic (As)	2009/10/24	106	75 - 125	96	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Barium (Ba)	2009/10/24	103	75 - 125	101	75 - 125	<1	ug/L	0.3	25
3507470	Dissolved Beryllium (Be)	2009/10/24	99	75 - 125	105	75 - 125	<1	ug/L	NC	25
3507470	Dissolved Chromium (Cr)	2009/10/24	116	75 - 125	100	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Lithium (Li)	2009/10/24	NC	75 - 125	106	75 - 125	<20	ug/L	1.7	25
3507470	Dissolved Selenium (Se)	2009/10/24	118	75 - 125	107	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Strontium (Sr)	2009/10/24	NC	75 - 125	98	75 - 125	<10	ug/L	0.3	25
3507470	Dissolved Titanium (Ti)	2009/10/24	115	75 - 125	95	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Uranium (U)	2009/10/24	102	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507470	Dissolved Vanadium (V)	2009/10/24	119	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507470	Dissolved Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507470	Dissolved Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507470	Dissolved Boron (B)	2009/10/24					<50	ug/L	1.6	25
3507470	Dissolved Molybdenum (Mo)	2009/10/24					<1	ug/L	1.5	25
3507470	Dissolved Silicon (Si)	2009/10/24					<100	ug/L	1.9	25
3507470	Dissolved Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507470	Dissolved Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507470	Dissolved Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3507483	Total Arsenic (As)	2009/10/24	120	75 - 125	97	75 - 125	<0.5	ug/L	NC	25
3507483	Total Barium (Ba)	2009/10/24	105	75 - 125	101	75 - 125	<1	ug/L	3.9	25
3507483	Total Beryllium (Be)	2009/10/24	105	75 - 125	103	75 - 125	<1	ug/L	NC	25
3507483	Total Chromium (Cr)	2009/10/24	120	75 - 125	101	75 - 125	<0.5	ug/L	NC	25
3507483	Total Lithium (Li)	2009/10/24	NC	75 - 125	105	75 - 125	<20	ug/L	0.6	25

Maxxam Job #: A957009
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3507483	Total Selenium (Se)	2009/10/24	108	75 - 125	106	75 - 125	<0.5	ug/L	NC	25
3507483	Total Strontium (Sr)	2009/10/24	NC	75 - 125	95	75 - 125	<10	ug/L	0.9	25
3507483	Total Titanium (Ti)	2009/10/24	123	75 - 125	105	75 - 125	<10	ug/L	NC	25
3507483	Total Uranium (U)	2009/10/24	107	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507483	Total Vanadium (V)	2009/10/24	114	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507483	Total Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507483	Total Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507483	Total Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507483	Total Boron (B)	2009/10/24					<50	ug/L	1.7	25
3507483	Total Molybdenum (Mo)	2009/10/24					<1	ug/L	5.0	25
3507483	Total Silicon (Si)	2009/10/24					<100	ug/L	0.4	25
3507483	Total Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507483	Total Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507483	Total Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3513296	Total Calcium (Ca)	2009/10/24							2.4	25
3513296	Total Magnesium (Mg)	2009/10/24							4.8	25
3513296	Total Potassium (K)	2009/10/24							3.1	25
3513296	Total Sodium (Na)	2009/10/24							4.9	25
3513296	Total Sulphur (S)	2009/10/24							2.0	25
3513297	Dissolved Calcium (Ca)	2009/10/24					<1	mg/L	0.3	25
3513297	Dissolved Magnesium (Mg)	2009/10/24					<1	mg/L	3.2	25
3513297	Dissolved Potassium (K)	2009/10/24					<1	mg/L	0.5	25
3513297	Dissolved Sodium (Na)	2009/10/24					<1	mg/L	3.8	25
3513297	Dissolved Sulphur (S)	2009/10/24					<20	mg/L	0.1	25

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

A957009

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

No. 21390 page 1 of 1

Golder Associates

500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number:		Laboratory Name:
09-1421-0028		Maxxam
[redacted]		Address: 8577 Commerce Ct. Burnaby
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 604-444-4808
		Contact: Elaine Cousins

Office the final reports should be sent to: Quote: A80018

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Sample Control Number (SCN)	[redacted]	Sample Matrix (over)	Date Sampled (D/M/Y)	[redacted]	Number of Containers	Total Metals	Marine Methods Dissolved Metals	Marine Methods Major Cations Hardness						RUSH	Remarks (over)
21390-01		H_2O	21/09/09		2	✓	✓	✓							DLS as per quote
21390-02		"	21/09/09		2	✓	✓	✓							"
21390-03		"	21/09/09		2	✓	✓	✓							"
21390 ~~-04~~ 01															
-05															
-06															
-07															
-08															
-09															
-10															
-11															
-12															

Attn Elaine Cousins

Sampler's Signature	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company
Virginia Chant	Virginia Chant	Golder	Oct. 6, 09	15:00		
Sample Storage (°C) 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company

Comments:	Method of Shipment:	Waybill No.:	Received for Lab by:	Date	Time
	Courier	D007826618		09/10/07	9:20
	Shipped by: DHL	Shipment Condition: Seal Intact:	Temp (°C) 4.4.2	Cooler opened by:	Date / Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Your Project #: 09-1421-0028
Your C.O.C. #: 21397

Attention: Cathy McPherson
Golder Associates Ltd.
4260 Still Creek Drive
Suite 500
Burnaby, BC
CANADA V5C 6C6

Report Date: 2009/10/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A957010
Received: 2009/10/07, 09:20

Sample Matrix: Sea Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness (calculated as CaCO3)	9	N/A	2009/10/26		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	9	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (dis) (1)	9	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Elements by CRC ICPMS (dissolved) (1)	9	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (tot) (1)	9	N/A	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	9	2009/10/22	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Elements by CRC ICPMS (total) (1)	9	2009/10/22	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Filter and HNO3 Preserve for Metals	9	N/A	2009/10/13	BRN WI-00006 R1.0	Based on EPA 200.2

* Results relate only to the items tested.

(1) SCC/CAEAL

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ELAINE COUSINS, BBY CS Manager
Email: elaine.cousins@maxxamanalytics.com
Phone# (604) 444-4808 Ext:276

==========

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. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A957010
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

RESULTS OF CHEMICAL ANALYSES OF SEA WATER

Maxxam ID		R20212	R20213	R20214	R20215	R20216	R20217	R20218	R20219	R20220		
Sampling Date		2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23		
	Units	**21397-01**	**21397-02**	**21397-03**	**21397-04**	**21397-05**	**21397-06**	**21397-07**	**21397-08**	**21397-09**	**RDL**	**QC Batch**
Preparation												
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	N/A	ONSITE
Misc. Inorganics												
Dissolved Hardness (CaCO3)	mg/L	6440	6350	6420	6490	6590	6640	6930	6840	7010	0.5	3483410

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A957010
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20212	R20213	R20214	R20215	R20216	R20217	R20218	R20219	R20220		
Sampling Date		2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23		
	Units	**21397-01**	**21397-02**	**21397-03**	**21397-04**	**21397-05**	**21397-06**	**21397-07**	**21397-08**	**21397-09**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS												
Dissolved Aluminum (Al)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	15	10	3507470
Dissolved Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Arsenic (As)	ug/L	1.9	2.1	2.0	2.0	2.3	1.9	2.1	2.1	1.9	0.5	3507470
Dissolved Barium (Ba)	ug/L	9	9	9	9	9	9	9	9	9	1	3507470
Dissolved Beryllium (Be)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507470
Dissolved Bismuth (Bi)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507470
Dissolved Boron (B)	ug/L	3890	3800	3800	3810	3840	3690	4040	3920	3970	50	3507470
Dissolved Cadmium (Cd)	ug/L	0.09	0.10	0.09	0.10	0.09	0.09	0.10	0.10	0.08	0.01	3504843
Dissolved Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Copper (Cu)	ug/L	0.22	0.21	0.26	0.23	0.19	0.17	0.19	0.23	0.22	0.05	3504843
Dissolved Iron (Fe)	ug/L	1	1	4	1	1	1	2	2	1	1	3504843
Dissolved Lead (Pb)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Lithium (Li)	ug/L	182	179	177	186	180	172	189	184	186	20	3507470
Dissolved Manganese (Mn)	ug/L	2.3	2.1	2.1	1.8	1.8	1.8	2.0	2.1	2.0	0.2	3504843
Dissolved Molybdenum (Mo)	ug/L	11	11	11	11	11	11	12	12	11	1	3507470
Dissolved Nickel (Ni)	ug/L	0.67	0.50	0.43	0.40	0.57	0.59	0.41	0.41	0.69	0.05	3504843
Dissolved Selenium (Se)	ug/L	0.5	<0.5	0.6	1.0	<0.5	<0.5	0.7	<0.5	<0.5	0.5	3507470
Dissolved Silicon (Si)	ug/L	1880	1850	1910	2040	1990	1930	2070	2030	2020	100	3507470
Dissolved Silver (Ag)	ug/L	<0.05	<0.05	<0.05	0.14	0.09	<0.05	0.06	0.06	0.05	0.05	3507470
Dissolved Strontium (Sr)	ug/L	7380	7320	7490	7580	7460	7190	7890	7690	7740	10	3507470
Dissolved Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	3507470
Dissolved Tin (Sn)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507470
Dissolved Titanium (Ti)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	3507470
Dissolved Uranium (U)	ug/L	2.75	2.69	2.65	2.81	2.78	2.65	2.97	2.82	2.93	0.05	3507470
Dissolved Vanadium (V)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	3507470
Dissolved Zinc (Zn)	ug/L	0.9	0.9	1.1	0.8	0.9	0.8	1.6	0.9	1.1	0.5	3504843
Dissolved Calcium (Ca)	mg/L	431	427	431	450	440	442	461	454	465	1	3513297
Dissolved Magnesium (Mg)	mg/L	1300	1280	1300	1300	1330	1340	1400	1390	1420	1	3513297
Dissolved Potassium (K)	mg/L	391	383	389	401	401	402	418	410	421	1	3513297
Dissolved Sodium (Na)	mg/L	10800	10700	10800	10900	11100	11200	11700	11600	11800	1	3513297
Dissolved Sulphur (S)	mg/L	1070	1060	1060	1120	1100	1110	1160	1140	1170	20	3513297

RDL = Reportable Detection Limit

Maxxam Job #: A957010
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20212	R20213	R20214	R20215	R20216	R20217	R20218	R20219	R20220		
Sampling Date		2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23	2009/09/23		
	Units	**21397-01**	**21397-02**	**21397-03**	**21397-04**	**21397-05**	**21397-06**	**21397-07**	**21397-08**	**21397-09**	**RDL**	**QC Batch**
Total Metals by ICPMS												
Total Aluminum (Al)	ug/L	15	11	10	10	11	10	17	16	<10	10	3507483
Total Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	3507483
Total Arsenic (As)	ug/L	1.9	2.2	2.0	2.0	2.0	2.2	2.1	2.1	2.1	0.5	3507483
Total Barium (Ba)	ug/L	10	10	9	9	9	9	9	9	9	1	3507483
Total Beryllium (Be)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507483
Total Bismuth (Bi)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507483
Total Boron (B)	ug/L	3810	3940	3690	3800	3860	3930	3950	4010	3960	50	3507483
Total Cadmium (Cd)	ug/L	0.09	0.09	0.09	0.09	0.11	0.09	0.10	0.09	0.10	0.01	3504799
Total Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	3507483
Total Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	3504799
Total Copper (Cu)	ug/L	0.20	0.22	0.26	0.19	0.16	0.20	0.20	0.19	0.17	0.05	3504799
Total Iron (Fe)	ug/L	7	7	9	7	7	7	12	11	13	1	3504799
Total Lead (Pb)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	3504799
Total Lithium (Li)	ug/L	179	186	176	180	184	186	187	190	187	20	3507483
Total Manganese (Mn)	ug/L	2.5	2.4	2.4	2.3	2.4	2.4	2.6	2.4	2.7	0.2	3504799
Total Molybdenum (Mo)	ug/L	12	12	11	12	11	12	12	12	12	1	3507483
Total Nickel (Ni)	ug/L	0.65	0.62	0.51	0.58	0.65	0.74	0.58	0.70	0.65	0.05	3504799
Total Selenium (Se)	ug/L	0.6	0.6	1.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	3507483
Total Silicon (Si)	ug/L	2040	2090	1820	2440	2290	2000	2100	2130	1890	100	3507483
Total Silver (Ag)	ug/L	<0.05	<0.05	0.12	0.07	<0.05	<0.05	0.05	<0.05	<0.05	0.05	3507483
Total Strontium (Sr)	ug/L	7470	7650	7320	7510	7490	7540	7810	7840	7660	10	3507483
Total Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	3507483
Total Tin (Sn)	ug/L	1	<1	<1	<1	<1	<1	<1	<1	<1	1	3507483
Total Titanium (Ti)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	3507483
Total Uranium (U)	ug/L	2.80	3.01	2.80	2.87	2.85	2.88	2.96	3.08	2.91	0.05	3507483
Total Vanadium (V)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	3507483
Total Zinc (Zn)	ug/L	0.5	1.0	0.8	0.6	0.6	0.6	0.6	0.6	0.8	0.5	3504799
Total Calcium (Ca)	mg/L	437	437	427	456	443	447	478	451	447	1	3513296
Total Magnesium (Mg)	mg/L	1360	1350	1250	1370	1350	1370	1470	1400	1360	1	3513296
Total Potassium (K)	mg/L	400	395	382	409	397	405	432	413	404	1	3513296
Total Sodium (Na)	mg/L	11400	11300	10400	11500	11300	11400	9810	11600	11400	1	3513296
Total Sulphur (S)	mg/L	1090	1090	1070	1140	1100	1140	1210	1130	1110	20	3513296

RDL = Reportable Detection Limit

Maxxam Job #: A957010
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3504799	Total Cadmium (Cd)	2009/10/23	94	80 - 120	96	80 - 120	<0.01	ug/L	2.8	25
3504799	Total Cobalt (Co)	2009/10/23	99	80 - 120	97	80 - 120	<0.05	ug/L	NC	25
3504799	Total Copper (Cu)	2009/10/23	91	80 - 120	94	80 - 120	<0.05	ug/L	3.8	25
3504799	Total Lead (Pb)	2009/10/23	93	80 - 120	96	80 - 120	<0.05	ug/L	NC	25
3504799	Total Nickel (Ni)	2009/10/23	93	80 - 120	99	80 - 120	<0.05	ug/L	12.5	25
3504799	Total Zinc (Zn)	2009/10/23	92	80 - 120	97	80 - 120	<0.5	ug/L	NC	25
3504799	Total Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504799	Total Manganese (Mn)	2009/10/23					<0.2	ug/L	7.7	25
3504843	Dissolved Cadmium (Cd)	2009/10/23	95	80 - 120	95	80 - 120	<0.01	ug/L	1.3	25
3504843	Dissolved Cobalt (Co)	2009/10/23	101	80 - 120	102	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Copper (Cu)	2009/10/23	90	80 - 120	100	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Lead (Pb)	2009/10/23	94	80 - 120	98	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Nickel (Ni)	2009/10/23	98	80 - 120	104	80 - 120	<0.05	ug/L	0.5	25
3504843	Dissolved Zinc (Zn)	2009/10/23	91	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
3504843	Dissolved Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504843	Dissolved Manganese (Mn)	2009/10/23					<0.2	ug/L	1.3	25
3507470	Dissolved Arsenic (As)	2009/10/24	106	75 - 125	96	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Barium (Ba)	2009/10/24	103	75 - 125	101	75 - 125	<1	ug/L	0.3	25
3507470	Dissolved Beryllium (Be)	2009/10/24	99	75 - 125	105	75 - 125	<1	ug/L	NC	25
3507470	Dissolved Chromium (Cr)	2009/10/24	116	75 - 125	100	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Lithium (Li)	2009/10/24	NC	75 - 125	106	75 - 125	<20	ug/L	1.7	25
3507470	Dissolved Selenium (Se)	2009/10/24	118	75 - 125	107	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Strontium (Sr)	2009/10/24	NC	75 - 125	98	75 - 125	<10	ug/L	0.3	25
3507470	Dissolved Titanium (Ti)	2009/10/24	115	75 - 125	95	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Uranium (U)	2009/10/24	102	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507470	Dissolved Vanadium (V)	2009/10/24	119	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507470	Dissolved Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507470	Dissolved Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507470	Dissolved Boron (B)	2009/10/24					<50	ug/L	1.6	25
3507470	Dissolved Molybdenum (Mo)	2009/10/24					<1	ug/L	1.5	25
3507470	Dissolved Silicon (Si)	2009/10/24					<100	ug/L	1.9	25
3507470	Dissolved Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507470	Dissolved Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507470	Dissolved Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3507483	Total Arsenic (As)	2009/10/24	120	75 - 125	97	75 - 125	<0.5	ug/L	NC	25
3507483	Total Barium (Ba)	2009/10/24	105	75 - 125	101	75 - 125	<1	ug/L	3.9	25
3507483	Total Beryllium (Be)	2009/10/24	105	75 - 125	103	75 - 125	<1	ug/L	NC	25
3507483	Total Chromium (Cr)	2009/10/24	120	75 - 125	101	75 - 125	<0.5	ug/L	NC	25
3507483	Total Lithium (Li)	2009/10/24	NC	75 - 125	105	75 - 125	<20	ug/L	0.6	25

Maxxam Job #: A957010
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3507483	Total Selenium (Se)	2009/10/24	108	75 - 125	106	75 - 125	<0.5	ug/L	NC	25
3507483	Total Strontium (Sr)	2009/10/24	NC	75 - 125	95	75 - 125	<10	ug/L	0.9	25
3507483	Total Titanium (Ti)	2009/10/24	123	75 - 125	105	75 - 125	<10	ug/L	NC	25
3507483	Total Uranium (U)	2009/10/24	107	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507483	Total Vanadium (V)	2009/10/24	114	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507483	Total Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507483	Total Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507483	Total Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507483	Total Boron (B)	2009/10/24					<50	ug/L	1.7	25
3507483	Total Molybdenum (Mo)	2009/10/24					<1	ug/L	5.0	25
3507483	Total Silicon (Si)	2009/10/24					<100	ug/L	0.4	25
3507483	Total Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507483	Total Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507483	Total Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3513296	Total Calcium (Ca)	2009/10/24							2.4	25
3513296	Total Magnesium (Mg)	2009/10/24							4.8	25
3513296	Total Potassium (K)	2009/10/24							3.1	25
3513296	Total Sodium (Na)	2009/10/24							4.9	25
3513296	Total Sulphur (S)	2009/10/24							2.0	25
3513297	Dissolved Calcium (Ca)	2009/10/24					<1	mg/L	0.3	25
3513297	Dissolved Magnesium (Mg)	2009/10/24					<1	mg/L	3.2	25
3513297	Dissolved Potassium (K)	2009/10/24					<1	mg/L	0.5	25
3513297	Dissolved Sodium (Na)	2009/10/24					<1	mg/L	3.8	25
3513297	Dissolved Sulphur (S)	2009/10/24					<20	mg/L	0.1	25

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

A957018

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

No. 21397 page 1 of 1

Golder Associates
500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Maxxam
[redacted]		Address: 8577 Commerce Ct. Burnaby
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 604-444-4808 / Contact: Elaine Cousins

Office the final reports should be sent to: Quote: A80018

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Sample Control Number (SCN)	[redacted]	Sample Matrix (over)	Date Sampled (D/M/Y)	[redacted]	Number of Containers	Analyses Required: Total Metals	Marine Methods Dissolved Metals	Marine Methods Major cations Hardness								RUSH	Remarks (over)
21397 -01		H_2O	29/09/09		2	✓	✓	✓									PLS as per quote
21397 -02		"	"		2	✓	✓	✓									"
21397 -03		"	"		2	✓	✓	✓									"
21397 -04		"	"		2	✓	✓	✓									"
21397 -05		"	"		2	✓	✓	✓									"
21397 -06		"	"		2	✓	✓	✓									"
21397 -07		"	"		2	✓	✓	✓									"
21397 -08		"	"		2	✓	✓	✓									"
21397 -09		"	"		2	✓	✓	✓									"
-10																	
-11																	
-12																	

Attn Elaine Cousins

Sampler's Signature	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company
Virginia Chant	Virginia Chant	Golder	Oct. 6, 09	15:00		
Sample Storage (°C) 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company

Comments:	Method of Shipment:	Waybill No.:	Received for lab by:	Date	Time
	Courier	D007826618	[illegible]	09/10/07	9:20
	Shipped by: DHL	Shipment Condition: Seal Intact:	Temp (°C) 4.2 / Cooler opened by:	Date	Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Your Project #: 09-1421-0028
Your C.O.C. #: 21398

Attention: Cathy McPherson
Golder Associates Ltd.
4260 Still Creek Drive
Suite 500
Burnaby, BC
CANADA V5C 6C6

Report Date: 2009/10/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A957002
Received: 2009/10/07, 09:20

Sample Matrix: Sea Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness (calculated as CaCO3)	3	N/A	2009/10/26		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (dis) (1)	3	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Elements by CRC ICPMS (dissolved) (1)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (tot) (1)	3	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	2009/10/22	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Elements by CRC ICPMS (total) (1)	3	2009/10/22	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Filter and HNO3 Preserve for Metals	3	N/A	2009/10/13	BRN WI-00006 R1.0	Based on EPA 200.2

* Results relate only to the items tested.

(1) SCC/CAEAL

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ELAINE COUSINS, BBY CS Manager
Email: elaine.cousins@maxxamanalytics.com
Phone# (604) 444-4808 Ext:276

==========

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. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A957002
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

RESULTS OF CHEMICAL ANALYSES OF SEA WATER

Maxxam ID		R20187	R20188	R20189		
Sampling Date		2009/09/28	2009/09/28	2009/09/28		
	Units	**21398-01**	**21398-02**	**21398-03**	**RDL**	**QC Batch**
Preparation						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	N/A	ONSITE
Misc. Inorganics						
Dissolved Hardness (CaCO3)	mg/L	5900	6270	6730	0.5	3483410

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A957002
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20187	R20188	R20189		
Sampling Date		2009/09/28	2009/09/28	2009/09/28		
	Units	**21398-01**	**21398-02**	**21398-03**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS						
Dissolved Aluminum (Al)	ug/L	<10	<10	<10	10	3507470
Dissolved Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Arsenic (As)	ug/L	1.6	1.8	2.1	0.5	3507470
Dissolved Barium (Ba)	ug/L	10	9	10	1	3507470
Dissolved Beryllium (Be)	ug/L	<1	<1	<1	1	3507470
Dissolved Bismuth (Bi)	ug/L	<1	<1	<1	1	3507470
Dissolved Boron (B)	ug/L	3530	3720	3920	50	3507470
Dissolved Cadmium (Cd)	ug/L	0.08	0.09	0.09	0.01	3504843
Dissolved Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Copper (Cu)	ug/L	0.25	0.28	0.41	0.05	3504843
Dissolved Iron (Fe)	ug/L	2	3	3	1	3504843
Dissolved Lead (Pb)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Lithium (Li)	ug/L	169	174	183	20	3507470
Dissolved Manganese (Mn)	ug/L	2.0	2.3	2.4	0.2	3504843
Dissolved Molybdenum (Mo)	ug/L	10	11	12	1	3507470
Dissolved Nickel (Ni)	ug/L	0.58	0.64	0.61	0.05	3504843
Dissolved Selenium (Se)	ug/L	0.8	0.6	0.6	0.5	3507470
Dissolved Silicon (Si)	ug/L	1850	1980	2080	100	3507470
Dissolved Silver (Ag)	ug/L	0.06	<0.05	<0.05	0.05	3507470
Dissolved Strontium (Sr)	ug/L	6950	7220	7670	10	3507470
Dissolved Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	0.1	3507470
Dissolved Tin (Sn)	ug/L	<1	<1	<1	1	3507470
Dissolved Titanium (Ti)	ug/L	<10	<10	<10	10	3507470
Dissolved Uranium (U)	ug/L	2.59	2.61	2.86	0.05	3507470
Dissolved Vanadium (V)	ug/L	<10	<10	<10	10	3507470
Dissolved Zinc (Zn)	ug/L	0.5	1.1	2.5	0.5	3504843
Dissolved Calcium (Ca)	mg/L	411	422	450	1	3513297
Dissolved Magnesium (Mg)	mg/L	1190	1270	1360	1	3513297
Dissolved Potassium (K)	mg/L	366	380	407	1	3513297
Dissolved Sodium (Na)	mg/L	9820	10500	11300	1	3513297
Dissolved Sulphur (S)	mg/L	1020	1030	1120	20	3513297

RDL = Reportable Detection Limit

Maxxam Job #: A957002
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20187	R20188	R20189		
Sampling Date		2009/09/28	2009/09/28	2009/09/28		
	Units	**21398-01**	**21398-02**	**21398-03**	**RDL**	**QC Batch**
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	14	23	36	10	3507483
Total Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507483
Total Arsenic (As)	ug/L	1.6	2.0	2.2	0.5	3507483
Total Barium (Ba)	ug/L	9	9	9	1	3507483
Total Beryllium (Be)	ug/L	<1	<1	<1	1	3507483
Total Bismuth (Bi)	ug/L	<1	<1	<1	1	3507483
Total Boron (B)	ug/L	3320	3580	3860	50	3507483
Total Cadmium (Cd)	ug/L	0.08	0.09	0.07	0.01	3504799
Total Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	0.5	3507483
Total Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504799
Total Copper (Cu)	ug/L	0.28	0.20	0.64	0.05	3504799
Total Iron (Fe)	ug/L	4	11	21	1	3504799
Total Lead (Pb)	ug/L	0.06	<0.05	<0.05	0.05	3504799
Total Lithium (Li)	ug/L	160	172	185	20	3507483
Total Manganese (Mn)	ug/L	2.2	2.6	2.8	0.2	3504799
Total Molybdenum (Mo)	ug/L	10	11	11	1	3507483
Total Nickel (Ni)	ug/L	0.72	0.68	0.56	0.05	3504799
Total Selenium (Se)	ug/L	0.8	1.4	1.0	0.5	3507483
Total Silicon (Si)	ug/L	1660	1850	2280	100	3507483
Total Silver (Ag)	ug/L	<0.05	0.22	0.10	0.05	3507483
Total Strontium (Sr)	ug/L	6480	7060	7610	10	3507483
Total Thallium (Tl)	ug/L	<0.1	0.3	0.2	0.1	3507483
Total Tin (Sn)	ug/L	<1	3	2	1	3507483
Total Titanium (Ti)	ug/L	<10	<10	<10	10	3507483
Total Uranium (U)	ug/L	2.35	2.65	2.95	0.05	3507483
Total Vanadium (V)	ug/L	<10	<10	<10	10	3507483
Total Zinc (Zn)	ug/L	0.8	<0.5	0.7	0.5	3504799
Total Calcium (Ca)	mg/L	374	418	445	1	3513296
Total Magnesium (Mg)	mg/L	1100	1230	1360	1	3513296
Total Potassium (K)	mg/L	333	374	401	1	3513296
Total Sodium (Na)	mg/L	9170	10300	11300	1	3513296
Total Sulphur (S)	mg/L	932	1030	1110	20	3513296

RDL = Reportable Detection Limit

Maxxam Job #: A957002
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3504799	Total Cadmium (Cd)	2009/10/23	94	80 - 120	96	80 - 120	<0.01	ug/L	2.8	25
3504799	Total Cobalt (Co)	2009/10/23	99	80 - 120	97	80 - 120	<0.05	ug/L	NC	25
3504799	Total Copper (Cu)	2009/10/23	91	80 - 120	94	80 - 120	<0.05	ug/L	3.8	25
3504799	Total Lead (Pb)	2009/10/23	93	80 - 120	96	80 - 120	<0.05	ug/L	NC	25
3504799	Total Nickel (Ni)	2009/10/23	93	80 - 120	99	80 - 120	<0.05	ug/L	12.5	25
3504799	Total Zinc (Zn)	2009/10/23	92	80 - 120	97	80 - 120	<0.5	ug/L	NC	25
3504799	Total Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504799	Total Manganese (Mn)	2009/10/23					<0.2	ug/L	7.7	25
3504843	Dissolved Cadmium (Cd)	2009/10/23	95	80 - 120	95	80 - 120	<0.01	ug/L	1.3	25
3504843	Dissolved Cobalt (Co)	2009/10/23	101	80 - 120	102	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Copper (Cu)	2009/10/23	90	80 - 120	100	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Lead (Pb)	2009/10/23	94	80 - 120	98	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Nickel (Ni)	2009/10/23	98	80 - 120	104	80 - 120	<0.05	ug/L	0.5	25
3504843	Dissolved Zinc (Zn)	2009/10/23	91	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
3504843	Dissolved Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504843	Dissolved Manganese (Mn)	2009/10/23					<0.2	ug/L	1.3	25
3507470	Dissolved Arsenic (As)	2009/10/24	106	75 - 125	96	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Barium (Ba)	2009/10/24	103	75 - 125	101	75 - 125	<1	ug/L	0.3	25
3507470	Dissolved Beryllium (Be)	2009/10/24	99	75 - 125	105	75 - 125	<1	ug/L	NC	25
3507470	Dissolved Chromium (Cr)	2009/10/24	116	75 - 125	100	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Lithium (Li)	2009/10/24	NC	75 - 125	106	75 - 125	<20	ug/L	1.7	25
3507470	Dissolved Selenium (Se)	2009/10/24	118	75 - 125	107	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Strontium (Sr)	2009/10/24	NC	75 - 125	98	75 - 125	<10	ug/L	0.3	25
3507470	Dissolved Titanium (Ti)	2009/10/24	115	75 - 125	95	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Uranium (U)	2009/10/24	102	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507470	Dissolved Vanadium (V)	2009/10/24	119	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507470	Dissolved Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507470	Dissolved Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507470	Dissolved Boron (B)	2009/10/24					<50	ug/L	1.6	25
3507470	Dissolved Molybdenum (Mo)	2009/10/24					<1	ug/L	1.5	25
3507470	Dissolved Silicon (Si)	2009/10/24					<100	ug/L	1.9	25
3507470	Dissolved Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507470	Dissolved Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507470	Dissolved Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3507483	Total Arsenic (As)	2009/10/24	120	75 - 125	97	75 - 125	<0.5	ug/L	NC	25
3507483	Total Barium (Ba)	2009/10/24	105	75 - 125	101	75 - 125	<1	ug/L	3.9	25
3507483	Total Beryllium (Be)	2009/10/24	105	75 - 125	103	75 - 125	<1	ug/L	NC	25
3507483	Total Chromium (Cr)	2009/10/24	120	75 - 125	101	75 - 125	<0.5	ug/L	NC	25
3507483	Total Lithium (Li)	2009/10/24	NC	75 - 125	105	75 - 125	<20	ug/L	0.6	25

Maxxam Job #: A957002
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3507483	Total Selenium (Se)	2009/10/24	108	75 - 125	106	75 - 125	<0.5	ug/L	NC	25
3507483	Total Strontium (Sr)	2009/10/24	NC	75 - 125	95	75 - 125	<10	ug/L	0.9	25
3507483	Total Titanium (Ti)	2009/10/24	123	75 - 125	105	75 - 125	<10	ug/L	NC	25
3507483	Total Uranium (U)	2009/10/24	107	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507483	Total Vanadium (V)	2009/10/24	114	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507483	Total Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507483	Total Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507483	Total Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507483	Total Boron (B)	2009/10/24					<50	ug/L	1.7	25
3507483	Total Molybdenum (Mo)	2009/10/24					<1	ug/L	5.0	25
3507483	Total Silicon (Si)	2009/10/24					<100	ug/L	0.4	25
3507483	Total Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507483	Total Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507483	Total Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3513296	Total Calcium (Ca)	2009/10/24							2.4	25
3513296	Total Magnesium (Mg)	2009/10/24							4.8	25
3513296	Total Potassium (K)	2009/10/24							3.1	25
3513296	Total Sodium (Na)	2009/10/24							4.9	25
3513296	Total Sulphur (S)	2009/10/24							2.0	25
3513297	Dissolved Calcium (Ca)	2009/10/24					<1	mg/L	0.3	25
3513297	Dissolved Magnesium (Mg)	2009/10/24					<1	mg/L	3.2	25
3513297	Dissolved Potassium (K)	2009/10/24					<1	mg/L	0.5	25
3513297	Dissolved Sodium (Na)	2009/10/24					<1	mg/L	3.8	25
3513297	Dissolved Sulphur (S)	2009/10/24					<20	mg/L	0.1	25

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

A957002

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

No. 21398 page 1 of 1

Golder Associates

500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Maxxam	
[redacted]		Address: 8577 Commerce Ct, Burnaby	
Golder Contact: Cathy McPherson	Golder E-mail Address: cmcpherson @golder.com	Tel/Fax: 604-444-4808	Contact: Elaine Cousins

Office the final reports should be sent to: Quote: A80018

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Sample Control Number (SCN)	[redacted]	Sample Matrix (over)	Date Sampled (D/M/Y)	[redacted]	Number of Containers	Analyses Required: Total Metals	Marine Methods Dissolved Metals	Marine Methods Hydrocarbons Hardness							RUSH	Remarks (over)
21398 -01		H2O	28/09/09		2	✓	✓	✓								DLS as per quote
21398 -02		"	"		2	✓	✓	✓								"
21398 -03		"	"		2	✓	✓	✓								"
-04																
-05																
-06																
-07																
-08																
-09																
-10																
-11																
-12																

ATTN Elaine Cousins

Sampler's Signature: Virginia Chant	Relinquished by: Signature: Virginia Chant	Company: Golder	Date: Oct. 6, 09	Time: 15:00	Received by: Signature	Company
Sample Storage (°C): 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company

Comments:	Method of Shipment: Courier	Waybill No.: D007826618	Received for Lab by:	Date: 09/10/07	Time: 9:20	
	Shipped by: DHL	Shipment Condition: Seal Intact:	Temp (°C): 4.2	Cooler opened by:	Date	Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly *

Your Project #: 09-1421-0028
Your C.O.C. #: 21336

Attention: Cathy McPherson
Golder Associates Ltd.
4260 Still Creek Drive
Suite 500
Burnaby, BC
CANADA V5C 6C6

Report Date: 2009/10/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A957013
Received: 2009/10/07, 09:20

Sample Matrix: Sea Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness (calculated as CaCO3)	3	N/A	2009/10/26		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (dis) (1)	3	N/A	2009/10/23	BRN SOP-00206	Based on EPA 200.8
Elements by CRC ICPMS (dissolved) (1)	3	N/A	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Metals by Chelation CRC ICPMS (tot) (1)	3	N/A	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	2009/10/22	2009/10/24	BRN SOP-00206 R7.0	Based on EPA 200.8
Elements by CRC ICPMS (total) (1)	3	2009/10/22	2009/10/24	BRN SOP-00206	Based on EPA 200.8
Filter and HNO3 Preserve for Metals	3	N/A	2009/10/13	BRN WI-00006 R1.0	Based on EPA 200.2

* Results relate only to the items tested.

(1) SCC/CAEAL

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ELAINE COUSINS, BBY CS Manager
Email: elaine.cousins@maxxamanalytics.com
Phone# (604) 444-4808 Ext:276

==========

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. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Job #: A957013
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

RESULTS OF CHEMICAL ANALYSES OF SEA WATER

Maxxam ID		R20238	R20239	R20240		
Sampling Date		2009/10/06	2009/10/06	2009/10/06		
	Units	**21336-01**	**21336-02**	**21336-03**	**RDL**	**QC Batch**
Preparation						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	N/A	ONSITE
Misc. Inorganics						
Dissolved Hardness (CaCO3)	mg/L	6630	6620	7080	0.5	3483410

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A957013
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20238	R20239	R20240		
Sampling Date		2009/10/06	2009/10/06	2009/10/06		
	Units	**21336-01**	**21336-02**	**21336-03**	**RDL**	**QC Batch**
Dissolved Metals by ICPMS						
Dissolved Aluminum (Al)	ug/L	<10	<10	<10	10	3507470
Dissolved Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Arsenic (As)	ug/L	2.1	2.0	2.0	0.5	3507470
Dissolved Barium (Ba)	ug/L	10	9	9	1	3507470
Dissolved Beryllium (Be)	ug/L	<1	<1	<1	1	3507470
Dissolved Bismuth (Bi)	ug/L	<1	<1	<1	1	3507470
Dissolved Boron (B)	ug/L	3880	3810	3960	50	3507470
Dissolved Cadmium (Cd)	ug/L	0.10	0.09	0.09	0.01	3504843
Dissolved Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	0.5	3507470
Dissolved Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Copper (Cu)	ug/L	0.20	0.22	0.20	0.05	3504843
Dissolved Iron (Fe)	ug/L	2	2	2	1	3504843
Dissolved Lead (Pb)	ug/L	<0.05	<0.05	<0.05	0.05	3504843
Dissolved Lithium (Li)	ug/L	181	179	186	20	3507470
Dissolved Manganese (Mn)	ug/L	2.5	2.2	2.4	0.2	3504843
Dissolved Molybdenum (Mo)	ug/L	11	11	12	1	3507470
Dissolved Nickel (Ni)	ug/L	0.67	0.63	0.53	0.05	3504843
Dissolved Selenium (Se)	ug/L	<0.5	0.5	0.5	0.5	3507470
Dissolved Silicon (Si)	ug/L	1890	1850	1990	100	3507470
Dissolved Silver (Ag)	ug/L	<0.05	<0.05	<0.05	0.05	3507470
Dissolved Strontium (Sr)	ug/L	7340	7280	7740	10	3507470
Dissolved Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	0.1	3507470
Dissolved Tin (Sn)	ug/L	<1	<1	<1	1	3507470
Dissolved Titanium (Ti)	ug/L	<10	<10	<10	10	3507470
Dissolved Uranium (U)	ug/L	2.65	2.68	2.87	0.05	3507470
Dissolved Vanadium (V)	ug/L	<10	<10	<10	10	3507470
Dissolved Zinc (Zn)	ug/L	1.7	0.7	1.6	0.5	3504843
Dissolved Calcium (Ca)	mg/L	441	439	467	1	3513297
Dissolved Magnesium (Mg)	mg/L	1340	1340	1440	1	3513297
Dissolved Potassium (K)	mg/L	399	397	425	1	3513297
Dissolved Sodium (Na)	mg/L	11300	11200	12000	1	3513297
Dissolved Sulphur (S)	mg/L	1090	1090	1180	20	3513297

RDL = Reportable Detection Limit

Maxxam Job #: A957013
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

ELEMENTS BY ATOMIC SPECTROSCOPY (SEA WATER)

Maxxam ID		R20238	R20239	R20240		
Sampling Date		2009/10/06	2009/10/06	2009/10/06		
	Units	**21336-01**	**21336-02**	**21336-03**	**RDL**	**QC Batch**
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	<10	11	11	10	3507483
Total Antimony (Sb)	ug/L	<0.5	<0.5	<0.5	0.5	3507483
Total Arsenic (As)	ug/L	1.9	1.9	1.9	0.5	3507483
Total Barium (Ba)	ug/L	10	10	9	1	3507483
Total Beryllium (Be)	ug/L	<1	<1	<1	1	3507483
Total Bismuth (Bi)	ug/L	<1	<1	<1	1	3507483
Total Boron (B)	ug/L	3800	3930	3810	50	3507483
Total Cadmium (Cd)	ug/L	0.09	0.09	0.11	0.01	3504799
Total Chromium (Cr)	ug/L	<0.5	<0.5	<0.5	0.5	3507483
Total Cobalt (Co)	ug/L	<0.05	<0.05	<0.05	0.05	3504799
Total Copper (Cu)	ug/L	0.27	0.19	0.18	0.05	3504799
Total Iron (Fe)	ug/L	5	6	7	1	3504799
Total Lead (Pb)	ug/L	<0.05	<0.05	<0.05	0.05	3504799
Total Lithium (Li)	ug/L	177	186	180	20	3507483
Total Manganese (Mn)	ug/L	2.5	2.4	2.3	0.2	3504799
Total Molybdenum (Mo)	ug/L	11	11	11	1	3507483
Total Nickel (Ni)	ug/L	0.66	0.57	0.70	0.05	3504799
Total Selenium (Se)	ug/L	0.6	<0.5	0.6	0.5	3507483
Total Silicon (Si)	ug/L	1880	1830	2090	100	3507483
Total Silver (Ag)	ug/L	<0.05	<0.05	<0.05	0.05	3507483
Total Strontium (Sr)	ug/L	7210	7590	7410	10	3507483
Total Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	0.1	3507483
Total Tin (Sn)	ug/L	<1	<1	<1	1	3507483
Total Titanium (Ti)	ug/L	<10	<10	<10	10	3507483
Total Uranium (U)	ug/L	2.70	2.86	2.76	0.05	3507483
Total Vanadium (V)	ug/L	<10	<10	<10	10	3507483
Total Zinc (Zn)	ug/L	0.6	<0.5	1.5	0.5	3504799
Total Calcium (Ca)	mg/L	423	437	442	1	3513296
Total Magnesium (Mg)	mg/L	1290	1330	1350	1	3513296
Total Potassium (K)	mg/L	380	395	400	1	3513296
Total Sodium (Na)	mg/L	10700	11100	11200	1	3513296
Total Sulphur (S)	mg/L	1050	1090	1110	20	3513296

RDL = Reportable Detection Limit

Maxxam Job #: A957013
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3504799	Total Cadmium (Cd)	2009/10/23	94	80 - 120	96	80 - 120	<0.01	ug/L	2.8	25
3504799	Total Cobalt (Co)	2009/10/23	99	80 - 120	97	80 - 120	<0.05	ug/L	NC	25
3504799	Total Copper (Cu)	2009/10/23	91	80 - 120	94	80 - 120	<0.05	ug/L	3.8	25
3504799	Total Lead (Pb)	2009/10/23	93	80 - 120	96	80 - 120	<0.05	ug/L	NC	25
3504799	Total Nickel (Ni)	2009/10/23	93	80 - 120	99	80 - 120	<0.05	ug/L	12.5	25
3504799	Total Zinc (Zn)	2009/10/23	92	80 - 120	97	80 - 120	<0.5	ug/L	NC	25
3504799	Total Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504799	Total Manganese (Mn)	2009/10/23					<0.2	ug/L	7.7	25
3504843	Dissolved Cadmium (Cd)	2009/10/23	95	80 - 120	95	80 - 120	<0.01	ug/L	1.3	25
3504843	Dissolved Cobalt (Co)	2009/10/23	101	80 - 120	102	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Copper (Cu)	2009/10/23	90	80 - 120	100	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Lead (Pb)	2009/10/23	94	80 - 120	98	80 - 120	<0.05	ug/L	NC	25
3504843	Dissolved Nickel (Ni)	2009/10/23	98	80 - 120	104	80 - 120	<0.05	ug/L	0.5	25
3504843	Dissolved Zinc (Zn)	2009/10/23	91	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
3504843	Dissolved Iron (Fe)	2009/10/23					<1	ug/L	NC	25
3504843	Dissolved Manganese (Mn)	2009/10/23					<0.2	ug/L	1.3	25
3507470	Dissolved Arsenic (As)	2009/10/24	106	75 - 125	96	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Barium (Ba)	2009/10/24	103	75 - 125	101	75 - 125	<1	ug/L	0.3	25
3507470	Dissolved Beryllium (Be)	2009/10/24	99	75 - 125	105	75 - 125	<1	ug/L	NC	25
3507470	Dissolved Chromium (Cr)	2009/10/24	116	75 - 125	100	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Lithium (Li)	2009/10/24	NC	75 - 125	106	75 - 125	<20	ug/L	1.7	25
3507470	Dissolved Selenium (Se)	2009/10/24	118	75 - 125	107	75 - 125	<0.5	ug/L	NC	25
3507470	Dissolved Strontium (Sr)	2009/10/24	NC	75 - 125	98	75 - 125	<10	ug/L	0.3	25
3507470	Dissolved Titanium (Ti)	2009/10/24	115	75 - 125	95	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Uranium (U)	2009/10/24	102	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507470	Dissolved Vanadium (V)	2009/10/24	119	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507470	Dissolved Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507470	Dissolved Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507470	Dissolved Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507470	Dissolved Boron (B)	2009/10/24					<50	ug/L	1.6	25
3507470	Dissolved Molybdenum (Mo)	2009/10/24					<1	ug/L	1.5	25
3507470	Dissolved Silicon (Si)	2009/10/24					<100	ug/L	1.9	25
3507470	Dissolved Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507470	Dissolved Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507470	Dissolved Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3507483	Total Arsenic (As)	2009/10/24	120	75 - 125	97	75 - 125	<0.5	ug/L	NC	25
3507483	Total Barium (Ba)	2009/10/24	105	75 - 125	101	75 - 125	<1	ug/L	3.9	25
3507483	Total Beryllium (Be)	2009/10/24	105	75 - 125	103	75 - 125	<1	ug/L	NC	25
3507483	Total Chromium (Cr)	2009/10/24	120	75 - 125	101	75 - 125	<0.5	ug/L	NC	25
3507483	Total Lithium (Li)	2009/10/24	NC	75 - 125	105	75 - 125	<20	ug/L	0.6	25

Maxxam Job #: A957013
Report Date: 2009/10/26

Golder Associates Ltd.
Client Project #: 09-1421-0028

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3507483	Total Selenium (Se)	2009/10/24	108	75 - 125	106	75 - 125	<0.5	ug/L	NC	25
3507483	Total Strontium (Sr)	2009/10/24	NC	75 - 125	95	75 - 125	<10	ug/L	0.9	25
3507483	Total Titanium (Ti)	2009/10/24	123	75 - 125	105	75 - 125	<10	ug/L	NC	25
3507483	Total Uranium (U)	2009/10/24	107	75 - 125	104	75 - 125	<0.05	ug/L	1.5	25
3507483	Total Vanadium (V)	2009/10/24	114	75 - 125	98	75 - 125	<10	ug/L	NC	25
3507483	Total Aluminum (Al)	2009/10/24					<10	ug/L	NC	25
3507483	Total Antimony (Sb)	2009/10/24					<0.5	ug/L	NC	25
3507483	Total Bismuth (Bi)	2009/10/24					<1	ug/L	NC	25
3507483	Total Boron (B)	2009/10/24					<50	ug/L	1.7	25
3507483	Total Molybdenum (Mo)	2009/10/24					<1	ug/L	5.0	25
3507483	Total Silicon (Si)	2009/10/24					<100	ug/L	0.4	25
3507483	Total Silver (Ag)	2009/10/24					<0.05	ug/L	NC	25
3507483	Total Thallium (Tl)	2009/10/24					<0.1	ug/L	NC	25
3507483	Total Tin (Sn)	2009/10/24					<1	ug/L	NC	25
3513296	Total Calcium (Ca)	2009/10/24							2.4	25
3513296	Total Magnesium (Mg)	2009/10/24							4.8	25
3513296	Total Potassium (K)	2009/10/24							3.1	25
3513296	Total Sodium (Na)	2009/10/24							4.9	25
3513296	Total Sulphur (S)	2009/10/24							2.0	25
3513297	Dissolved Calcium (Ca)	2009/10/24					<1	mg/L	0.3	25
3513297	Dissolved Magnesium (Mg)	2009/10/24					<1	mg/L	3.2	25
3513297	Dissolved Potassium (K)	2009/10/24					<1	mg/L	0.5	25
3513297	Dissolved Sodium (Na)	2009/10/24					<1	mg/L	3.8	25
3513297	Dissolved Sulphur (S)	2009/10/24					<20	mg/L	0.1	25

N/A = Not Applicable
RPD = Relative Percent Difference
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 to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
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 not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

CHAIN-OF-CUSTODY RECORD/ANALYSIS REQUEST

ID 21336 page 1 of 1

Golder Associates

500–4260 Still Creek Drive
Burnaby, British Columbia, Canada V5C 6C6
Telephone: 604-298-6623 Fax: 604-298-5253

Project Number: 09-1421-0028		Laboratory Name: Maxxam
[redacted]		Address: 8577 Commerce Ct. Burnaby
Golder Contact: Cathy McPherson	Golder E-mail Address: CMcpherson @golder.com	Tel/Fax: 604-444-4808
		Contact: Elaine Cousins

Office the final reports should be sent to: Quote: A80018

- ☑ 500–4260 Still Creek Drive, Burnaby, BC V5C 6C6, Tel: 604-298-6623, Fax: 604-298-5253
- ☐ 202–2790 Gladwin Road, Abbotsford, BC V2T 4S8, Tel: 604-850-8786, Fax: 604-850-8756
- ☐ 2640 Douglas Street, Victoria, BC V8T 4M1, Tel: 250-881-7372, Fax: 250-881-7470

Sample Control Number (SCN)	[redacted]	Sample Matrix (over)	Date Sampled (D/M/Y)	[redacted]	Number of Containers	Analyses Required: Total Metals	Marine Methods Dissolved Metals	Marine Methods Major cations Hardness							RUSH	Remarks (over)
21336 -01		H_2O	06/10/09		2	✓	✓	✓								pls copy quote
21336 -02		"	"		2	✓	✓	✓								"
21336 -03		"	"		2	✓	✓	✓								"
-04																
-05																
-06																
-07																
-08																
-09																
-10																
-11																
-12																

Attn Elaine Cousins

Sampler's Signature	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company
Virginia Chant	Virginia Chant	Golder	Oct. 6, 09	15:00		
Sample Storage (°C) 4°C	Relinquished by: Signature	Company	Date	Time	Received by: Signature	Company

Comments:	Method of Shipment:	Waybill No.:	Received for Lab by:	Date	Time
	Courier	D007826618		09/10/07	9:20
	Shipped by: DHL	Shipment Condition: Seal Intact:	Temp (°C) 4A.2 Cooler opened by:	Date	Time

WHITE: Golder copy YELLOW: Lab copy PINK: Lab returns with Final Report * Bill CRD Directly*

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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