Denison Environmental Services

Technical Memorandum

TO: Jon Bronson, Roy Morrell, Kaori Torigai, Karen Furlong, Leslie Gomm, Bill Slater and Patricia Randell
DATE: December 30, 2010
FROM: Jessie Luchinski and Jay Cherian
SUBJECT: Review of Water Quality and Mixing at X3 and X3A – October 21, 2010

Background

Prior to September 2010, the last point of routine monitoring of water entering the Rose Creek Diversion was at location X3, at the outflow of the pumphouse pond. Monitoring at X3 allowed for the testing of all flow from the South Fork of Rose Creek combined with the majority of the flow from the North Fork of Rose Creek (via location X2). However, a portion of the flow from the North Fork of Rose Creek bypasses the Pumphouse Pond via a secondary channel and enters Rose Creek at a location immediately downstream of X3, and the proportion of flow along this flow path, in relation to the total flow through the North Fork of Rose Creek varies seasonally. An alternate monitoring location was therefore proposed to represent water quality and flow rate in the Rose Creek Diversion, as upstream as possible of the reaches that border the tailings impoundments, and downstream of the fully converged North and South Forks. Also considered for the siting of the new monitoring location, a small stream drains into Rose Creek from the south side of the Rose Creek Diversion, downstream of X3, and adequate mixing. The flow path of the North and South Forks of Rose Creek, along with the additional flow path from the backslope, are shown in Figure 1, attached.

The new sampling site (X3A) to be established in Rose Creek would be useful in evaluating possible seepage to the diversion from areas bordering the tailings impoundments (especially in upper reaches), as well as seepage from the diversion to the tailings areas and ponds (especially in the lower reaches). Location X3A (refer to Figure 1) was established and sampled for the first time on September 2, 2010.

In order to confirm if X3A was established an adequate distance downstream of the confluence of the North and South Forks to allow for sufficient mixing, it was proposed that a mixing study be carried out. This report provides the results of the study under low flow conditions (which may differ from under peak flow conditions), performed on October 21, 2010.

Methods

The mixing study consisted of water monitoring at X3 and three points across the Rose Creek Diversion at location X3A:

- center of the creek (X3A),
- north bank of the creek ("left", X3A L.B.) and
- south bank of the creek ("right", X3A R.B.).

Care was taken when sampling to not disturb sediment upstream of the sampling locations.

Field parameters (pH, electrical conductivity (EC), and temperature) were measured only at the centre location using a Hanna Instruments Combo meter. Each sample was also analyzed for metals and other parameters as reported in Appendix A, attached (S LDL parameters suite in Appendix B of the DES Care and Maintenance Contract) by Maxxam Analytics.

A comparison of results from X3 and the three X3A sites across the transect was undertaken to assess for changes in water quality between the two monitoring locations.

A comparison of the three X3A sites was undertaken to assess for mixing variation across the transect.

A comparison of duplicates and splits from X3 in 2010 was also undertaken to provide an assessment of natural variability in successive samples, and variability during the testing process, to provide a relative comparison for differences observed across X3A and between X3 and the X3A sites.

There are several options with which results from the different sites could be compared. As this study is based on a limited set of data collected over one day, the method chosen was to compare sites was to use relative percent difference. This method also has the advantage that it is already in use at the Faro Mine Complex by Denison Environmental Services for quality assurance and control of the water quality monitoring program:

Relative Percent Difference (RPD) is the difference between the sample result and

$$\%RPD = \frac{2(C_1 - C_2)}{(C_1 + C_2)} * 100$$

second result, divided by the average of the sample result and second result, as described below:

Where: C1 = The concentration of the first sample;
C2 = The concentration of the second sample.

Results

Results of testing from Maxxam Analytics can be found in Appendix A, and field parameters in the table below.

Table 1 – Field Parameters for Mixing Study at X3A

Site	Time	Temp. (°C)	pH	EC (µS/cm)
X3A	9:36 AM	0.1	7.84	268
X3	1:40 PM	0.2	7.57	225

Where RPD were >20%, the results were flagged so long as both results being compared are greater than the Practical Quantitation Limit (PQL), where PQL is 5 times the Method Detection Limit (MDL). If one or both of the results were less than PQL, the RPD comparison was considered not applicable in evaluation of results.

Tables 2 to 4, attached, show a summary of results for all non-field parameters along with the results of RPD comparisons from the left bank, centre and right bank at X3A with results from X3.

Parameters where the relative difference of X3A sites with X3 was greater than 20% include:

- ammonia (centre);
- dissolved copper (left bank);
- dissolved iron (left bank);
- dissolved lead (left bank, centre and right bank);
- dissolved nickel (left bank);
- dissolved zinc (left bank, centre and right bank);
- total aluminum (left bank);
- total copper (left bank and centre);
- total iron (centre and right bank);
- total lead (left bank, centre and right bank);
- total magnesium (right bank).

A scan of results shows that all the results are all within the same order of magnitude of each other, with the exception of:

- dissolved zinc – across transect at X3A (X3 was greater than at the X3A sites; note also the dissolved zinc at X3 was greater than the total zinc, and reanalysis yielded the same results);
- total copper at the left bank of X3A (X3A left bank concentration was greater than X3);

Tables 5 to 7, attached, show the results of duplicates and splits testing in 2010 at X3 to show a comparison of variability in successive samples and variation through testing (or laboratory variability). An RPD of greater than 50% is shown with a "!" symbol, as this is RPD value currently used for on-going QA / QC evaluations on site. A scan of RPD duplicates and splits values, based on the two data sets for each type of comparison, shows that for:

- total bismuth, cadmium, cobalt, copper, manganese, lead, and zinc, a RPD greater than 20% is observed as the variability of successive samples;

- dissolved aluminum, cadmium, copper, and lead, a RPD greater than 20% is observed as the variability of successive samples;
- DOC, TDS, TOC and TSS, a RPD greater than 20% is observed as the variability of successive samples;
- total calcium, iron, molybdenum, nickel, lead, antimony, silicon, and zinc, a RPD greater than 20% is observed as the variability of testing processes;
- dissolved aluminum, cobalt, copper, manganese, lead and zinc a RPD greater than 20% is observed as the variability of testing processes;
- TOC, total hardness, and turbidity a RPD greater than 20% is observed as the variability of testing processes;

Tables 8 to 10, attached, show and RPD comparison of the left and right banks with each the centre. The results of RPD comparison are the same as comparison of the three X3A sites with X3, with the following exceptions:

- Ammonia left bank and centre RPD is less than 20%;
- Dissolved iron RPD is less than 20%;
- Dissolved nickel RPD is less than 20%; and
- Dissolved zinc RPD is less than 20%.

Note, that in all three of the above metals, the concentration of dissolved metals at X3 was higher than all the X3A sites.

Discussion of Results of Mixing Study, Site and Process Variability, and X3 / X3A Water Quality

Natural Water Quality Variability and Testing Process Reproducibility

In general, variability in successive sampling and testing processes, based on an RPD greater than 20%, was observed for more parameters than was observed as part of the mixing and X3 / X3A comparisons. The more limited difference in water quality observed between X3 and X3A and between sites across the X3A transect provides a preliminary indication that, in general terms, the results of monitoring at all the sites sampled in October 21, 2010 could be expected to have encompassed more parameters than what was observed.

Comparison of X3 and X3A Water Quality

In general, based on the samples included in the study from X3 and X3A, the RPD comparisons show that the variability in results between X3 and the three samples from X3A are generally within the natural variability of successive samples and of testing processes, even where the RPD was greater than 20%. Therefore, based on this study, in general terms, there is not a significant difference between water quality at X3 and X3A. Dissolved zinc, total copper and ammonia results may be the exceptions - RPD results observed in the X3 vs X3A sites, was not observed in the RPD review of splits and duplicates. A larger statistical sampling comparison would be required to establish whether or not the difference in RPD comparisons and variability in sampling and testing was significant for these parameters.

For follow-up assessment of water quality at X3 in comparison with X3A, it is suggested that visual (graphical) representation of water quality at X3 and X3A be included as part

of 2010 annual environmental reporting from September to December 2010 for several indicator parameters.

X3A Mixing

The results of the mixing study at X3A show that an assumption of full mixing can be made across the X3A transect, as the results of RPD comparison from the left and right banks are within the natural variability in sampling and testing processes at X3. Again, a larger statistical sampling comparison would be required to establish whether or not the difference in RPD comparisons and variability in sampling and testing was significant, especially for the possible exception of total copper. For follow-up assessment of the total copper result at X3A observed on October 21, 2010 it is suggested that a review of total copper be evaluated, based on samples collected as part of the routine monitoring program, where X3A samples are collected from shore (equivalent to left bank in mixing study) between September and December 2010, as part of 2010 annual environmental review.

Low Flow Rate Vs Peak Flow Rate

It is suggested that this study be repeated at peak flow rates (i.e. freshet) to verify results with differing flow paths for the two branches of the North Fork of Rose Creek, and when relative and total flow rates from the North Fork and South Fork, and also from the backslope would be expected to differ from the low flow season, to provide a further snapshot under another extreme of flow rate conditions.

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Faro Mine Closure

TABLES

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Table 2: General Parameters at X3A Comparison with X3

	Units	X3A L.B.	X3A	X3A R.B.	X3	RDL		Relative Percent Difference Comparison with X3			
ANIONS								RPD L.B. & X3	RPD Center & X3	RPD R.B. & X3	Comments
Nitrite (N)	mg/L	<0.005	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Calculated Parameters											
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	N/A		N/A	N/A	N/A	
Nitrate (N)	mg/L	0.09	0.08	0.09	0.08	0.02		11.8	0.0	11.8	
Misc. Inorganics											
Dissolved Organic Carbon (C)	mg/L	2.1	1.9	2.0	1.9	0.5		10.0	0.0	5.1	
Alkalinity (Total as CaCO3)	mg/L	100	110	110	98	0.5		2.0	11.5	11.5	
Total Organic Carbon (C)	mg/L	1.7	1.9	1.7	1.7	0.5		0.0	11.1	0.0	
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Bicarbonate (HCO3)	mg/L	130	130	140	120	0.5		8.0	8.0	15.4	
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Anions											
Dissolved Sulphate (SO4)	mg/L	22	20	22	20	0.5		9.5	0.0	9.5	
Dissolved Chloride (Cl)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Nutrients											
Ammonia (N)	mg/L	0.072	0.083	0.024	0.067	0.005		7.2	21.3	94.5	R.B. < PQL. RPD analysis with this value not valid.
Nitrate plus Nitrite (N)	mg/L	0.09	0.08	0.09	0.08	0.02		11.8	0.0	11.8	
Physical Properties											
Conductivity	uS/cm	241	244	255	234	1		2.9	4.2	8.6	
pH	pH Units	8.07	8.11	8.14	8.05			0.2	0.7	1.1	
Physical Properties											
Total Suspended Solids	mg/L	<1	<1	<1	<1	1		N/A	N/A	N/A	
Total Dissolved Solids	mg/L	130	140	130	130	10		0.0	7.4	0.0	
Turbidity	NTU	0.8	0.7	0.7	0.8	0.1		0.0	13.3	13.3	

Shading indicates RDP>20%

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Table 3: Dissolved Metals at X3A Comparison with X3

	Units	X3A L.B.	X3A	X3A R.B.	X3	RDL	Relative Percent Difference Comparison with X3			
Misc. Inorganics							RPD L.B. & X3	RPD Center & X3	RPD R.B. & X3	Comments
Dissolved Hardness (CaCO3)	mg/L	115	119	123	114	0.5	0.9	4.3	7.6	
Dissolved Metals by ICPMS										
Dissolved Aluminum (Al)	ug/L	2.8	2.8	3.0	3.4	0.2	19.4	19.4	12.5	
Dissolved Antimony (Sb)	ug/L	0.06	0.05	0.06	0.05	0.02	18.2	0.0	18.2	
Dissolved Arsenic (As)	ug/L	0.36	0.35	0.36	0.36	0.02	0.0	2.8	0.0	
Dissolved Barium (Ba)	ug/L	54.0	55.4	55.7	50.3	0.02	7.1	9.6	10.2	
Dissolved Beryllium (Be)	ug/L	<0.01	<0.01	<0.01	<0.01	0.01	N/A	N/A	N/A	
Dissolved Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	<0.005	0.005	N/A	N/A	N/A	
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	50	N/A	N/A	N/A	
Dissolved Cadmium (Cd)	ug/L	0.009	0.012	0.016	0.028	0.005	102.7	80.0	54.5	All X3A values < PQL. RPD analysis not valid.
Dissolved Chromium (Cr)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	N/A	N/A	N/A	
Dissolved Cobalt (Co)	ug/L	0.085	0.084	0.080	0.084	0.005	1.2	0.0	4.9	
Dissolved Copper (Cu)	ug/L	0.40	0.43	0.54	0.50	0.05	22.2	15.1	7.7	All values > PQL.
Dissolved Iron (Fe)	ug/L	101	106	105	127	1	22.8	18.0	19.0	All values > PQL.
Dissolved Lead (Pb)	ug/L	0.165	0.242	0.248	0.324	0.005	65.0	29.0	26.6	All values > PQL.
Dissolved Lithium (Li)	ug/L	4.1	3.9	3.8	3.6	0.5	13.0	8.0	5.4	
Dissolved Manganese (Mn)	ug/L	48.8	49.0	46.9	50.5	0.05	3.4	3.0	7.4	
Dissolved Molybdenum (Mo)	ug/L	0.47	0.50	0.53	0.45	0.05	4.3	10.5	16.3	
Dissolved Nickel (Ni)	ug/L	0.39	0.45	0.41	0.49	0.02	22.7	8.5	17.8	All values > PQL.
Dissolved Selenium (Se)	ug/L	0.25	0.27	0.29	0.24	0.04	4.1	11.8	18.9	
Dissolved Silicon (Si)	ug/L	4760	5040	4870	5150	100	7.9	2.2	5.6	
Dissolved Silver (Ag)	ug/L	<0.005	<0.005	<0.005	<0.005	0.005	N/A	N/A	N/A	
Dissolved Strontium (Sr)	ug/L	155	160	162	158	0.05	1.9	1.3	2.5	
Dissolved Thallium (Tl)	ug/L	<0.002	<0.002	<0.002	<0.002	0.002	N/A	N/A	N/A	
Dissolved Tin (Sn)	ug/L	<0.01	<0.01	<0.01	<0.01	0.01	N/A	N/A	N/A	
Dissolved Titanium (Ti)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5	N/A	N/A	N/A	
Dissolved Uranium (U)	ug/L	1.75	1.76	1.78	1.67	0.002	4.7	5.2	6.4	
Dissolved Vanadium (V)	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	N/A	N/A	N/A	
Dissolved Zinc (Zn)	ug/L	7.2	7.9	7.2	30	0.1	122.6	116.6	122.6	All values > PQL.
Dissolved Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	N/A	N/A	N/A	
Dissolved Calcium (Ca)	mg/L	33.7	34.7	35.3	33.5	0.05	0.6	3.5	5.2	
Dissolved Magnesium (Mg)	mg/L	7.38	7.86	8.35	7.38	0.05	0.0	6.3	12.3	
Dissolved Potassium (K)	mg/L	0.85	0.84	0.86	0.86	0.05	1.2	2.4	0.0	
Dissolved Sodium (Na)	mg/L	2.38	2.34	2.36	2.51	0.05	5.3	7.0	6.2	
Dissolved Sulphur (S)	mg/L	<10	<10	<10	<10	10	N/A	N/A	N/A	

Shading indicates RDP>20%

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Table 4: Totals Metals at X3A Comparison with X3

	Units	X3A L.B.	X3A	X3A R.B.	X3	RDL		Relative Percent Difference Comparison with X3			
Calculated Parameters								RPD L.B. & X3	RPD Center & X3	RPD R.B. & X3	Comments
Total Hardness (CaCO3)	mg/L	113	117	124	112	0.5		0.9	4.4	10.2	
Total Metals by ICPMS											
Total Aluminum (Al)	ug/L	8.8	5.8	6.1	6.5	0.2		30.1	11.4	6.3	All values > PQL.
Total Antimony (Sb)	ug/L	0.05	0.05	0.06	0.06	0.02		18.2	18.2	0.0	
Total Arsenic (As)	ug/L	0.48	0.42	0.45	0.44	0.02		8.7	4.7	2.2	
Total Barium (Ba)	ug/L	55.9	55.1	56.5	52.4	0.02		6.5	5.0	7.5	
Total Beryllium (Be)	ug/L	<0.01	<0.01	<0.01	<0.01	0.01		N/A	N/A	N/A	
Total Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Total Boron (B)	ug/L	<50	<50	<50	<50	50		N/A	N/A	N/A	
Total Cadmium (Cd)	ug/L	0.018	0.025	0.024	0.015	0.005		18.2	50.0	46.2	Center = PQL. R.B. & L.B. & X3 < PQL. RPD analysis not valid.
Total Chromium (Cr)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Total Cobalt (Co)	ug/L	0.097	0.082	0.086	0.093	0.005		4.2	12.6	7.8	
Total Copper (Cu)	ug/L	6.03	0.40	0.61	0.52	0.05		168.2	26.1	15.9	All values > PQL.
Total Iron (Fe)	ug/L	184	168	169	223	1		19.2	28.1	27.6	All values > PQL.
Total Lead (Pb)	ug/L	0.528	0.326	0.434	0.862	0.005		48.1	90.2	66.0	All values > PQL.
Total Lithium (Li)	ug/L	3.8	3.9	3.9	3.5	0.5		8.2	10.8	10.8	
Total Manganese (Mn)	ug/L	54.4	50.3	50.0	53.3	0.05		2.0	5.8	6.4	
Total Molybdenum (Mo)	ug/L	0.47	0.50	0.49	0.43	0.05		8.9	15.1	13.0	
Total Nickel (Ni)	ug/L	0.53	0.46	0.48	0.54	0.02		1.9	16.0	11.8	
Total Selenium (Se)	ug/L	0.27	0.28	0.27	0.23	0.04		16.0	19.6	16.0	
Total Silicon (Si)	ug/L	5030	4600	4800	4910	100		2.4	6.5	2.3	
Total Silver (Ag)	ug/L	<0.005	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Total Strontium (Sr)	ug/L	159	163	162	158	0.05		0.6	3.1	2.5	
Total Thallium (Tl)	ug/L	0.002	<0.002	<0.002	<0.002	0.002		N/A	N/A	N/A	
Total Tin (Sn)	ug/L	0.02	<0.01	<0.01	<0.01	0.01		N/A	N/A	N/A	
Total Titanium (Ti)	ug/L	<0.5	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Total Uranium (U)	ug/L	1.73	1.78	1.80	1.72	0.002		0.6	3.4	4.5	
Total Vanadium (V)	ug/L	<0.2	<0.2	<0.2	<0.2	0.2		N/A	N/A	N/A	
Total Zinc (Zn)	ug/L	8.8	8.0	8.1	9.5	0.1		7.7	17.1	15.9	
Total Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Total Calcium (Ca)	mg/L	33.5	34.3	35.3	33.5	0.05		0.0	2.4	5.2	
Total Magnesium (Mg)	mg/L	7.08	7.63	8.70	6.81	0.05		3.9	11.4	24.4	All values > PQL.
Total Potassium (K)	mg/L	0.92	0.86	0.94	0.85	0.05		7.9	1.2	10.1	
Total Sodium (Na)	mg/L	2.33	2.29	2.49	2.34	0.05		0.4	2.2	6.2	
Total Sulphur (S)	mg/L	<10	<10	<10	<10	10		N/A	N/A	N/A	

Shading indicates RDP>20%

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Table 5: General Parametes - Splits and Duplicates at X3 in 2010

Station	Date	Sample Type	Acid(pH4.5)	Acid(pH8.3)	ALK	ALKPP	CaCO3	CaCO3-d	Chloride	CN(wad)	CNTHIO	CO3	Colour	COND	DOC	HCO3	NH3	OH	pH	SO4-d	TDS	TOC	TSS	TURB
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TCU	µmho/cm	mg/L	mg/L	mg/L	mg/L	(blank)	mg/L	mg/L	mg/L	mg/L	NTU
X3	03/08/2010	M			87.00	<0.5	111.00	85.00	<0.5			<0.5		189.00	2.00	110.00	<0.05	<0.5	8.16	14.00	120.00	2.50	<1	
X3	03/08/2010	SPLIT			87.00	<0.5	84.30	87.00	<0.5			<0.5		187.00	2.20	110.00	<0.05	<0.5	8.10	14.00	130.00	2.10	<1	
RPD (%)			N/A	N/A	0.00	N/A	27.34	2.33	N/A	N/A	N/A	N/A	N/A	1.06	9.52	0.00	N/A	N/A	0.06	0.00	8.00	17.39	N/A	N/A
Comments																								
Action																								
Result																								
X3	02/09/2010	M			83.00	<0.5	89.40	94.30	<0.5			<0.5		186.00	2.70	100.00	0.19	<0.5	7.90	13.00	110.00	2.30	<1	0.7
X3	02/09/2010	SPLIT			82.00	<0.5	89.70	91.70	<0.5			<0.5		193.00	1.20	100.00	0.19	<0.5	7.80	15.00	110.00	1.40	<1	0.5
RPD (%)			N/A	N/A	1.21	N/A	0.34	2.80	N/A	N/A	N/A	N/A	N/A	3.66	76.92	0.00	0.00	N/A	0.09	14.29	0.00	48.65	N/A	33.33
Comments															Both values correctly entered into emLine; however, split sample value not > PQL. Therefore, RPD analysis not valid in this case.									
Action															Let Value Stand									
Result															Discrepancy between values remains.									
X3	22/02/2010	M			140.00	<0.5	164.00	163.00	1.70			<0.5		314.00	1.40	170.00	<0.01	<0.5	7.90	28.00	180.00	1.20	<1.0	
X3	22/02/2010	DUPLICATE			140.00	<0.5	164.00	160.00	<0.5			<0.5		318.00	1.70	170.00	<0.01	<0.5	7.90	29.00	230.00	1.50	<1.0	0.6
RPD (%)			N/A	N/A	0.00	N/A	0.00	1.86	N/A	N/A	N/A	N/A	N/A	1.27	19.35	0.00	N/A	N/A	0.00	3.51	24.39	22.22	N/A	200.00
Comments																								Turbidity not run on main sample. Accidentally requested for duplicate sample.
Action																								Let Value Stand
Result																								No turbidity value for main sample.
X3	04/08/2010	M			40	<0.5	44.6	44.8	<0.5			<0.5		84	2.3	48	0.77	<0.5	7.7	6.3	54	2.6	5	
X3	04/08/2010	DUPLICATE			38	<0.5	45.5	43.5	<0.5			<0.5		85	2.9	47	<0.05	<0.5	7.6	6.4	50	2.6	4	
RPD (%)			N/A	N/A	5.13	N/A	2.00	2.94	N/A	N/A	N/A	N/A	N/A	1.18	23.08	2.11	N/A	N/A	0.10	1.57	7.69	0.00	22.22	N/A
Comments																								
Action																								
Result																								

RPD > 100%

100 ≥ RPD ≥ 50

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Table 6: Dissolved Metals - Splits and Duplicates at X3 in 2010

Station	Date	Sample Type	Ag-d µg/L	Al-d µg/L	As-d µg/L	Ba-d µg/L	B-d µg/L	Be-d µg/L	Bi-d µg/L	Ca-d mg/L	Cd-d µg/L	Co-d µg/L	Cr-d µg/L	Cu-d µg/L	Fe-d µg/L	Hg-d µg/L	K-d mg/L	Li-d mg/L	Mg-d mg/L	Mn-d µg/L	Mo-d µg/L	Na-d mg/L	Ni-d µg/L	Pb-d µg/L
		Result																						Discrepancy between values remains.
X3	03/08/2010	M	<0.005	11.20	0.51	45.80	<50	<0.01	<0.005	25.20	0.01	0.05	<0.1	0.68	139.00		0.69	0.00	5.34	26.20	0.46	2.04	0.46	1.90
X3	03/08/2010	SPLIT	<0.005	7.60	0.55	44.60	<50	<0.01	<0.005	25.70	0.01	0.06	<0.1	0.61	132.00		0.66	0.00	5.56	24.90	0.49	2.13	0.43	1.01
	RPD (%)		N/A	38.30	7.55	2.65	N/A	N/A	N/A	1.96	18.18	5.31	N/A	10.65	5.17	N/A	4.44	2.90	4.04	5.09	6.32	4.32	6.74	61.17
	Comments																							Both values > PQL and correctly entered into emLine. Lab noted for both samples that "Dissolved greater than total. Reanalysis yields similar results."
	Action																							Let Value Stand
	Result																							Discrepancy between values remains.
X3	03/09/2010	M	<0.005	6.20	0.47	44.50	<50	<0.01	<0.005	28.10	0.02	0.20	<0.1	0.60	137.00		0.90	0.00	5.88	34.30	0.46	2.36	0.67	0.69
X3	03/09/2010	SPLIT	<0.005	6.10	0.46	45.30	<50	<0.01	<0.005	27.20	0.02	0.13	<0.1	0.82	133.00		0.80	0.00	5.78	27.60	0.42	2.24	0.57	0.78
	RPD (%)		N/A	1.63	2.15	1.78	N/A	N/A	N/A	3.25	17.14	45.68	N/A	30.99	2.90	N/A	11.76	0.00	1.72	21.65	9.09	5.22	16.13	14.18
	Comments																							
	Action																							
	Result																							
X3	23/03/2010	M	<0.005	1.70	0.20	69.10	<50.0	<0.01	<0.005	47.80	0.01	0.11	<0.1	0.29	28.00		1.19	0.01	10.60	48.80	0.75	3.38	0.58	0.04
X3	23/03/2010	DUPLICATE	<0.005	2.10	0.22	69.80	<50.0	<0.01	<0.005	46.60	0.01	0.10	<0.1	0.28	29.00		1.15	0.01	10.60	48.30	0.79	3.40	0.58	0.09
	RPD (%)		N/A	21.05	9.52	0.72	N/A	N/A	N/A	2.54	0.00	3.88	N/A	3.51	3.51	N/A	3.42	2.50	0.00	1.03	5.19	0.59	0.00	72.87
	Comments																							Both values > PQL and entered correctly into emLine.
	Action																							Let Value Stand
	Result																							Discrepancy between values remains.
X3	04/06/2010	M	<0.005	23.8	0.32	23.8	<50	<0.01	<0.005	13.1	0.015	0.037	<0.1	0.74	77		0.54	0.0014	2.93	8.85	0.2	1.48	0.44	0.992
X3	04/06/2010	DUPLICATE	<0.005	24.4	0.31	24.5	<50	<0.01	0.017	12.7	0.027	0.04	<0.1	0.94	75		0.54	0.0014	2.89	9.16	0.22	1.46	0.48	1.15
	RPD (%)		N/A	2.49	3.17	2.90	N/A	N/A	N/A	3.10	57.14	7.79	N/A	23.81	2.63	N/A	0.00	0.00	1.37	3.44	9.52	1.36	8.70	14.75
	Comments										Both values correctly entered into emLine, however, value of main sample not > PQL. Therefore RPD analysis not valid in this case.													
	Action										Let Value Stand													
	Result										Discrepancy between values remains.													

Station	Date	Sample Type	Sb-d µg/L	S-d mg/L	Se-d µg/L	Si-d µg/L	Sn-d µg/L	Sr-d µg/L	Ti-d µg/L	Tl-d µg/L	U-d µg/L	V-d µg/L	Zn-d µg/L	Zr-d µg/L
		Result												
X3	03/08/2010	M	0.06	<10	0.19	4030.00	<0.01	116.0	<0.5	0.003	1.13	<0.2	6.80	<0.1
X3	03/08/2010	SPLIT	0.06	<10	0.19	3650.00	<0.01	117.0	<0.5	0.003	1.14	<0.2	4.70	<0.1
	RPD (%)		N/A	N/A	0.00	9.90	N/A	0.86	N/A	0.00	0.88	N/A	36.52	N/A
	Comments													
	Action													
	Result													
X3	03/09/2010	M	0.06	<10	0.16	4640.00	<0.01	122.0	<0.5	0.003	1.12	<0.2	42.80	<0.1
X3	03/09/2010	SPLIT	0.05	<10	0.17	4330.00	<0.01	127.0	<0.5	0.003	1.18	<0.2	28.10	<0.1
	RPD (%)		N/A	N/A	6.06	13.16	N/A	4.02	N/A	0.00	5.22	N/A	41.47	N/A
	Comments													
	Action													
	Result													
X3	23/03/2010	M	0.05	11.00	0.39	6170.00	<0.01	199.0	<0.5	<0.002	2.68	<0.2	20.00	<0.1
X3	23/03/2010	DUPLICATE	0.05	10.00	0.41	5740.00	<0.01	200.0	<0.5	<0.002	2.72	<0.2	20.20	<0.1
	RPD (%)		0.00	9.52	5.00	7.22	N/A	0.50	N/A	N/A	1.48	N/A	1.00	N/A
	Comments													
	Action													
	Result													
X3	04/06/2010	M	0.06	<10	0.09	3940	0.02	58	<0.5	<0.002	0.505	<0.2	4.5	<0.1
X3	04/06/2010	DUPLICATE	0.06	<10	0.08	3860	<0.01	59.8	<0.5	<0.002	0.503	<0.2	5	<0.1
	RPD (%)		N/A	N/A	11.76	2.05	N/A	3.06	N/A	N/A	0.40	N/A	10.53	N/A
	Comments													
	Action													
	Result													

RPD > 100%

100 ≥ RPD ≥ 50

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Table 7: Total Metals - Splits and Duplicates at X3 in 2010

Station	Date	Sample Type	Ag µg/L	Al µg/L	As µg/L	B µg/L	Ba µg/L	Be µg/L	Bi µg/L	Ca mg/L	Cd µg/L	Co µg/L	Cr µg/L	Cu µg/L	Fe µg/L	Hg µg/L	K mg/L	Li mg/L	Mg mg/L	Mn µg/L	Mo µg/L	Na mg/L	Ni µg/L	Pb µg/L	B mg/L	Sb µg/L	Se µg/L	Si µg/L	Sn µg/L	Sr µg/L	Ti µg/L	Tl µg/L	U µg/L	V µg/L	Zn µg/L	Zr µg/L
X3	03/09/2010	M	<0.005	9.30	0.51	<50	48.30	<0.01	<0.005	35.30	0.01	0.05	<0.1	0.53	277.00		0.70	0.00	5.56	28.00	0.46	2.09	0.45	0.67	<10	0.06	0.25	5690.00	<0.01	122.00	<0.5	0.00	1.19	<0.2	5.60	<0.1
X3	03/09/2010	SPLIT	<0.005	9.60	0.57	<50	47.80	<0.01	<0.005	25.10	<0.005	0.05	<0.1	0.46	168.00		0.70	0.00	5.25	28.00	0.53	1.96	0.33	0.46	<10	0.06	0.16	3880.00	<0.01	128.00	<0.5	0.00	1.04	<0.2	4.90	<0.1
		RPD (%)	N/A	3.17	11.11	N/A	1.04	N/A	N/A	33.77	N/A	8.16	N/A	14.14	29.87	N/A	0.00	2.80	5.74	0.00	14.14	6.42	30.77	N/A	N/A	N/A	0.00	43.90	N/A	N/A	4.80	N/A	0.00	13.45	N/A	13.33
		Comments																																		
		Action																																		
		Result																																		
X3	02/09/2010	M	<0.005	8.50	0.50	<50	44.60	<0.01	<0.005	26.70	0.01	0.05	<0.1	0.46	171.00		0.68	0.00	5.52	24.00	0.57	2.11	0.45	0.41	<10	0.04	0.15	4410.00	<0.01	124.0	<0.5	<0.002	1.11	<0.2	8.70	<0.1
X3	02/09/2010	SPLIT	<0.005	7.60	0.48	<50	45.00	<0.01	<0.005	26.60	0.01	0.05	<0.1	0.43	170.00		0.68	0.00	5.63	24.20	0.42	2.17	0.42	0.23	<10	0.05	0.17	4410.00	<0.01	125.0	<0.5	<0.002	1.20	<0.2	6.90	<0.1
		RPD (%)	N/A	11.18	4.08	N/A	0.89	N/A	N/A	0.38	9.52	5.31	N/A	6.74	0.59	N/A	0.00	0.00	1.97	0.83	30.30	2.80	6.90	55.05	N/A	22.22	6.06	0.00	N/A	0.80	N/A	N/A	7.79	N/A	23.08	N/A
		Comments																						Both values > PQL and correctly entered into emLine												
		Action																						Let Value Stand												
		Result																						Discrepancy between values remains.												
X3	23/03/2010	M	<0.005	2.80	0.29	<50	69.60	<0.01	<0.005	47.60	0.01	0.12	<0.1	0.40	72.00		1.19	0.01	10.90	50.40	0.73	3.47	0.62	0.11	12.00	0.06	0.41	6350.00	<0.01	199.0	<0.5	<0.002	2.78	<0.2	20.00	<0.1
X3	23/03/2010	DUPLICATE	<0.005	3.10	0.31	<50	71.40	<0.01	<0.005	47.70	0.01	0.11	<0.1	0.29	74.00		1.18	0.01	10.90	50.30	0.75	3.43	0.64	0.13	11.00	0.06	0.41	6390.00	<0.01	199.0	<0.5	<0.002	2.82	<0.2	20.30	<0.1
		RPD (%)	N/A	10.17	6.67	N/A	2.55	N/A	N/A	0.21	0.00	11.66	N/A	31.88	2.74	N/A	0.84	0.00	0.00	0.20	2.70	1.16	3.17	13.56	8.70	0.00	0.00	0.63	N/A	0.00	N/A	N/A	1.43	N/A	1.49	N/A
		Comments																																		
		Action																																		
		Result																																		
X3	04/04/2010	M	<0.005	62.9	0.38	<50	25.1	0.02	0.01	13	0.018	0.09	<0.1	0.76	183		0.55	0.0016	2.95	20	0.2	1.47	0.48	0.747	<10	0.05	0.08	3900	<0.01	60.7	1.5	0.003	0.534	<0.2	11.2	<0.1
X3	04/04/2010	DUPLICATE	<0.005	66.7	0.4	<50	25.3	<0.01	0.021	13.3	0.012	0.06	<0.1	0.74	186		0.55	0.0015	3	19.7	0.21	1.5	0.44	0.587	<10	0.05	0.09	3870	<0.01	60.8	1.4	<0.002	0.544	<0.2	3.9	<0.1
		RPD (%)	N/A	5.86	5.13	N/A	0.79	N/A	70.97	2.28	40.00	37.33	N/A	2.67	1.63	N/A	0.00	6.45	1.68	24.09	4.88	2.02	8.70	23.99	N/A	0.00	11.76	0.77	N/A	0.16	6.90	N/A	1.86	N/A	96.69	N/A
		Comments							Values correctly entered into emLine, however, neither value > PQL. Therefore RPD analysis not valid in this case.																												Both values > PQL and correctly entered into emLine.	
		Action							Let Value Stand																										Let Value Stand	
		Result							Discrepancy between values remains.																										Discrepancy between values remains	

RPD > 100%

100 ≥ RPD ≥ 50

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Table 8: General Parameters at X3A Comparison

	Units	X3A L.B.	X3A	X3A R.B.	RDL		Relative Percent Difference Comparison at X3A			Comments
ANIONS							RPD L.B. & Center	RPD R.B. & Center	RPD L.B. & R.B.	
Nitrite (N)	mg/L	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Calculated Parameters										
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	N/A		N/A	N/A	N/A	
Nitrate (N)	mg/L	0.09	0.08	0.09	0.02		11.8	11.8	0.0	
Misc. Inorganics										
Dissolved Organic Carbon (C)	mg/L	2.1	1.9	2.0	0.5		10.0	5.1	4.9	
Alkalinity (Total as CaCO3)	mg/L	100	110	110	0.5		9.5	0.0	9.5	
Total Organic Carbon (C)	mg/L	1.7	1.9	1.7	0.5		11.1	11.1	0.0	
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Bicarbonate (HCO3)	mg/L	130	130	140	0.5		0.0	7.4	7.4	
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Anions										
Dissolved Sulphate (SO4)	mg/L	22	20	22	0.5		9.5	9.5	0.0	
Dissolved Chloride (Cl)	mg/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Nutrients										
Ammonia (N)	mg/L	0.072	0.083	0.024	0.005		14.2	110.3	100.0	R.B. < PQL. RPD analysis with this value not valid.
Nitrate plus Nitrite (N)	mg/L	0.09	0.08	0.09	0.02		11.8	11.8	0.0	
Physical Properties										
Conductivity	uS/cm	241	244	255	1		1.2	4.4	5.6	
pH	pH Units	8.07	8.11	8.14			0.5	0.4	0.9	
Physical Properties										
Total Suspended Solids	mg/L	<1	<1	<1	1		N/A	N/A	N/A	
Total Dissolved Solids	mg/L	130	140	130	10		7.4	7.4	0.0	
Turbidity	NTU	0.8	0.7	0.7	0.1		13.3	0.0	13.3	

Shading indicates RDP>20%

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Table 9: Dissolved Metals at X3A Comparison

	Units	X3A L.B.	X3A	X3A R.B.	RDL		Relative Percent Difference Comparison at X3A			
Misc. Inorganics							RPD L.B. & Center	RPD R.B. & Center	RPD L.B. & R.B.	Comments
Dissolved Hardness (CaCO3)	mg/L	115	119	123	0.5		3.4	3.3	6.7	
Dissolved Metals by ICPMS										
Dissolved Aluminum (Al)	ug/L	2.8	2.8	3.0	0.2		0.0	6.9	6.9	
Dissolved Antimony (Sb)	ug/L	0.06	0.05	0.06	0.02		18.2	18.2	0.0	
Dissolved Arsenic (As)	ug/L	0.36	0.35	0.36	0.02		2.8	2.8	0.0	
Dissolved Barium (Ba)	ug/L	54.0	55.4	55.7	0.02		2.6	0.5	3.1	
Dissolved Beryllium (Be)	ug/L	<0.01	<0.01	<0.01	0.01		N/A	N/A	N/A	
Dissolved Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Dissolved Boron (B)	ug/L	<50	<50	<50	50		N/A	N/A	N/A	
Dissolved Cadmium (Cd)	ug/L	0.009	0.012	0.016	0.005		28.6	28.6	56.0	All values < PQL. RPD analysis not valid.
Dissolved Chromium (Cr)	ug/L	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Dissolved Cobalt (Co)	ug/L	0.085	0.084	0.080	0.005		1.2	4.9	6.1	
Dissolved Copper (Cu)	ug/L	0.40	0.43	0.54	0.05		7.2	22.7	29.8	All values > PQL.
Dissolved Iron (Fe)	ug/L	101	106	105	1		4.8	0.9	3.9	
Dissolved Lead (Pb)	ug/L	0.165	0.242	0.248	0.005		37.8	2.4	40.2	All values > PQL.
Dissolved Lithium (Li)	ug/L	4.1	3.9	3.8	0.5		5.0	2.6	7.6	
Dissolved Manganese (Mn)	ug/L	48.8	49.0	46.9	0.05		0.4	4.4	4.0	
Dissolved Molybdenum (Mo)	ug/L	0.47	0.50	0.53	0.05		6.2	5.8	12.0	
Dissolved Nickel (Ni)	ug/L	0.39	0.45	0.41	0.02		14.3	9.3	5.0	
Dissolved Selenium (Se)	ug/L	0.25	0.27	0.29	0.04		7.7	7.1	14.8	
Dissolved Silicon (Si)	ug/L	4760	5040	4870	100		5.7	3.4	2.3	
Dissolved Silver (Ag)	ug/L	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Dissolved Strontium (Sr)	ug/L	155	160	162	0.05		3.2	1.2	4.4	
Dissolved Thallium (Tl)	ug/L	<0.002	<0.002	<0.002	0.002		N/A	N/A	N/A	
Dissolved Tin (Sn)	ug/L	<0.01	<0.01	<0.01	0.01		N/A	N/A	N/A	
Dissolved Titanium (Ti)	ug/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Dissolved Uranium (U)	ug/L	1.75	1.76	1.78	0.002		0.6	1.1	1.7	
Dissolved Vanadium (V)	ug/L	<0.2	<0.2	<0.2	0.2		N/A	N/A	N/A	
Dissolved Zinc (Zn)	ug/L	7.2	7.9	7.2	0.1		9.3	9.3	0.0	
Dissolved Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Dissolved Calcium (Ca)	mg/L	33.7	34.7	35.3	0.05		2.9	1.7	4.6	
Dissolved Magnesium (Mg)	mg/L	7.38	7.86	8.35	0.05		6.3	6.0	12.3	
Dissolved Potassium (K)	mg/L	0.85	0.84	0.86	0.05		1.2	2.4	1.2	
Dissolved Sodium (Na)	mg/L	2.38	2.34	2.36	0.05		1.7	0.9	0.8	
Dissolved Sulphur (S)	mg/L	<10	<10	<10	10		N/A	N/A	N/A	

Shading indicates RDP>20%

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Table 10: Total Metals at X3A Comparison

	Units	X3A L.B.	X3A	X3A R.B.	RDL		Relative Percent Difference Comparison at X3A			
Calculated Parameters							RPD L.B. And Center	RPD R.B. And Center	RPD L.B. And R.B.	Comments
Total Hardness (CaCO3)	mg/L	113	117	124	0.5		3.5	5.8	9.3	
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	8.8	5.8	6.1	0.2		41.1	5.0	36.2	All values > PQL.
Total Antimony (Sb)	ug/L	0.05	0.05	0.06	0.02		0.0	18.2	18.2	
Total Arsenic (As)	ug/L	0.48	0.42	0.45	0.02		13.3	6.9	6.5	
Total Barium (Ba)	ug/L	55.9	55.1	56.5	0.02		1.4	2.5	1.1	
Total Beryllium (Be)	ug/L	<0.01	<0.01	<0.01	0.01		N/A	N/A	N/A	
Total Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Total Boron (B)	ug/L	<50	<50	<50	50		N/A	N/A	N/A	
Total Cadmium (Cd)	ug/L	0.018	0.025	0.024	0.005		32.6	4.1	28.6	Center = PQL. R.B. & L.B. < PQL. RPD analysis not valid.
Total Chromium (Cr)	ug/L	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Total Cobalt (Co)	ug/L	0.097	0.082	0.086	0.005		16.8	4.8	12.0	
Total Copper (Cu)	ug/L	6.03	0.40	0.61	0.05		175.1	41.6	163.3	All values > PQL.
Total Iron (Fe)	ug/L	184	168	169	1		9.1	0.6	8.5	
Total Lead (Pb)	ug/L	0.528	0.326	0.434	0.005		47.3	28.4	19.5	All values > PQL.
Total Lithium (Li)	ug/L	3.8	3.9	3.9	0.5		2.6	0.0	2.6	
Total Manganese (Mn)	ug/L	54.4	50.3	50.0	0.05		7.8	0.6	8.4	
Total Molybdenum (Mo)	ug/L	0.47	0.50	0.49	0.05		6.2	2.0	4.2	
Total Nickel (Ni)	ug/L	0.53	0.46	0.48	0.02		14.1	4.3	9.9	
Total Selenium (Se)	ug/L	0.27	0.28	0.27	0.04		3.6	3.6	0.0	
Total Silicon (Si)	ug/L	5030	4600	4800	100		8.9	4.3	4.7	
Total Silver (Ag)	ug/L	<0.005	<0.005	<0.005	0.005		N/A	N/A	N/A	
Total Strontium (Sr)	ug/L	159	163	162	0.05		2.5	0.6	1.9	
Total Thallium (Tl)	ug/L	0.002	<0.002	<0.002	0.002		N/A	N/A	N/A	
Total Tin (Sn)	ug/L	0.02	<0.01	<0.01	0.01		N/A	N/A	N/A	
Total Titanium (Ti)	ug/L	<0.5	<0.5	<0.5	0.5		N/A	N/A	N/A	
Total Uranium (U)	ug/L	1.73	1.78	1.80	0.002		2.8	1.1	4.0	
Total Vanadium (V)	ug/L	<0.2	<0.2	<0.2	0.2		N/A	N/A	N/A	
Total Zinc (Zn)	ug/L	8.8	8.0	8.1	0.1		9.5	1.2	8.3	
Total Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	0.1		N/A	N/A	N/A	
Total Calcium (Ca)	mg/L	33.5	34.3	35.3	0.05		2.4	2.9	5.2	
Total Magnesium (Mg)	mg/L	7.08	7.63	8.70	0.05		7.5	13.1	20.5	All values > PQL.
Total Potassium (K)	mg/L	0.92	0.86	0.94	0.05		6.7	8.9	2.2	
Total Sodium (Na)	mg/L	2.33	2.29	2.49	0.05		1.7	8.4	6.6	
Total Sulphur (S)	mg/L	<10	<10	<10	10		N/A	N/A	N/A	

Shading indicates RDP>20%

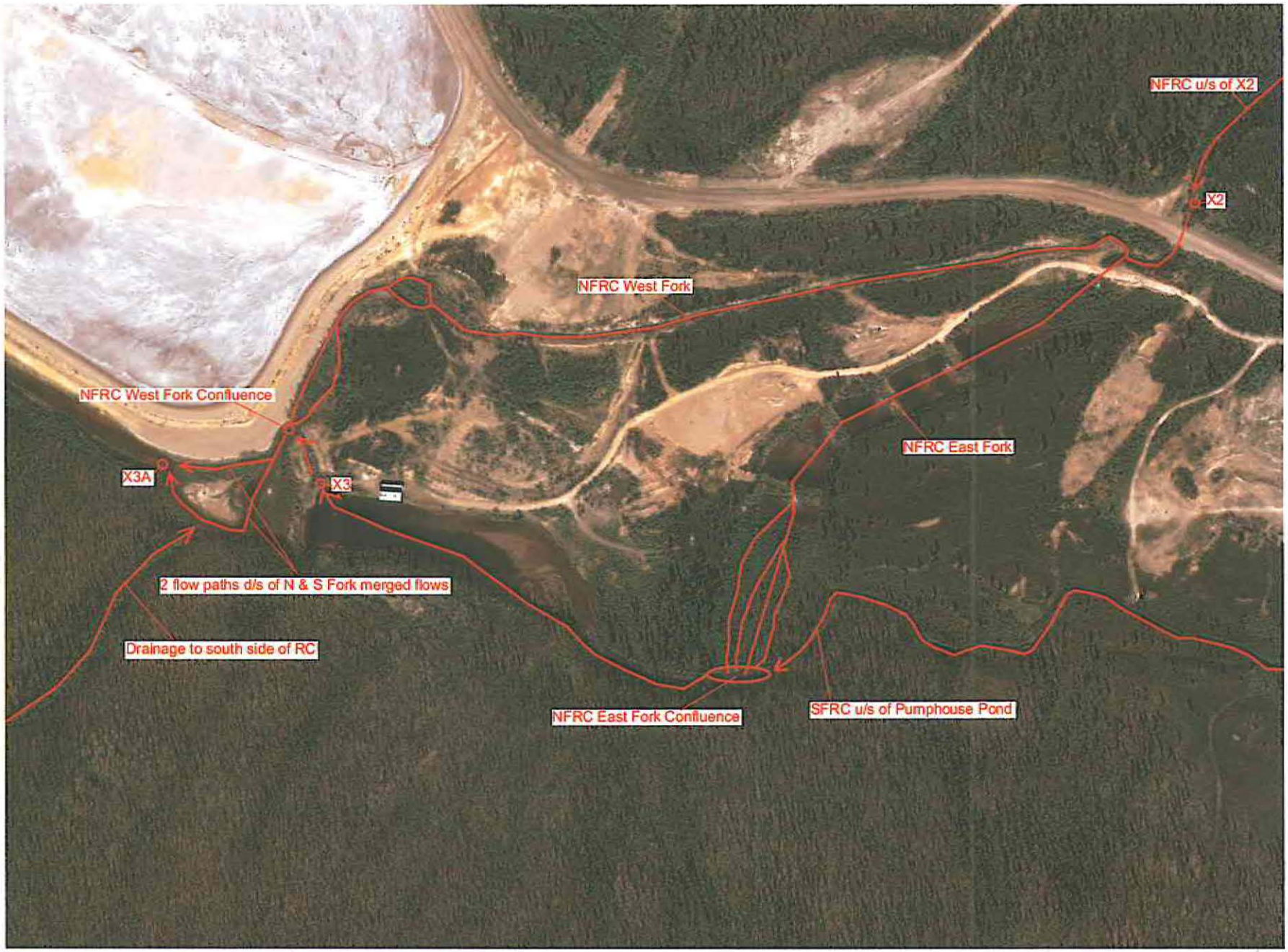
Denison Environmental Services

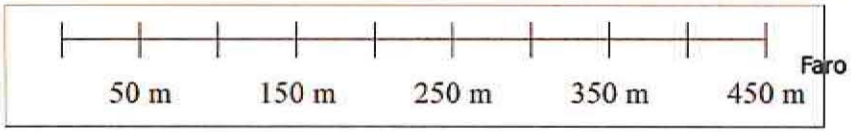
Technical Memorandum

Faro Mine Closure

FIGURE

Figure 1: Confluence of North and South Fork of Rose Creek





Faro Mine Complex - DES - X3A Mixing Study

Denison Environmental Services

Technical Memorandum

Faro Mine Closure

APPENDIX A

Analytical Results
From Maxxam Analytics

October 21, 2010

Your Project #: OCT 20 & 21/10-MONTHLY-FAROSRF
Your C.O.C. #: 08324238

Attention: Jay Cherian
DENISON ENVIRONMENTAL SERVICES
FARO CARE AND MAINTENANCE PROJ
BOX 280
FARO, YT
CANADA Y0B 1K0

Report Date: 2010/11/02

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0A2990
Received: 2010/10/25, 09:00

Sample Matrix: Surface
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water	10	2010/10/26	2010/10/26	BRN SOP-00264 R4.0	Based on SM2320B
Chloride by Automated Colourimetry	9	N/A	2010/10/26	BRN-SOP 00234 R3.0	Based on EPA 325.2
Chloride by Automated Colourimetry	1	N/A	2010/10/29	BRN-SOP 00234 R3.0	Based on EPA 325.2
Carbon (DOC)	4	N/A	2010/10/26	BRN SOP-00224 R4.0	Based on M 860-87T
Conductance - water	10	N/A	2010/10/26	BRN SOP-00264 R2.0	Based on SM-2510B
Hardness Total (calculated as CaCO3)	10	N/A	2010/11/01		
Hardness (calculated as CaCO3)	10	N/A	2010/11/01		
Ion Balance	10	N/A	2010/11/01	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	10	N/A	2010/11/01	BRN SOP-00206	Based on EPA 200.8
Elements by ICPMS Low Level (dissolved)	10	N/A	2010/10/30	BRN SOP-00206	Based on EPA 200.8
Na, K, Ca, Mg, S by CRC ICPMS (total)	10	N/A	2010/11/01	BRN SOP-00206	Based on EPA 200.8
Elements by ICPMS Low Level (total)	8	N/A	2010/10/30	BRN SOP-00206	Based on EPA 200.8
Elements by ICPMS Low Level (total)	2	N/A	2010/11/01	BRN SOP-00206	Based on EPA 200.8
Ammonia-N	2	N/A	2010/10/26	BBY6SOP-00044	Based on EPA 350.1
Ammonia-N	8	N/A	2010/10/27	BBY6SOP-00044	Based on EPA 350.1
Nitrate + Nitrite (N)	10	N/A	2010/10/26		Based on USEPA 353.
Nitrite (N) by CFA	10	N/A	2010/10/26	BRN SOP-00233 R1.0	EPA 353.2
Nitrogen - Nitrate (as N)	10	N/A	2010/10/27	BBY6SOP-00010	Based on EPA 353.2
Filter and HNO3 Preserve for Metals	10	N/A	2010/10/25	BRN WI-00006 R1.0	Based on EPA 200.2
pH Water	10	N/A	2010/10/26	BRN SOP-00264 R4.0	Based on SM-4500H+
Sulphate by Automated Colourimetry	5	N/A	2010/10/26	BRN-SOP 00243 R1.0	Based on EPA 375.4
Sulphate by Automated Colourimetry	4	N/A	2010/10/27	BRN-SOP 00243 R1.0	Based on EPA 375.4
Sulphate by Automated Colourimetry	1	N/A	2010/10/29	BRN-SOP 00243 R1.0	Based on EPA 375.4
Total Dissolved Solids (Filt. Residue)	10	N/A	2010/10/27	BRN SOP 00276 R4.0	SM 2540C
Carbon (Total Organic)	4	N/A	2010/10/26	BRN SOP-00224 R4.0	Based on SM-5310C
Total Suspended Solids-LowLevel	10	N/A	2010/10/26	BRN SOP-00277 R5.0	Based on SM-2540 D
Turbidity	4	N/A	2010/10/26	BRN SOP-00265 R6.0	SM - 2130B

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

../2

Your Project #: OCT 20 & 21/10-MONTHLY-FAROSRF
Your C.O.C. #: 08324238

Attention: Jay Cherian
DENISON ENVIRONMENTAL SERVICES
FARO CARE AND MAINTENANCE PROJ
BOX 280
FARO, YT
CANADA Y0B 1K0

Report Date: 2010/11/02

CERTIFICATE OF ANALYSIS

Encryption Key

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

TABITHA RUDKIN, Project Manager
Email: TRudkin@maxxam.ca
Phone# (604) 638-2639

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

Total cover pages: 2

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

RESULTS OF CHEMICAL ANALYSES OF SURFACE

Maxxam ID		X93287	X93288			X93289		
Sampling Date		2010/10/21 13:45	2010/10/21 09:36			2010/10/20 11:20		
COC Number		08324238	08324238			08324238		
	Units	**X3**	**X3A**	**RDL**	**QC Batch**	**X4**	**RDL**	**QC Batch**
ANIONS								
Nitrite (N)	mg/L	<0.005 (1)	<0.005 (1)	0.005	4372843	<0.005 (1)	0.005	4372843
Calculated Parameters								
Filter and HNO3 Preservation	N/A	FIELD	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	NC	NC	0.01	4367879	0.93	0.01	4367879
Nitrate (N)	mg/L	0.08	0.08	0.02	4367880	0.04	0.02	4367880
Misc. Inorganics								
Dissolved Organic Carbon (C)	mg/L	1.9	1.9	0.5	4370123		0.5	4370123
Alkalinity (Total as CaCO3)	mg/L	98	110	0.5	4371807	1.8	0.5	4371807
Total Organic Carbon (C)	mg/L	1.7	1.9	0.5	4370122		0.5	4370122
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	0.5	4371807	<0.5	0.5	4371807
Bicarbonate (HCO3)	mg/L	120	130	0.5	4371807	2.2	0.5	4371807
Carbonate (CO3)	mg/L	<0.5	<0.5	0.5	4371807	<0.5	0.5	4371807
Hydroxide (OH)	mg/L	<0.5	<0.5	0.5	4371807	<0.5	0.5	4371807
Anions								
Dissolved Sulphate (SO4)	mg/L	20	20	0.5	4373795	1000	5	4373795
Dissolved Chloride (Cl)	mg/L	<0.5	<0.5	0.5	4373782	1.4	0.5	4373782
Nutrients								
Ammonia (N)	mg/L	0.067	0.083	0.005	4373971	0.26	0.005	4370353
Nitrate plus Nitrite (N)	mg/L	0.08 (1)	0.08 (1)	0.02	4372818	0.04 (1)	0.02	4372818
Physical Properties								
Conductivity	uS/cm	234	244	1	4371790	1590	1	4371790
pH	pH Units	8.05	8.11		4371692	5.61		4371692
Physical Properties								
Total Suspended Solids	mg/L	<1	<1	1	4372438	33	1	4372438
Total Dissolved Solids	mg/L	130	140	10	4372442	1400	10	4372442
Turbidity	NTU	0.8	0.7	0.1	4370967			

RDL = Reportable Detection Limit
(1) Samples arrived to laboratory past recommended hold time.

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

RESULTS OF CHEMICAL ANALYSES OF SURFACE

Maxxam ID		X93290			X93291		X93292		
Sampling Date		2010/10/20 10:55			2010/10/21 10:30		2010/10/21 11:30		
COC Number		08324238			08324238		08324238		
	Units	X5P	RDL	QC Batch	X10	QC Batch	X14	RDL	QC Batch
ANIONS									
Nitrite (N)	mg/L	<0.005 (1)	0.005	4372843	<0.005 (1)	4372843	<0.005 (1)	0.005	4372843
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	0.92	0.01	4367879	NC	4367879	0.97	0.01	4367879
Nitrate (N)	mg/L	0.22	0.02	4367880	0.09	4367880	0.11	0.02	4367880
Misc. Inorganics									
Dissolved Organic Carbon (C)	mg/L		0.5	4370123	2.0	4370123	2.3	0.5	4370123
Alkalinity (Total as CaCO3)	mg/L	190	0.5	4371807	110	4371807	130	0.5	4371807
Total Organic Carbon (C)	mg/L		0.5	4370122	1.7	4370122	1.7	0.5	4370122
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	4371807	<0.5	4371807	<0.5	0.5	4371807
Bicarbonate (HCO3)	mg/L	240	0.5	4371807	140	4371807	160	0.5	4371807
Carbonate (CO3)	mg/L	<0.5	0.5	4371807	<0.5	4371807	<0.5	0.5	4371807
Hydroxide (OH)	mg/L	<0.5	0.5	4371807	<0.5	4371807	<0.5	0.5	4371807
Anions									
Dissolved Sulphate (SO4)	mg/L	1200	5	4373795	24	4378577	110	0.5	4385585
Dissolved Chloride (Cl)	mg/L	2.0	0.5	4373782	<0.5	4373782	<0.5	0.5	4385579
Nutrients									
Ammonia (N)	mg/L	0.80	0.01	4373971	0.061	4373971	0.11	0.005	4373971
Nitrate plus Nitrite (N)	mg/L	0.22 (1)	0.02	4372818	0.09 (1)	4372818	0.11 (1)	0.02	4372818
Physical Properties									
Conductivity	uS/cm	2070	1	4371790	257	4371790	471	1	4371790
pH	pH Units	8.06		4371692	8.16	4371692	8.14		4371692
Physical Properties									
Total Suspended Solids	mg/L	2	1	4372438	10	4372438	1	1	4372438
Total Dissolved Solids	mg/L	1900	10	4372442	150	4372442	290	10	4372442
Turbidity	NTU				1.7	4370967	1.8	0.1	4370967

RDL = Reportable Detection Limit
(1) Samples arrived to laboratory past recommended hold time.

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

RESULTS OF CHEMICAL ANALYSES OF SURFACE

Maxxam ID		X93293			X93294	X93295		
Sampling Date		2010/10/20 09:00			2010/10/20 10:40	2010/10/20 09:27		
COC Number		08324238			08324238	08324238		
	Units	**X22B**	**RDL**	**QC Batch**	**ETA COMBINED**	**FCS-4**	**RDL**	**QC Batch**
ANIONS								
Nitrite (N)	mg/L	0.008 (1)	0.005	4372843	0.012 (1)	<0.005 (1)	0.005	4372843
Calculated Parameters								
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	FIELD	N/A	ONSITE
Ion Balance	N/A	0.98	0.01	4367879	0.99	0.89	0.01	4367879
Nitrate (N)	mg/L	0.51	0.02	4367880	0.33	0.15	0.02	4367880
Misc. Inorganics								
Alkalinity (Total as CaCO3)	mg/L	79	0.5	4371807	<0.5	<0.5	0.5	4371807
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	4371807	<0.5	<0.5	0.5	4371807
Bicarbonate (HCO3)	mg/L	97	0.5	4371807	<0.5	<0.5	0.5	4371807
Carbonate (CO3)	mg/L	<0.5	0.5	4371807	<0.5	<0.5	0.5	4371807
Hydroxide (OH)	mg/L	<0.5	0.5	4371807	<0.5	<0.5	0.5	4371807
Anions								
Dissolved Sulphate (SO4)	mg/L	710	5	4373795	6900	7300	50	4378577
Dissolved Chloride (Cl)	mg/L	1.4	0.5	4373782	12	13	0.5	4373782
Nutrients								
Ammonia (N)	mg/L	1.2	0.05	4373971	1.3	1.2	0.05	4373971
Nitrate plus Nitrite (N)	mg/L	0.52 (1)	0.02	4372818	0.34 (1)	0.15 (1)	0.02	4372818
Physical Properties								
Conductivity	uS/cm	1310	1	4371790	7510	7180	1	4371790
pH	pH Units	7.67		4371692	4.89	4.61		4371692
Physical Properties								
Total Suspended Solids	mg/L	<1	1	4372438	190	250	1	4372438
Total Dissolved Solids	mg/L	1000	10	4372442	7400	7100	10	4372442

RDL = Reportable Detection Limit
(1) Samples arrived to laboratory past recommended hold time.

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

RESULTS OF CHEMICAL ANALYSES OF SURFACE

Maxxam ID		X93296		
Sampling Date		2010/10/20 11:28		
COC Number		08324238		
	Units	**ADDER POND**	**RDL**	**QC Batch**
ANIONS				
Nitrite (N)	mg/L	<0.005 (1)	0.005	4372843
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	NC	0.01	4367879
Nitrate (N)	mg/L	<0.02	0.02	4367880
Misc. Inorganics				
Alkalinity (Total as CaCO3)	mg/L	<0.5	0.5	4371807
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	4371807
Bicarbonate (HCO3)	mg/L	<0.5	0.5	4371807
Carbonate (CO3)	mg/L	<0.5	0.5	4371807
Hydroxide (OH)	mg/L	<0.5	0.5	4371807
Anions				
Dissolved Sulphate (SO4)	mg/L	<0.5	0.5	4378577
Dissolved Chloride (Cl)	mg/L	<0.5	0.5	4373782
Nutrients				
Ammonia (N)	mg/L	0.010	0.005	4370353
Nitrate plus Nitrite (N)	mg/L	<0.02 (1)	0.02	4372818
Physical Properties				
Conductivity	uS/cm	7	1	4371790
pH	pH Units	5.23		4371692
Physical Properties				
Total Suspended Solids	mg/L	<1	1	4372438
Total Dissolved Solids	mg/L	<10	10	4372442

RDL = Reportable Detection Limit
(1) Samples arrived to laboratory past recommended hold time.

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93287	X93288		X93289	X93290		
Sampling Date		2010/10/21 13:45	2010/10/21 09:36		2010/10/20 11:20	2010/10/20 10:55		
COC Number		08324238	08324238		08324238	08324238		
	Units	**X3**	**X3A**	**RDL**	**X4**	**X5P**	**RDL**	**QC Batch**
Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	114	119	0.5	773	1180	0.5	4365964
Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	ug/L	3.4	2.8	0.2	46	9	1	4375693
Dissolved Antimony (Sb)	ug/L	0.05	0.05	0.02	0.4	0.2	0.1	4375693
Dissolved Arsenic (As)	ug/L	0.36	0.35	0.02	0.3	0.1	0.1	4375693
Dissolved Barium (Ba)	ug/L	50.3	55.4	0.02	7.8	20.1	0.1	4375693
Dissolved Beryllium (Be)	ug/L	<0.01	<0.01	0.01	<0.05	<0.05	0.05	4375693
Dissolved Bismuth (Bi)	ug/L	<0.005	<0.005	0.005	<0.03	<0.03	0.03	4375693
Dissolved Boron (B)	ug/L	<50	<50	50	<300	<300	300	4375693
Dissolved Cadmium (Cd)	ug/L	0.028	0.012	0.005	5.81	0.22	0.03	4375693
Dissolved Chromium (Cr)	ug/L	<0.1	<0.1	0.1	<0.5	<0.5	0.5	4375693
Dissolved Cobalt (Co)	ug/L	0.084	0.084	0.005	93.1	36.4	0.03	4375693
Dissolved Copper (Cu)	ug/L	0.50	0.43	0.05	13.4	0.7	0.3	4375693
Dissolved Iron (Fe)	ug/L	127	106	1	57400	400	5	4375693
Dissolved Lead (Pb)	ug/L	0.324	0.242	0.005	43.3	0.35	0.03	4375693
Dissolved Lithium (Li)	ug/L	3.6	3.9	0.5	19	30	3	4375693
Dissolved Manganese (Mn)	ug/L	50.5	49.0	0.05	18400	19400	0.3	4375693
Dissolved Molybdenum (Mo)	ug/L	0.45	0.50	0.05	<0.3	0.6	0.3	4375693
Dissolved Nickel (Ni)	ug/L	0.49	0.45	0.02	80.4	48.6	0.1	4375693
Dissolved Selenium (Se)	ug/L	0.24	0.27	0.04	<0.2	<0.2	0.2	4375693
Dissolved Silicon (Si)	ug/L	5150	5040	100	5780	4630	500	4375693
Dissolved Silver (Ag)	ug/L	<0.005	<0.005	0.005	<0.03	<0.03	0.03	4375693
Dissolved Strontium (Sr)	ug/L	158	160	0.05	744	1070	0.3	4375693
Dissolved Thallium (Tl)	ug/L	<0.002	<0.002	0.002	1.01	0.36	0.01	4375693
Dissolved Tin (Sn)	ug/L	<0.01	<0.01	0.01	<0.05	<0.05	0.05	4375693
Dissolved Titanium (Ti)	ug/L	<0.5	<0.5	0.5	<3	<3	3	4375693
Dissolved Uranium (U)	ug/L	1.67	1.76	0.002	0.42	3.75	0.01	4375693
Dissolved Vanadium (V)	ug/L	<0.2	<0.2	0.2	<1	<1	1	4375693
Dissolved Zinc (Zn)	ug/L	30.0 (1)	7.9	0.1	21000	534 (1)	0.5	4375693
Dissolved Zirconium (Zr)	ug/L	<0.1	<0.1	0.1	<0.5	<0.5	0.5	4375693
Dissolved Calcium (Ca)	mg/L	33.5	34.7	0.05	212	339	0.3	4366866
Dissolved Magnesium (Mg)	mg/L	7.38	7.86	0.05	59.1	80.1	0.3	4366866

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Reanalysis yields similar results

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93287	X93288		X93289	X93290		
Sampling Date		2010/10/21 13:45	2010/10/21 09:36		2010/10/20 11:20	2010/10/20 10:55		
COC Number		08324238	08324238		08324238	08324238		
	Units	X3	X3A	RDL	X4	X5P	RDL	QC Batch
Dissolved Potassium (K)	mg/L	0.86	0.84	0.05	4.2	6.2	0.3	4366866
Dissolved Sodium (Na)	mg/L	2.51	2.34	0.05	11.8	24.9	0.3	4366866
Dissolved Sulphur (S)	mg/L	<10	<10	10	332	427	50	4366866

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93291	X93292	X93293		X93294		
Sampling Date		2010/10/21 10:30	2010/10/21 11:30	2010/10/20 09:00		2010/10/20 10:40		
COC Number		08324238	08324238	08324238		08324238		
	Units	X10	X14	X22B	RDL	ETA COMBINED	RDL	QC Batch
Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	122	222	709	0.5	4140	0.5	4365964
Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	ug/L	2.6	4.0	3.6	0.2	910	20	4375693
Dissolved Antimony (Sb)	ug/L	0.07	0.07	0.27	0.02	<2	2	4375693
Dissolved Arsenic (As)	ug/L	0.32	0.32	0.14	0.02	21	2	4375693
Dissolved Barium (Ba)	ug/L	53.2	54.8	16.2	0.02	15	2	4375693
Dissolved Beryllium (Be)	ug/L	<0.01	<0.01	0.05	0.01	<1	1	4375693
Dissolved Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	0.005	<0.5	0.5	4375693
Dissolved Boron (B)	ug/L	<50	<50	<50	50	<5000	5000	4375693
Dissolved Cadmium (Cd)	ug/L	0.012	0.046 (1)	16.3	0.005	34.6	0.5	4375693
Dissolved Chromium (Cr)	ug/L	0.1	<0.1	<0.1	0.1	<10	10	4375693
Dissolved Cobalt (Co)	ug/L	0.084	0.961	55.0	0.005	1060	0.5	4375693
Dissolved Copper (Cu)	ug/L	0.42	0.51 (1)	4.77	0.05	41 (1)	5	4375693
Dissolved Iron (Fe)	ug/L	194	220	13	1	1090000	100	4375693
Dissolved Lead (Pb)	ug/L	0.399	0.498 (1)	0.265	0.005	4.2	0.5	4375693
Dissolved Lithium (Li)	ug/L	4.0	5.2	62.0	0.5	138	50	4375693
Dissolved Manganese (Mn)	ug/L	36.9	1360	3100	0.05	89400	5	4375693
Dissolved Molybdenum (Mo)	ug/L	0.57	0.61	0.55	0.05	<5	5	4375693
Dissolved Nickel (Ni)	ug/L	0.53	2.52	138	0.02	966	2	4375693
Dissolved Selenium (Se)	ug/L	0.30	0.31	0.16	0.04	<4	4	4375693
Dissolved Silicon (Si)	ug/L	4900	4730	3650	100	15600	10000	4375693
Dissolved Silver (Ag)	ug/L	<0.005	0.005	0.021	0.005	0.5	0.5	4375693
Dissolved Strontium (Sr)	ug/L	158	237	658	0.05	3840	5	4375693
Dissolved Thallium (Tl)	ug/L	<0.002	0.003	0.450	0.002	0.3	0.2	4375693
Dissolved Tin (Sn)	ug/L	<0.01	<0.01	0.02	0.01	<1	1	4375693
Dissolved Titanium (Ti)	ug/L	<0.5	<0.5	<0.5	0.5	<50	50	4375693
Dissolved Uranium (U)	ug/L	1.81	2.30	1.16	0.002	5.1	0.2	4375693
Dissolved Vanadium (V)	ug/L	<0.2	<0.2	<0.2	0.2	<20	20	4375693
Dissolved Zinc (Zn)	ug/L	23.0	23.9	19100	0.1	477000	10	4375693
Dissolved Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	0.1	<10	10	4375693
Dissolved Calcium (Ca)	mg/L	35.7	64.9	152	0.05	429	5	4366866
Dissolved Magnesium (Mg)	mg/L	8.06	14.6	80.2	0.05	745	5	4366866

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Reanalysis yields similar results

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93291	X93292	X93293		X93294		
Sampling Date		2010/10/21 10:30	2010/10/21 11:30	2010/10/20 09:00		2010/10/20 10:40		
COC Number		08324238	08324238	08324238		08324238		
	Units	**X10**	**X14**	**X22B**	**RDL**	**ETA COMBINED**	**RDL**	**QC Batch**
Dissolved Potassium (K)	mg/L	0.80	1.47	9.62	0.05	14	5	4366866
Dissolved Sodium (Na)	mg/L	2.28	4.72	20.9	0.05	66	5	4366866
Dissolved Sulphur (S)	mg/L	<10	40	265	10	2310	1000	4366866

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93295		X93296		
Sampling Date		2010/10/20 09:27		2010/10/20 11:28		
COC Number		08324238		08324238		
	Units	**FCS-4**	**RDL**	**ADDER POND**	**RDL**	**QC Batch**
Misc. Inorganics						
Dissolved Hardness (CaCO3)	mg/L	4220	0.5	<0.5	0.5	4365964
Dissolved Metals by ICPMS						
Dissolved Aluminum (Al)	ug/L	32	20	3.6 (1)	0.2	4375693
Dissolved Antimony (Sb)	ug/L	<2	2	<0.02	0.02	4375693
Dissolved Arsenic (As)	ug/L	6	2	<0.02	0.02	4375693
Dissolved Barium (Ba)	ug/L	14	2	0.46 (1)	0.02	4375693
Dissolved Beryllium (Be)	ug/L	<1	1	<0.01	0.01	4375693
Dissolved Bismuth (Bi)	ug/L	<0.5	0.5	<0.005	0.005	4375693
Dissolved Boron (B)	ug/L	<5000	5000	<50	50	4375693
Dissolved Cadmium (Cd)	ug/L	22.4	0.5	<0.005	0.005	4375693
Dissolved Chromium (Cr)	ug/L	<10	10	<0.1	0.1	4375693
Dissolved Cobalt (Co)	ug/L	903	0.5	0.038 (2)	0.005	4375693
Dissolved Copper (Cu)	ug/L	10	5	0.11	0.05	4375693
Dissolved Iron (Fe)	ug/L	883000	100	25 (1)	1	4375693
Dissolved Lead (Pb)	ug/L	0.9	0.5	0.537 (1)	0.005	4375693
Dissolved Lithium (Li)	ug/L	127	50	<0.5	0.5	4375693
Dissolved Manganese (Mn)	ug/L	86600	5	4.93 (1)	0.05	4375693
Dissolved Molybdenum (Mo)	ug/L	<5	5	<0.05	0.05	4375693
Dissolved Nickel (Ni)	ug/L	810	2	0.10 (3)	0.02	4375693
Dissolved Selenium (Se)	ug/L	<4	4	<0.04	0.04	4375693
Dissolved Silicon (Si)	ug/L	12900	10000	<100	100	4375693
Dissolved Silver (Ag)	ug/L	<0.5	0.5	<0.005	0.005	4375693
Dissolved Strontium (Sr)	ug/L	3910	5	0.26 (1)	0.05	4375693
Dissolved Thallium (Tl)	ug/L	0.4	0.2	<0.002	0.002	4375693
Dissolved Tin (Sn)	ug/L	<1	1	<0.01	0.01	4375693
Dissolved Titanium (Ti)	ug/L	<50	50	<0.5	0.5	4375693
Dissolved Uranium (U)	ug/L	6.1	0.2	<0.002	0.002	4375693
Dissolved Vanadium (V)	ug/L	<20	20	<0.2	0.2	4375693

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Reanalysis yields similar results
(2) Duplicate RPD for Co exceeds acceptance criteria. 10% of analytes failure in multielement scan is allowed.
Dissolved greater than total. Reanalysis yields similar results
(3) Duplicate RPD for Ni exceeds acceptance criteria. 10% of analytes failure in multielement scan is allowed.
Dissolved greater than total. Reanalysis yields similar results

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE)

Maxxam ID		X93295		X93296		
Sampling Date		2010/10/20 09:27		2010/10/20 11:28		
COC Number		08324238		08324238		
	Units	**FCS-4**	**RDL**	**ADDER POND**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	ug/L	399000	10	14.8 (1)	0.1	4375693
Dissolved Zirconium (Zr)	ug/L	<10	10	<0.1	0.1	4375693
Dissolved Calcium (Ca)	mg/L	437	5	0.07	0.05	4366866
Dissolved Magnesium (Mg)	mg/L	760	5	<0.05	0.05	4366866
Dissolved Potassium (K)	mg/L	13	5	<0.05	0.05	4366866
Dissolved Sodium (Na)	mg/L	65	5	<0.05	0.05	4366866
Dissolved Sulphur (S)	mg/L	1990	1000	<10	10	4366866

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Reanalysis yields similar results

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93287	X93288		X93289	X93290		
Sampling Date		2010/10/21 13:45	2010/10/21 09:36		2010/10/20 11:20	2010/10/20 10:55		
COC Number		08324238	08324238		08324238	08324238		
	Units	X3	X3A	RDL	X4	X5P	RDL	QC Batch
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	112	117	0.5	695	1130	0.5	4366674
Total Metals by ICPMS								
Total Aluminum (Al)	ug/L	6.5	5.8	0.2	73	9	1	4376465
Total Antimony (Sb)	ug/L	0.06	0.05	0.02	0.6	0.2	0.1	4376465
Total Arsenic (As)	ug/L	0.44	0.42	0.02	0.8	0.5	0.1	4376465
Total Barium (Ba)	ug/L	52.4	55.1	0.02	8.2	20.5	0.1	4376465
Total Beryllium (Be)	ug/L	<0.01	<0.01	0.01	0.05	<0.05	0.05	4376465
Total Bismuth (Bi)	ug/L	<0.005	<0.005	0.005	<0.03	<0.03	0.03	4376465
Total Boron (B)	ug/L	<50	<50	50	<300	<300	300	4376465
Total Cadmium (Cd)	ug/L	0.015	0.025	0.005	6.73	0.27	0.03	4376465
Total Chromium (Cr)	ug/L	<0.1	<0.1	0.1	<0.5	<0.5	0.5	4376465
Total Cobalt (Co)	ug/L	0.093	0.082	0.005	88.9	36.2	0.03	4376465
Total Copper (Cu)	ug/L	0.52	0.40	0.05	18.2	0.9	0.3	4376465
Total Iron (Fe)	ug/L	223	168	1	56300	781	5	4376465
Total Lead (Pb)	ug/L	0.862	0.326	0.005	114	2.10	0.03	4376465
Total Lithium (Li)	ug/L	3.5	3.9	0.5	20	30	3	4376465
Total Manganese (Mn)	ug/L	53.3	50.3	0.05	18400	19800	0.3	4376465
Total Molybdenum (Mo)	ug/L	0.43	0.50	0.05	<0.3	0.6	0.3	4376465
Total Nickel (Ni)	ug/L	0.54	0.46	0.02	79.2	51.0	0.1	4376465
Total Selenium (Se)	ug/L	0.23	0.28	0.04	<0.2	<0.2	0.2	4376465
Total Silicon (Si)	ug/L	4910	4600	100	5550	5140	500	4376465
Total Silver (Ag)	ug/L	<0.005	<0.005	0.005	<0.03	<0.03	0.03	4376465
Total Strontium (Sr)	ug/L	158	163	0.05	765	1100	0.3	4376465
Total Thallium (Tl)	ug/L	<0.002	<0.002	0.002	1.04	0.34	0.01	4376465
Total Tin (Sn)	ug/L	<0.01	<0.01	0.01	<0.05	<0.05	0.05	4376465
Total Titanium (Ti)	ug/L	<0.5	<0.5	0.5	<3	<3	3	4376465
Total Uranium (U)	ug/L	1.72	1.78	0.002	0.59	3.96	0.01	4376465
Total Vanadium (V)	ug/L	<0.2	<0.2	0.2	<1	<1	1	4376465
Total Zinc (Zn)	ug/L	9.5	8.0	0.1	20500	402	0.5	4376465
Total Zirconium (Zr)	ug/L	<0.1	<0.1	0.1	<0.5	<0.5	0.5	4376465
Total Calcium (Ca)	mg/L	33.5	34.3	0.05	191	327	0.3	4366867
Total Magnesium (Mg)	mg/L	6.81	7.63	0.05	52.8	75.7	0.3	4366867

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93287	X93288		X93289	X93290		
Sampling Date		2010/10/21 13:45	2010/10/21 09:36		2010/10/20 11:20	2010/10/20 10:55		
COC Number		08324238	08324238		08324238	08324238		
	Units	**X3**	**X3A**	**RDL**	**X4**	**X5P**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	0.85	0.86	0.05	4.1	6.3	0.3	4366867
Total Sodium (Na)	mg/L	2.34	2.29	0.05	10.4	23.4	0.3	4366867
Total Sulphur (S)	mg/L	<10	<10	10	313	447	50	4366867

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93291	X93292	X93293		X93294		
Sampling Date		2010/10/21 10:30	2010/10/21 11:30	2010/10/20 09:00		2010/10/20 10:40		
COC Number		08324238	08324238	08324238		08324238		
	Units	**X10**	**X14**	**X22B**	**RDL**	**ETA COMBINED**	**RDL**	**QC Batch**
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	123	228	697	0.5	3600	0.5	4366674
Total Metals by ICPMS								
Total Aluminum (Al)	ug/L	26.7	4.8	11.7	0.2	1400	20	4376465
Total Antimony (Sb)	ug/L	0.07	0.06	0.27	0.02	<2	2	4376465
Total Arsenic (As)	ug/L	0.47	0.44	0.15	0.02	26	2	4376465
Total Barium (Ba)	ug/L	56.6	56.1	16.5	0.02	16	2	4376465
Total Beryllium (Be)	ug/L	<0.01	<0.01	0.06	0.01	<1	1	4376465
Total Bismuth (Bi)	ug/L	<0.005	<0.005	<0.005	0.005	<0.5	0.5	4376465
Total Boron (B)	ug/L	<50	<50	<50	50	<5000	5000	4376465
Total Cadmium (Cd)	ug/L	0.027	0.035	16.9	0.005	33.9	0.5	4376465
Total Chromium (Cr)	ug/L	0.1	<0.1	<0.1	0.1	11	10	4376465
Total Cobalt (Co)	ug/L	0.141	0.910	53.7	0.005	978	0.5	4376465
Total Copper (Cu)	ug/L	7.23	0.39	5.77	0.05	22	5	4376465
Total Iron (Fe)	ug/L	395	418	153	1	1020000	100	4376465
Total Lead (Pb)	ug/L	0.801	0.282	0.827	0.005	52.6	0.5	4376465
Total Lithium (Li)	ug/L	4.1	5.1	62.2	0.5	136	50	4376465
Total Manganese (Mn)	ug/L	48.1	1390	3120	0.05	90200	5	4376465
Total Molybdenum (Mo)	ug/L	0.57	0.64	0.52	0.05	<5	5	4376465
Total Nickel (Ni)	ug/L	0.61	2.45	136	0.02	884	2	4376465
Total Selenium (Se)	ug/L	0.33	0.32	0.15	0.04	<4	4	4376465
Total Silicon (Si)	ug/L	4930	5130	3630	100	15400	10000	4376465
Total Silver (Ag)	ug/L	<0.005	<0.005	0.018	0.005	0.5	0.5	4376465
Total Strontium (Sr)	ug/L	166	240	669	0.05	3930	5	4376465
Total Thallium (Tl)	ug/L	<0.002	0.004	0.448	0.002	0.4	0.2	4376465
Total Tin (Sn)	ug/L	<0.01	<0.01	<0.01	0.01	<1	1	4376465
Total Titanium (Ti)	ug/L	1.0	<0.5	<0.5	0.5	<50	50	4376465
Total Uranium (U)	ug/L	1.84	2.39	1.19	0.002	4.8	0.2	4376465
Total Vanadium (V)	ug/L	<0.2	<0.2	<0.2	0.2	<20	20	4376465
Total Zinc (Zn)	ug/L	27.1	23.9	19100	0.1	462000	10	4376465
Total Zirconium (Zr)	ug/L	<0.1	<0.1	<0.1	0.1	<10	10	4376465
Total Calcium (Ca)	mg/L	35.3	67.3	149	0.05	386	5	4366867
Total Magnesium (Mg)	mg/L	8.37	14.5	78.9	0.05	641	5	4366867

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93291	X93292	X93293		X93294		
Sampling Date		2010/10/21 10:30	2010/10/21 11:30	2010/10/20 09:00		2010/10/20 10:40		
COC Number		08324238	08324238	08324238		08324238		
	Units	X10	X14	X22B	RDL	ETA COMBINED	RDL	QC Batch
Total Potassium (K)	mg/L	0.87	1.30	8.54	0.05	12	5	4366867
Total Sodium (Na)	mg/L	2.32	4.67	19.8	0.05	55	5	4366867
Total Sulphur (S)	mg/L	<10	41	274	10	2340	1000	4366867

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93295		X93296		
Sampling Date		2010/10/20 09:27		2010/10/20 11:28		
COC Number		08324238		08324238		
	Units	**FCS-4**	**RDL**	**ADDER POND**	**RDL**	**QC Batch**
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	4440	0.5	<0.5	0.5	4366674
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	1420	20	0.8	0.2	4376465
Total Antimony (Sb)	ug/L	<2	2	<0.02	0.02	4376465
Total Arsenic (As)	ug/L	21	2	<0.02	0.02	4376465
Total Barium (Ba)	ug/L	16	2	0.08	0.02	4376465
Total Beryllium (Be)	ug/L	1	1	<0.01	0.01	4376465
Total Bismuth (Bi)	ug/L	<0.5	0.5	<0.005	0.005	4376465
Total Boron (B)	ug/L	<5000	5000	<50	50	4376465
Total Cadmium (Cd)	ug/L	26.7	0.5	<0.005	0.005	4376465
Total Chromium (Cr)	ug/L	<10	10	<0.1	0.1	4376465
Total Cobalt (Co)	ug/L	963	0.5	0.026	0.005	4376465
Total Copper (Cu)	ug/L	28	5	0.06	0.05	4376465
Total Iron (Fe)	ug/L	973000	100	14	1	4376465
Total Lead (Pb)	ug/L	83.7	0.5	0.103	0.005	4376465
Total Lithium (Li)	ug/L	151	50	<0.5	0.5	4376465
Total Manganese (Mn)	ug/L	95300	5	3.17	0.05	4376465
Total Molybdenum (Mo)	ug/L	<5	5	<0.05	0.05	4376465
Total Nickel (Ni)	ug/L	874	2	0.03	0.02	4376465
Total Selenium (Se)	ug/L	<4	4	<0.04	0.04	4376465
Total Silicon (Si)	ug/L	14400	10000	<100	100	4376465
Total Silver (Ag)	ug/L	<0.5	0.5	<0.005	0.005	4376465
Total Strontium (Sr)	ug/L	4140	5	0.17	0.05	4376465
Total Thallium (Tl)	ug/L	0.5	0.2	<0.002	0.002	4376465
Total Tin (Sn)	ug/L	<1	1	<0.01	0.01	4376465
Total Titanium (Ti)	ug/L	<50	50	<0.5	0.5	4376465
Total Uranium (U)	ug/L	7.2	0.2	0.012	0.002	4376465
Total Vanadium (V)	ug/L	<20	20	<0.2	0.2	4376465
Total Zinc (Zn)	ug/L	435000	10	8.2	0.1	4376465
Total Zirconium (Zr)	ug/L	<10	10	<0.1	0.1	4376465
Total Calcium (Ca)	mg/L	458	5	<0.05	0.05	4366867
Total Magnesium (Mg)	mg/L	800	5	<0.05	0.05	4366867

RDL = Reportable Detection Limit

Maxxam Job #: B0A2990
Report Date: 2010/11/02

DENISON ENVIRONMENTAL SERVICES
Client Project #: OCT 20 & 21/10-MONTHLY-FAROSRF

Sampler Initials: NG

LOW LEVEL TOTAL METALS IN WATER (SURFACE)

Maxxam ID		X93295		X93296		
Sampling Date		2010/10/20 09:27		2010/10/20 11:28		
COC Number		08324238		08324238		
	Units	**FCS-4**	**RDL**	**ADDER POND**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	14	5	<0.05	0.05	4366867
Total Sodium (Na)	mg/L	70	5	<0.05	0.05	4366867
Total Sulphur (S)	mg/L	2480	1000	<10	10	4366867

RDL = Reportable Detection Limit

General Comments

Sample X93287-01: Ion Balance: NC = Not Calculable due to low ion sum [< 3 meq/L].

Sample X93288-01: Ion Balance: NC = Not Calculable due to low ion sum [< 3 meq/L].

Sample X93291-01: Ion Balance: NC = Not Calculable due to low ion sum [< 3 meq/L].

Sample X93296-01: Ion Balance: NC = Not Calculable due to low ion sum [< 3 meq/L].

RESULTS OF CHEMICAL ANALYSES OF SURFACE Comments

Sample X93287-02 Turbidity: Sample received past method-specified hold time.

Sample X93288-02 Turbidity: Sample received past method-specified hold time.

Sample X93291-02 Turbidity: Sample received past method-specified hold time.

Sample X93292-02 Turbidity: Sample received past method-specified hold time.

LOW LEVEL DISSOLVED METALS IN WATER (SURFACE) Comments

Sample X93289-04 Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

Sample X93290-04 Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

Sample X93294-04 Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

Sample X93295-04 Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

LOW LEVEL TOTAL METALS IN WATER (SURFACE) Comments

Sample X93289-03 Elements by ICPMS Low Level (total): RDL raised due to sample matrix interference.

Sample X93290-03 Elements by ICPMS Low Level (total): RDL raised due to sample matrix interference.

Sample X93294-03 Elements by ICPMS Low Level (total): RDL raised due to sample matrix interference.

Sample X93295-03 Elements by ICPMS Low Level (total): RDL raised due to sample matrix interference.

Results relate only to the items tested.

DENISON ENVIRONMENTAL SERVICES
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Quality Assurance Report

Maxxam Job Number: VB0A2990

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4370122 AD5	Matrix Spike [X93292-05]	Total Organic Carbon (C)	2010/10/26		113	%	80 - 120
	Spiked Blank	Total Organic Carbon (C)	2010/10/26		107	%	80 - 120
	Method Blank	Total Organic Carbon (C)	2010/10/26	<0.5		mg/L	
	RPD [X93292-05]	Total Organic Carbon (C)	2010/10/26	NC		%	20
4370123 AD5	Matrix Spike	Dissolved Organic Carbon (C)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Dissolved Organic Carbon (C)	2010/10/26		107	%	80 - 120
	Method Blank	Dissolved Organic Carbon (C)	2010/10/26	<0.5		mg/L	
	RPD	Dissolved Organic Carbon (C)	2010/10/26	0.07		%	20
4370353 SF1	Matrix Spike	Ammonia (N)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Ammonia (N)	2010/10/26		102	%	80 - 120
	Method Blank	Ammonia (N)	2010/10/26	<0.005		mg/L	
	RPD	Ammonia (N)	2010/10/26	0.3		%	20
4370967 NS6	Spiked Blank	Turbidity	2010/10/26		99	%	80 - 120
	Method Blank	Turbidity	2010/10/26	<0.1		NTU	
	RPD [X93288-02]	Turbidity	2010/10/26	0.3		%	20
4371790 MM3	Spiked Blank	Conductivity	2010/10/26		100	%	80 - 120
	Method Blank	Conductivity	2010/10/26	<1		uS/cm	
	RPD [X93293-02]	Conductivity	2010/10/26	0		%	20
4371807 MM3	Matrix Spike	Alkalinity (Total as CaCO3)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Alkalinity (Total as CaCO3)	2010/10/26		100	%	80 - 120
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<0.5		mg/L	
		Alkalinity (PP as CaCO3)	2010/10/26	<0.5		mg/L	
		Bicarbonate (HCO3)	2010/10/26	<0.5		mg/L	
		Carbonate (CO3)	2010/10/26	<0.5		mg/L	
		Hydroxide (OH)	2010/10/26	<0.5		mg/L	
	RPD [X93293-02]	Alkalinity (Total as CaCO3)	2010/10/26	1.3		%	20
		Alkalinity (PP as CaCO3)	2010/10/26	NC		%	20
		Bicarbonate (HCO3)	2010/10/26	1.3		%	20
		Carbonate (CO3)	2010/10/26	NC		%	20
		Hydroxide (OH)	2010/10/26	NC		%	20
4372438 TM8	Spiked Blank	Total Suspended Solids	2010/10/26		101	%	80 - 120
	Method Blank	Total Suspended Solids	2010/10/26	<1		mg/L	
4372442 TM8	Matrix Spike	Total Dissolved Solids	2010/10/27		94	%	80 - 120
	Spiked Blank	Total Dissolved Solids	2010/10/27		94	%	80 - 120
	Method Blank	Total Dissolved Solids	2010/10/27	<10		mg/L	
	RPD	Total Dissolved Solids	2010/10/27	0		%	20
4372818 IC4	Matrix Spike	Nitrate plus Nitrite (N)	2010/10/26		103	%	80 - 120
	Spiked Blank	Nitrate plus Nitrite (N)	2010/10/26		103	%	80 - 120
	Method Blank	Nitrate plus Nitrite (N)	2010/10/26	<0.02		mg/L	
	RPD [X93287-02]	Nitrate plus Nitrite (N)	2010/10/26	NC (1)		%	25
4372843 IC4	Matrix Spike	Nitrite (N)	2010/10/26		99	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/26		97	%	80 - 120
	Method Blank	Nitrite (N)	2010/10/26	<0.005		mg/L	
	RPD [X93287-02]	Nitrite (N)	2010/10/26	NC (1)		%	20
4373782 KCG	Matrix Spike	Dissolved Chloride (Cl)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		94	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<0.5		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/26	NC		%	20
4373795 KCG	Matrix Spike	Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2010/10/26		93	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2010/10/26	<0.5		mg/L	
	RPD [X93287-02]	Dissolved Sulphate (SO4)	2010/10/26	0.1		%	20
4373971 SF1	Matrix Spike	Ammonia (N)	2010/10/27		116	%	80 - 120
	Spiked Blank	Ammonia (N)	2010/10/27		100	%	80 - 120

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4373971 SF1	Method Blank	Ammonia (N)	2010/10/27	<0.005		mg/L	
	RPD [X93295-05]	Ammonia (N)	2010/10/27	2.1		%	20
4375693 AA1	Matrix Spike [X93296-04]	Dissolved Arsenic (As)	2010/10/30		91	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/30		98	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/30		103	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/30		95	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/30		96	%	80 - 120
		Dissolved Copper (Cu)	2010/10/30		97	%	80 - 120
		Dissolved Lead (Pb)	2010/10/30		102	%	80 - 120
		Dissolved Lithium (Li)	2010/10/30		99	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/30		97	%	80 - 120
		Dissolved Selenium (Se)	2010/10/30		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/30		104	%	80 - 120
		Dissolved Vanadium (V)	2010/10/30		90	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/30		NC	%	80 - 120
	Spiked Blank	Dissolved Arsenic (As)	2010/10/30		96	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/30		100	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/30		103	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/30		96	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/30		99	%	80 - 120
		Dissolved Copper (Cu)	2010/10/30		96	%	80 - 120
		Dissolved Lead (Pb)	2010/10/30		104	%	80 - 120
		Dissolved Lithium (Li)	2010/10/30		104	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/30		95	%	80 - 120
		Dissolved Selenium (Se)	2010/10/30		105	%	80 - 120
		Dissolved Uranium (U)	2010/10/30		109	%	80 - 120
		Dissolved Vanadium (V)	2010/10/30		90	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/30		97	%	80 - 120
	Method Blank	Dissolved Aluminum (Al)	2010/10/30	<0.2		ug/L	
		Dissolved Antimony (Sb)	2010/10/30	<0.02		ug/L	
		Dissolved Arsenic (As)	2010/10/30	<0.02		ug/L	
		Dissolved Barium (Ba)	2010/10/30	<0.02		ug/L	
		Dissolved Beryllium (Be)	2010/10/30	<0.01		ug/L	
		Dissolved Bismuth (Bi)	2010/10/30	<0.005		ug/L	
		Dissolved Boron (B)	2010/10/30	<50		ug/L	
		Dissolved Cadmium (Cd)	2010/10/30	<0.005		ug/L	
		Dissolved Chromium (Cr)	2010/10/30	<0.1		ug/L	
		Dissolved Cobalt (Co)	2010/10/30	<0.005		ug/L	
		Dissolved Copper (Cu)	2010/10/30	<0.05		ug/L	
		Dissolved Iron (Fe)	2010/10/30	<1		ug/L	
		Dissolved Lead (Pb)	2010/10/30	<0.005		ug/L	
		Dissolved Lithium (Li)	2010/10/30	<0.5		ug/L	
		Dissolved Manganese (Mn)	2010/10/30	<0.05		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/30	<0.05		ug/L	
		Dissolved Nickel (Ni)	2010/10/30	<0.02		ug/L	
		Dissolved Selenium (Se)	2010/10/30	<0.04		ug/L	
		Dissolved Silicon (Si)	2010/10/30	<100		ug/L	
		Dissolved Silver (Ag)	2010/10/30	<0.005		ug/L	
		Dissolved Strontium (Sr)	2010/10/30	<0.05		ug/L	
		Dissolved Thallium (Tl)	2010/10/30	<0.002		ug/L	
		Dissolved Tin (Sn)	2010/10/30	<0.01		ug/L	
		Dissolved Titanium (Ti)	2010/10/30	<0.5		ug/L	
		Dissolved Uranium (U)	2010/10/30	<0.002		ug/L	
		Dissolved Vanadium (V)	2010/10/30	<0.2		ug/L	

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4375693 AA1	Method Blank	Dissolved Zinc (Zn)	2010/10/30	<0.1		ug/L	
		Dissolved Zirconium (Zr)	2010/10/30	<0.1		ug/L	
	RPD [X93296-04]	Dissolved Aluminum (Al)	2010/10/30	5.9		%	20
		Dissolved Antimony (Sb)	2010/10/30	NC		%	20
		Dissolved Arsenic (As)	2010/10/30	NC		%	20
		Dissolved Barium (Ba)	2010/10/30	0.8		%	20
		Dissolved Beryllium (Be)	2010/10/30	NC		%	20
		Dissolved Bismuth (Bi)	2010/10/30	NC		%	20
		Dissolved Boron (B)	2010/10/30	NC		%	20
		Dissolved Cadmium (Cd)	2010/10/30	NC		%	20
		Dissolved Chromium (Cr)	2010/10/30	NC		%	20
		Dissolved Cobalt (Co)	2010/10/30	23.6 (2)		%	20
		Dissolved Copper (Cu)	2010/10/30	NC		%	20
		Dissolved Iron (Fe)	2010/10/30	2.5		%	20
		Dissolved Lead (Pb)	2010/10/30	0.9		%	20
		Dissolved Lithium (Li)	2010/10/30	NC		%	20
		Dissolved Manganese (Mn)	2010/10/30	2.1		%	20
		Dissolved Molybdenum (Mo)	2010/10/30	NC		%	20
		Dissolved Nickel (Ni)	2010/10/30	NC		%	20
		Dissolved Selenium (Se)	2010/10/30	NC		%	20
		Dissolved Silicon (Si)	2010/10/30	NC		%	20
		Dissolved Silver (Ag)	2010/10/30	NC		%	20
		Dissolved Strontium (Sr)	2010/10/30	6.7		%	20
		Dissolved Thallium (Tl)	2010/10/30	NC		%	20
		Dissolved Tin (Sn)	2010/10/30	NC		%	20
		Dissolved Titanium (Ti)	2010/10/30	NC		%	20
		Dissolved Uranium (U)	2010/10/30	NC		%	20
		Dissolved Vanadium (V)	2010/10/30	NC		%	20
		Dissolved Zinc (Zn)	2010/10/30	1.8		%	20
		Dissolved Zirconium (Zr)	2010/10/30	NC		%	20
4376465 AA1	Matrix Spike	Total Arsenic (As)	2010/10/30		105	%	80 - 120
		Total Beryllium (Be)	2010/10/30		109	%	80 - 120
		Total Cadmium (Cd)	2010/10/30		110	%	80 - 120
		Total Chromium (Cr)	2010/10/30		100	%	80 - 120
		Total Cobalt (Co)	2010/10/30		101	%	80 - 120
		Total Copper (Cu)	2010/10/30		80	%	80 - 120
		Total Lead (Pb)	2010/10/30		104	%	80 - 120
		Total Lithium (Li)	2010/10/30		104	%	80 - 120
		Total Nickel (Ni)	2010/10/30		101	%	80 - 120
		Total Selenium (Se)	2010/10/30		110	%	80 - 120
		Total Uranium (U)	2010/10/30		113	%	80 - 120
		Total Vanadium (V)	2010/10/30		99	%	80 - 120
		Total Zinc (Zn)	2010/10/30		NC	%	80 - 120
	Spiked Blank	Total Arsenic (As)	2010/10/30		105	%	80 - 120
		Total Beryllium (Be)	2010/10/30		101	%	80 - 120
		Total Cadmium (Cd)	2010/10/30		104	%	80 - 120
		Total Chromium (Cr)	2010/10/30		96	%	80 - 120
		Total Cobalt (Co)	2010/10/30		103	%	80 - 120
		Total Copper (Cu)	2010/10/30		102	%	80 - 120
		Total Lead (Pb)	2010/10/30		104	%	80 - 120
		Total Lithium (Li)	2010/10/30		103	%	80 - 120
		Total Nickel (Ni)	2010/10/30		103	%	80 - 120
		Total Selenium (Se)	2010/10/30		105	%	80 - 120
		Total Uranium (U)	2010/10/30		108	%	80 - 120
		Total Vanadium (V)	2010/10/30		96	%	80 - 120

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Quality Assurance Report (Continued)

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4376465 AA1	Spiked Blank	Total Zinc (Zn)	2010/10/30		107	%	80 - 120
	Method Blank	Total Aluminum (Al)	2010/10/30	<0.2		ug/L	
		Total Antimony (Sb)	2010/10/30	<0.02		ug/L	
		Total Arsenic (As)	2010/10/30	<0.02		ug/L	
		Total Barium (Ba)	2010/10/30	<0.02		ug/L	
		Total Beryllium (Be)	2010/10/30	<0.01		ug/L	
		Total Bismuth (Bi)	2010/10/30	<0.005		ug/L	
		Total Boron (B)	2010/10/30	<50		ug/L	
		Total Cadmium (Cd)	2010/10/30	<0.005		ug/L	
		Total Chromium (Cr)	2010/10/30	<0.1		ug/L	
		Total Cobalt (Co)	2010/10/30	<0.005		ug/L	
		Total Copper (Cu)	2010/10/30	<0.05		ug/L	
		Total Iron (Fe)	2010/10/30	<1		ug/L	
		Total Lead (Pb)	2010/10/30	<0.005		ug/L	
		Total Lithium (Li)	2010/10/30	<0.5		ug/L	
		Total Manganese (Mn)	2010/10/30	<0.05		ug/L	
		Total Molybdenum (Mo)	2010/10/30	<0.05		ug/L	
		Total Nickel (Ni)	2010/10/30	<0.02		ug/L	
		Total Selenium (Se)	2010/10/30	<0.04		ug/L	
		Total Silicon (Si)	2010/10/30	<100		ug/L	
		Total Silver (Ag)	2010/10/30	<0.005		ug/L	
		Total Strontium (Sr)	2010/10/30	<0.05		ug/L	
		Total Thallium (Tl)	2010/10/30	<0.002		ug/L	
		Total Tin (Sn)	2010/10/30	<0.01		ug/L	
		Total Titanium (Ti)	2010/10/30	<0.5		ug/L	
		Total Uranium (U)	2010/10/30	<0.002		ug/L	
		Total Vanadium (V)	2010/10/30	<0.2		ug/L	
		Total Zinc (Zn)	2010/10/30	<0.1		ug/L	
		Total Zirconium (Zr)	2010/10/30	<0.1		ug/L	
	RPD	Total Aluminum (Al)	2010/10/30	2.6		%	20
		Total Antimony (Sb)	2010/10/30	NC		%	20
		Total Arsenic (As)	2010/10/30	9.1		%	20
		Total Barium (Ba)	2010/10/30	0.7		%	20
		Total Beryllium (Be)	2010/10/30	NC		%	20
		Total Bismuth (Bi)	2010/10/30	NC		%	20
		Total Boron (B)	2010/10/30	NC		%	20
		Total Cadmium (Cd)	2010/10/30	NC		%	20
		Total Chromium (Cr)	2010/10/30	NC		%	20
		Total Cobalt (Co)	2010/10/30	14.5		%	20
		Total Copper (Cu)	2010/10/30	3.4		%	20
		Total Iron (Fe)	2010/10/30	1.3		%	20
		Total Lead (Pb)	2010/10/30	4.1		%	20
		Total Lithium (Li)	2010/10/30	6.1		%	20
		Total Manganese (Mn)	2010/10/30	1.8		%	20
		Total Molybdenum (Mo)	2010/10/30	1.5		%	20
		Total Nickel (Ni)	2010/10/30	13.3		%	20
		Total Selenium (Se)	2010/10/30	2.4		%	20
		Total Silicon (Si)	2010/10/30	6.6		%	20
		Total Silver (Ag)	2010/10/30	NC		%	20
		Total Strontium (Sr)	2010/10/30	0.9		%	20
		Total Thallium (Tl)	2010/10/30	NC		%	20
		Total Tin (Sn)	2010/10/30	NC		%	20
		Total Titanium (Ti)	2010/10/30	NC		%	20
		Total Uranium (U)	2010/10/30	0.5		%	20
		Total Vanadium (V)	2010/10/30	NC		%	20

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4376465 AA1	RPD	Total Zinc (Zn)	2010/10/30	4.6		%	20
		Total Zirconium (Zr)	2010/10/30	NC		%	20
4378577 KCG	Matrix Spike	Dissolved Sulphate (SO4)	2010/10/27		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2010/10/27		100	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2010/10/27	<0.5		mg/L	
	RPD	Dissolved Sulphate (SO4)	2010/10/27	NC (3)		%	20
4385579 BB3	Matrix Spike	Dissolved Chloride (Cl)	2010/10/29		99	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/29		98	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2010/10/29	<0.5		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/29	10.4		%	20
4385585 BB3	Matrix Spike	Dissolved Sulphate (SO4)	2010/10/29		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2010/10/29		95	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2010/10/29	<0.5		mg/L	
	RPD	Dissolved Sulphate (SO4)	2010/10/29	0.5		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Samples arrived to laboratory past recommended hold time.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(3) Detection limits raised due to matrix interference