

February 21, 2013

EDI Job Number: 12-Y-0450

Assessment and Abandoned Mines
Yukon Government
Box 2703
Whitehorse, YT

Attention: Adrienne Turcotte, Project Officer

Re: Water quality sampling conducted at Dixon Lake

Water quality in Dixon Lake was investigated in January 2013 as part of a study into the cause of tissue discolouration associated with a decrease in body condition in Arctic grayling noted during sampling in the fall 2012. The site was visited on January 8 and 9, 2013, and the lake water was accessed via a number of holes augured through the surface ice. The ice was 0.7 to 1.0 m thick in the areas where holes were drilled. On-site temperature and dissolved oxygen profiles were conducted at sample location “T” using a YSI Pro Plus Multi-meter. In addition, water quality samples were collected from approximately 0.3 m below the ice at two different locations (Table 1); samples were analyzed (Maxxam Analytics) for concentrations of major ions, nutrient parameters, total and dissolved metals (Table 2). It was originally planned that samples be collected from multiple depths through the water column, however, extreme cold temperatures and subsequent equipment malfunctions did not allow for such sampling.

Table 1. Water quality sample locations and data collected at each.

| Sample Number for Laboratory Analysis | Sample Location | | Laboratory samples collected (Y/N) and collection depth | Temperature and oxygen profile conducted (Y/N) |
|---------------------------------------|-----------------|--------------|---|--|
| | Eastings | Northing | | |
| 0450-120109-001 | 593496 | 6910682 (H)* | Y; 0.3 m below surface (within the auger hole) | N |
| 0450-120109-002 | 593630 | 6910858 (I)* | Y; 0.3 m below surface (within the auger hole) | Y |

* H and I refer to the sampling location designations that appear in Figure 1 of the “Dixon Lake Fish Tissue and Water Quality Project – Field Update”.



In-situ Water Quality Data

Dixon Lake is dimictic, which means that it circulates freely for a short period of time in the spring and fall, likely stratifies in summer, and inversely stratifies in winter. These lakes are typical of the northern temperate climate. Dixon Lake was sampled January 9, 2013. Ice thickness ranged from 0.7 to 1.0 m. Temperature and dissolved oxygen profiles were conducted to a depth of 10.0 m in a deep area of the lake (Figure 1). The water temperature was between 1.0 and 1.5°C to a depth of 2.0 m, when the temperature began to rise to a temperature of just under 3.0°C at a depth of 10.0 m. Dissolved oxygen follows the opposite trend, with a concentration of 13.38 mg/L just under the ice to a concentration of 4.10 mg/L at 10.0 m in depth (Figure 1).

While the concentration of oxygen remains relatively high in the epilimnion, it steadily decreases with increasing depth. Oxygen is generally depleted through oxidation of organic matter both in the water column (lesser amount) and at the sediment water interface (larger amount). In low nutrient environments, including Dixon Lake, an increased amount of time is required for the oxygen in the hypolimnion to deplete; however this process began immediately following the formation of ice on the water surface and will continue until spring break-up. Sources of oxidation in Dixon Lake likely include bacterial decomposition of organic matter including aquatic invertebrates and plant material (noted in under ice video recording on January 8/9, 2013 sampling trip).

Laboratory Results

Samples sent for laboratory analysis (Table 2) indicates that the pH in Dixon Lake was neutral to slightly acidic. Water was very clear and colourless with total suspended solids below laboratory detection, and correspondingly the specific conductivity was low (approximately 50 $\mu\text{S}/\text{cm}$). Water was also soft, with a total hardness between 18 and 20 mg/L CaCO_3 , another indicator of low mineralization.

Nutrient indicators, including ammonia, nitrate, nitrite, dissolved phosphorus and orthophosphate, were all exceedingly low, indicating that the system was oligotrophic.

The concentrations of total metals in the water were also low. Only the total cadmium concentration from one sample (sample number 0450-130109-001, concentration of 0.012 $\mu\text{g}/\text{L}$) exceeded the CCME guideline for the protection of aquatic life (hardness dependent guideline, calculated at 0.008 $\mu\text{g}/\text{L}$ for this site, based on a water hardness of 20 mg/L CaCO_3). Concentrations of all other metals were well below applicable CCME guidelines for the protection of freshwater aquatic life. This indicates that concentrations of parameters of potential toxicological concern were not present in high concentrations in Dixon Lake.



Conclusions

Based on the water quality data presented above, there are no clear indicators that the water quality in Dixon Lake poses any potential causes for any adverse health effects to the fish population of Dixon Lake, including Arctic grayling. Following reports from the fish pathology analysis, it may be that additional, more specific analyses are requested.

Please feel free to contact me at any time with questions or comments on the above discussion (867-393-4882).

Yours truly,

EDI Environmental Dynamics Inc.

A handwritten signature in black ink, appearing to read 'Lyndsay Doetzel', is positioned below the company name.

Lyndsay Doetzel, M.Sc., R.P.Biol.
Aquatic Toxicologist

Attachments:

- Figure 1. Temperature and dissolved oxygen profiles from Dixon Lake, as measured on 9 January, 2013.
- Table 2. Water quality results for laboratory analysis of samples collected in Dixon Lake (sampled January 9, 2013).
- Maxxam Analytics Laboratory report

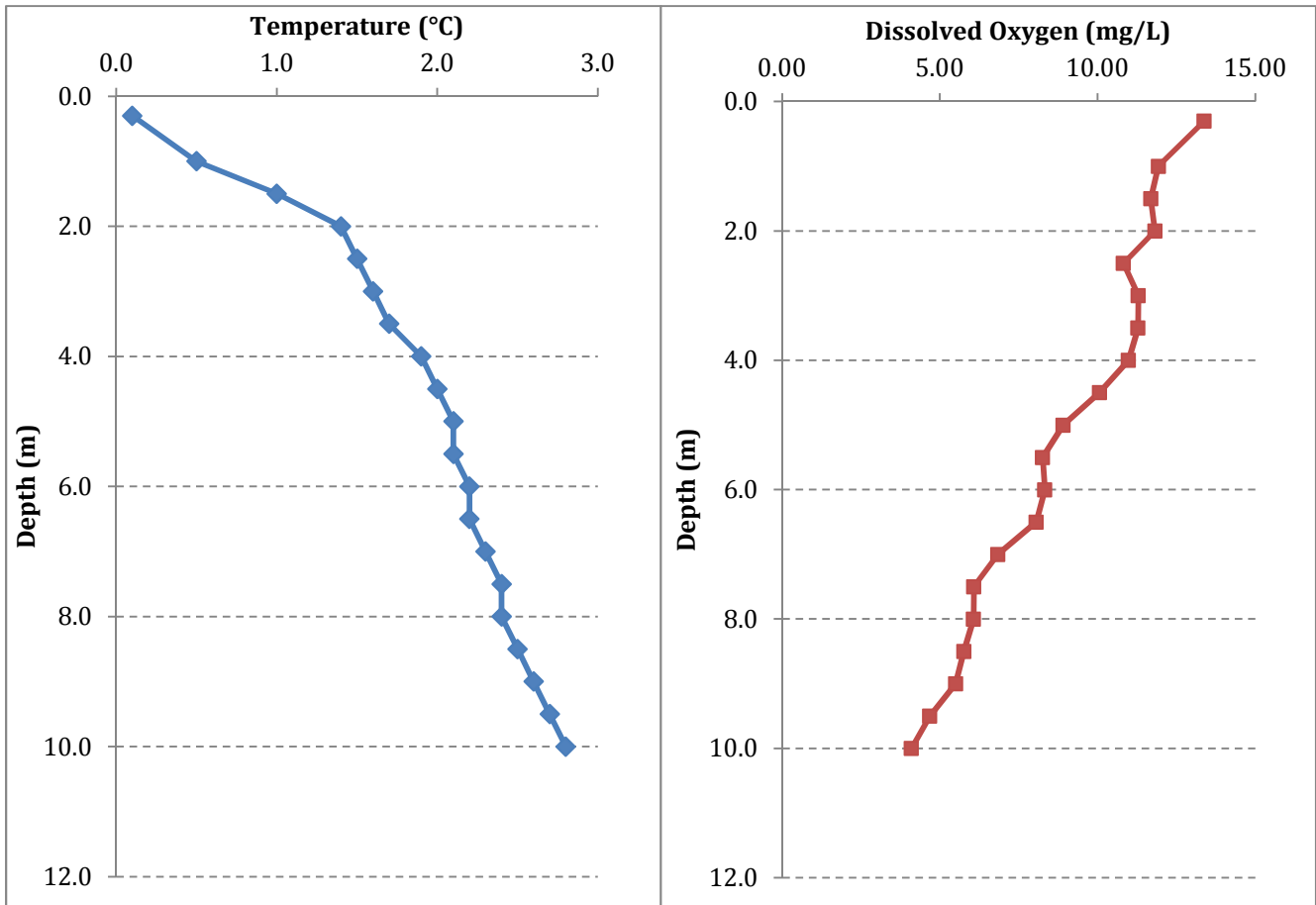


Figure 1. Temperature and dissolved oxygen profiles from Dixon Lake, as measured on 9 January, 2013.



Table 2. Water quality results for laboratory analysis of samples collected in Dixon Lake (sampled January 9, 2013).

| Parameter | Units | CCME AL Guidelines | 0450-130109-001 | 0450-130109-002 | RDL |
|----------------------------------|----------|--------------------|-----------------|-----------------|--------|
| | | | 09-Jan-2013 | 09-Jan-2013 | |
| Misc. Inorganics | | | | | |
| Acidity (pH 4.5) | mg/L | -- | <0.50 | <0.50 | 0.50 |
| Acidity (pH 8.3) | mg/L | -- | 0.69 | 0.52 | 0.50 |
| Calculated Parameters | | | | | |
| Filter and HNO3 Preservation | N/A | -- | FIELD | FIELD | N/A |
| Total Hardness (CaCO3) | mg/L | -- | 20.5 | 18.8 | 0.50 |
| Physical Properties | | | | | |
| Conductivity | µS/cm | -- | 53.6 | 49.5 | 1.0 |
| pH | pH Units | 6.5 - 9.0 | 6.78 | 7.06 | |
| Physical Properties | | | | | |
| Total Suspended Solids | mg/L | -- | <1.0 | <1.0 | 1.0 |
| Total Dissolved Solids | mg/L | -- | 44 | 56 | 10 |
| Misc. Inorganics | | | | | |
| Fluoride (F) | mg/L | -- | 0.044 | 0.042 | 0.010 |
| Dissolved Hardness (CaCO3) | mg/L | -- | 19.9 | 17.7 | 0.50 |
| Alkalinity (Total as CaCO3) | mg/L | -- | 10.6 | 12.4 | 0.50 |
| Alkalinity (PP as CaCO3) | mg/L | -- | <0.50 | <0.50 | 0.50 |
| Bicarbonate (HCO3) | mg/L | -- | 13.0 | 15.1 | 0.50 |
| Carbonate (CO3) | mg/L | -- | <0.50 | <0.50 | 0.50 |
| Hydroxide (OH) | mg/L | -- | <0.50 | <0.50 | 0.50 |
| Anions | | | | | |
| Orthophosphate (P) | mg/L | -- | 0.0054 (1) | 0.0027 | 0.0010 |
| Dissolved Sulphate (SO4) | mg/L | -- | 9.42 | 8.53 | 0.50 |
| Dissolved Chloride (Cl) | mg/L | -- | 0.73 | 0.66 | 0.50 |
| Nutrients | | | | | |
| Ammonia (N) | mg/L | 12.5 ^A | 0.023 | 0.020 | 0.0050 |
| Dissolved Phosphorus (P) | mg/L | -- | 0.0044 | 0.0027 | 0.0020 |
| Nitrate (N) | mg/L | 13 | 0.0170 | 0.0185 | 0.0020 |
| Nitrate plus Nitrite (N) | mg/L | -- | 0.0170 | 0.0185 | 0.0020 |
| Nitrite (N) | mg/L | 60 | <0.0020 | <0.0020 | 0.0020 |
| Elements | | | | | |
| Dissolved Mercury (Hg) | µg/L | -- | <0.010 | <0.010 | 0.010 |
| Total Mercury (Hg) | µg/L | 0.026 | <0.010 | <0.010 | 0.010 |
| ANIONS | | | | | |
| Bromide (Br) | mg/L | -- | <0.010 | <0.010 | 0.010 |
| Dissolved Metals by ICPMS | | | | | |



| Parameter | Units | CCME AL Guidelines | 0450-130109-001 | 0450-130109-002 | RDL |
|------------------------------|-------|--------------------|-----------------|-----------------|-------|
| | | | 09-Jan-2013 | 09-Jan-2013 | |
| Dissolved Aluminum (Al) | µg/L | -- | 13.0 | 14.6 | 3.0 |
| Dissolved Antimony (Sb) | µg/L | -- | <0.50 | <0.50 | 0.50 |
| Dissolved Arsenic (As) | µg/L | -- | 0.12 | 0.10 | 0.10 |
| Dissolved Barium (Ba) | µg/L | -- | 16.7 | 14.9 | 1.0 |
| Dissolved Beryllium (Be) | µg/L | -- | <0.10 | <0.10 | 0.10 |
| Dissolved Bismuth (Bi) | µg/L | -- | <1.0 | <1.0 | 1.0 |
| Dissolved Boron (B) | µg/L | -- | <50 | <50 | 50 |
| Dissolved Cadmium (Cd) | µg/L | -- | <0.010 | <0.010 | 0.010 |
| Dissolved Chromium (Cr) | µg/L | -- | <1.0 | <1.0 | 1.0 |
| Dissolved Cobalt (Co) | µg/L | -- | <0.50 | <0.50 | 0.50 |
| Dissolved Copper (Cu) | µg/L | -- | 0.47 | 11.8 (1) | 0.20 |
| Dissolved Iron (Fe) | µg/L | -- | 127 | 119 | 5.0 |
| Dissolved Lead (Pb) | µg/L | -- | <0.20 | <0.20 | 0.20 |
| Dissolved Lithium (Li) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Dissolved Manganese (Mn) | µg/L | -- | 11.9 | 9.0 | 1.0 |
| Dissolved Molybdenum (Mo) | µg/L | -- | <1.0 | <1.0 | 1.0 |
| Dissolved Nickel (Ni) | µg/L | -- | <1.0 | <1.0 | 1.0 |
| Dissolved Selenium (Se) | µg/L | -- | <0.10 | <0.10 | 0.10 |
| Dissolved Silicon (Si) | µg/L | -- | 4520 | 4180 | 100 |
| Dissolved Silver (Ag) | µg/L | -- | <0.020 | <0.020 | 0.020 |
| Dissolved Strontium (Sr) | µg/L | -- | 50.1 | 44.9 | 1.0 |
| Dissolved Thallium (Tl) | µg/L | -- | <0.050 | <0.050 | 0.050 |
| Dissolved Tin (Sn) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Dissolved Titanium (Ti) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Dissolved Uranium (U) | µg/L | -- | 0.23 | 0.22 | 0.10 |
| Dissolved Vanadium (V) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Dissolved Zinc (Zn) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Dissolved Zirconium (Zr) | µg/L | -- | <0.50 | <0.50 | 0.50 |
| Dissolved Calcium (Ca) | mg/L | -- | 6.63 | 5.92 | 0.050 |
| Dissolved Magnesium (Mg) | mg/L | -- | 0.821 | 0.713 | 0.050 |
| Dissolved Potassium (K) | mg/L | -- | 0.372 | 0.278 | 0.050 |
| Dissolved Sodium (Na) | mg/L | -- | 1.84 | 1.54 | 0.050 |
| Dissolved Sulphur (S) | mg/L | -- | 3.2 | <3.0 | 3.0 |
| Total Metals by ICPMS | | | | | |
| Total Aluminum (Al) | µg/L | 100 ^B | 20.7 | 17.3 | 3.0 |
| Total Antimony (Sb) | µg/L | -- | 0.67 | <0.50 | 0.50 |
| Total Arsenic (As) | µg/L | 5 | 0.15 | 0.11 | 0.10 |



| Parameter | Units | CCME AL Guidelines | 0450-130109-001 | 0450-130109-002 | RDL |
|-----------------------|-------|--------------------|-----------------|-----------------|-------|
| | | | 09-Jan-2013 | 09-Jan-2013 | |
| Total Barium (Ba) | µg/L | -- | 17.9 | 16.3 | 1.0 |
| Total Beryllium (Be) | µg/L | -- | <0.10 | <0.10 | 0.10 |
| Total Bismuth (Bi) | µg/L | -- | <1.0 | <1.0 | 1.0 |
| Total Boron (B) | µg/L | 1500 | <50 | <50 | 50 |
| Total Cadmium (Cd) | µg/L | 0.008 ^C | 0.012 | <0.010 | 0.010 |
| Total Chromium (Cr) | µg/L | 8.9 | <1.0 | <1.0 | 1.0 |
| Total Cobalt (Co) | µg/L | -- | <0.50 | <0.50 | 0.50 |
| Total Copper (Cu) | µg/L | 2 | 0.68 | 0.54 | 0.20 |
| Total Iron (Fe) | µg/L | 300 | 199 | 177 | 5.0 |
| Total Lead (Pb) | µg/L | 1 | <0.20 | <0.20 | 0.20 |
| Total Lithium (Li) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Total Manganese (Mn) | µg/L | -- | 13.0 | 10.6 | 1.0 |
| Total Molybdenum (Mo) | µg/L | 73 | <1.0 | <1.0 | 1.0 |
| Total Nickel (Ni) | µg/L | 25 | <1.0 | <1.0 | 1.0 |
| Total Selenium (Se) | µg/L | 1 | <0.10 | <0.10 | 0.10 |
| Total Silicon (Si) | µg/L | -- | 4700 | 4220 | 100 |
| Total Silver (Ag) | µg/L | 0.1 | <0.020 | <0.020 | 0.020 |
| Total Strontium (Sr) | µg/L | -- | 51.1 | 48.0 | 1.0 |
| Total Thallium (Tl) | µg/L | 0.8 | <0.050 | <0.050 | 0.050 |
| Total Tin (Sn) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Total Titanium (Ti) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Total Uranium (U) | µg/L | 15 | 0.25 | 0.24 | 0.10 |
| Total Vanadium (V) | µg/L | -- | <5.0 | <5.0 | 5.0 |
| Total Zinc (Zn) | µg/L | 30 | <5.0 | <5.0 | 5.0 |
| Total Zirconium (Zr) | µg/L | -- | <0.50 | <0.50 | 0.50 |
| Total Calcium (Ca) | mg/L | -- | 6.81 | 6.27 | 0.050 |
| Total Magnesium (Mg) | mg/L | -- | 0.840 | 0.752 | 0.050 |
| Total Potassium (K) | mg/L | -- | 0.378 | 0.297 | 0.050 |
| Total Sodium (Na) | mg/L | -- | 1.87 | 1.65 | 0.050 |
| Total Sulphur (S) | mg/L | -- | 3.4 | 3.2 | 3.0 |

RDL: Reportable detection limit

(1) Sample analyzed past recommended hold time.

^A temperature and pH dependent; guideline calculated for temperature of 5°C and pH 7

^B pH dependent; guideline calculated for pH ≥ 6.5

^C hardness dependent; guideline calculated for water hardness of 20 mg/L CaCO₃

Text – indicates that concentration exceeds the CCME AL guideline.

Your Project #: 12-Y-0450 AAM DIXON LAKE
 Your C.O.C. #: 34832401

Attention: LYNDASAY DOETZEL

 EDI ENVIRONMENTAL DYNAMICS
 3-478 RANGE ROAD
 WHITEHORSE, BC
 CANADA Y1A 3A2

Report Date: 2013/01/22

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B302636
Received: 2013/01/11, 09:00

 Sample Matrix: Water
 # Samples Received: 2

| Analyses | Quantity | Date | Date | Laboratory Method | Analytical Method |
|---|----------|------------|------------|-------------------|----------------------|
| | | Extracted | Analyzed | | |
| Acidity pH 4.5 & pH 8.3 (as CaCO ₃) | 2 | N/A | 2013/01/14 | BBY6SOP-00037 | SM-2310B |
| Alkalinity - Water | 2 | 2013/01/12 | 2013/01/12 | BBY6SOP-00026 | SM2320B |
| Chloride by Automated Colourimetry | 1 | N/A | 2013/01/15 | BBY6SOP-00011 | SM-4500-Cl- |
| Chloride by Automated Colourimetry | 1 | N/A | 2013/01/16 | BBY6SOP-00011 | SM-4500-Cl- |
| Conductance - water | 2 | N/A | 2013/01/12 | BBY6SOP-00026 | SM-2510B |
| Fluoride | 2 | N/A | 2013/01/14 | BBY6SOP-00038 | SM - 4500 F C |
| Hardness Total (calculated as CaCO ₃) | 2 | N/A | 2013/01/16 | BBY WI-00033 | Calculated Parameter |
| Hardness (calculated as CaCO ₃) | 2 | N/A | 2013/01/15 | BBY WI-00033 | Calculated Parameter |
| Mercury (Dissolved) by CVAf | 2 | N/A | 2013/01/15 | BBY7SOP-00015 | EPA 245.7 |
| Mercury (Total) by CVAf | 2 | 2013/01/15 | 2013/01/15 | BBY7SOP-00015 | EPA 245.7 |
| Bromide as Bromine (Br) by ICPMS | 2 | N/A | 2013/01/14 | BBY7SOP-00002 | EPA 6020A |
| Na, K, Ca, Mg, S by CRC ICPMS (diss.) | 2 | N/A | 2013/01/15 | BBY7SOP-00002 | EPA 6020A |
| Elements by CRC ICPMS (dissolved) | 2 | N/A | 2013/01/14 | BBY7SOP-00002 | EPA 6020A |
| Na, K, Ca, Mg, S by CRC ICPMS (total) | 2 | 2013/01/11 | 2013/01/16 | BBY7SOP-00002 | EPA 6020A |
| Elements by CRC ICPMS (total) | 2 | 2013/01/15 | 2013/01/16 | BBY7SOP-00002 | EPA 6020A |
| Ammonia-N (Preserved) | 2 | N/A | 2013/01/14 | BBY6SOP-00009 | SM-4500NH3G |
| Nitrate+Nitrite (N) (low level) | 2 | N/A | 2013/01/12 | BBY6SOP-00010 | EPA 353.2 |
| Nitrite (N) (low level) | 2 | N/A | 2013/01/12 | BBY6SOP-00010 | EPA 353.2 |
| Nitrogen - Nitrate (as N) | 2 | N/A | 2013/01/15 | | |
| Filter and HNO ₃ Preserve for Metals | 2 | N/A | 2013/01/11 | BBY6WI-00001 | EPA 200.2 |
| pH Water | 2 | N/A | 2013/01/12 | BBY6SOP-00026 | SM-4500H+B |
| Orthophosphate by Konelab (low level) | 1 | N/A | 2013/01/12 | BBY6SOP-00013 | SM 4500 P E |
| Orthophosphate by Konelab (low level) | 1 | N/A | 2013/01/19 | BBY6SOP-00013 | SM 4500 P E |
| Sulphate by Automated Colourimetry | 1 | N/A | 2013/01/15 | BBY6SOP-00017 | SM4500-SO42- E |
| Sulphate by Automated Colourimetry | 1 | N/A | 2013/01/16 | BBY6SOP-00017 | SM4500-SO42- E |
| Total Dissolved Solids (Filt. Residue) | 1 | 2013/01/15 | 2013/01/15 | BBY6SOP-00033 | SM 2540C |
| Total Dissolved Solids (Filt. Residue) | 1 | 2013/01/16 | 2013/01/16 | BBY6SOP-00033 | SM 2540C |
| Phosphorus-P (Total, dissolved) | 2 | 2013/01/14 | 2013/01/15 | BBY6SOP-00013 | SM-4500 PE |
| Total Suspended Solids-LowLevel | 2 | 2013/01/15 | 2013/01/15 | BBY6SOP-00034 | SM-2540 D |

* Results relate only to the items tested.



Maxxam Job #: B302636
Report Date: 2013/01/22

EDI ENVIRONMENTAL DYNAMICS
Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

-2-

Encryption Key

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

Lanoy Luangkhamdeng, Burnaby Project Manager
Email: LLuangkhamdeng@maxxam.ca
Phone# (604) 638-2636

=====
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 #: B302636
 Report Date: 2013/01/22

 EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

RESULTS OF CHEMICAL ANALYSES OF WATER

| | | | | | | |
|------------------------------|--------------|------------------------|-----------------|------------------------|------------|-----------------|
| Maxxam ID | | FJ0553 | | FJ0554 | | |
| Sampling Date | | 2013/01/09 14:05 | | 2013/01/09 15:20 | | |
| COC# | | 34832401 | | 34832401 | | |
| | UNITS | 0450-130109-001 | QC Batch | 0450-130109-002 | RDL | QC Batch |
| Misc. Inorganics | | | | | | |
| Acidity (pH 4.5) | mg/L | <0.50 | 6486154 | <0.50 | 0.50 | 6486154 |
| Acidity (pH 8.3) | mg/L | 0.69 | 6486154 | 0.52 | 0.50 | 6486154 |
| Calculated Parameters | | | | | | |
| Filter and HNO3 Preservation | N/A | FIELD | ONSITE | FIELD | N/A | ONSITE |
| Total Hardness (CaCO3) | mg/L | 20.5 | 6481153 | 18.8 | 0.50 | 6481153 |
| Nitrate (N) | mg/L | 0.0170 | 6481230 | 0.0185 | 0.0020 | 6481230 |
| Misc. Inorganics | | | | | | |
| Fluoride (F) | mg/L | 0.044 | 6487528 | 0.042 | 0.010 | 6487528 |
| Dissolved Hardness (CaCO3) | mg/L | 19.9 | 6480880 | 17.7 | 0.50 | 6480880 |
| Alkalinity (Total as CaCO3) | mg/L | 10.6 | 6484070 | 12.4 | 0.50 | 6484070 |
| Alkalinity (PP as CaCO3) | mg/L | <0.50 | 6484070 | <0.50 | 0.50 | 6484070 |
| Bicarbonate (HCO3) | mg/L | 13.0 | 6484070 | 15.1 | 0.50 | 6484070 |
| Carbonate (CO3) | mg/L | <0.50 | 6484070 | <0.50 | 0.50 | 6484070 |
| Hydroxide (OH) | mg/L | <0.50 | 6484070 | <0.50 | 0.50 | 6484070 |
| Anions | | | | | | |
| Orthophosphate (P) | mg/L | 0.0054 ⁽¹⁾ | 6501126 | 0.0027 | 0.0010 | 6484293 |
| Dissolved Sulphate (SO4) | mg/L | 9.42 | 6490913 | 8.53 | 0.50 | 6494067 |
| Dissolved Chloride (Cl) | mg/L | 0.73 | 6490910 | 0.66 | 0.50 | 6494062 |
| Nutrients | | | | | | |
| Ammonia (N) | mg/L | 0.023 | 6485223 | 0.020 | 0.0050 | 6485223 |
| Dissolved Phosphorus (P) | mg/L | 0.0044 | 6486511 | 0.0027 | 0.0020 | 6486511 |
| Nitrate plus Nitrite (N) | mg/L | 0.0170 | 6484279 | 0.0185 | 0.0020 | 6484279 |
| Nitrite (N) | mg/L | <0.0020 | 6484282 | <0.0020 | 0.0020 | 6484282 |
| Physical Properties | | | | | | |
| Conductivity | uS/cm | 53.6 | 6484071 | 49.5 | 1.0 | 6484071 |
| pH | pH Units | 6.78 | 6484072 | 7.06 | | 6484072 |
| Physical Properties | | | | | | |
| Total Suspended Solids | mg/L | <1.0 | 6488647 | <1.0 | 1.0 | 6488647 |
| Total Dissolved Solids | mg/L | 44 | 6490313 | 56 | 10 | 6490313 |

N/A = Not Applicable

RDL = Reportable Detection Limit

(1) - Sample analysed past recommended hold time.

Maxxam Job #: B302636
 Report Date: 2013/01/22

EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

MERCURY BY COLD VAPOR (WATER)

| | | | | | |
|------------------------|--------------|------------------------|------------------------|------------|-----------------|
| Maxxam ID | | FJ0553 | FJ0554 | | |
| Sampling Date | | 2013/01/09 14:05 | 2013/01/09 15:20 | | |
| COC# | | 34832401 | 34832401 | | |
| | UNITS | 0450-130109-001 | 0450-130109-002 | RDL | QC Batch |
| Elements | | | | | |
| Dissolved Mercury (Hg) | ug/L | <0.010 | <0.010 | 0.010 | 6488148 |
| Total Mercury (Hg) | ug/L | <0.010 | <0.010 | 0.010 | 6488152 |

RDL = Reportable Detection Limit

Maxxam Job #: B302636
 Report Date: 2013/01/22

 EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | FJ0553 | | FJ0554 | | |
|----------------------------------|-------|------------------|----------|---------------------|-------|----------|
| Sampling Date | | 2013/01/09 14:05 | | 2013/01/09 15:20 | | |
| COC# | | 34832401 | | 34832401 | | |
| | UNITS | 0450-130109-001 | QC Batch | 0450-130109-002 | RDL | QC Batch |
| ANIONS | | | | | | |
| Bromide (Br) | mg/L | <0.010 | 6481537 | <0.010 | 0.010 | 6481537 |
| Dissolved Metals by ICPMS | | | | | | |
| Dissolved Aluminum (Al) | ug/L | 13.0 | 6485128 | 14.6 | 3.0 | 6485128 |
| Dissolved Antimony (Sb) | ug/L | <0.50 | 6485128 | <0.50 | 0.50 | 6485128 |
| Dissolved Arsenic (As) | ug/L | 0.12 | 6485128 | 0.10 | 0.10 | 6485128 |
| Dissolved Barium (Ba) | ug/L | 16.7 | 6485128 | 14.9 | 1.0 | 6485128 |
| Dissolved Beryllium (Be) | ug/L | <0.10 | 6485128 | <0.10 | 0.10 | 6485128 |
| Dissolved Bismuth (Bi) | ug/L | <1.0 | 6485128 | <1.0 | 1.0 | 6485128 |
| Dissolved Boron (B) | ug/L | <50 | 6485128 | <50 | 50 | 6485128 |
| Dissolved Cadmium (Cd) | ug/L | <0.010 | 6485128 | <0.010 | 0.010 | 6485128 |
| Dissolved Chromium (Cr) | ug/L | <1.0 | 6485128 | <1.0 | 1.0 | 6485128 |
| Dissolved Cobalt (Co) | ug/L | <0.50 | 6485128 | <0.50 | 0.50 | 6485128 |
| Dissolved Copper (Cu) | ug/L | 0.47 | 6485128 | 11.8 ⁽¹⁾ | 0.20 | 6498371 |
| Dissolved Iron (Fe) | ug/L | 127 | 6485128 | 119 | 5.0 | 6485128 |
| Dissolved Lead (Pb) | ug/L | <0.20 | 6485128 | <0.20 | 0.20 | 6485128 |
| Dissolved Lithium (Li) | ug/L | <5.0 | 6485128 | <5.0 | 5.0 | 6485128 |
| Dissolved Manganese (Mn) | ug/L | 11.9 | 6485128 | 9.0 | 1.0 | 6485128 |
| Dissolved Molybdenum (Mo) | ug/L | <1.0 | 6485128 | <1.0 | 1.0 | 6485128 |
| Dissolved Nickel (Ni) | ug/L | <1.0 | 6485128 | <1.0 | 1.0 | 6485128 |
| Dissolved Selenium (Se) | ug/L | <0.10 | 6485128 | <0.10 | 0.10 | 6485128 |
| Dissolved Silicon (Si) | ug/L | 4520 | 6485128 | 4180 | 100 | 6485128 |
| Dissolved Silver (Ag) | ug/L | <0.020 | 6485128 | <0.020 | 0.020 | 6485128 |
| Dissolved Strontium (Sr) | ug/L | 50.1 | 6485128 | 44.9 | 1.0 | 6485128 |
| Dissolved Thallium (Tl) | ug/L | <0.050 | 6485128 | <0.050 | 0.050 | 6485128 |
| Dissolved Tin (Sn) | ug/L | <5.0 | 6485128 | <5.0 | 5.0 | 6485128 |
| Dissolved Titanium (Ti) | ug/L | <5.0 | 6485128 | <5.0 | 5.0 | 6485128 |
| Dissolved Uranium (U) | ug/L | 0.23 | 6485128 | 0.22 | 0.10 | 6485128 |
| Dissolved Vanadium (V) | ug/L | <5.0 | 6485128 | <5.0 | 5.0 | 6485128 |
| Dissolved Zinc (Zn) | ug/L | <5.0 | 6485128 | <5.0 | 5.0 | 6485128 |
| Dissolved Zirconium (Zr) | ug/L | <0.50 | 6485128 | <0.50 | 0.50 | 6485128 |
| Dissolved Calcium (Ca) | mg/L | 6.63 | 6480881 | 5.92 | 0.050 | 6480881 |
| Dissolved Magnesium (Mg) | mg/L | 0.821 | 6480881 | 0.713 | 0.050 | 6480881 |
| Dissolved Potassium (K) | mg/L | 0.372 | 6480881 | 0.278 | 0.050 | 6480881 |
| Dissolved Sodium (Na) | mg/L | 1.84 | 6480881 | 1.54 | 0.050 | 6480881 |

RDL = Reportable Detection Limit

(1) - Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B302636
 Report Date: 2013/01/22

 EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | FJ0553 | | FJ0554 | | |
|------------------------------|-------|------------------|----------|------------------|-------|----------|
| Sampling Date | | 2013/01/09 14:05 | | 2013/01/09 15:20 | | |
| COC# | | 34832401 | | 34832401 | | |
| | UNITS | 0450-130109-001 | QC Batch | 0450-130109-002 | RDL | QC Batch |
| Dissolved Sulphur (S) | mg/L | 3.2 | 6480881 | <3.0 | 3.0 | 6480881 |
| Total Metals by ICPMS | | | | | | |
| Total Aluminum (Al) | ug/L | 20.7 | 6489716 | 17.3 | 3.0 | 6489716 |
| Total Antimony (Sb) | ug/L | 0.67 | 6489716 | <0.50 | 0.50 | 6489716 |
| Total Arsenic (As) | ug/L | 0.15 | 6489716 | 0.11 | 0.10 | 6489716 |
| Total Barium (Ba) | ug/L | 17.9 | 6489716 | 16.3 | 1.0 | 6489716 |
| Total Beryllium (Be) | ug/L | <0.10 | 6489716 | <0.10 | 0.10 | 6489716 |
| Total Bismuth (Bi) | ug/L | <1.0 | 6489716 | <1.0 | 1.0 | 6489716 |
| Total Boron (B) | ug/L | <50 | 6489716 | <50 | 50 | 6489716 |
| Total Cadmium (Cd) | ug/L | 0.012 | 6489716 | <0.010 | 0.010 | 6489716 |
| Total Chromium (Cr) | ug/L | <1.0 | 6489716 | <1.0 | 1.0 | 6489716 |
| Total Cobalt (Co) | ug/L | <0.50 | 6489716 | <0.50 | 0.50 | 6489716 |
| Total Copper (Cu) | ug/L | 0.68 | 6489716 | 0.54 | 0.20 | 6489716 |
| Total Iron (Fe) | ug/L | 199 | 6489716 | 177 | 5.0 | 6489716 |
| Total Lead (Pb) | ug/L | <0.20 | 6489716 | <0.20 | 0.20 | 6489716 |
| Total Lithium (Li) | ug/L | <5.0 | 6489716 | <5.0 | 5.0 | 6489716 |
| Total Manganese (Mn) | ug/L | 13.0 | 6489716 | 10.6 | 1.0 | 6489716 |
| Total Molybdenum (Mo) | ug/L | <1.0 | 6489716 | <1.0 | 1.0 | 6489716 |
| Total Nickel (Ni) | ug/L | <1.0 | 6489716 | <1.0 | 1.0 | 6489716 |
| Total Selenium (Se) | ug/L | <0.10 | 6489716 | <0.10 | 0.10 | 6489716 |
| Total Silicon (Si) | ug/L | 4700 | 6489716 | 4220 | 100 | 6489716 |
| Total Silver (Ag) | ug/L | <0.020 | 6489716 | <0.020 | 0.020 | 6489716 |
| Total Strontium (Sr) | ug/L | 51.1 | 6489716 | 48.0 | 1.0 | 6489716 |
| Total Thallium (Tl) | ug/L | <0.050 | 6489716 | <0.050 | 0.050 | 6489716 |
| Total Tin (Sn) | ug/L | <5.0 | 6489716 | <5.0 | 5.0 | 6489716 |
| Total Titanium (Ti) | ug/L | <5.0 | 6489716 | <5.0 | 5.0 | 6489716 |
| Total Uranium (U) | ug/L | 0.25 | 6489716 | 0.24 | 0.10 | 6489716 |
| Total Vanadium (V) | ug/L | <5.0 | 6489716 | <5.0 | 5.0 | 6489716 |
| Total Zinc (Zn) | ug/L | <5.0 | 6489716 | <5.0 | 5.0 | 6489716 |
| Total Zirconium (Zr) | ug/L | <0.50 | 6489716 | <0.50 | 0.50 | 6489716 |
| Total Calcium (Ca) | mg/L | 6.81 | 6481501 | 6.27 | 0.050 | 6481501 |
| Total Magnesium (Mg) | mg/L | 0.840 | 6481501 | 0.752 | 0.050 | 6481501 |
| Total Potassium (K) | mg/L | 0.378 | 6481501 | 0.297 | 0.050 | 6481501 |
| Total Sodium (Na) | mg/L | 1.87 | 6481501 | 1.65 | 0.050 | 6481501 |
| Total Sulphur (S) | mg/L | 3.4 | 6481501 | 3.2 | 3.0 | 6481501 |

RDL = Reportable Detection Limit

Maxxam Job #: B302636
Report Date: 2013/01/22

EDI ENVIRONMENTAL DYNAMICS
Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

General Comments

Sample FJ0553-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample FJ0554-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample FJ0554, Elements by CRC ICPMS (dissolved): Test repeated.

Maxxam Job #: B302636
 Report Date: 2013/01/22

 EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

QUALITY ASSURANCE REPORT

| QC Batch | Parameter | Date | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|----------|--|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 6481537 | Bromide (Br) | 2013/01/14 | 102 | 78 - 120 | 108 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 6484070 | Alkalinity (Total as CaCO ₃) | 2013/01/12 | NC | 80 - 120 | 96 | 80 - 120 | <0.50 | mg/L | 2.3 | 20 |
| 6484070 | Alkalinity (PP as CaCO ₃) | 2013/01/12 | | | | | <0.50 | mg/L | NC | 20 |
| 6484070 | Bicarbonate (HCO ₃) | 2013/01/12 | | | | | <0.50 | mg/L | 2.3 | 20 |
| 6484070 | Carbonate (CO ₃) | 2013/01/12 | | | | | <0.50 | mg/L | NC | 20 |
| 6484070 | Hydroxide (OH) | 2013/01/12 | | | | | <0.50 | mg/L | NC | 20 |
| 6484071 | Conductivity | 2013/01/12 | | | 100 | 80 - 120 | <1.0 | uS/cm | 0.5 | 20 |
| 6484279 | Nitrate plus Nitrite (N) | 2013/01/12 | NC | 80 - 120 | 104 | 80 - 120 | <0.0020 | mg/L | 0.6 | 25 |
| 6484282 | Nitrite (N) | 2013/01/12 | 101 | 80 - 120 | 98 | 80 - 120 | <0.0020 | mg/L | NC | 25 |
| 6484293 | Orthophosphate (P) | 2013/01/12 | 98 | 80 - 120 | 95 | 80 - 120 | <0.0010 | mg/L | NC | 20 |
| 6485128 | Dissolved Aluminum (Al) | 2013/01/14 | 102 | 80 - 120 | 102 | 80 - 120 | <3.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Antimony (Sb) | 2013/01/14 | 97 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 6485128 | Dissolved Arsenic (As) | 2013/01/14 | 98 | 80 - 120 | 99 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6485128 | Dissolved Barium (Ba) | 2013/01/14 | 98 | 80 - 120 | 98 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Beryllium (Be) | 2013/01/14 | 93 | 80 - 120 | 90 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6485128 | Dissolved Bismuth (Bi) | 2013/01/14 | 96 | 80 - 120 | 96 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Cadmium (Cd) | 2013/01/14 | 100 | 80 - 120 | 100 | 80 - 120 | <0.010 | ug/L | NC | 20 |
| 6485128 | Dissolved Chromium (Cr) | 2013/01/14 | 101 | 80 - 120 | 102 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Cobalt (Co) | 2013/01/14 | 94 | 80 - 120 | 97 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 6485128 | Dissolved Copper (Cu) | 2013/01/14 | 98 | 80 - 120 | 102 | 80 - 120 | <0.20 | ug/L | NC | 20 |
| 6485128 | Dissolved Iron (Fe) | 2013/01/14 | 102 | 80 - 120 | 104 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Lead (Pb) | 2013/01/14 | 95 | 80 - 120 | 95 | 80 - 120 | <0.20 | ug/L | NC | 20 |
| 6485128 | Dissolved Lithium (Li) | 2013/01/14 | 100 | 80 - 120 | 101 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Manganese (Mn) | 2013/01/14 | 100 | 80 - 120 | 100 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Molybdenum (Mo) | 2013/01/14 | 97 | 80 - 120 | 95 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Nickel (Ni) | 2013/01/14 | 99 | 80 - 120 | 101 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Selenium (Se) | 2013/01/14 | 106 | 80 - 120 | 101 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6485128 | Dissolved Silver (Ag) | 2013/01/14 | 90 | 80 - 120 | 92 | 80 - 120 | <0.020 | ug/L | NC | 20 |
| 6485128 | Dissolved Strontium (Sr) | 2013/01/14 | 94 | 80 - 120 | 95 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Thallium (Tl) | 2013/01/14 | 100 | 80 - 120 | 102 | 80 - 120 | <0.050 | ug/L | NC | 20 |
| 6485128 | Dissolved Tin (Sn) | 2013/01/14 | 99 | 80 - 120 | 104 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Titanium (Ti) | 2013/01/14 | 105 | 80 - 120 | 106 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Uranium (U) | 2013/01/14 | 93 | 80 - 120 | 93 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6485128 | Dissolved Vanadium (V) | 2013/01/14 | 100 | 80 - 120 | 101 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Zinc (Zn) | 2013/01/14 | 109 | 80 - 120 | 104 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6485128 | Dissolved Boron (B) | 2013/01/14 | | | | | <50 | ug/L | NC | 20 |
| 6485128 | Dissolved Silicon (Si) | 2013/01/14 | | | | | <100 | ug/L | NC | 20 |
| 6485128 | Dissolved Zirconium (Zr) | 2013/01/14 | | | | | <0.50 | ug/L | NC | 20 |
| 6485223 | Ammonia (N) | 2013/01/14 | NC | 80 - 120 | 102 | 80 - 120 | <0.0050 | mg/L | 0.6 | 20 |
| 6486154 | Acidity (pH 8.3) | 2013/01/14 | | | 104 | 80 - 120 | <0.50 | mg/L | NC | 20 |

Maxxam Job #: B302636
 Report Date: 2013/01/22

 EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

QUALITY ASSURANCE REPORT

| QC Batch | Parameter | Date | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|----------|--------------------------|------------|--------------|-----------|--------------|-----------|------------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 6486154 | Acidity (pH 4.5) | 2013/01/14 | | | | | <0.50 | mg/L | NC | 20 |
| 6486511 | Dissolved Phosphorus (P) | 2013/01/15 | 102 | 80 - 120 | 95 | 80 - 120 | <0.0020 | mg/L | NC | 20 |
| 6487528 | Fluoride (F) | 2013/01/14 | 98 | 80 - 120 | 90 | 80 - 120 | 0.012, RDL=0.010 | mg/L | 1.8 | 20 |
| 6488148 | Dissolved Mercury (Hg) | 2013/01/15 | 89 | 80 - 120 | 89 | 80 - 120 | <0.010 | ug/L | NC | 20 |
| 6488152 | Total Mercury (Hg) | 2013/01/15 | 91 | 80 - 120 | 90 | 80 - 120 | <0.010 | ug/L | | |
| 6488647 | Total Suspended Solids | 2013/01/15 | | | 101 | 80 - 120 | <1.0 | mg/L | | |
| 6489716 | Total Aluminum (Al) | 2013/01/16 | NC | 80 - 120 | 106 | 80 - 120 | <3.0 | ug/L | 9.7 | 20 |
| 6489716 | Total Antimony (Sb) | 2013/01/16 | 100 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 6489716 | Total Arsenic (As) | 2013/01/16 | 104 | 80 - 120 | 104 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6489716 | Total Barium (Ba) | 2013/01/16 | NC | 80 - 120 | 100 | 80 - 120 | <1.0 | ug/L | 4.1 | 20 |
| 6489716 | Total Beryllium (Be) | 2013/01/16 | 92 | 80 - 120 | 93 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6489716 | Total Bismuth (Bi) | 2013/01/16 | 94 | 80 - 120 | 102 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6489716 | Total Cadmium (Cd) | 2013/01/16 | 99 | 80 - 120 | 102 | 80 - 120 | <0.010 | ug/L | NC | 20 |
| 6489716 | Total Chromium (Cr) | 2013/01/16 | 99 | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6489716 | Total Cobalt (Co) | 2013/01/16 | 97 | 80 - 120 | 103 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 6489716 | Total Copper (Cu) | 2013/01/16 | 93 | 80 - 120 | 100 | 80 - 120 | <0.20 | ug/L | 6.4 | 20 |
| 6489716 | Total Iron (Fe) | 2013/01/16 | NC | 80 - 120 | 110 | 80 - 120 | <5.0 | ug/L | 0.3 | 20 |
| 6489716 | Total Lead (Pb) | 2013/01/16 | 95 | 80 - 120 | 100 | 80 - 120 | <0.20 | ug/L | NC | 20 |
| 6489716 | Total Lithium (Li) | 2013/01/16 | 92 | 80 - 120 | 97 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6489716 | Total Manganese (Mn) | 2013/01/16 | NC | 80 - 120 | 102 | 80 - 120 | <1.0 | ug/L | 2.5 | 20 |
| 6489716 | Total Molybdenum (Mo) | 2013/01/16 | NC | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6489716 | Total Nickel (Ni) | 2013/01/16 | 95 | 80 - 120 | 104 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 6489716 | Total Selenium (Se) | 2013/01/16 | 102 | 80 - 120 | 107 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6489716 | Total Silver (Ag) | 2013/01/16 | 89 | 80 - 120 | 87 | 80 - 120 | <0.020 | ug/L | NC | 20 |
| 6489716 | Total Strontium (Sr) | 2013/01/16 | NC | 80 - 120 | 97 | 80 - 120 | <1.0 | ug/L | 2.6 | 20 |
| 6489716 | Total Thallium (Tl) | 2013/01/16 | 90 | 80 - 120 | 105 | 80 - 120 | <0.050 | ug/L | NC | 20 |
| 6489716 | Total Tin (Sn) | 2013/01/16 | 107 | 80 - 120 | 108 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6489716 | Total Titanium (Ti) | 2013/01/16 | 103 | 80 - 120 | 105 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6489716 | Total Uranium (U) | 2013/01/16 | 98 | 80 - 120 | 101 | 80 - 120 | <0.10 | ug/L | NC | 20 |
| 6489716 | Total Vanadium (V) | 2013/01/16 | 101 | 80 - 120 | 97 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6489716 | Total Zinc (Zn) | 2013/01/16 | NC | 80 - 120 | 101 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 6489716 | Total Boron (B) | 2013/01/16 | | | | | <50 | ug/L | NC | 20 |
| 6489716 | Total Silicon (Si) | 2013/01/16 | | | | | <100 | ug/L | 7.6 | 20 |
| 6489716 | Total Zirconium (Zr) | 2013/01/16 | | | | | <0.50 | ug/L | NC | 20 |
| 6490313 | Total Dissolved Solids | 2013/01/15 | NC | 80 - 120 | 108 | 80 - 120 | <10 | mg/L | 0.7 | 20 |
| 6490910 | Dissolved Chloride (Cl) | 2013/01/15 | NC | 80 - 120 | 101 | 80 - 120 | <0.50 | mg/L | 1.0 | 20 |
| 6490913 | Dissolved Sulphate (SO4) | 2013/01/15 | NC | 80 - 120 | 99 | 80 - 120 | 0.83, RDL=0.50 | mg/L | 2.1 | 20 |
| 6494062 | Dissolved Chloride (Cl) | 2013/01/16 | 92 | 80 - 120 | 102 | 80 - 120 | <0.50 | mg/L | 0.6 | 20 |
| 6494067 | Dissolved Sulphate (SO4) | 2013/01/16 | 96 | 80 - 120 | 101 | 80 - 120 | 0.60, RDL=0.50 | mg/L | 3.3 | 20 |

Maxxam Job #: B302636
 Report Date: 2013/01/22

EDI ENVIRONMENTAL DYNAMICS
 Client Project #: 12-Y-0450 AAM DIXON LAKE

Sampler Initials: MK

QUALITY ASSURANCE REPORT

| QC Batch | Parameter | Date | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|----------|-----------------------|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 6498371 | Dissolved Copper (Cu) | 2013/01/18 | | | 99 | 80 - 120 | <0.20 | ug/L | | |
| 6501126 | Orthophosphate (P) | 2013/01/19 | NC | 80 - 120 | 103 | 80 - 120 | <0.0010 | mg/L | NC | 20 |

N/A = Not Applicable

RDL = Reportable Detection Limit

RPD = Relative Percent Difference

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

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

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

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

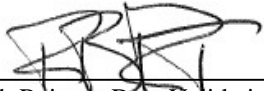
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

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.

Validation Signature Page

Maxxam Job #: B302636

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



Rob Reinert, Data Validation Coordinator

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

| INVOICE INFORMATION | | REPORT INFORMATION (if differs from invoice) | | PROJECT INFORMATION | | Laboratory Use Only: | |
|---------------------|---|--|------------------------|---------------------|----------------|----------------------|---------------------|
| Company Name | #8560 EDI ENVIRONMENTAL DYNAMICS | Company Name | LYNDSAY DOETZEL | Quotation # | B11178 | MAXXAM JOB # | B302636 |
| Contact Name | LYNDSAY DOETZEL | Contact Name | LYNDSAY DOETZEL | P.O. # | | BOTTLE ORDER # | 348324 |
| Address | 3-478 RANGE ROAD WHITEHORSE BC Y1A 3A2 | Address | | Project # | 12-Y-0450 | CHAIN OF CUSTODY # | |
| Phone | (867)393-4882 Fax: (867)393-4883 | Phone | (867)393-4882 Fax: | Project Name | AAM Dixon Lake | PROJECT MANAGER | Lancy Luangthandeng |
| Email | ldoetzel@edynamics.com | Email | ldoetzel@edynamics.com | Site # | | | |
| | | | | Samples By | Meighan Kearns | | |

| REGULATORY CRITERIA: | SPECIAL INSTRUCTIONS: | ANALYSIS REQUESTED (Please be specific): | TURNAROUND TIME (TAT) REQUIRED: |
|---|-----------------------|---|--|
| <input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input type="checkbox"/> Other _____ | | Metals: Field Filtered? (Y/N) CCME TOTAL METALS * HARDNESS CCME DISSOLVED METALS + HARDNESS MAJOR ANIONS pH Conductivity Total Dissolved Solids (Filt. Residue) Total Suspended Solids-LowLevel Ammonia-N Nitrate+Nitrite (N) (low level) Nitrite (N) (low level) | PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS Regular (Standard) TAT: (Will be applied if Rush TAT is not specified) Standard TAT = 5 working days for most tests Please note: Standard TAT for certain tests such as DOO and Duromix/Furans are > 5 days - contact your Project Manager for details Job Specific Rush TAT (if applies to entire submission) 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required _____ Rush Confirmation Number: _____ (not for #) |



SAMPLES MUST BE KEPT COOL (-10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

| Sample Barcode Label | Sample Location Identification | Date Sampled | Time Sampled | Matrix | Metals: Field Filtered? (Y/N) | CCME TOTAL METALS * HARDNESS | CCME DISSOLVED METALS + HARDNESS | MAJOR ANIONS | pH | Conductivity | Total Dissolved Solids (Filt. Residue) | Total Suspended Solids-LowLevel | Ammonia-N | Nitrate+Nitrite (N) (low level) | Nitrite (N) (low level) | # of Bottles | Comments |
|----------------------|--------------------------------|--------------|--------------|--------|-------------------------------|------------------------------|----------------------------------|--------------|----|--------------|--|---------------------------------|-----------|---------------------------------|-------------------------|--------------|---------------------------|
| FJ0553 | 0450-130109-001 | 09 Jan 2013 | 1405 | water | Y | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 8 | Total no. of bottles is 8 |
| 554 | 0450-130109-002 | 09 Jan 2013 | 1520 | water | Y | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 8 | Total no. of bottles of 8 |
| | | | | | | | | | | | | | | | | | |
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|------------------------------------|----------------|-------|--------------------------------|----------------|-------|-------------------------------|---|
| RELINQUISHED BY: (Signature/Print) | Date: (YYMMDD) | Time: | RECEIVED BY: (Signature/Print) | Date: (YYMMDD) | Time: | # Jars Used and Not Submitted | Laboratory Use Only |
| <i>M. Kearns</i> / M. Kearns | 13/01/10 | 14:00 | <i>M. Luangthandeng</i> | 2013/01/11 | 09:00 | | Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt: 11.1 Quality Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

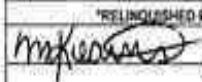

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

| | | | | | | | |
|--|-------------------------------|--|------------------------------|-----------------------------|---|-----------------------------|--|
| INVOICE INFORMATION: | | REPORT INFORMATION (if differs from invoice): | | PROJECT INFORMATION: | | Laboratory Use Only: | |
| Company Name: #8560 EDI ENVIRONMENTAL DYNAMICS | Company Name: | Guidance #: B11178 | MAXXAM JOB #: | BOTTLE ORDER #: |  | | |
| Contact Name: LYNSAY DOETZEL | Contact Name: LYNSAY DOETZEL | P.O. #: | | 340324 | CHAIN OF CUSTODY #: | | |
| Address: 3-478 RANGE ROAD WHITEHORSE BC Y1A 3A2 | Address: | Project #: 12-Y-0450 | Project Name: AAM Dixon Lake | PROJECT MANAGER: |  | | |
| Phone: (867)393-4882 Fax: (867)393-4883 | Phone: (867)393-4882 Fax: | Site #: | Sampled By: Melghan Kearns | Laney Luonghending | C0348324-01-02 | | |
| Email: ldoetzel@edynamics.com | Email: ldoetzel@edynamics.com | | | | | | |

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| REGULATORY CRITERIA | | SPECIAL INSTRUCTIONS | | ANALYSIS REQUESTED (Please be specific) | | | | TURNAROUND TIME (TAT) REQUIRED: | |
| <input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input type="checkbox"/> Other: _____ | | | | | | | | PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS Regular (Standard) TAT: (will be applied if Rush TAT is not specified) Standard TAT = 5 working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dissolved Phosphorus are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Days Required _____ | |

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

| Sample Barcode Label | Sample Location Identification | Date Sampled | Time Sampled | Matrix | Metals - Field Filtered ? (Y/N) | Nitrogen - Nitrate (as N) | Phosphorus-P (Total, dissolved) | Orthophosphate (low level) | | | | | # of Bottles | Comments |
|----------------------|--------------------------------|--------------|--------------|--------|---------------------------------|---------------------------|---------------------------------|----------------------------|--|--|--|--|--------------|---------------------------|
| 1 | 0450-130109-001 | 09 Jan 2013 | 14:05 | water | Y | ✓ | ✓ | ✓ | | | | | 8 | Total no. of bottles is 8 |
| 2 | 0450-130109-002 | 09 Jan 2013 | 15:20 | water | Y | ✓ | ✓ | ✓ | | | | | 8 | Total no. of bottles is 8 |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |

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| *RELINQUISHED BY: (Signature/Print) | | Date: (YYMMDD) | Time: | RECEIVED BY: (Signature/Print) | | Date: (YYMMDD) | Time: | # Jars Used and Not Submitted | Laboratory Use Only | |
|  / M. Kearns | | 13/01/10 | 14:00 |  | | 13/01/10 | 09:00 | | Time Sensitivity: <input type="checkbox"/> | Temperature (°C) on Receipt: 17.1 |
| | | | | | | | | Current Status on Receipt: <input checked="" type="checkbox"/> | | Yes <input type="checkbox"/> No <input type="checkbox"/> |