

December 20, 2010

EBA File: N23101632

Engineering and Environmental Services Department
Cowichan Valley Regional District (CVRD)
175 Ingram Street
Duncan BC, V9L 1N8

Attention: Mr. Rob Williams
Environmental Technologist

**Regarding: Addendum to Environmental Review
1355 and 1345 Fisher Road, Cobble Hill, British Columbia**

Dear Mr. Williams:

EBA Engineering Consultants Ltd. (EBA) has received the analytical testing results of the surface water runoff sample that was collected by the Cowichan Valley Regional District (CVRD) at 1355 Fisher Road on November 15, 2010. EBA has prepared this addendum letter to present and discuss the results of this sample. This addendum letter should be included with any copies made of EBA's report to the CVRD entitled *Environmental Review 1355 and 1345 Fisher Road Cobble Hill, British Columbia* (EBA report no. N23101632, dated November 23, 2010).

1.0 BACKGROUND

EBA was instructed by the CVRD to collect a sample of the runoff water that pools between the windrows of unscreened compost at 1355 Fisher Road following periods of heavy precipitation. This sampling event was originally scheduled for October 7, 2010 when EBA was in the area to collect compost and leachate samples at 1345 Fisher Road; however at the time of sampling there was no pooled water to collect.

EBA provided the CVRD with sample bottles and instructions on how to collect the sample. The CVRD visited the site on November 15, 2010 to collect the sample using the methodology outlined in EBA's report (see Section 4.3 of the EBA report) and shipped the samples to Exova Laboratory in Surrey, BC for testing of nitrate, nitrite, nitrate + nitrite, nitrogen, ammonia-N.

The results were scheduled to be reported on November 23, 2010 which was four days after the report was required to be posted for public viewing on the CVRD's website, therefore the CVRD directed EBA to prepared this addendum document to accompany EBA's report.

2.0 AMENDMENT TO SECTION 6.3 - 1355 FISHER ROAD POOLED RUNOFF SAMPLE

The results of the pooled runoff sample collected at 1355 Fisher Road on November 15, 2010 indicated that the nitrate, nitrite, and nitrate + nitrite concentrations were less than the laboratory detection limit. The total nitrogen concentration was 65.0 mg/L and the ammonia-N (ammonium) concentration was 22 mg/L. Table 7 attached was updated to include these results and the laboratory certificate is presented in Appendix A.

3.0 AMENDMENT TO SECTION 6.4 - 1345 FINISHED CLASS A COMPOST AND LEACHATE SAMPLE

The first line in the second paragraph of Section 6.4 – 1345 Fisher Road Finished Class A Compost and Leachate Sample should state the following: “The results of the leachate sample at 1345 Fisher Road on October 7, 2010 indicated that all of the parameters tested met the GCDWQ except for total arsenic, total lead and total manganese”. The total arsenic concentration was originally not reported as an exceedence of the guideline. This result has been corrected on Table 7 attached.

The leachate sample also had an ammonium concentration of 16.2 mg/L. Although there is no guideline for ammonium, ammonium is soluble in water and can leach. Some of the ammonium has the ability to convert to nitrate as it migrates through the soil.

4.0 AMENDMENT TO FIGURE 3

EBA identified that the 140-foot well located at 1360 Fisher Road was incorrectly plotted on Figure 3 of EBA’s report. EBA has placed the well on the correct lot and the revised Figure 3 is attached to this letter.

5.0 DISCUSSION

The analytical results of the runoff water sample that was collected did not change the conclusions of the November 2010 EBA report. EBA stands by the conclusion that the current indoor operation at 1355 Fisher Road is not a major cause of elevated nitrate concentrations in the on site well. However, historical land uses at this property and neighbouring properties need to be investigated as part of a comprehensive hydrogeological investigation to identify and assess the significance of all known sources of nitrates that are contributing or have contributed to the nitrate concentration in the on site well and other wells in the area.

Based on the analytical results of one sample of runoff water from the compost stockpiles at 1355 Fisher Road, it does not appear that the unscreened compost is directly contributing nitrate to the subsurface; however ammonium was detected in the sample. Ammonium is soluble in water and can leach. Ammonium forms positive ions which tend to travel through soil layers at a slower rate than negative ions such as nitrate. Some of the ammonium has the ability to convert to nitrate as it migrates through the soil.

Based on what is known about the site at present, it is unknown how much ammonium remains in the soil from historical land use practices, how fast the ammonium migrates downward through the stratigraphic formations, how much can convert to nitrate; and what is the relative impact of ammonium leaching from the current stored piles relative to historical ammonium in the soil profile. These aspects of geochemical transformation and transport could be part of the scope of the comprehensive hydrogeological delineation program.

6.0 RECOMMENDATION

EBA recommends covering the compost stockpiles at 1345 and 1355 Fisher Road to prevent most precipitation from contact with the compost piles to reduce or eliminate runoff, which would then reduce or eliminate current ammonium contributions to the subsurface.

7.0 LIMITATIONS OF REPORT

This addendum and its contents are intended for the sole use of the Cowichan Valley Regional District and its agents. EBA does not accept any responsibility for the accuracy of any data, any analysis or any recommendation contained or referenced in this report when the report is used or relied upon by any party other than Cowichan Valley Regional District, or for any project other than for the purpose at the Property that is identified herein. Any such unauthorized use of this report is at the sole risk of the user.

8.0 CLOSURE

This addendum report was prepared to supplement EBA's Environmental Review 1355 and 1345 Fisher Road, Cobble Hill, BC report dated November 23, 2010 (EBA File No. N23101632) and is therefore subject to the terms and conditions stated in EBA's Services Agreement and EBA's General Conditions as presented in Section 10.0 and in Appendix F of that report.

We trust the information in this report is sufficient for your present requirements. If you have questions or require additional information, please contact the undersigned.

Respectfully submitted;

EBA Engineering Consultants Ltd.

Prepared by:

Reviewed by:



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Environmental Geoscientist
Pacific Environment Practice
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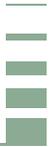
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Attachments:

Table 7: Analytical Results – Runoff and Leachate 1355 and 1345 Fisher Road
Figure 3: Groundwater Testing, Utility and Improvement District Well Locations
Appendix A: Laboratory Certificate



ATTACHMENTS

TABLE 7: Analytical Results - Runoff and Leachate 1355 and 1345 Fisher Road					
		1355 Fisher Road Runoff	1345 Fisher Road Leachate	Canadian Drinking Water Quality Guidelines ¹	
		15-Nov-10	7-Oct-10	Potability at Point of Use ²	Aesthetic Objective
Anions					
Nitrate (N)	mg/L	< 0.01	0.010	10	-
Nitrite (N)	mg/L	< 0.01	< 0.005	1	-
Nitrate + Nitrite (N)	mg/L	< 0.02	0.11	10	-
Total Nitrogen	mg/L	65.0	58.2	-	-
Inorganic Non-Metalic Parameters					
Ammonium (N)	mg/L	22	16.2	-	-
Total Organic Carbon	mg/L	-	325	-	-
Total Metals					
Aluminum	µg/L	-	6,910	-	-
Antimony	µg/L	-	1.4	6	-
Arsenic	µg/L	-	25.2	10	-
Barium	µg/L	-	273	1,000	-
Boron	µg/L	-	108	5,000	-
Cadmium	µg/L	-	0.64	5	-
Chromium	µg/L	-	18.8	50	-
Copper	µg/L	-	0.035	-	1,000
Iron	µg/L	-	35	-	300
Lead	µg/L	-	21.0	10	-
Magnesium	mg/L	-	60.9	-	-
Manganese	µg/L	-	1,690	-	50
Mercury	µg/L	-	-	1	-
Selenium	µg/L	-	< 0.2	10	-
Sodium	mg/L	-	80.3	-	200
Uranium	µg/L	-	3.6	20	-
Zinc	µg/L	-	143	-	5,000

Bold - Concentration exceeds the aesthetic objective as set by the Guidelines for Canadian Drinking Water Quality.

Bold - Concentration exceeds the Guidelines for Canadian Drinking Water Quality for potability.

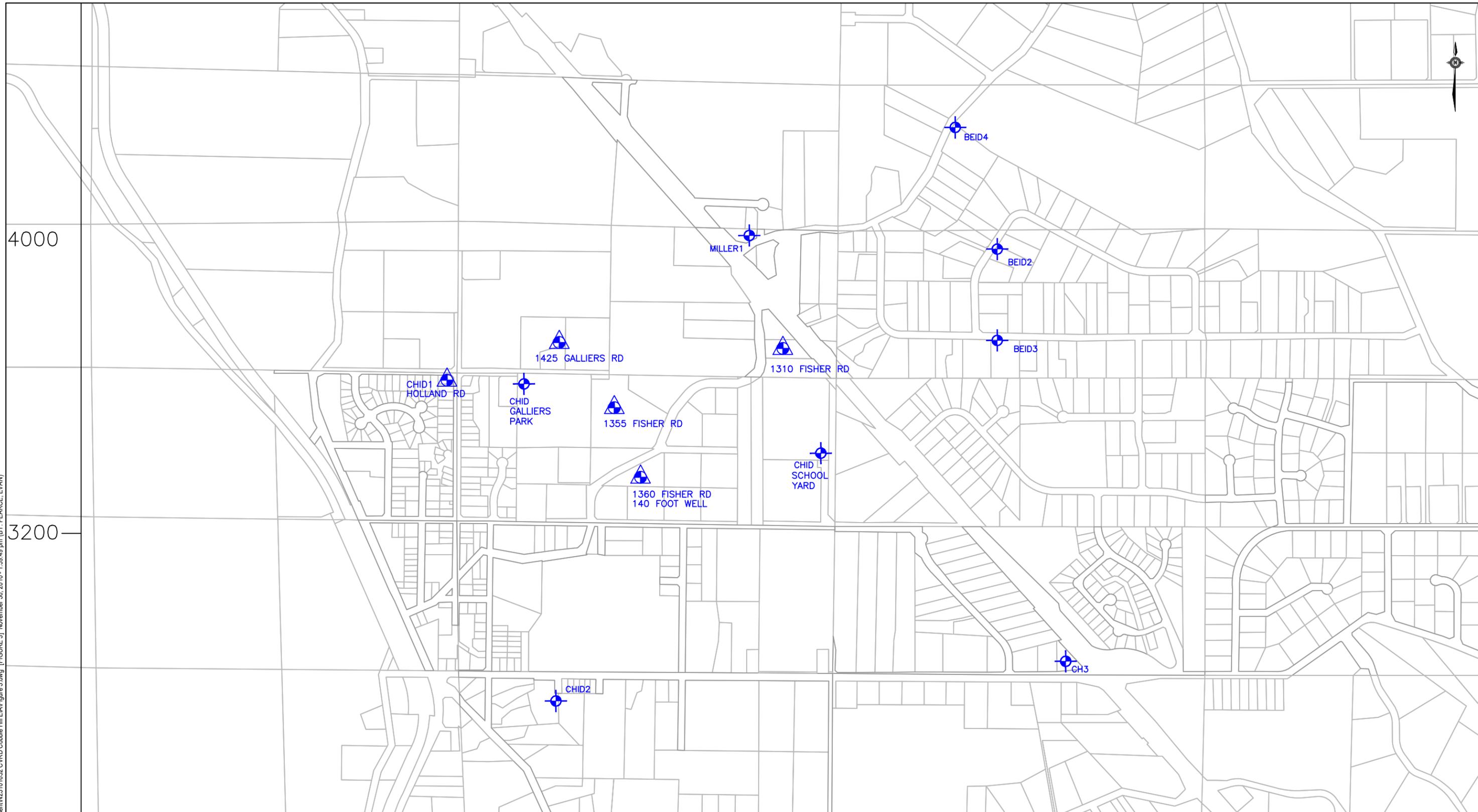
Notes:

"-" = Not analyzed or no guideline/criteria.

"<" = Less than the laboratory method detection limit

1. Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, Guidelines for Canadian Drinking Water Quality, updated May, 2008.

2. Health criteria at point of use/distribution. Guidelines presented for comparison purposes only and do not apply to water not used for human consumption.



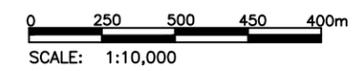
Q:\Nanaimo\Environmental\N231\Projects\2006 - Present\N23101632 CVRD Cobble Hill EIA\Figures 3.dwg [FIGURE 3] November 30, 2010 - 1:59:49 pm (BY: PEARCE, EVAN)

LEGEND:

- Utility or Improvement District Pumping Well
- Groundwater Testing Location
- BEID - Braithwaite Estates Improvement District
- CHID - Cobble Hill Improvement District

NOTE:

Base map provided by Braithwaite Estates Improvement District Board (BEID).



CLIENT		Environmental Review 1355 & 1345 Fisher Road			
Cowichan Valley Regional District		Groundwater Testing, Utility and Improvement District Well Locations			
EBA Engineering Consultants Ltd.		PROJECT NO.	DWN	CHK	REV
		N23101632	EP	MG	1
OFFICE		DATE		Figure 3	
NAN		November 30, 2010			

Report Transmission Cover Page

Bill To: EBA Engineering Consultants	Project:	Lot ID: 774524
Report To: EBA Engineering Consultants	ID: N23101632	Control Number: A137183
#1 - 4376 Boban Drive	Name: Environmental Review	Date Received: Nov 16, 2010
Nanaimo, BC, Canada	Location: FRRF Cobble Hill, BC	Date Reported: Nov 23, 2010
V9T 6A7	LSD:	Report Number: 1387968
Attn: Mike Gallo	P.O.:	
Sampled By:	Acct code:	
Company: CVRD		

Contact & Affiliation	Address	Delivery Commitments
Mike Gallo	#1 - 4376 Boban Drive	On [Lot Verification] send
EBA Engineering Consultants Ltd -	Nanaimo, British Columbia V9T 6A7	(COA) by Email - Single Report
	Phone: (250) 756-2256	On [Report Approval] send
	Fax: (250) 756-2686	(COC, Test Report) by Automated Fax
	Email: mgallo@eba.ca	On [Report Approval] send
		(COC, Test Report) by Email - Merge Reports
		On [Lot Approval and Final Test Report Approval] send
		(Invoice) by Email - Single Report

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Sample Custody

Bill To: EBA Engineering Consultants	Project:	Lot ID: 774524
Report To: EBA Engineering Consultants	ID: N23101632	Control Number: A137183
#1 - 4376 Boban Drive	Name: Environmental Review	Date Received: Nov 16, 2010
Nanaimo, BC, Canada	Location: FRRF Cobble Hill, BC	Date Reported: Nov 23, 2010
V9T 6A7	LSD:	Report Number: 1387968
Attn: Mike Gallo	P.O.:	
Sampled By:	Acct code:	
Company: CVRD		

Sample Disposal Date: February 21, 2011

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	\$ 2.50 per sample
Storage for an additional 60 days	\$ 5.00 per sample
Storage for an additional 90 days	\$ 7.50 per sample

Return Sample, collect, to the address below via:

Greyhound

DHL

Purolator

Other (specify) _____

Name _____

Company _____

Address _____

Phone _____

Fax _____

Signature _____

Analytical Report

Bill To: EBA Engineering Consultants
Report To: EBA Engineering Consultants
#1 - 4376 Boban Drive
Nanaimo, BC, Canada
V9T 6A7
Attn: Mike Gallo
Sampled By:
Company: CVRD

Project:
ID: N23101632
Name: Environmental Review
Location: FRRF Cobble Hill, BC
LSD:
P.O.:
Acct code:

Lot ID: **774524**
Control Number: A137183
Date Received: Nov 16, 2010
Date Reported: Nov 23, 2010
Report Number: 1387968

Reference Number 774524-1
Sample Date Nov 15, 2010
Sample Time NA
Sample Location
Sample Description FRRF Runoff
Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters					
Nitrogen Total	mg/L	65.0			0.06
Ammonia - N	mg/L	22			
Routine Water					
Nitrate - N	Dissolved mg/L	<0.01			0.01
Nitrite - N	Dissolved mg/L	<0.01			0.01
Nitrate and Nitrite - N	Dissolved mg/L	<0.02			0.01

Approved by: 
Andrew Garrard, BSc
General Manager

Quality Control

Bill To: EBA Engineering Consultants	Project:	Lot ID: 774524
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Attn: Mike Gallo	P.O.:	
Sampled By:	Acct code:	
Company: CVRD		

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ammonium - N	ug/L	-76.106	-110.00	10.00	yes
Date Acquired:	November 17, 2010				
Nitrogen	mg/L	0.05103	-0.06	0.06	yes
Date Acquired:	November 19, 2010				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Ammonium - N	ug/L	104.94	85	115	yes
Date Acquired:	November 17, 2010				
Ammonium - N	ug/L	118.44	70	130	yes
Date Acquired:	November 17, 2010				
Nitrite - N	mg/L	105.33	90	110	yes
Nitrate and Nitrite - N	mg/L	95.16	90	110	yes
Date Acquired:	November 16, 2010				

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonia - N	mg/L	0.6		0.00	0.00	yes
Ammonium - N	mg/L	0.60	0.62	0.52	0.72	yes
Nitrate - N	mg/L	0.67	0.65	0.55	0.75	yes
Nitrate and Nitrite - N	mg/L	0.67	0.65	0.55	0.75	yes
Date Acquired:	November 16, 2010					
Nitrate - N	mg/L	<0.01	0.00	-0.15	0.15	yes
Nitrite - N	mg/L	1.27	1.192	1.040	1.340	yes
Nitrate and Nitrite - N	mg/L	1.21	1.19	0.89	1.49	yes
Date Acquired:	November 16, 2010					

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrogen	mg/L	2.52	2.35	10	0.06	yes
Date Acquired:	November 19, 2010					
Ammonia - N	mg/L	0.12	0.13	20	0.50	yes
Nitrate - N	mg/L	0.30	0.30	15	0.05	yes
Nitrite - N	mg/L	0.051	0.052	10	0.030	yes
Nitrate and Nitrite - N	mg/L	0.36	0.36	10	0.05	yes
Date Acquired:	November 16, 2010					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	<0.01	-0.01	0.02	yes
Nitrite - N	mg/L	<0.005	-0.004	0.006	yes
Nitrate and Nitrite - N	mg/L	<0.01	0.00	0.01	yes
Date Acquired:	November 16, 2010				
Nitrogen	mg/L	125	103.98	137.82	yes
Date Acquired:	November 19, 2010				

Quality Control

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Sampled By:	Acct code:	
Company: CVRD		

Inorganic Nonmetallic Parameters -

Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Nitrogen	mg/L	16.0	12.99	16.41	yes
Date Acquired:	November 19, 2010				
Nitrogen	mg/L	1.03	0.81	1.23	yes
Date Acquired:	November 19, 2010				

Methodology and Notes

Bill To: EBA Engineering Consultants	Project:	Lot ID: 774524
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Sampled By:	Acct code:	
Company: CVRD		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Ammonia-N in Water	APHA	* Titrametric, 4500-NH3 C	17-Nov-10	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	23-Nov-10	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	23-Nov-10	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	19-Nov-10	Exova Edmonton

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
ISO	International Organization for Standardization

Comments:

Please direct any inquiries regarding this report to our Client Services group.

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