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April 15, 2014

Web Kassa
Environment Canada
401 Burrard Street
Vancouver, British Columbia
V6C 3S5

Re: Addendum to April 9, 2014 submission: *Summary of in situ and analytical water quality data collected as part of the Burnaby Lake coal recovery program (updated to April 4, 2014)*

Introduction

This letter summarizes the remaining analytical water quality data collected at the Burnaby Lake u/s - Site 3 and Burnaby Lake d/s – Site 1 stations on April 4, 2014. These data were collected at the end of the Burnaby Lake Coal Recovery Program, when coal recovery was complete and Quantum Murray LP (Quantum) began demobilizing from the site. When the original report was submitted to Environment Canada (EC) on April 9, 2014, only pH, hardness, metals, extractable petroleum hydrocarbons (EPH) and polycyclic aromatic hydrocarbon (PAH) results were available from the lab (CARO Analytical). Results for the remaining parameters (e.g. alkalinity, N, C, dissolved solids, sulphide, etc.) were not available until the afternoon of April 11, 2014. This letter briefly summarizes the additional data available as of April 11, 2014 and includes comparisons with water quality guidelines for the protection of freshwater aquatic life as follows (Table 1, Appendix 1):

- BC Approved Water Quality Guidelines (*updated to 2014*)
- Compendium of Working Water Quality Guidelines (*updated to 2006*)
- Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines – Summary Table (*updated to 2014*)

The results are also compared with the Ministry of Environment, Lands and Parks (MELP) 1998 *Guidelines for Interpreting Water Quality Data (Version 1)*.

Table 1: Sulphate, Sulphide, Chloride, C, N, alkalinity, conductivity, TDS and TSS data from Burnaby Lake upstream and downstream stations (April 4, 2014)

Parameter	Units	Method Detection Limit	Burnaby Lake d/s Site 1	Burnaby Lake u/s Site 3	BC Approved / Working Water Quality Guidelines	Guidelines for Interpreting Water Quality Data - BC	CCME Water Quality Guidelines
			04-Apr-14	04-Apr-14			
Alkalinity, T as CaCO ₃	mg/L	2	40	41	Total alkalinity >20 mg/L indicates low sensitivity to acid inputs	Natural waters typically show levels < 500 mg/L. Alkalinity in coastal BC typically ranges from 0 to 10 mg/L, while interior regions can have alkalinity values >100 mg/L	-
Alkalinity, Phenolphthalein as CaCO ₃	mg/L	2	<2	<2			
Alkalinity, Bicarbonate as CaCO ₃	mg/L	2	40	41			
Alkalinity, Carbonate as CaCO ₃	mg/L	2	<2	<2			
Alkalinity, Hydroxide as CaCO ₃	mg/L	2	<2	<2			
Electrical conductivity (EC)	us/cm	2	162	161	-	Specific conductivity - natural waters may vary from 50 to 1500 us/cm. Coastal BC streams have specific conductivity values of roughly 100 µS/cm. Interior streams range up to 500 us/cm	-
Chloride	mg/L	0.1	21.6	21.4	150 (30d avg) 600 (max)	Avg chloride levels in natural freshwater systems roughly 8.3 mg/L	120 (long term) / 640 short term
Nitrogen, Nitrate as N	mg/L	0.01	0.438	0.428	3 to 32.8	Without anthropogenic inputs most surface waters show <0.3 mg/L nitrate	13 to 550
Nitrogen, Nitrite as N	mg/L	0.01	<0.010	<0.010	0.02 to 0.06	Normally present at trace levels in surface waters (<0.001 mg/L)	0.06
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	0.438	0.428	-	-	-
Nitrogen, Ammonia as N, Total	mg/L	0.02	0.042	0.055	Max 20.5 @ pH 6.97 and 9.69 C (A)	Natural waters typically have ammonia concentrations <0.1 mg/L	8.47@ pH 6.97 and 9.69 C (A)

(A) pH and temperature from Site 1 Sonde dataset - April 4, 2014

Table 1: Sulphate, Sulphide, Chloride, C, N, alkalinity, conductivity, TDS and TSS data from Burnaby Lake upstream and downstream stations (April 4, 2014)

Parameter	Units	Method Detection Limit	Burnaby Lake d/s Site 1	Burnaby Lake u/s Site 3	BC Approved / Working Water Quality Guidelines	Guidelines for Interpreting Water Quality Data - BC	CCME Water Quality Guidelines
			04-Apr-14	04-Apr-14			
Sulphate	mg/L	1	4.6	4.8	218 (30d avg) @ hardness ranging from 31 to 75 mg/L	-	-
Sulfide, Total	mg/L	0.01	0.02	0.02	As H_2S (2ug/L) detected by scent in air (2 ppb); in water at 0.025 to 0.25 ug/L	-	-
Carbon, Total Organic	mg/L	0.5	7.2	7.1	30-day median $\pm$ 20% of the median background concentration	The range in natural waters may vary from 1 mg /L to 30 mg/L	-
Carbon, Diss. Organic	mg/L	0.5	6.7	6.6		-	-
Carbon, Diss. Inorganic	mg/L	0.5	7.4	7.5	-	-	-
Solids, Total Dissolved	mg/L	10	107	117	-	Values in fresh water range from 0-1,000 mg/L; Coastal BC streams typically have dissolved solids <75 mg/L	-
Solids, Total Suspended	mg/L	2	2	6	Change from background of 25 mg/L at any one time for 24h in all waters during clear flows / in clear waters	-	Clear flow Maximum increase of 25 mg/L from background for any short-term exposure (e.g. 24-h)

If you have any questions, comments or concerns about this letter please feel free to contact the undersigned at 604-790-6915, 250-318-0247 or Karla.Graf@cn.ca

Yours truly,



Karla Graf, Environmental Specialist / PM
Bach. Env. Eng., Dip. T. RRM.
Cert. Tech. Comm.

References and information sources

CCME (2014) Water Quality Guidelines for the Protection of Aquatic Life – Summary Table <http://st-ts.ccme.ca/?chems=all&chapters=1>

MELP (1998) Guidelines for Interpreting Water Quality Data (Version 1.0)
<http://www.for.gov.bc.ca/hts/risc/pubs/aquatic/interp/intrptoc.htm>

MOE (2006) A Compendium of Working Water Quality Guidelines
<http://www.env.gov.bc.ca/wat/wq/BCguidelines/working.html>

MOE (2003) Ambient Water Quality Criteria for Chloride
<http://www.env.gov.bc.ca/wat/wq/BCguidelines/chloride/chloride.html>

MOE (2009) Water Quality Guidelines for Nitrogen (Nitrate, Nitrite, and Ammonia)
<http://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do;jsessionid=knxMTzVbYJqYJDS1BxBbHJrdzgyVJ4XXLTGzF93q0T9RTRkN3whz!-270631733?subdocumentId=9021>

MOE (2013) Ambient Water Quality Guidelines For Sulphate
http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html

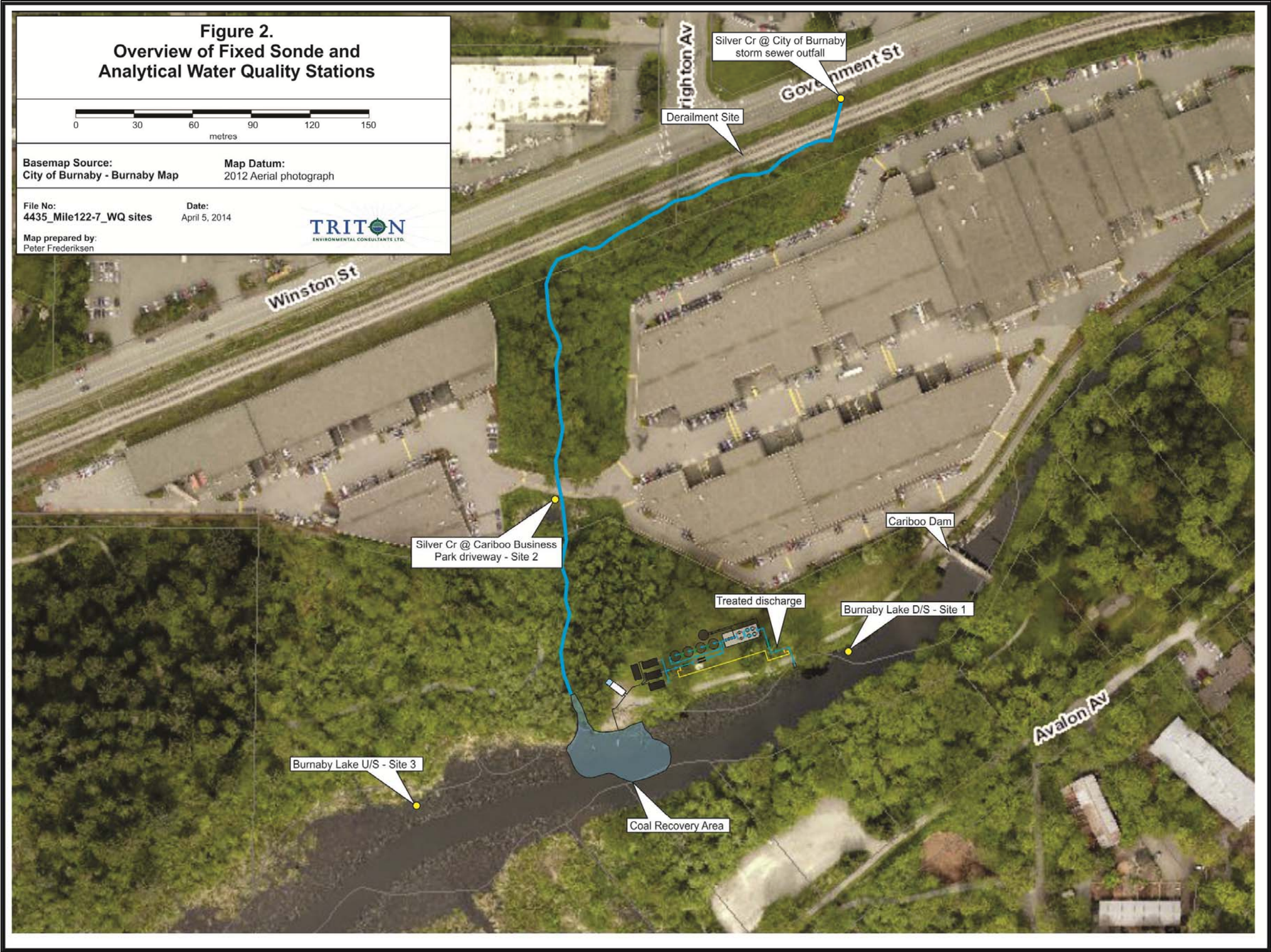
MOE (2001) Ambient Water Quality Guidelines (Criteria) for Turbidity, Suspended and Benthic Sediments
<http://www.env.gov.bc.ca/wat/wq/BCguidelines/turbidity/turbidity.html>

APPENDIX 1: TABULATED ANALYTICAL DATA: C, N, alkalinity, chloride, sulphide, sulphate, TDS, TSS and electrical conductivity in Burnaby Lake and Silver Creek (through April 4, 2014)

Parameter	Units	Method Detection Limits	Burnaby Lake U/S - Site 3 - u/s of coal recovery area and derailment				Burnaby Lake D/S - Site 1 - d/s of coal recovery area and derailment						Silver Creek @ Cariboo Business Park Driveway		Silver Creek @ City Burnaby Outfall	BC Approved / Working Water Quality Guidelines	CCME Water Quality Guidelines
			02-Mar-14	07-Mar-14	12-Mar-14	04-Apr-14	02-Mar-14	07-Mar-14	12-Mar-14	20-Mar-14	28-Mar-14	04-Apr-14	02-Mar-14	07-Mar-14	07-Mar-14		
Alkalinity, Total as CaCO ₃	mg/L	2	43	29	33	41	42	27	35	34	35	40	29	24	24	Total alkalinity >20 mg/L indicates low sensitivity to acid inputs	-
Alkalinity, Phenolphthalein as CaCO ₃	mg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Alkalinity, Bicarbonate as CaCO ₃	mg/L	2	43	29	33	41	42	27	35	34	35	40	29	24	24		
Alkalinity, Carbonate as CaCO ₃	mg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Alkalinity, Hydroxide as CaCO ₃	mg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
Chloride	mg/L	1	152	23.6	23.3	21.4	165	27.7	23.3	21.5	20.1	21.6	1,010	35	34.8	150 (30d avg) 600 (max)	120 (long term)
																	640 (short term)
Nitrogen, Nitrate as N	mg/L	0.01	0.628	-	0.624	0.428	0.623	-	0.61	0.582	0.387	0.438	0.548	-	1.25	3 to 32.8	13 to 550
Nitrogen, Nitrite as N	mg/L	0.01	<0.010	-	<0.010	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.01	0.02 to 0.06	0.06
Nitrogen, Ammonia as N, Total	mg/L	0.02	0.119	0.034	<0.020	0.055	0.109	0.025	<0.020	0.066	0.048	0.042	0.38	0.033	0.167	17.3 (max) to 20.5 (max)	3.98 to 12.58
Nitrate + Nitrite as N	mg/L	0.02	0.628	0.62	0.624	0.428	0.623	-	0.61	0.582	0.387	0.438	0.548	1.28	-	-	-
Sulphate	mg/L	1	6.5	3.9	5	4.8	6.4	3.9	4.7	4.5	4.1	4.6	8.9	3.6	3.6	218 (30 d avg) for hardness ranging from 31 to 75 mg/L)	-
Sulphide	mg/L	0.01	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.03	0.02	0.03	As H₂S (2ug/L) detected by scent in air (2 ppb); in water at 0.025 to 0.25 ug/L	-
Carbon, Total Organic	mg/L	0.5	7	6.4	8.9	7.1	7.6	6.1	6.7	3.3	7.5	7.2	10.2	4.2	4.1	30-day median ± 20% of the median background concentration	-
Carbon, Diss Inorganic	mg/L	0.5	8.2	4.8	7.1	7.5	8.2	-	7.6	5.9	6.6	7.4	5	4	4	-	-
Carbon, Diss Organic	mg/L	0.5	6.5	5.8	8.5	6.6	6.6	4.9	6.4	3.2	6.2	6.7	6	3.9	3.9	30-day median ± 20% of the median background concentration	-
Solids, Total Dissolved	mg/L	10	323	94	78	117	347	96	96	99	82	107	1880	102	109	-	-

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Parameter	Units	Method Detection Limits	Burnaby Lake U/S - Site 3 - u/s of coal recovery area and derailment				Burnaby Lake D/S - Site 1 - d/s of coal recovery area and derailment						Silver Creek @ Cariboo Business Park Driveway		Silver Creek @ City Burnaby Outfall	BC Approved / Working Water Quality Guidelines	CCME Water Quality Guidelines
			02-Mar-14	07-Mar-14	12-Mar-14	04-Apr-14	02-Mar-14	07-Mar-14	12-Mar-14	20-Mar-14	28-Mar-14	04-Apr-14	02-Mar-14	07-Mar-14	07-Mar-14		
Solids, Total Susp	mg/L	2	<2	4	<2	6	2	4	<2	2	12	2	53	<2	3	Change from background of 25 mg/L at any one time for 24h in all waters during clear flows / in clear waters	Clear flow: Maximum increase of 25 mg/L from background for any short-term exposure (e.g. 24-h)
Conductivity (EC)	us/cm	-	-	-	-	161	-	-	-	-	-	162	-	-	-	-	-



REPORTED TO	Triton Environmental Consultants Ltd. (Richmond) 8971 Beckwith Road Richmond, BC V6X 1V4	TEL	(604) 279-2093
		FAX	(604) 279-2047
ATTENTION	Peter Frederiksen	WORK ORDER	4040312
PO NUMBER		RECEIVED / TEMP	Apr-04-14 11:04 / 9°C
PROJECT	4435-029	REPORTED	Apr-11-14
PROJECT INFO	BLCRP	COC NUMBER	40837.5581

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

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



Issued By:

Jennifer Shanko, ASCT For Brent Coates, BSc
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www.caro.ca

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analysis Description	Method Reference (* = modified from)		Location
	Preparation	Analysis	
Alkalinity, speciated	N/A	APHA 2320 B	Richmond
Ammonia-N, total colorimetric	N/A	APHA 4500-NH ₃ G	Kelowna
Calculated Parameters	N/A	APHA 2340B	Richmond
Carbon, Dissolved Inorganic	N/A	APHA 5310 B	Kelowna
Carbon, Dissolved Organic	N/A	APHA 5310 B	Kelowna
Carbon, Total Organic in Water	N/A	APHA 5310 B	Kelowna
Chloride in Water by IC	N/A	APHA 4110 B	Kelowna
Conductivity in Water	N/A	APHA 2510 B	Richmond
Dissolved Metals	APHA 3030 B	APHA 3125 B	Richmond
EPH in Water	EPA 3510C	BCMOE	Richmond
Hardness as CaCO ₃ (CALC)	N/A	APHA 2340 B	Richmond
L/HEPH in Water Pkg	N/A	BCMOE	Richmond
Nitrate-N in Water by IC	N/A	APHA 4110 B	Kelowna
Nitrite-N in Water by IC	N/A	APHA 4110 B	Kelowna
PAH in Water (low)	EPA 3510C	EPA 8270D (2007)	Richmond
pH in Water	N/A	APHA 4500-H+ B	Richmond
Sulfate in Water by IC	N/A	APHA 4110 B	Kelowna
Total Dissolved Solids (GRAV)	N/A	APHA 2540 C	Richmond
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	Richmond
Total Sulfide in Water	N/A	APHA 4500-S ₂ D	Edmonton
Total Suspended Solids	N/A	APHA 2540 D *	Richmond

Note: The numbers in brackets represent the year that the method was published/approved

Method Reference Descriptions:

BCMOE	British Columbia Environmental Laboratory Manual, 2009, British Columbia Ministry of Environment
APHA	Standard Methods for the Examination of Water and Wastewater, American Public Health Association
EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL	Method Reporting Limit
<	Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
MAC	Maximum acceptable concentration (health-related guideline)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
ug/L	Micrograms per litre
uS/cm	Microsiemens per centimeter

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake d/s Site 1 (4040312-01) [Water] Sampled: Apr-04-14 09:30

Anions

Alkalinity, Total as CaCO ₃	40	2	mg/L	N/A	Apr-08-14	
Alkalinity, Phenolphthalein as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Alkalinity, Bicarbonate as CaCO ₃	40	2	mg/L	N/A	Apr-08-14	
Alkalinity, Carbonate as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Alkalinity, Hydroxide as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Chloride	21.6	0.10	mg/L	N/A	Apr-05-14	
Nitrogen, Nitrate as N	0.438	0.010	mg/L	N/A	Apr-05-14	
Nitrogen, Nitrite as N	< 0.010	0.010	mg/L	N/A	Apr-05-14	
Sulfate	4.6	1.0	mg/L	N/A	Apr-05-14	

General Parameters

Carbon, Total Organic	7.2	0.5	mg/L	N/A	Apr-04-14	
Carbon, Dissolved Inorganic	7.4	0.5	mg/L	N/A	Apr-09-14	
Carbon, Dissolved Organic	6.7	0.5	mg/L	N/A	Apr-04-14	
Conductivity (EC)	162	2	uS/cm	N/A	Apr-04-14	
Nitrogen, Ammonia as N, Total	0.042	0.020	mg/L	N/A	Apr-07-14	
pH	6.96	0.01	pH units	N/A	Apr-04-14	
Solids, Total Dissolved	107	10	mg/L	N/A	Apr-09-14	
Solids, Total Suspended	2	2	mg/L	N/A	Apr-08-14	
Sulfide	0.02	0.01	mg/L	N/A	Apr-11-14	

Calculated Parameters

LEPHw	< 100	100	ug/L	N/A	N/A	
HEPHw	< 100	100	ug/L	N/A	N/A	
Total PAH	< 0.05	0.05	ug/L	N/A	N/A	
Hardness, Total (Total as CaCO ₃)	41.8	0.1	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	42	0.1	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.438	0.020	mg/L	N/A	N/A	

Dissolved Metals

Aluminum, dissolved	37	1	ug/L	N/A	Apr-04-14	
Antimony, dissolved	0.4	0.05	ug/L	N/A	Apr-04-14	
Arsenic, dissolved	0.60	0.05	ug/L	N/A	Apr-04-14	
Barium, dissolved	16.1	0.1	ug/L	N/A	Apr-04-14	
Beryllium, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Bismuth, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Boron, dissolved	11	1	ug/L	N/A	Apr-04-14	
Cadmium, dissolved	0.010	0.002	ug/L	N/A	Apr-04-14	
Calcium, dissolved	13100	40	ug/L	N/A	Apr-04-14	
Chromium, dissolved	0.3	0.1	ug/L	N/A	Apr-04-14	
Cobalt, dissolved	0.119	0.005	ug/L	N/A	Apr-04-14	
Copper, dissolved	2.7	0.1	ug/L	N/A	Apr-04-14	
Iron, dissolved	358	2	ug/L	N/A	Apr-04-14	
Lead, dissolved	0.48	0.05	ug/L	N/A	Apr-04-14	
Lithium, dissolved	0.30	0.05	ug/L	N/A	Apr-04-14	
Magnesium, dissolved	2150	5	ug/L	N/A	Apr-04-14	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake d/s Site 1 (4040312-01) [Water] Sampled: Apr-04-14 09:30, Continued

Dissolved Metals, Continued

Manganese, dissolved	52.4	0.05	ug/L	N/A	Apr-04-14	
Mercury, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Molybdenum, dissolved	0.84	0.01	ug/L	N/A	Apr-04-14	
Nickel, dissolved	0.49	0.02	ug/L	N/A	Apr-04-14	
Phosphorus, dissolved	11	10	ug/L	N/A	Apr-04-14	
Potassium, dissolved	1360	10	ug/L	N/A	Apr-04-14	
Selenium, dissolved	< 0.1	0.1	ug/L	N/A	Apr-04-14	
Silicon, dissolved	3370	50	ug/L	N/A	Apr-04-14	
Silver, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Sodium, dissolved	14800	10	ug/L	N/A	Apr-04-14	
Strontium, dissolved	76.9	0.1	ug/L	N/A	Apr-04-14	
Sulfur, dissolved	1640	500	ug/L	N/A	Apr-04-14	
Tellurium, dissolved	< 0.05	0.05	ug/L	N/A	Apr-04-14	
Thallium, dissolved	< 0.004	0.004	ug/L	N/A	Apr-04-14	
Thorium, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Tin, dissolved	< 0.05	0.05	ug/L	N/A	Apr-04-14	
Titanium, dissolved	0.8	0.2	ug/L	N/A	Apr-04-14	
Uranium, dissolved	0.020	0.001	ug/L	N/A	Apr-04-14	
Vanadium, dissolved	0.4	0.2	ug/L	N/A	Apr-04-14	
Zinc, dissolved	8	1	ug/L	N/A	Apr-04-14	
Zirconium, dissolved	0.07	0.01	ug/L	N/A	Apr-04-14	

Total Recoverable Metals

Aluminum, total	124	1	ug/L	Apr-04-14	Apr-04-14	
Antimony, total	0.4	0.05	ug/L	Apr-04-14	Apr-04-14	
Arsenic, total	0.72	0.05	ug/L	Apr-04-14	Apr-04-14	
Barium, total	17.1	0.1	ug/L	Apr-04-14	Apr-04-14	
Beryllium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Bismuth, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Boron, total	14	1	ug/L	Apr-04-14	Apr-04-14	
Cadmium, total	0.014	0.002	ug/L	Apr-04-14	Apr-04-14	
Calcium, total	13200	40	ug/L	Apr-04-14	Apr-04-14	
Chromium, total	0.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Cobalt, total	0.148	0.005	ug/L	Apr-04-14	Apr-04-14	
Copper, total	3.3	0.1	ug/L	Apr-04-14	Apr-04-14	
Iron, total	580	2	ug/L	Apr-04-14	Apr-04-14	
Lead, total	0.95	0.05	ug/L	Apr-04-14	Apr-04-14	
Lithium, total	0.33	0.05	ug/L	Apr-04-14	Apr-04-14	
Magnesium, total	2170	5.0	ug/L	Apr-04-14	Apr-04-14	
Manganese, total	58.3	0.05	ug/L	Apr-04-14	Apr-04-14	
Mercury, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Molybdenum, total	0.79	0.01	ug/L	Apr-04-14	Apr-04-14	
Nickel, total	0.57	0.02	ug/L	Apr-04-14	Apr-04-14	
Phosphorus, total	20	10	ug/L	Apr-04-14	Apr-04-14	
Potassium, total	1380	10	ug/L	Apr-04-14	Apr-04-14	
Selenium, total	< 0.1	0.1	ug/L	Apr-04-14	Apr-04-14	

SAMPLE ANALYTICAL DATA

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4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake d/s Site 1 (4040312-01) [Water] Sampled: Apr-04-14 09:30, Continued

Total Recoverable Metals, Continued

Silicon, total	3600	50	ug/L	Apr-04-14	Apr-04-14	
Silver, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Sodium, total	14900	10	ug/L	Apr-04-14	Apr-04-14	
Strontium, total	76.6	0.1	ug/L	Apr-04-14	Apr-04-14	
Sulfur, total	1400	500	ug/L	Apr-04-14	Apr-04-14	
Tellurium, total	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Thallium, total	< 0.004	0.004	ug/L	Apr-04-14	Apr-04-14	
Thorium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Tin, total	0.08	0.05	ug/L	Apr-04-14	Apr-04-14	
Titanium, total	3.6	0.2	ug/L	Apr-04-14	Apr-04-14	
Uranium, total	0.023	0.001	ug/L	Apr-04-14	Apr-04-14	
Vanadium, total	0.7	0.2	ug/L	Apr-04-14	Apr-04-14	
Zinc, total	10	1	ug/L	Apr-04-14	Apr-04-14	
Zirconium, total	0.13	0.01	ug/L	Apr-04-14	Apr-04-14	

Aggregate Organic Parameters

EPHw (10-19)	< 100	100	ug/L	Apr-04-14	Apr-04-14	
EPHw (19-32)	< 100	100	ug/L	Apr-04-14	Apr-04-14	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Acenaphthylene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Acridine	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Anthracene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (a) anthracene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (a) pyrene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (b) fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Benzo (g,h,i) perylene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Benzo (k) fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Chrysene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Dibenz (a,h) anthracene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Fluorene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Indeno (1,2,3-cd) pyrene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Naphthalene	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Phenanthrene	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Pyrene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Quinoline	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Surrogate: Naphthalene-d8	64 %	40-96		Apr-04-14	Apr-04-14	
Surrogate: Acenaphthene-d10	66 %	45-92		Apr-04-14	Apr-04-14	
Surrogate: Phenanthrene-d10	69 %	48-90		Apr-04-14	Apr-04-14	
Surrogate: Chrysene-d12	70 %	41-96		Apr-04-14	Apr-04-14	
Surrogate: Perylene-d12	68 %	47-104		Apr-04-14	Apr-04-14	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake d/s Site 1 - Laboratory Duplicate Metals (4040312-02) [Water] Sampled:
Apr-04-14 08:45

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	41.7	0.1	mg/L	N/A	N/A	
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Total Recoverable Metals

Aluminum, total	119	1	ug/L	Apr-04-14	Apr-04-14	
Antimony, total	0.4	0.05	ug/L	Apr-04-14	Apr-04-14	
Arsenic, total	0.71	0.05	ug/L	Apr-04-14	Apr-04-14	
Barium, total	17.2	0.1	ug/L	Apr-04-14	Apr-04-14	
Beryllium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Bismuth, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Boron, total	13	1	ug/L	Apr-04-14	Apr-04-14	
Cadmium, total	0.015	0.002	ug/L	Apr-04-14	Apr-04-14	
Calcium, total	13100	40	ug/L	Apr-04-14	Apr-04-14	
Chromium, total	0.4	0.1	ug/L	Apr-04-14	Apr-04-14	
Cobalt, total	0.149	0.005	ug/L	Apr-04-14	Apr-04-14	
Copper, total	3.3	0.1	ug/L	Apr-04-14	Apr-04-14	
Iron, total	582	2	ug/L	Apr-04-14	Apr-04-14	
Lead, total	0.94	0.05	ug/L	Apr-04-14	Apr-04-14	
Lithium, total	0.32	0.05	ug/L	Apr-04-14	Apr-04-14	
Magnesium, total	2170	5.0	ug/L	Apr-04-14	Apr-04-14	
Manganese, total	58.4	0.05	ug/L	Apr-04-14	Apr-04-14	
Molybdenum, total	0.81	0.01	ug/L	Apr-04-14	Apr-04-14	
Nickel, total	0.55	0.02	ug/L	Apr-04-14	Apr-04-14	
Phosphorus, total	21	10	ug/L	Apr-04-14	Apr-04-14	
Potassium, total	1370	10	ug/L	Apr-04-14	Apr-04-14	
Selenium, total	< 0.1	0.1	ug/L	Apr-04-14	Apr-04-14	
Silicon, total	3600	50	ug/L	Apr-04-14	Apr-04-14	
Silver, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Sodium, total	14800	10	ug/L	Apr-04-14	Apr-04-14	
Strontium, total	76.6	0.1	ug/L	Apr-04-14	Apr-04-14	
Sulfur, total	1500	500	ug/L	Apr-04-14	Apr-04-14	
Tellurium, total	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Thallium, total	< 0.004	0.004	ug/L	Apr-04-14	Apr-04-14	
Thorium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Tin, total	0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Titanium, total	4.6	0.2	ug/L	Apr-04-14	Apr-04-14	
Uranium, total	0.023	0.001	ug/L	Apr-04-14	Apr-04-14	
Vanadium, total	0.7	0.2	ug/L	Apr-04-14	Apr-04-14	
Zinc, total	10	1	ug/L	Apr-04-14	Apr-04-14	
Zirconium, total	0.14	0.01	ug/L	Apr-04-14	Apr-04-14	

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
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Apr-11-14

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup):** Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS):** A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM):** A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Aggregate Organic Parameters, Batch B4D0121									
Blank (B4D0121-BLK1) Prepared: Apr-04-14, Analyzed: Apr-04-14									
EPHw (10-19)	< 100	100 ug/L							
EPHw (19-32)	< 100	100 ug/L							
LCS (B4D0121-BS2) Prepared: Apr-04-14, Analyzed: Apr-04-14									
EPHw (10-19)	2750	100 ug/L	3470		79	63-123			
EPHw (19-32)	3960	100 ug/L	4970		80	51-102			
Anions, Batch B4D0235									
Blank (B4D0235-BLK1) Prepared: Apr-05-14, Analyzed: Apr-05-14									
Chloride	< 0.10	0.10 mg/L							
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L							
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
Blank (B4D0235-BLK2) Prepared: Apr-05-14, Analyzed: Apr-05-14									
Chloride	< 0.10	0.10 mg/L							
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L							
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
LCS (B4D0235-BS1) Prepared: Apr-05-14, Analyzed: Apr-05-14									
Chloride	11.5	0.10 mg/L	12.0		96	85-115			
Nitrogen, Nitrate as N	3.99	0.010 mg/L	4.00		100	85-115			
Nitrogen, Nitrite as N	1.96	0.010 mg/L	2.00		98	85-115			
Sulfate	11.5	1.0 mg/L	12.0		96	85-115			
LCS (B4D0235-BS2) Prepared: Apr-05-14, Analyzed: Apr-05-14									
Chloride	11.6	0.10 mg/L	12.0		97	85-115			
Nitrogen, Nitrate as N	4.01	0.010 mg/L	4.00		100	85-115			
Nitrogen, Nitrite as N	1.99	0.010 mg/L	2.00		100	85-115			
Sulfate	11.5	1.0 mg/L	12.0		96	85-115			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Anions, Batch B4D0235, Continued

Duplicate (B4D0235-DUP1)	Source: 4040312-01		Prepared: Apr-05-14, Analyzed: Apr-05-14						
Chloride	21.7	0.10 mg/L		21.6			< 1	10	
Nitrogen, Nitrate as N	0.438	0.010 mg/L		0.438			< 1	10	
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L		< 0.010				10	
Sulfate	4.6	1.0 mg/L		4.6				10	

Anions, Batch B4D0274

Blank (B4D0274-BLK1)	Prepared: Apr-08-14, Analyzed: Apr-08-14								
Alkalinity, Total as CaCO ₃	< 2	2 mg/L							
Alkalinity, Phenolphthalein as CaCO ₃	< 2	2 mg/L							
Alkalinity, Bicarbonate as CaCO ₃	< 2	2 mg/L							
Alkalinity, Carbonate as CaCO ₃	< 2	2 mg/L							
Alkalinity, Hydroxide as CaCO ₃	< 2	2 mg/L							

LCS (B4D0274-BS1)	Prepared: Apr-08-14, Analyzed: Apr-08-14								
Alkalinity, Total as CaCO ₃	2350	2 mg/L	2500	94	81-109				

Duplicate (B4D0274-DUP1)	Source: 4040312-01		Prepared: Apr-08-14, Analyzed: Apr-08-14						
Alkalinity, Total as CaCO ₃	41	2 mg/L		40			2	12	
Alkalinity, Phenolphthalein as CaCO ₃	< 2	2 mg/L		< 2				12	
Alkalinity, Bicarbonate as CaCO ₃	41	2 mg/L		40			2	12	
Alkalinity, Carbonate as CaCO ₃	< 2	2 mg/L		< 2				12	
Alkalinity, Hydroxide as CaCO ₃	< 2	2 mg/L		< 2				12	

Dissolved Metals, Batch B4D0165

Blank (B4D0165-BLK1)	Prepared: Apr-04-14, Analyzed: Apr-04-14								
Aluminum, dissolved	< 1	1 ug/L							
Antimony, dissolved	< 0.05	0.05 ug/L							
Arsenic, dissolved	< 0.05	0.05 ug/L							
Barium, dissolved	< 0.1	0.1 ug/L							
Beryllium, dissolved	< 0.01	0.01 ug/L							
Bismuth, dissolved	< 0.01	0.01 ug/L							
Boron, dissolved	< 1	1 ug/L							
Cadmium, dissolved	< 0.002	0.002 ug/L							
Calcium, dissolved	< 40	40 ug/L							
Chromium, dissolved	< 0.1	0.1 ug/L							
Cobalt, dissolved	< 0.005	0.005 ug/L							
Copper, dissolved	< 0.1	0.1 ug/L							
Iron, dissolved	< 2	2 ug/L							
Lead, dissolved	< 0.05	0.05 ug/L							
Lithium, dissolved	< 0.05	0.05 ug/L							
Magnesium, dissolved	< 5	5 ug/L							
Manganese, dissolved	< 0.05	0.05 ug/L							
Mercury, dissolved	< 0.01	0.01 ug/L							
Molybdenum, dissolved	< 0.01	0.01 ug/L							
Nickel, dissolved	< 0.02	0.02 ug/L							
Phosphorus, dissolved	< 10	10 ug/L							
Potassium, dissolved	< 10	10 ug/L							
Selenium, dissolved	< 0.1	0.1 ug/L							
Silicon, dissolved	< 50	50 ug/L							
Silver, dissolved	< 0.01	0.01 ug/L							
Sodium, dissolved	< 10	10 ug/L							
Strontium, dissolved	< 0.1	0.1 ug/L							
Sulfur, dissolved	< 500	500 ug/L							
Tellurium, dissolved	< 0.05	0.05 ug/L							

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
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WORK ORDER 4040312
REPORTED Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Dissolved Metals, Batch B4D0165, Continued									
Blank (B4D0165-BLK1), Continued				Prepared: Apr-04-14, Analyzed: Apr-04-14					
Thallium, dissolved	< 0.004	0.004 ug/L							
Thorium, dissolved	< 0.01	0.01 ug/L							
Tin, dissolved	< 0.05	0.05 ug/L							
Titanium, dissolved	< 0.2	0.2 ug/L							
Uranium, dissolved	< 0.001	0.001 ug/L							
Vanadium, dissolved	< 0.2	0.2 ug/L							
Zinc, dissolved	< 1	1 ug/L							
Zirconium, dissolved	< 0.01	0.01 ug/L							
Duplicate (B4D0165-DUP1)				Source: 4040312-01		Prepared: Apr-04-14, Analyzed: Apr-04-14			
Aluminum, dissolved	37	1 ug/L		37			1	14	
Antimony, dissolved	0.4	0.05 ug/L		0.4			5	31	
Arsenic, dissolved	0.60	0.05 ug/L		0.60			1	13	
Barium, dissolved	16.2	0.1 ug/L		16.1			< 1	16	
Beryllium, dissolved	< 0.01	0.01 ug/L		< 0.01				30	
Bismuth, dissolved	< 0.01	0.01 ug/L		< 0.01				30	
Boron, dissolved	11	1 ug/L		11			1	14	
Cadmium, dissolved	0.012	0.002 ug/L		0.010			20	16	RPD
Calcium, dissolved	13100	40 ug/L		13100			< 1	10	
Chromium, dissolved	0.4	0.1 ug/L		0.3				11	
Cobalt, dissolved	0.120	0.005 ug/L		0.119			1	16	
Copper, dissolved	2.7	0.1 ug/L		2.7			< 1	27	
Iron, dissolved	357	2 ug/L		358			< 1	14	
Lead, dissolved	0.47	0.05 ug/L		0.48			< 1	20	
Lithium, dissolved	0.30	0.05 ug/L		0.30			2	20	
Magnesium, dissolved	2170	5 ug/L		2150			< 1	11	
Manganese, dissolved	52.8	0.05 ug/L		52.4			< 1	15	
Mercury, dissolved	< 0.01	0.01 ug/L		< 0.01				30	
Molybdenum, dissolved	0.83	0.01 ug/L		0.84			< 1	17	
Nickel, dissolved	0.50	0.02 ug/L		0.49			1	23	
Phosphorus, dissolved	15	10 ug/L		11				15	
Potassium, dissolved	1370	10 ug/L		1360			< 1	10	
Selenium, dissolved	< 0.1	0.1 ug/L		< 0.1				22	
Silicon, dissolved	3400	50 ug/L		3370			1	11	
Silver, dissolved	< 0.01	0.01 ug/L		< 0.01				30	
Sodium, dissolved	14900	10 ug/L		14800			< 1	10	
Strontium, dissolved	76.7	0.1 ug/L		76.9			< 1	12	
Sulfur, dissolved	1620	500 ug/L		1640				21	
Tellurium, dissolved	< 0.05	0.05 ug/L		< 0.05				30	
Thallium, dissolved	< 0.004	0.004 ug/L		< 0.004				22	
Thorium, dissolved	< 0.01	0.01 ug/L		< 0.01				20	
Tin, dissolved	< 0.05	0.05 ug/L		< 0.05				30	
Titanium, dissolved	0.8	0.2 ug/L		0.8				15	
Uranium, dissolved	0.019	0.001 ug/L		0.020			6	16	
Vanadium, dissolved	0.4	0.2 ug/L		0.4				10	
Zinc, dissolved	12	1 ug/L		8			39	15	RPD
Zirconium, dissolved	0.07	0.01 ug/L		0.07			8	39	
Reference (B4D0165-SRM1)				Prepared: Apr-04-14, Analyzed: Apr-04-14					
Aluminum, dissolved	25	1 ug/L	23.3		105	58-142			
Antimony, dissolved	5.3	0.05 ug/L	4.30		123	75-125			
Arsenic, dissolved	44.8	0.05 ug/L	43.8		102	81-119			
Barium, dissolved	354	0.1 ug/L	335		106	83-117			
Beryllium, dissolved	22.8	0.01 ug/L	21.3		107	80-120			
Boron, dissolved	190	1 ug/L	174		109	74-117			
Cadmium, dissolved	23.3	0.002 ug/L	22.4		104	83-117			
Calcium, dissolved	856	40 ug/L	769		111	76-124			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Dissolved Metals, Batch B4D0165, Continued

Reference (B4D0165-SRM1), Continued			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Chromium, dissolved	46.5	0.1 ug/L	43.7		106	81-119			
Cobalt, dissolved	13.8	0.005 ug/L	12.8		108	76-124			
Copper, dissolved	93.5	0.1 ug/L	84.4		111	84-116			
Iron, dissolved	140	2 ug/L	129		109	74-126			
Lead, dissolved	11.7	0.05 ug/L	11.2		105	72-128			
Lithium, dissolved	11.2	0.05 ug/L	10.4		108	60-140			
Magnesium, dissolved	753	5 ug/L	692		109	81-119			
Manganese, dissolved	36.7	0.05 ug/L	34.5		106	84-116			
Molybdenum, dissolved	45.4	0.01 ug/L	42.6		107	83-117			
Nickel, dissolved	90.2	0.02 ug/L	84.0		107	74-126			
Phosphorus, dissolved	49	10 ug/L	49.5		100	68-132			
Potassium, dissolved	334	10 ug/L	319		105	74-126			
Selenium, dissolved	3.4	0.1 ug/L	3.31		103	70-130			
Sodium, dissolved	2010	10 ug/L	1910		105	72-128			
Strontium, dissolved	97.0	0.1 ug/L	91.6		106	84-113			
Thallium, dissolved	4.07	0.004 ug/L	3.93		104	57-143			
Uranium, dissolved	28.1	0.001 ug/L	26.6		106	85-115			
Vanadium, dissolved	90.6	0.2 ug/L	86.9		104	87-113			
Zinc, dissolved	93	1 ug/L	88.1		106	72-128			

General Parameters, Batch B4D0166

Duplicate (B4D0166-DUP1)		Source: 4040312-01		Prepared: Apr-04-14, Analyzed: Apr-04-14					
pH	6.93	0.01 pH units	6.96			< 1	4		
Reference (B4D0166-SRM1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
pH	6.99	0.01 pH units	7.00		100	98-102			

General Parameters, Batch B4D0180

Blank (B4D0180-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	< 2	2 uS/cm							
LCS (B4D0180-BS1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	1410	2 uS/cm	1410		100	88-112			
LCS (B4D0180-BS2)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	147	2 uS/cm	147		100	88-112			
Reference (B4D0180-SRM1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	497	2 uS/cm	500		99	90-110			

General Parameters, Batch B4D0208

Blank (B4D0208-BLK1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	< 2	2 mg/L							
Blank (B4D0208-BLK2)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	< 2	2 mg/L							
LCS (B4D0208-BS1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	46	2 mg/L	49.0		94	83-107			
LCS (B4D0208-BS2)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	44	2 mg/L	51.6		86	83-107			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
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Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
General Parameters, Batch B4D0244									
Blank (B4D0244-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Solids, Total Dissolved	< 10	10 mg/L							
Duplicate (B4D0244-DUP1)			Source: 4040312-01		Prepared: Apr-09-14, Analyzed: Apr-09-14				
Solids, Total Dissolved	103	10 mg/L		107			4	11	
Reference (B4D0244-SRM1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Solids, Total Dissolved	245	10 mg/L		240	102	70-130			
General Parameters, Batch B4D0301									
Blank (B4D0301-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK3)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK4)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK5)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
LCS (B4D0301-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	9.97	0.020 mg/L		10.0	100	86-111			
LCS (B4D0301-BS2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	9.86	0.020 mg/L		10.0	99	86-111			
LCS (B4D0301-BS3)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L		10.0		86-111			
LCS (B4D0301-BS4)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L		10.0		86-111			
LCS (B4D0301-BS5)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L		10.0		86-111			
Duplicate (B4D0301-DUP1)			Source: 4040312-01		Prepared: Apr-09-14, Analyzed: Apr-09-14				
Nitrogen, Ammonia as N, Total	0.039	0.020 mg/L		0.042				15	
General Parameters, Batch B4D0320									
Blank (B4D0320-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	< 0.5	0.5 mg/L							
Carbon, Dissolved Organic	< 0.5	0.5 mg/L							
Blank (B4D0320-BLK2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	< 0.5	0.5 mg/L							
Carbon, Dissolved Organic	< 0.5	0.5 mg/L							
LCS (B4D0320-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	10.0	0.5 mg/L		10.0	100	78-116			
Carbon, Dissolved Organic	11.7	0.5 mg/L		10.0	117	80-120			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER 4040312
REPORTED Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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General Parameters, Batch B4D0320, Continued

LCS (B4D0320-BS2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	10.3	0.5 mg/L	10.0		103	78-116			
Carbon, Dissolved Organic	10.1	0.5 mg/L	10.0		101	80-120			
Duplicate (B4D0320-DUP1)			Source: 4040312-01		Prepared: Apr-09-14, Analyzed: Apr-09-14				
Carbon, Total Organic	7.5	0.5 mg/L		7.2			4	16	
Carbon, Dissolved Organic	6.9	0.5 mg/L		6.7			4	15	

General Parameters, Batch B4D0321

Blank (B4D0321-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Dissolved Inorganic	< 0.5	0.5 mg/L							
LCS (B4D0321-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Dissolved Inorganic	8.2	0.5 mg/L	10.0		82	80-120			
Duplicate (B4D0321-DUP1)			Source: 4040312-01		Prepared: Apr-09-14, Analyzed: Apr-09-14				
Carbon, Dissolved Inorganic	7.4	0.5 mg/L		7.4			< 1	20	

General Parameters, Batch B4D0414

Blank (B4D0414-BLK1)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	< 0.01	0.01 mg/L							
Blank (B4D0414-BLK2)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	< 0.01	0.01 mg/L							
LCS (B4D0414-BS1)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	0.30	0.01 mg/L	0.385		77	36-114			
LCS (B4D0414-BS2)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	0.28	0.01 mg/L	0.385		73	36-114			

Polycyclic Aromatic Hydrocarbons (PAH), Batch B4D0121

Blank (B4D0121-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Acenaphthene	< 0.02	0.02 ug/L							
Acenaphthylene	< 0.02	0.02 ug/L							
Acridine	< 0.05	0.05 ug/L							
Anthracene	< 0.01	0.01 ug/L							
Benzo (a) anthracene	< 0.01	0.01 ug/L							
Benzo (a) pyrene	< 0.01	0.01 ug/L							
Benzo (b) fluoranthene	< 0.02	0.02 ug/L							
Benzo (g,h,i) perylene	< 0.02	0.02 ug/L							
Benzo (k) fluoranthene	< 0.02	0.02 ug/L							
Chrysene	< 0.02	0.02 ug/L							
Dibenz (a,h) anthracene	< 0.02	0.02 ug/L							
Fluoranthene	< 0.02	0.02 ug/L							
Fluorene	< 0.02	0.02 ug/L							
Indeno (1,2,3-cd) pyrene	< 0.02	0.02 ug/L							
Naphthalene	< 0.05	0.05 ug/L							
Phenanthrene	< 0.05	0.05 ug/L							
Pyrene	< 0.02	0.02 ug/L							
Quinoline	< 0.05	0.05 ug/L							
Surrogate: Naphthalene-d8	0.669	ug/L	1.02		66	40-96			
Surrogate: Acenaphthene-d10	0.700	ug/L	0.995		70	45-92			
Surrogate: Phenanthrene-d10	0.714	ug/L	0.970		74	48-90			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Polycyclic Aromatic Hydrocarbons (PAH), Batch B4D0121, Continued

Blank (B4D0121-BLK1), Continued

Prepared: Apr-04-14, Analyzed: Apr-04-14

Surrogate: Chrysene-d12	0.782	ug/L	0.950		82	41-96			
Surrogate: Perylene-d12	0.730	ug/L	0.990		74	47-104			

LCS (B4D0121-BS1)

Prepared: Apr-04-14, Analyzed: Apr-04-14

Acenaphthene	0.69	0.02 ug/L	1.00		69	54-92			
Acenaphthylene	0.76	0.02 ug/L	1.00		76	54-95			
Acridine	0.66	0.05 ug/L	1.00		66	49-87			
Anthracene	0.77	0.01 ug/L	1.00		77	53-94			
Benzo (a) anthracene	0.64	0.01 ug/L	1.00		64	52-95			
Benzo (a) pyrene	0.75	0.01 ug/L	1.00		75	52-103			
Benzo (b) fluoranthene	0.60	0.02 ug/L	1.00		60	49-94			
Benzo (g,h,i) perylene	0.67	0.02 ug/L	1.00		67	51-98			
Benzo (k) fluoranthene	0.64	0.02 ug/L	1.00		64	49-105			
Chrysene	0.73	0.02 ug/L	1.00		73	50-104			
Dibenz (a,h) anthracene	0.65	0.02 ug/L	1.00		65	49-96			
Fluoranthene	0.82	0.02 ug/L	1.00		82	53-102			
Fluorene	0.76	0.02 ug/L	1.00		76	54-91			
Indeno (1,2,3-cd) pyrene	0.68	0.02 ug/L	1.00		68	51-99			
Naphthalene	0.63	0.05 ug/L	1.00		63	51-91			
Phenanthrene	0.76	0.05 ug/L	1.00		76	56-96			
Pyrene	0.79	0.02 ug/L	1.00		79	51-105			
Quinoline	0.66	0.05 ug/L	1.00		66	48-126			
Surrogate: Naphthalene-d8	0.659	ug/L	1.02		65	40-96			
Surrogate: Acenaphthene-d10	0.688	ug/L	0.995		69	45-92			
Surrogate: Phenanthrene-d10	0.735	ug/L	0.970		76	48-90			
Surrogate: Chrysene-d12	0.750	ug/L	0.950		79	41-96			
Surrogate: Perylene-d12	0.725	ug/L	0.990		73	47-104			

LCS Dup (B4D0121-BS1)

Prepared: Apr-04-14, Analyzed: Apr-04-14

Acenaphthene	0.64	0.02 ug/L	1.00		64	54-92	7	20	
Acenaphthylene	0.71	0.02 ug/L	1.00		71	54-95	7	20	
Acridine	0.61	0.05 ug/L	1.00		61	49-87	9	20	
Anthracene	0.71	0.01 ug/L	1.00		71	53-94	7	20	
Benzo (a) anthracene	0.65	0.01 ug/L	1.00		65	52-95	< 1	20	
Benzo (a) pyrene	0.73	0.01 ug/L	1.00		73	52-103	3	20	
Benzo (b) fluoranthene	0.57	0.02 ug/L	1.00		57	49-94	5	20	
Benzo (g,h,i) perylene	0.66	0.02 ug/L	1.00		66	51-98	3	20	
Benzo (k) fluoranthene	0.68	0.02 ug/L	1.00		68	49-105	6	20	
Chrysene	0.73	0.02 ug/L	1.00		73	50-104	< 1	20	
Dibenz (a,h) anthracene	0.63	0.02 ug/L	1.00		63	49-96	4	20	
Fluoranthene	0.76	0.02 ug/L	1.00		76	53-102	8	20	
Fluorene	0.70	0.02 ug/L	1.00		70	54-91	8	20	
Indeno (1,2,3-cd) pyrene	0.68	0.02 ug/L	1.00		68	51-99	< 1	20	
Naphthalene	0.62	0.05 ug/L	1.00		62	51-91	2	20	
Phenanthrene	0.71	0.05 ug/L	1.00		71	56-96	6	20	
Pyrene	0.75	0.02 ug/L	1.00		75	51-105	6	20	
Quinoline	0.63	0.05 ug/L	1.00		63	48-126	5	20	
Surrogate: Naphthalene-d8	0.645	ug/L	1.02		63	40-96			
Surrogate: Acenaphthene-d10	0.650	ug/L	0.995		65	45-92			
Surrogate: Phenanthrene-d10	0.692	ug/L	0.970		71	48-90			
Surrogate: Chrysene-d12	0.769	ug/L	0.950		81	41-96			
Surrogate: Perylene-d12	0.696	ug/L	0.990		70	47-104			

Total Recoverable Metals, Batch B4D0164

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
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WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Total Recoverable Metals, Batch B4D0164, Continued

Blank (B4D0164-BLK1)

Prepared: Apr-04-14, Analyzed: Apr-04-14

Aluminum, total	< 1	1 ug/L							
Antimony, total	< 0.05	0.05 ug/L							
Arsenic, total	< 0.05	0.05 ug/L							
Barium, total	< 0.1	0.1 ug/L							
Beryllium, total	< 0.01	0.01 ug/L							
Bismuth, total	< 0.01	0.01 ug/L							
Boron, total	< 1	1 ug/L							
Cadmium, total	< 0.002	0.002 ug/L							
Calcium, total	< 40	40 ug/L							
Chromium, total	< 0.1	0.1 ug/L							
Cobalt, total	< 0.005	0.005 ug/L							
Copper, total	< 0.1	0.1 ug/L							
Iron, total	< 2	2 ug/L							
Lead, total	< 0.05	0.05 ug/L							
Lithium, total	< 0.05	0.05 ug/L							
Magnesium, total	< 5.0	5.0 ug/L							
Manganese, total	< 0.05	0.05 ug/L							
Mercury, total	< 0.01	0.01 ug/L							
Molybdenum, total	< 0.01	0.01 ug/L							
Nickel, total	< 0.02	0.02 ug/L							
Phosphorus, total	< 10	10 ug/L							
Potassium, total	< 10	10 ug/L							
Selenium, total	< 0.1	0.1 ug/L							
Silicon, total	< 50	50 ug/L							
Silver, total	< 0.01	0.01 ug/L							
Sodium, total	< 10	10 ug/L							
Strontium, total	< 0.1	0.1 ug/L							
Sulfur, total	< 500	500 ug/L							
Tellurium, total	< 0.05	0.05 ug/L							
Thallium, total	< 0.004	0.004 ug/L							
Thorium, total	< 0.01	0.01 ug/L							
Tin, total	< 0.05	0.05 ug/L							
Titanium, total	< 0.2	0.2 ug/L							
Uranium, total	< 0.001	0.001 ug/L							
Vanadium, total	< 0.2	0.2 ug/L							
Zinc, total	< 1	1 ug/L							
Zirconium, total	< 0.01	0.01 ug/L							

Duplicate (B4D0164-DUP1)

Source: 4040312-01

Prepared: Apr-04-14, Analyzed: Apr-04-14

Aluminum, total	115	1 ug/L	124	7	28
Antimony, total	0.4	0.05 ug/L	0.4	10	36
Arsenic, total	0.70	0.05 ug/L	0.72	3	18
Barium, total	17.2	0.1 ug/L	17.1	< 1	8
Beryllium, total	< 0.01	0.01 ug/L	< 0.01		29
Bismuth, total	< 0.01	0.01 ug/L	< 0.01		46
Boron, total	11	1 ug/L	14	24	40
Cadmium, total	0.014	0.002 ug/L	0.014	< 1	43
Calcium, total	13400	40 ug/L	13200	1	10
Chromium, total	0.5	0.1 ug/L	0.5	2	23
Cobalt, total	0.146	0.005 ug/L	0.148	2	18
Copper, total	3.2	0.1 ug/L	3.3	2	33
Iron, total	568	2 ug/L	580	2	16
Lead, total	0.95	0.05 ug/L	0.95	< 1	26
Lithium, total	0.32	0.05 ug/L	0.33	1	20
Magnesium, total	2160	5.0 ug/L	2170	< 1	7
Manganese, total	57.6	0.05 ug/L	58.3	1	10
Mercury, total	< 0.01	0.01 ug/L	< 0.01		40

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REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
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Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Total Recoverable Metals, Batch B4D0164, Continued									
Duplicate (B4D0164-DUP1), Continued		Source: 4040312-01		Prepared: Apr-04-14, Analyzed: Apr-04-14					
Molybdenum, total	0.79	0.01 ug/L		0.79			< 1	26	
Nickel, total	0.55	0.02 ug/L		0.57			4	20	
Phosphorus, total	18	10 ug/L		20				32	
Potassium, total	1370	10 ug/L		1380			< 1	15	
Selenium, total	< 0.1	0.1 ug/L		< 0.1				25	
Silicon, total	3540	50 ug/L		3610			2	14	
Silver, total	< 0.01	0.01 ug/L		< 0.01				35	
Sodium, total	14700	10 ug/L		14900			2	11	
Strontium, total	77.2	0.1 ug/L		76.6			< 1	8	
Sulfur, total	1500	500 ug/L		1400				20	
Tellurium, total	< 0.05	0.05 ug/L		< 0.05				20	
Thallium, total	< 0.004	0.004 ug/L		< 0.004				30	
Thorium, total	< 0.01	0.01 ug/L		< 0.01				50	
Tin, total	0.05	0.05 ug/L		0.08				19	
Titanium, total	6.6	0.2 ug/L		3.6			58	42	RPD
Uranium, total	0.025	0.001 ug/L		0.023			7	12	
Vanadium, total	0.7	0.2 ug/L		0.7				21	
Zinc, total	13	1 ug/L		10			22	33	
Zirconium, total	0.16	0.01 ug/L		0.13			19	41	
Matrix Spike (B4D0164-MS1)		Source: 4040312-02		Prepared: Apr-04-14, Analyzed: Apr-04-14					
Antimony, total	41.6	0.05 ug/L	40.0	0.4	103	80-120			
Arsenic, total	20.5	0.05 ug/L	20.0	0.71	99	80-120			
Barium, total	118	0.1 ug/L	100	17.2	101	80-120			
Beryllium, total	10.6	0.01 ug/L	10.0	< 0.01	106	80-120			
Cadmium, total	10.2	0.002 ug/L	10.0	0.015	101	80-120			
Chromium, total	41.9	0.1 ug/L	40.0	0.4	104	80-120			
Cobalt, total	42.5	0.005 ug/L	40.0	0.149	106	80-120			
Copper, total	45.8	0.1 ug/L	40.0	3.3	106	80-120			
Iron, total	792	2 ug/L	200	582	105	80-120			
Lead, total	21.3	0.05 ug/L	20.0	0.94	102	80-120			
Manganese, total	100	0.05 ug/L	40.0	58.4	105	80-120			
Nickel, total	41.2	0.02 ug/L	40.0	0.55	102	80-120			
Selenium, total	10.4	0.1 ug/L	10.0	< 0.1	104	80-120			
Silver, total	8.28	0.01 ug/L	10.0	< 0.01	83	80-120			
Thallium, total	10.3	0.004 ug/L	10.0	< 0.004	103	80-120			
Vanadium, total	41.2	0.2 ug/L	40.0	0.7	101	80-120			
Zinc, total	114	1 ug/L	100	10	104	80-120			
Reference (B4D0164-SRM1)		Prepared: Apr-04-14, Analyzed: Apr-04-14							
Aluminum, total	63	1 ug/L	59.2		107	81-129			
Antimony, total	11.2	0.05 ug/L	10.1		111	88-114			
Arsenic, total	25.4	0.05 ug/L	24.4		104	88-114			
Barium, total	162	0.1 ug/L	155		104	72-104			
Beryllium, total	10.4	0.01 ug/L	9.76		107	76-131			
Boron, total	740	1 ug/L	680		109	75-121			
Cadmium, total	10.4	0.002 ug/L	9.80		106	89-111			
Calcium, total	2170	40 ug/L	2040		107	86-121			
Chromium, total	52.2	0.1 ug/L	48.4		108	89-114			
Cobalt, total	8.16	0.005 ug/L	7.32		111	91-113			
Copper, total	106	0.1 ug/L	97.4		109	91-115			
Iron, total	106	2 ug/L	93.8		113	77-124			
Lead, total	41.5	0.05 ug/L	38.6		107	92-113			
Lithium, total	84.8	0.05 ug/L	78.0		109	85-115			
Magnesium, total	746	5.0 ug/L	662		113	78-120			
Manganese, total	23.3	0.05 ug/L	21.8		107	90-114			
Mercury, total	1.36	0.01 ug/L	0.912		149	50-150			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040312
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Total Recoverable Metals, Batch B4D0164, Continued

Reference (B4D0164-SRM1), Continued

Prepared: Apr-04-14, Analyzed: Apr-04-14

Molybdenum, total	42.0	0.01 ug/L	39.4		107	90-111			
Nickel, total	52.4	0.02 ug/L	48.4		108	90-111			
Phosphorus, total	47	10 ug/L	46.6		100	85-115			
Potassium, total	1330	10 ug/L	1190		112	84-113			
Selenium, total	25.2	0.1 ug/L	23.0		109	85-115			
Sodium, total	1640	10 ug/L	1530		108	82-123			
Strontium, total	80.1	0.1 ug/L	72.6		110	88-112			
Thallium, total	16.8	0.004 ug/L	15.9		106	91-114			
Uranium, total	3.98	0.001 ug/L	3.84		104	85-120			
Vanadium, total	79.5	0.2 ug/L	75.2		106	86-111			
Zinc, total	516	1 ug/L	484		107	85-111			

QC Qualifiers:

RPD Relative percent difference (RPD) of duplicate analysis are outside of control limits for unknown reason(s).

REPORTED TO	Triton Environmental Consultants Ltd. (Richmond) 8971 Beckwith Road Richmond, BC V6X 1V4	TEL	(604) 279-2093
		FAX	(604) 279-2047
ATTENTION	Peter Frederiksen	WORK ORDER	4040315
PO NUMBER		RECEIVED / TEMP	Apr-04-14 11:04 / 9°C
PROJECT	4435-029	REPORTED	Apr-11-14
PROJECT INFO	BLCRP	COC NUMBER	40837.5581

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

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Issued By: **Jennifer Shanko, ASCT For Brent Coates, BSc**
Business Manager, Richmond

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

Locations:

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www.caro.ca

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analysis Description	Method Reference (* = modified from)		Location
	Preparation	Analysis	
Alkalinity, speciated	N/A	APHA 2320 B	Richmond
Ammonia-N, total colorimetric	N/A	APHA 4500-NH ₃ G	Kelowna
Calculated Parameters	N/A	APHA 2340B	Richmond
Carbon, Dissolved Inorganic	N/A	APHA 5310 B	Kelowna
Carbon, Dissolved Organic	N/A	APHA 5310 B	Kelowna
Carbon, Total Organic in Water	N/A	APHA 5310 B	Kelowna
Chloride in Water by IC	N/A	APHA 4110 B	Kelowna
Conductivity in Water	N/A	APHA 2510 B	Richmond
Dissolved Metals	APHA 3030 B	APHA 3125 B	Richmond
EPH in Water	EPA 3510C	BCMOE	Richmond
Hardness as CaCO ₃ (CALC)	N/A	APHA 2340 B	Richmond
L/HEPH in Water Pkg	N/A	BCMOE	Richmond
Nitrate-N in Water by IC	N/A	APHA 4110 B	Kelowna
Nitrite-N in Water by IC	N/A	APHA 4110 B	Kelowna
PAH in Water (low)	EPA 3510C	EPA 8270D (2007)	Richmond
pH in Water	N/A	APHA 4500-H+ B	Richmond
Sulfate in Water by IC	N/A	APHA 4110 B	Kelowna
Total Dissolved Solids (GRAV)	N/A	APHA 2540 C	Richmond
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	Richmond
Total Sulfide in Water	N/A	APHA 4500-S ₂ D	Edmonton
Total Suspended Solids	N/A	APHA 2540 D *	Richmond

Note: The numbers in brackets represent the year that the method was published/approved

Method Reference Descriptions:

BCMOE	British Columbia Environmental Laboratory Manual, 2009, British Columbia Ministry of Environment
APHA	Standard Methods for the Examination of Water and Wastewater, American Public Health Association
EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL	Method Reporting Limit
<	Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
MAC	Maximum acceptable concentration (health-related guideline)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
ug/L	Micrograms per litre
uS/cm	Microsiemens per centimeter

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake u/s Site 3 (4040315-01) [Water] Sampled: Apr-04-14 08:45

Anions

Alkalinity, Total as CaCO ₃	41	2	mg/L	N/A	Apr-08-14	
Alkalinity, Phenolphthalein as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Alkalinity, Bicarbonate as CaCO ₃	41	2	mg/L	N/A	Apr-08-14	
Alkalinity, Carbonate as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Alkalinity, Hydroxide as CaCO ₃	< 2	2	mg/L	N/A	Apr-08-14	
Chloride	21.4	0.10	mg/L	N/A	Apr-05-14	
Nitrogen, Nitrate as N	0.428	0.010	mg/L	N/A	Apr-05-14	
Nitrogen, Nitrite as N	< 0.010	0.010	mg/L	N/A	Apr-05-14	
Sulfate	4.8	1.0	mg/L	N/A	Apr-05-14	

General Parameters

Carbon, Total Organic	7.1	0.5	mg/L	N/A	Apr-04-14	
Carbon, Dissolved Inorganic	7.5	0.5	mg/L	N/A	Apr-09-14	
Carbon, Dissolved Organic	6.6	0.5	mg/L	N/A	Apr-04-14	
Conductivity (EC)	161	2	uS/cm	N/A	Apr-04-14	
Nitrogen, Ammonia as N, Total	0.055	0.020	mg/L	N/A	Apr-07-14	
pH	6.90	0.01	pH units	N/A	Apr-04-14	
Solids, Total Dissolved	117	10	mg/L	N/A	Apr-09-14	
Solids, Total Suspended	6	2	mg/L	N/A	Apr-08-14	
Sulfide	0.02	0.01	mg/L	N/A	Apr-11-14	

Calculated Parameters

LEPHw	< 100	100	ug/L	N/A	N/A	
HEPHw	< 100	100	ug/L	N/A	N/A	
Total PAH	< 0.05	0.05	ug/L	N/A	N/A	
Hardness, Total (Total as CaCO ₃)	43.0	0.1	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	42	0.1	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.428	0.020	mg/L	N/A	N/A	

Dissolved Metals

Aluminum, dissolved	38	1	ug/L	N/A	Apr-04-14	
Antimony, dissolved	0.4	0.05	ug/L	N/A	Apr-04-14	
Arsenic, dissolved	0.61	0.05	ug/L	N/A	Apr-04-14	
Barium, dissolved	16.1	0.1	ug/L	N/A	Apr-04-14	
Beryllium, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Bismuth, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Boron, dissolved	12	1	ug/L	N/A	Apr-04-14	
Cadmium, dissolved	0.008	0.002	ug/L	N/A	Apr-04-14	
Calcium, dissolved	13400	40	ug/L	N/A	Apr-04-14	
Chromium, dissolved	0.3	0.1	ug/L	N/A	Apr-04-14	
Cobalt, dissolved	0.118	0.005	ug/L	N/A	Apr-04-14	
Copper, dissolved	2.8	0.1	ug/L	N/A	Apr-04-14	
Iron, dissolved	359	2	ug/L	N/A	Apr-04-14	
Lead, dissolved	0.52	0.05	ug/L	N/A	Apr-04-14	
Lithium, dissolved	0.32	0.05	ug/L	N/A	Apr-04-14	
Magnesium, dissolved	2180	5	ug/L	N/A	Apr-04-14	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake u/s Site 3 (4040315-01) [Water] Sampled: Apr-04-14 08:45, Continued

Dissolved Metals, Continued

Manganese, dissolved	50.9	0.05	ug/L	N/A	Apr-04-14	
Mercury, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Molybdenum, dissolved	0.53	0.01	ug/L	N/A	Apr-04-14	
Nickel, dissolved	0.52	0.02	ug/L	N/A	Apr-04-14	
Phosphorus, dissolved	14	10	ug/L	N/A	Apr-04-14	
Potassium, dissolved	1410	10	ug/L	N/A	Apr-04-14	
Selenium, dissolved	< 0.1	0.1	ug/L	N/A	Apr-04-14	
Silicon, dissolved	3400	50	ug/L	N/A	Apr-04-14	
Silver, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Sodium, dissolved	14500	10	ug/L	N/A	Apr-04-14	
Strontium, dissolved	77.8	0.1	ug/L	N/A	Apr-04-14	
Sulfur, dissolved	1600	500	ug/L	N/A	Apr-04-14	
Tellurium, dissolved	< 0.05	0.05	ug/L	N/A	Apr-04-14	
Thallium, dissolved	< 0.004	0.004	ug/L	N/A	Apr-04-14	
Thorium, dissolved	< 0.01	0.01	ug/L	N/A	Apr-04-14	
Tin, dissolved	< 0.05	0.05	ug/L	N/A	Apr-04-14	
Titanium, dissolved	0.9	0.2	ug/L	N/A	Apr-04-14	
Uranium, dissolved	0.020	0.001	ug/L	N/A	Apr-04-14	
Vanadium, dissolved	0.4	0.2	ug/L	N/A	Apr-04-14	
Zinc, dissolved	9	1	ug/L	N/A	Apr-04-14	
Zirconium, dissolved	0.07	0.01	ug/L	N/A	Apr-04-14	

Total Recoverable Metals

Aluminum, total	129	1	ug/L	Apr-04-14	Apr-04-14	
Antimony, total	0.4	0.05	ug/L	Apr-04-14	Apr-04-14	
Arsenic, total	0.72	0.05	ug/L	Apr-04-14	Apr-04-14	
Barium, total	17.3	0.1	ug/L	Apr-04-14	Apr-04-14	
Beryllium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Bismuth, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Boron, total	13	1	ug/L	Apr-04-14	Apr-04-14	
Cadmium, total	0.012	0.002	ug/L	Apr-04-14	Apr-04-14	
Calcium, total	13600	40	ug/L	Apr-04-14	Apr-04-14	
Chromium, total	0.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Cobalt, total	0.152	0.005	ug/L	Apr-04-14	Apr-04-14	
Copper, total	3.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Iron, total	602	2	ug/L	Apr-04-14	Apr-04-14	
Lead, total	1.09	0.05	ug/L	Apr-04-14	Apr-04-14	
Lithium, total	0.33	0.05	ug/L	Apr-04-14	Apr-04-14	
Magnesium, total	2210	5.0	ug/L	Apr-04-14	Apr-04-14	
Manganese, total	59.2	0.05	ug/L	Apr-04-14	Apr-04-14	
Mercury, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Molybdenum, total	0.54	0.01	ug/L	Apr-04-14	Apr-04-14	
Nickel, total	0.58	0.02	ug/L	Apr-04-14	Apr-04-14	
Phosphorus, total	19	10	ug/L	Apr-04-14	Apr-04-14	
Potassium, total	1440	10	ug/L	Apr-04-14	Apr-04-14	
Selenium, total	< 0.1	0.1	ug/L	Apr-04-14	Apr-04-14	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake u/s Site 3 (4040315-01) [Water] Sampled: Apr-04-14 08:45, Continued

Total Recoverable Metals, Continued

Silicon, total	3600	50	ug/L	Apr-04-14	Apr-04-14	
Silver, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Sodium, total	14600	10	ug/L	Apr-04-14	Apr-04-14	
Strontium, total	78.4	0.1	ug/L	Apr-04-14	Apr-04-14	
Sulfur, total	1700	500	ug/L	Apr-04-14	Apr-04-14	
Tellurium, total	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Thallium, total	< 0.004	0.004	ug/L	Apr-04-14	Apr-04-14	
Thorium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Tin, total	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Titanium, total	4.5	0.2	ug/L	Apr-04-14	Apr-04-14	
Uranium, total	0.025	0.001	ug/L	Apr-04-14	Apr-04-14	
Vanadium, total	0.7	0.2	ug/L	Apr-04-14	Apr-04-14	
Zinc, total	27	1	ug/L	Apr-04-14	Apr-04-14	
Zirconium, total	0.11	0.01	ug/L	Apr-04-14	Apr-04-14	

Aggregate Organic Parameters

EPHw (10-19)	< 100	100	ug/L	Apr-04-14	Apr-04-14	
EPHw (19-32)	< 100	100	ug/L	Apr-04-14	Apr-04-14	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Acenaphthylene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Acridine	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Anthracene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (a) anthracene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (a) pyrene	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Benzo (b) fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Benzo (g,h,i) perylene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Benzo (k) fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Chrysene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Dibenz (a,h) anthracene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Fluoranthene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Fluorene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Indeno (1,2,3-cd) pyrene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Naphthalene	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Phenanthrene	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Pyrene	< 0.02	0.02	ug/L	Apr-04-14	Apr-04-14	
Quinoline	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Surrogate: Naphthalene-d8	64 %	40-96		Apr-04-14	Apr-04-14	
Surrogate: Acenaphthene-d10	68 %	45-92		Apr-04-14	Apr-04-14	
Surrogate: Phenanthrene-d10	72 %	48-90		Apr-04-14	Apr-04-14	
Surrogate: Chrysene-d12	77 %	41-96		Apr-04-14	Apr-04-14	
Surrogate: Perylene-d12	76 %	47-104		Apr-04-14	Apr-04-14	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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Sample ID: Burnaby Lake u/s Site 3 - duplicate metals (4040315-02) [Water] Sampled: Apr-04-14 08:45

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	42.8	0.1	mg/L	N/A	N/A	
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Total Recoverable Metals

Aluminum, total	128	1	ug/L	Apr-04-14	Apr-04-14	
Antimony, total	0.4	0.05	ug/L	Apr-04-14	Apr-04-14	
Arsenic, total	0.73	0.05	ug/L	Apr-04-14	Apr-04-14	
Barium, total	16.9	0.1	ug/L	Apr-04-14	Apr-04-14	
Beryllium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Bismuth, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Boron, total	13	1	ug/L	Apr-04-14	Apr-04-14	
Cadmium, total	0.014	0.002	ug/L	Apr-04-14	Apr-04-14	
Calcium, total	13500	40	ug/L	Apr-04-14	Apr-04-14	
Chromium, total	0.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Cobalt, total	0.153	0.005	ug/L	Apr-04-14	Apr-04-14	
Copper, total	3.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Iron, total	605	2	ug/L	Apr-04-14	Apr-04-14	
Lead, total	1.07	0.05	ug/L	Apr-04-14	Apr-04-14	
Lithium, total	0.35	0.05	ug/L	Apr-04-14	Apr-04-14	
Magnesium, total	2200	5.0	ug/L	Apr-04-14	Apr-04-14	
Manganese, total	58.6	0.05	ug/L	Apr-04-14	Apr-04-14	
Molybdenum, total	0.54	0.01	ug/L	Apr-04-14	Apr-04-14	
Nickel, total	0.59	0.02	ug/L	Apr-04-14	Apr-04-14	
Phosphorus, total	22	10	ug/L	Apr-04-14	Apr-04-14	
Potassium, total	1440	10	ug/L	Apr-04-14	Apr-04-14	
Selenium, total	< 0.1	0.1	ug/L	Apr-04-14	Apr-04-14	
Silicon, total	3600	50	ug/L	Apr-04-14	Apr-04-14	
Silver, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Sodium, total	14500	10	ug/L	Apr-04-14	Apr-04-14	
Strontium, total	78.5	0.1	ug/L	Apr-04-14	Apr-04-14	
Sulfur, total	1600	500	ug/L	Apr-04-14	Apr-04-14	
Tellurium, total	< 0.05	0.05	ug/L	Apr-04-14	Apr-04-14	
Thallium, total	< 0.004	0.004	ug/L	Apr-04-14	Apr-04-14	
Thorium, total	< 0.01	0.01	ug/L	Apr-04-14	Apr-04-14	
Tin, total	0.08	0.05	ug/L	Apr-04-14	Apr-04-14	
Titanium, total	4.2	0.2	ug/L	Apr-04-14	Apr-04-14	
Uranium, total	0.024	0.001	ug/L	Apr-04-14	Apr-04-14	
Vanadium, total	0.7	0.2	ug/L	Apr-04-14	Apr-04-14	
Zinc, total	12	1	ug/L	Apr-04-14	Apr-04-14	
Zirconium, total	0.11	0.01	ug/L	Apr-04-14	Apr-04-14	

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup):** Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS):** A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM):** A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Aggregate Organic Parameters, Batch B4D0121

Blank (B4D0121-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
EPHw (10-19)	< 100	100 ug/L							
EPHw (19-32)	< 100	100 ug/L							
LCS (B4D0121-BS2)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
EPHw (10-19)	2750	100 ug/L	3470		79	63-123			
EPHw (19-32)	3960	100 ug/L	4970		80	51-102			

Anions, Batch B4D0235

Blank (B4D0235-BLK1)			Prepared: Apr-05-14, Analyzed: Apr-05-14						
Chloride	< 0.10	0.10 mg/L							
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L							
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
Blank (B4D0235-BLK2)			Prepared: Apr-05-14, Analyzed: Apr-05-14						
Chloride	< 0.10	0.10 mg/L							
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L							
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
LCS (B4D0235-BS1)			Prepared: Apr-05-14, Analyzed: Apr-05-14						
Chloride	11.5	0.10 mg/L	12.0		96	85-115			
Nitrogen, Nitrate as N	3.99	0.010 mg/L	4.00		100	85-115			
Nitrogen, Nitrite as N	1.96	0.010 mg/L	2.00		98	85-115			
Sulfate	11.5	1.0 mg/L	12.0		96	85-115			
LCS (B4D0235-BS2)			Prepared: Apr-05-14, Analyzed: Apr-05-14						
Chloride	11.6	0.10 mg/L	12.0		97	85-115			
Nitrogen, Nitrate as N	4.01	0.010 mg/L	4.00		100	85-115			
Nitrogen, Nitrite as N	1.99	0.010 mg/L	2.00		100	85-115			
Sulfate	11.5	1.0 mg/L	12.0		96	85-115			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Anions, Batch B4D0274									
Blank (B4D0274-BLK1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Alkalinity, Total as CaCO ₃	< 2	2 mg/L							
Alkalinity, Phenolphthalein as CaCO ₃	< 2	2 mg/L							
Alkalinity, Bicarbonate as CaCO ₃	< 2	2 mg/L							
Alkalinity, Carbonate as CaCO ₃	< 2	2 mg/L							
Alkalinity, Hydroxide as CaCO ₃	< 2	2 mg/L							
LCS (B4D0274-BS1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Alkalinity, Total as CaCO ₃	2350	2 mg/L	2500		94	81-109			
Dissolved Metals, Batch B4D0165									
Blank (B4D0165-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Aluminum, dissolved	< 1	1 ug/L							
Antimony, dissolved	< 0.05	0.05 ug/L							
Arsenic, dissolved	< 0.05	0.05 ug/L							
Barium, dissolved	< 0.1	0.1 ug/L							
Beryllium, dissolved	< 0.01	0.01 ug/L							
Bismuth, dissolved	< 0.01	0.01 ug/L							
Boron, dissolved	< 1	1 ug/L							
Cadmium, dissolved	< 0.002	0.002 ug/L							
Calcium, dissolved	< 40	40 ug/L							
Chromium, dissolved	< 0.1	0.1 ug/L							
Cobalt, dissolved	< 0.005	0.005 ug/L							
Copper, dissolved	< 0.1	0.1 ug/L							
Iron, dissolved	< 2	2 ug/L							
Lead, dissolved	< 0.05	0.05 ug/L							
Lithium, dissolved	< 0.05	0.05 ug/L							
Magnesium, dissolved	< 5	5 ug/L							
Manganese, dissolved	< 0.05	0.05 ug/L							
Mercury, dissolved	< 0.01	0.01 ug/L							
Molybdenum, dissolved	< 0.01	0.01 ug/L							
Nickel, dissolved	< 0.02	0.02 ug/L							
Phosphorus, dissolved	< 10	10 ug/L							
Potassium, dissolved	< 10	10 ug/L							
Selenium, dissolved	< 0.1	0.1 ug/L							
Silicon, dissolved	< 50	50 ug/L							
Silver, dissolved	< 0.01	0.01 ug/L							
Sodium, dissolved	< 10	10 ug/L							
Strontium, dissolved	< 0.1	0.1 ug/L							
Sulfur, dissolved	< 500	500 ug/L							
Tellurium, dissolved	< 0.05	0.05 ug/L							
Thallium, dissolved	< 0.004	0.004 ug/L							
Thorium, dissolved	< 0.01	0.01 ug/L							
Tin, dissolved	< 0.05	0.05 ug/L							
Titanium, dissolved	< 0.2	0.2 ug/L							
Uranium, dissolved	< 0.001	0.001 ug/L							
Vanadium, dissolved	< 0.2	0.2 ug/L							
Zinc, dissolved	< 1	1 ug/L							
Zirconium, dissolved	< 0.01	0.01 ug/L							
Matrix Spike (B4D0165-MS1)			Source: 4040315-01		Prepared: Apr-04-14, Analyzed: Apr-04-14				
Antimony, dissolved	41.3	0.05 ug/L	40.0	0.4	102	81-114			
Arsenic, dissolved	20.0	0.05 ug/L	20.0	0.61	97	89-115			
Barium, dissolved	115	0.1 ug/L	100	16.1	99	86-115			
Beryllium, dissolved	10.2	0.01 ug/L	10.0	< 0.01	102	77-124			
Cadmium, dissolved	9.96	0.002 ug/L	10.0	0.008	99	82-126			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Dissolved Metals, Batch B4D0165, Continued

Matrix Spike (B4D0165-MS1), Continued		Source: 4040315-01		Prepared: Apr-04-14, Analyzed: Apr-04-14					
Chromium, dissolved	40.1	0.1 ug/L	40.0	0.3	99	85-117			
Cobalt, dissolved	41.8	0.005 ug/L	40.0	0.118	104	76-131			
Copper, dissolved	44.4	0.1 ug/L	40.0	2.8	104	88-113			
Iron, dissolved	565	2 ug/L	200	359	103	80-115			
Lead, dissolved	20.4	0.05 ug/L	20.0	0.52	100	84-121			
Manganese, dissolved	92.8	0.05 ug/L	40.0	50.9	105	75-135			
Nickel, dissolved	40.3	0.02 ug/L	40.0	0.52	100	83-121			
Selenium, dissolved	10.2	0.1 ug/L	10.0	< 0.1	102	91-122			
Silver, dissolved	8.76	0.01 ug/L	10.0	< 0.01	88	74-120			
Thallium, dissolved	10.1	0.004 ug/L	10.0	< 0.004	101	79-119			
Vanadium, dissolved	40.1	0.2 ug/L	40.0	0.4	99	80-115			
Zinc, dissolved	109	1 ug/L	100	9	100	89-123			

Reference (B4D0165-SRM1)		Prepared: Apr-04-14, Analyzed: Apr-04-14							
Aluminum, dissolved	25	1 ug/L	23.3		105	58-142			
Antimony, dissolved	5.3	0.05 ug/L	4.30		123	75-125			
Arsenic, dissolved	44.8	0.05 ug/L	43.8		102	81-119			
Barium, dissolved	354	0.1 ug/L	335		106	83-117			
Beryllium, dissolved	22.8	0.01 ug/L	21.3		107	80-120			
Boron, dissolved	190	1 ug/L	174		109	74-117			
Cadmium, dissolved	23.3	0.002 ug/L	22.4		104	83-117			
Calcium, dissolved	856	40 ug/L	769		111	76-124			
Chromium, dissolved	46.5	0.1 ug/L	43.7		106	81-119			
Cobalt, dissolved	13.8	0.005 ug/L	12.8		108	76-124			
Copper, dissolved	93.5	0.1 ug/L	84.4		111	84-116			
Iron, dissolved	140	2 ug/L	129		109	74-126			
Lead, dissolved	11.7	0.05 ug/L	11.2		105	72-128			
Lithium, dissolved	11.2	0.05 ug/L	10.4		108	60-140			
Magnesium, dissolved	753	5 ug/L	692		109	81-119			
Manganese, dissolved	36.7	0.05 ug/L	34.5		106	84-116			
Molybdenum, dissolved	45.4	0.01 ug/L	42.6		107	83-117			
Nickel, dissolved	90.2	0.02 ug/L	84.0		107	74-126			
Phosphorus, dissolved	49	10 ug/L	49.5		100	68-132			
Potassium, dissolved	334	10 ug/L	319		105	74-126			
Selenium, dissolved	3.4	0.1 ug/L	3.31		103	70-130			
Sodium, dissolved	2010	10 ug/L	1910		105	72-128			
Strontium, dissolved	97.0	0.1 ug/L	91.6		106	84-113			
Thallium, dissolved	4.07	0.004 ug/L	3.93		104	57-143			
Uranium, dissolved	28.1	0.001 ug/L	26.6		106	85-115			
Vanadium, dissolved	90.6	0.2 ug/L	86.9		104	87-113			
Zinc, dissolved	93	1 ug/L	88.1		106	72-128			

General Parameters, Batch B4D0166

Reference (B4D0166-SRM1)		Prepared: Apr-04-14, Analyzed: Apr-04-14							
pH	6.99	0.01 pH units	7.00		100	98-102			

General Parameters, Batch B4D0180

Blank (B4D0180-BLK1)		Prepared: Apr-04-14, Analyzed: Apr-04-14							
Conductivity (EC)	< 2	2 uS/cm							
LCS (B4D0180-BS1)		Prepared: Apr-04-14, Analyzed: Apr-04-14							
Conductivity (EC)	1410	2 uS/cm	1410		100	88-112			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
General Parameters, Batch B4D0180, Continued									
LCS (B4D0180-BS2)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	147	2 uS/cm	147		100	88-112			
Duplicate (B4D0180-DUP1)			Source: 4040315-01		Prepared: Apr-04-14, Analyzed: Apr-04-14				
Conductivity (EC)	158	2 uS/cm		161			2	7	
Reference (B4D0180-SRM1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Conductivity (EC)	497	2 uS/cm	500		99	90-110			
General Parameters, Batch B4D0208									
Blank (B4D0208-BLK1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	< 2	2 mg/L							
Blank (B4D0208-BLK2)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	< 2	2 mg/L							
LCS (B4D0208-BS1)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	46	2 mg/L	49.0		94	83-107			
LCS (B4D0208-BS2)			Prepared: Apr-08-14, Analyzed: Apr-08-14						
Solids, Total Suspended	44	2 mg/L	51.6		86	83-107			
General Parameters, Batch B4D0244									
Blank (B4D0244-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Solids, Total Dissolved	< 10	10 mg/L							
Reference (B4D0244-SRM1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Solids, Total Dissolved	245	10 mg/L	240		102	70-130			
General Parameters, Batch B4D0301									
Blank (B4D0301-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK3)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK4)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
Blank (B4D0301-BLK5)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L							
LCS (B4D0301-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	9.97	0.020 mg/L	10.0		100	86-111			
LCS (B4D0301-BS2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	9.86	0.020 mg/L	10.0		99	86-111			
LCS (B4D0301-BS3)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L	10.0			86-111			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER REPORTED 4040315
Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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General Parameters, Batch B4D0301, Continued

LCS (B4D0301-BS4)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L	10.0			86-111			
LCS (B4D0301-BS5)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Nitrogen, Ammonia as N, Total	< 0.020	0.020 mg/L	10.0			86-111			

General Parameters, Batch B4D0320

Blank (B4D0320-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	< 0.5	0.5 mg/L							
Carbon, Dissolved Organic	< 0.5	0.5 mg/L							
Blank (B4D0320-BLK2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	< 0.5	0.5 mg/L							
Carbon, Dissolved Organic	< 0.5	0.5 mg/L							
LCS (B4D0320-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	10.0	0.5 mg/L	10.0		100	78-116			
Carbon, Dissolved Organic	11.7	0.5 mg/L	10.0		117	80-120			
LCS (B4D0320-BS2)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Total Organic	10.3	0.5 mg/L	10.0		103	78-116			
Carbon, Dissolved Organic	10.1	0.5 mg/L	10.0		101	80-120			

General Parameters, Batch B4D0321

Blank (B4D0321-BLK1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Dissolved Inorganic	< 0.5	0.5 mg/L							
LCS (B4D0321-BS1)			Prepared: Apr-09-14, Analyzed: Apr-09-14						
Carbon, Dissolved Inorganic	8.2	0.5 mg/L	10.0		82	80-120			

General Parameters, Batch B4D0414

Blank (B4D0414-BLK1)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	< 0.01	0.01 mg/L							
Blank (B4D0414-BLK2)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	< 0.01	0.01 mg/L							
LCS (B4D0414-BS1)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	0.30	0.01 mg/L	0.385		77	36-114			
LCS (B4D0414-BS2)			Prepared: Apr-11-14, Analyzed: Apr-11-14						
Sulfide	0.28	0.01 mg/L	0.385		73	36-114			

Polycyclic Aromatic Hydrocarbons (PAH), Batch B4D0121

Blank (B4D0121-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Acenaphthene	< 0.02	0.02 ug/L							
Acenaphthylene	< 0.02	0.02 ug/L							
Acridine	< 0.05	0.05 ug/L							
Anthracene	< 0.01	0.01 ug/L							
Benzo (a) anthracene	< 0.01	0.01 ug/L							
Benzo (a) pyrene	< 0.01	0.01 ug/L							
Benzo (b) fluoranthene	< 0.02	0.02 ug/L							
Benzo (g,h,i) perylene	< 0.02	0.02 ug/L							

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER 4040315
REPORTED Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Polycyclic Aromatic Hydrocarbons (PAH), Batch B4D0121, Continued									
Blank (B4D0121-BLK1), Continued					Prepared: Apr-04-14, Analyzed: Apr-04-14				
Benzo (k) fluoranthene	< 0.02	0.02 ug/L							
Chrysene	< 0.02	0.02 ug/L							
Dibenz (a,h) anthracene	< 0.02	0.02 ug/L							
Fluoranthene	< 0.02	0.02 ug/L							
Fluorene	< 0.02	0.02 ug/L							
Indeno (1,2,3-cd) pyrene	< 0.02	0.02 ug/L							
Naphthalene	< 0.05	0.05 ug/L							
Phenanthrene	< 0.05	0.05 ug/L							
Pyrene	< 0.02	0.02 ug/L							
Quinoline	< 0.05	0.05 ug/L							
Surrogate: Naphthalene-d8	0.669	ug/L	1.02		66	40-96			
Surrogate: Acenaphthene-d10	0.700	ug/L	0.995		70	45-92			
Surrogate: Phenanthrene-d10	0.714	ug/L	0.970		74	48-90			
Surrogate: Chrysene-d12	0.782	ug/L	0.950		82	41-96			
Surrogate: Perylene-d12	0.730	ug/L	0.990		74	47-104			
LCS (B4D0121-BS1)					Prepared: Apr-04-14, Analyzed: Apr-04-14				
Acenaphthene	0.69	0.02 ug/L	1.00		69	54-92			
Acenaphthylene	0.76	0.02 ug/L	1.00		76	54-95			
Acridine	0.66	0.05 ug/L	1.00		66	49-87			
Anthracene	0.77	0.01 ug/L	1.00		77	53-94			
Benzo (a) anthracene	0.64	0.01 ug/L	1.00		64	52-95			
Benzo (a) pyrene	0.75	0.01 ug/L	1.00		75	52-103			
Benzo (b) fluoranthene	0.60	0.02 ug/L	1.00		60	49-94			
Benzo (g,h,i) perylene	0.67	0.02 ug/L	1.00		67	51-98			
Benzo (k) fluoranthene	0.64	0.02 ug/L	1.00		64	49-105			
Chrysene	0.73	0.02 ug/L	1.00		73	50-104			
Dibenz (a,h) anthracene	0.65	0.02 ug/L	1.00		65	49-96			
Fluoranthene	0.82	0.02 ug/L	1.00		82	53-102			
Fluorene	0.76	0.02 ug/L	1.00		76	54-91			
Indeno (1,2,3-cd) pyrene	0.68	0.02 ug/L	1.00		68	51-99			
Naphthalene	0.63	0.05 ug/L	1.00		63	51-91			
Phenanthrene	0.76	0.05 ug/L	1.00		76	56-96			
Pyrene	0.79	0.02 ug/L	1.00		79	51-105			
Quinoline	0.66	0.05 ug/L	1.00		66	48-126			
Surrogate: Naphthalene-d8	0.659	ug/L	1.02		65	40-96			
Surrogate: Acenaphthene-d10	0.688	ug/L	0.995		69	45-92			
Surrogate: Phenanthrene-d10	0.735	ug/L	0.970		76	48-90			
Surrogate: Chrysene-d12	0.750	ug/L	0.950		79	41-96			
Surrogate: Perylene-d12	0.725	ug/L	0.990		73	47-104			
LCS Dup (B4D0121-BSD1)					Prepared: Apr-04-14, Analyzed: Apr-04-14				
Acenaphthene	0.64	0.02 ug/L	1.00		64	54-92	7	20	
Acenaphthylene	0.71	0.02 ug/L	1.00		71	54-95	7	20	
Acridine	0.61	0.05 ug/L	1.00		61	49-87	9	20	
Anthracene	0.71	0.01 ug/L	1.00		71	53-94	7	20	
Benzo (a) anthracene	0.65	0.01 ug/L	1.00		65	52-95	< 1	20	
Benzo (a) pyrene	0.73	0.01 ug/L	1.00		73	52-103	3	20	
Benzo (b) fluoranthene	0.57	0.02 ug/L	1.00		57	49-94	5	20	
Benzo (g,h,i) perylene	0.66	0.02 ug/L	1.00		66	51-98	3	20	
Benzo (k) fluoranthene	0.68	0.02 ug/L	1.00		68	49-105	6	20	
Chrysene	0.73	0.02 ug/L	1.00		73	50-104	< 1	20	
Dibenz (a,h) anthracene	0.63	0.02 ug/L	1.00		63	49-96	4	20	
Fluoranthene	0.76	0.02 ug/L	1.00		76	53-102	8	20	
Fluorene	0.70	0.02 ug/L	1.00		70	54-91	8	20	
Indeno (1,2,3-cd) pyrene	0.68	0.02 ug/L	1.00		68	51-99	< 1	20	

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER 4040315
REPORTED Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
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Polycyclic Aromatic Hydrocarbons (PAH), Batch B4D0121, Continued

LCS Dup (B4D0121-BSD1), Continued			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Naphthalene	0.62	0.05 ug/L	1.00		62	51-91	2	20	
Phenanthrene	0.71	0.05 ug/L	1.00		71	56-96	6	20	
Pyrene	0.75	0.02 ug/L	1.00		75	51-105	6	20	
Quinoline	0.63	0.05 ug/L	1.00		63	48-126	5	20	
Surrogate: Naphthalene-d8	0.645	ug/L	1.02		63	40-96			
Surrogate: Acenaphthene-d10	0.650	ug/L	0.995		65	45-92			
Surrogate: Phenanthrene-d10	0.692	ug/L	0.970		71	48-90			
Surrogate: Chrysene-d12	0.769	ug/L	0.950		81	41-96			
Surrogate: Perylene-d12	0.696	ug/L	0.990		70	47-104			

Total Recoverable Metals, Batch B4D0164

Blank (B4D0164-BLK1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Aluminum, total	< 1	1 ug/L							
Antimony, total	< 0.05	0.05 ug/L							
Arsenic, total	< 0.05	0.05 ug/L							
Barium, total	< 0.1	0.1 ug/L							
Beryllium, total	< 0.01	0.01 ug/L							
Bismuth, total	< 0.01	0.01 ug/L							
Boron, total	< 1	1 ug/L							
Cadmium, total	< 0.002	0.002 ug/L							
Calcium, total	< 40	40 ug/L							
Chromium, total	< 0.1	0.1 ug/L							
Cobalt, total	< 0.005	0.005 ug/L							
Copper, total	< 0.1	0.1 ug/L							
Iron, total	< 2	2 ug/L							
Lead, total	< 0.05	0.05 ug/L							
Lithium, total	< 0.05	0.05 ug/L							
Magnesium, total	< 5.0	5.0 ug/L							
Manganese, total	< 0.05	0.05 ug/L							
Mercury, total	< 0.01	0.01 ug/L							
Molybdenum, total	< 0.01	0.01 ug/L							
Nickel, total	< 0.02	0.02 ug/L							
Phosphorus, total	< 10	10 ug/L							
Potassium, total	< 10	10 ug/L							
Selenium, total	< 0.1	0.1 ug/L							
Silicon, total	< 50	50 ug/L							
Silver, total	< 0.01	0.01 ug/L							
Sodium, total	< 10	10 ug/L							
Strontium, total	< 0.1	0.1 ug/L							
Sulfur, total	< 500	500 ug/L							
Tellurium, total	< 0.05	0.05 ug/L							
Thallium, total	< 0.004	0.004 ug/L							
Thorium, total	< 0.01	0.01 ug/L							
Tin, total	< 0.05	0.05 ug/L							
Titanium, total	< 0.2	0.2 ug/L							
Uranium, total	< 0.001	0.001 ug/L							
Vanadium, total	< 0.2	0.2 ug/L							
Zinc, total	< 1	1 ug/L							
Zirconium, total	< 0.01	0.01 ug/L							

Reference (B4D0164-SRM1)			Prepared: Apr-04-14, Analyzed: Apr-04-14						
Aluminum, total	63	1 ug/L	59.2		107	81-129			
Antimony, total	11.2	0.05 ug/L	10.1		111	88-114			
Arsenic, total	25.4	0.05 ug/L	24.4		104	88-114			
Barium, total	162	0.1 ug/L	155		104	72-104			

QUALITY CONTROL DATA

REPORTED TO PROJECT Triton Environmental Consultants Ltd. (Richmond)
4435-029

WORK ORDER 4040315
REPORTED Apr-11-14

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	RPD	RPD Limit	Notes
Total Recoverable Metals, Batch B4D0164, Continued									
Reference (B4D0164-SRM1), Continued				Prepared: Apr-04-14, Analyzed: Apr-04-14					
Beryllium, total	10.4	0.01 ug/L	9.76		107	76-131			
Boron, total	740	1 ug/L	680		109	75-121			
Cadmium, total	10.4	0.002 ug/L	9.80		106	89-111			
Calcium, total	2170	40 ug/L	2040		107	86-121			
Chromium, total	52.2	0.1 ug/L	48.4		108	89-114			
Cobalt, total	8.16	0.005 ug/L	7.32		111	91-113			
Copper, total	106	0.1 ug/L	97.4		109	91-115			
Iron, total	106	2 ug/L	93.8		113	77-124			
Lead, total	41.5	0.05 ug/L	38.6		107	92-113			
Lithium, total	84.8	0.05 ug/L	78.0		109	85-115			
Magnesium, total	746	5.0 ug/L	662		113	78-120			
Manganese, total	23.3	0.05 ug/L	21.8		107	90-114			
Mercury, total	1.36	0.01 ug/L	0.912		149	50-150			
Molybdenum, total	42.0	0.01 ug/L	39.4		107	90-111			
Nickel, total	52.4	0.02 ug/L	48.4		108	90-111			
Phosphorus, total	47	10 ug/L	46.6		100	85-115			
Potassium, total	1330	10 ug/L	1190		112	84-113			
Selenium, total	25.2	0.1 ug/L	23.0		109	85-115			
Sodium, total	1640	10 ug/L	1530		108	82-123			
Strontium, total	80.1	0.1 ug/L	72.6		110	88-112			
Thallium, total	16.8	0.004 ug/L	15.9		106	91-114			
Uranium, total	3.98	0.001 ug/L	3.84		104	85-120			
Vanadium, total	79.5	0.2 ug/L	75.2		106	86-111			
Zinc, total	516	1 ug/L	484		107	85-111			