



**MINTO MINE  
SURFACE WATER QUALITY MONITORING  
STANDARD OPERATING PROCEDURES**

**Prepared by: Minto**

**Explorations Ltd**

**October 2012**

## TABLE OF CONTENTS

<b>1. Purpose.....</b>	<b>4</b>
<b>2. Responsibilities .....</b>	<b>4</b>
Field Staff.....	4
Supervisors.....	5
<b>3. Safety .....</b>	<b>5</b>
<b>4. General Guidelines for Surface Water Quality Monitoring.....</b>	<b>5</b>
<b>5. Surface Water Sampling Procedures .....</b>	<b>7</b>
Preparation .....	7
Maintenance of Field Instruments .....	8
Field Measurement of Water Quality Parameters .....	8
Sample Collection.....	9
Field Notes and Photographic Record.....	12
Sample Custody and Shipment.....	12
Data Management .....	13
<b>6. Quality Assurance and Quality Control.....</b>	<b>14</b>
Quality Control .....	14
Quality Assurance.....	15
<b>7. Closure.....</b>	<b>16</b>
<b>8. References .....</b>	<b>16</b>

## **TABLE OF APPENDICES**

**Appendix 1: Current Maxxam Contact and Shipping Label**

**Appendix 2: Minto Environment Water Quality Field Form**

**Appendix 3: Sample Chain of Custody Form**

## 1. Purpose

The standard operating procedures (SOP) in this document serve as a guideline for the collection of surface water quality samples from water bodies at Minto Mine (Minto) specified by Water Use Licence QZ96-006. The Minto Mine Water Quality Monitoring SOP follows methods and procedures described in *Protocols Manual for Water Quality Sampling in Canada* (CCME, 2011), *Guidance Document for the Sampling and Analysis of Metal Mining Effluents* (Environment Canada, 2001) and *Ambient Freshwater and Effluent Sampling Manual* (RISC, 2003). This document is intended for Minto Mine employees familiar with the location of water quality sites at Minto, and who are knowledgeable in surface water sampling methods. Along with on the job training, the purpose of this document is to ensure the Minto Mine Water Quality Monitoring Program is carried out consistently and that all surface water samples are representative of the environmental conditions at the time of sampling.

## 2. Responsibilities

The reliability and quality of data generated by the Water Quality Monitoring Program is dependent on the staff involved and attention given to the sampling procedures, quality control protocols, and field equipment. It is crucial that water quality samples be collected in a consistent manner with the appropriate equipment to generate the most accurate field measurements and analytical results. Erroneous results which do not represent the water body being sampled can lead to inaccurate conclusions about water quality and have the potential to influence management actions.

The following is a typical allocation of responsibilities associated with the Water Quality Monitoring Program at Minto:

### Field Staff

Field staff must have the appropriate knowledge to collect representative samples and protect samples from contamination and deterioration. A sampler is responsible for minimizing field error and collecting the best sample possible. This includes consistency in sampling procedure, correct use of sampling equipment, accurate labelling, and completion of detailed field notes.

Field staff are responsible for coordinating all sampling events in accordance with the requirements of the current WUL, including sampling locations, sampling frequency, and parameter requirements. Staff performing sampling and monitoring duties shall ensure that all site and sample specific details are clearly documented, and that all quality assurance and quality control (QA/QC) protocols are being followed.

Field staff must be experienced in the operation and safety requirements for all field instruments, sampling gear, equipment and reagents used for sampling. They are responsible for maintaining equipment and maintaining stock and inventory of sampling supplies.

Field staff are also responsible for submitting all samples to the appropriate laboratory for analysis in a timely manner, and performing data entry related to the Water Quality Monitoring Program.

### **Supervisors**

Supervisors are responsible for ensuring field staff understand the requirements of the WUL and that all WUL requirements and internal QA/QC protocols are being met and documented. Supervisors are responsible for ensuring sample and data collection and management procedures are being carried out consistently and identifying variance from standard procedures. This includes ensuring digital copies of all field data and laboratory results are saved with the correct file names to the appropriate location on the server.

The first step in ensuring proper sampling techniques is to provide staff with training for the sampling conditions they encounter. Supervisors are responsible for providing appropriate levels of training to all field staff and ensuring that all samplers are proficient to carry out their responsibilities or are adequately supervised.

It is the responsibility of supervisors to compare water quality data to the applicable standards and to previously collected data to review trends, outliers, etc.

Supervisors must also periodically review sampling procedures and the content of this SOP to ensure the best methods are being used and that adequate QA/QC is being incorporated into the program.

## **3. Safety**

Safety is the most important component of any field program. All staff must be aware of all potential safety hazards and personal protective equipment (PPE) requirements for any task they are completing. At no time should field staff feel unsafe and all questions or concerns about safety must be brought to the attention of a supervisor.

It is crucial that monitoring activities are completed in a safe manner. This includes having first aid equipment, communication equipment, and wearing proper footwear and gloves for the job. It also means that sampling is frequently completed by two field staff. Field staff and supervisors should review all appropriate Job Hazard Analyses and Safe Work Procedures to ensure that the safety related elements of all tasks related to sampling are understood.

## **4. General Guidelines for Surface Water Quality Monitoring**

Water samples, field measurements, and observation of site conditions are collected from the same area for every sampling event whenever possible to achieve representative results over time.

Standard field forms are used to document all the required details for each sampling event, including thorough descriptions of unusual conditions and variations to the sample site or procedure. This data is stored in the Minto Water Quality Database.

The following procedures, practices, and considerations will be followed by all staff involved in the Water Quality Monitoring Program:

- All field staff will have the appropriate training and experience with field equipment, sampling procedures and objectives prior to performing monitoring duties or be accompanied by experienced staff.
- Organize a sufficient supply of bottles, labels, preservatives and filters to complete the sampling ahead of time. Sufficient quantities of these items should be stocked at the mine at all times.
- Sample containers are supplied by the analytical laboratory pre-cleaned and capped. Hands should be clean prior to sampling and clean gloves worn. Metal jewellery should not be worn on hands or wrists and smoking is not permitted while sampling.
- Do not use a preservative after the expiry date and always store preservatives where they will not freeze or overheat. Return expired preservatives to the laboratory for proper disposal.
- Do not take a sample or wade into a stream if conditions are unsafe. Ensure safe footing and solid points if contact when sampling from shore.
- Rinsing of bottles should be done slightly downstream from the actual sample location to prevent contaminants from entering the sample bottle.
- Sampling ponded water should be avoided as it will not provide accurate representation of water quality. Avoid collecting sediment and surface films if present.
- When wading to sample, always collect the sample while facing upstream to ensure that contaminants that may be on the sampler do not flow into the container. Care must be taken to avoid stirring up any sediment.
- During sample collection, the inner portion of sample bottles and caps must not be touched with anything other than sample water.
- Filter and/or add preservatives immediately or as soon as possible after sample collection.
- Gloves, syringes and filters will be kept in clean, sealed plastic bags.

- If a particular parameter cannot be completed for the site (e.g. the pH probe is not working) a note must be made on the field data form explaining why it could not be taken.
- As much as possible at a mine site, sample containers should be kept in a clean environment. Bottles must be capped at all times. Vehicle cleanliness is an important factor in minimizing the risk of contamination.
- All samples should be kept upright, and as close as possible to 4°C at all times until they are delivered to the laboratory. They must not be allowed to freeze unless freezing is part of the preservation protocol.
- Ship samples to the external laboratory as soon as reasonably possible. Samples should be analyzed within the time limits specified by the analytical laboratory.

## 5. Surface Water Sampling Procedures

### Preparation

Prior to departure for sampling, staff will ensure that all field equipment is checked for functionality and cleanliness and that sample bottles are clean and unopened. All equipment, calibration standards, preservatives, sampling gear and sample bottles will be organized and stored in a clean environment and transported in clean, dry containers. Field instruments should be tested to ensure batteries are charged and all parts are accounted for.

Sample bottles, preservatives, syringes, filters and coolers are currently supplied by Maxxam Analytics. Current contact information and shipping label for Maxxam Analytics is provided in Appendix 1.

Preparation for water quality sampling must also include provision for quality control samples. The number of quality control samples taken must correspond to a minimum of 10% of the total number of samples taken for all sampling events.

The following is a list of equipment and sampling supplies regularly used to complete surface water quality monitoring:

- Sample bottles and labels
- Field notebook and/or field forms
- Water quality meter
- Nitrile gloves
- Syringes and filters
- Sample preservatives
- Cooler and sufficient ice packs
- Deionized water

- Cooler labels and laboratory Chain Of Custody (COC)
- Chisel, axe and/or ice auger (when sampling under ice)
- Spare parts and batteries

General field gear typically includes:

- PPE
- Radio
- Rubber boots or waders
- Camera
- Pencils, pens, permanent marker
- Sample site map, GPS
- Flagging tape
- Multi tool
- First aid kit
- Appropriate clothing
- Water and food

### **Maintenance of Field Instruments**

All instruments used for performing field measurements are stored and calibrated in accordance with manufacturer's specifications. Proper maintenance of field instruments is very important as instruments must be in good working condition in order to produce accurate readings. Field staff are trained how to calibrate and use all water quality field instruments prior to going in the field.

Minto primarily uses an YSI Professional Plus handheld multi-parameter meter (YSI) for monitoring water quality field parameters. Performance of the meter is tracked and verified through daily checks and regular calibrations. Calibration checks are recorded to identify problems and to review in the event of equipment malfunction.

Alternatively, a Eutech (Oakton) PCTestr 35 handheld meter is used for monitoring sites W13 and W14. The meter measures temperature, pH, and conductivity only and is checked prior to use and calibrated according to the manufacturer's specifications.

Routine maintenance on all field instruments is performed according to the manufacturer with a record of all repairs and maintenance stored on site.

### **Field Measurement of Water Quality Parameters**

Water quality field parameters are recorded with every water sample including water temperature, pH, conductivity, dissolved oxygen (DO), and oxidation reduction potential (ORP). Water quality meters are used



according to the instructions provided by the manufacturer for greatest efficiency. The following procedures and considerations are followed by trained Minto staff:

- Field measurements are always made in situ (in the water body) or using a sub-sample taken in a separate container which is discarded once the measurements are recorded. Sub-samples are not used for further chemical analyses.
- Instrumentation must display stable in-situ parameters before field staff record parameters. For example, field staff will allow the YSI to stabilize in-situ for 10-15 minutes ensuring that dissolved oxygen readings are stable.
- Dissolved oxygen measurements are always taken in-situ rather than from a sample container.
- Field parameters are measured just below the water surface (0.1 m depth).
- Water quality data is screened on site during sample collection and suspicious readings are re-measured to prevent the recording of false information. Any indication of malfunctioning equipment is recorded in the notes for that station.

## **Sample Collection**

Surface water samples should be collected mid-stream whenever possible to reduce potential contamination from foreign material, sediments, and/or other effects from stream banks, back eddies, seepage areas, etc. When the stream is small, the current is too strong, water too deep, or ice is too thin, samples should be collected from the stream bank reaching as far out into the stream as safely possible. When field staff are able to safely wade into a stream, the sampling location should be approached from downstream. Samples are always collected upstream of the sampler.

The following surface water sampling procedures are followed by trained Minto staff:

- Locate the station using a station map or GPS coordinates then select an area representative of the stream to collect the sample.
- Clearly label all sample bottles with station name, date, time (24 hour clock), and analysis code (provided in Table 1).
- Put on clean nitrile gloves prior to collecting the sample.
- Handle sample bottles and caps appropriately to avoid contact with internal surfaces.
- Plunge the bottle under the water with the mouth facing upstream away from the sampler's hand.

- All bottles will be triple-rinsed.
- Ensure that samples requiring filtering are rinsed with filtered water only.
- Collect the water sample until the bottle is full and remove it from the water. Pour some water out to make room for preservatives if needed.
- Use new syringes and filters for every station.
- Filter at the sampling location whenever possible and otherwise from a sub-sample taken in a separate container in a clean environment as soon as possible after sample collection.
- Add preservatives to the required samples as soon as possible after sample collection and filtering.
- Replace caps immediately and tightly to prevent sample loss. Invert bottles to mix preserved samples.
- Place samples in a cooler with sufficient ice packs.

The following tables list the current requirements for water quality samples sent to Maxxam Analytics and the Minto On Site Laboratory (Minto Lab).

**Table 1: Sample Requirements for Samples Analyzed by Maxxam Analytics**

Analysis Name	Analysis Code	Parameters (not inclusive)	Bottle (plastic)	Filter	Preservative
Physical Parameters	RAW	TSS, TDS, pH, EC, hardness, alkalinity	1 L	Not required	Not required
Nutrients/Anions	RAW	SO <sub>4</sub> , Cl, F, NO <sub>2</sub> , NO <sub>3</sub>	500 mL	Not required	Not required
Nutrients/Anions	NH <sub>4</sub> , TP	P, NH <sub>3</sub>	120 mL	Not Required	1 mL Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )
Total Metals	TM	Al, As, Cd, Cr, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, U, Zn, Na, K, Ca, Mg, S	120 mL	Not required	1 mL Nitric Acid (HNO <sub>3</sub> )
Dissolved metals	DM	Al, As, Cd, Cr, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, U, Zn, Na, K, Ca, Mg, S	120 mL	Required (0.45 µm filter)	1 mL Nitric Acid (HNO <sub>3</sub> )
Dissolved Organic Carbon	DOC	DOC	120 mL	Required (0.45 µm filter)	1 mL Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )
Total Organic	TOC	TOC	120 mL	Not required	1 mL Sulphuric Acid

Carbon					(H2SO4)
Cyanide	CN	CN	120 mL	Not Required	1 mL Sodium Hydroxide (NaOH)
Radium	Ra 226	Ra 226	1 L	Not required	4 mL Nitric Acid (HNO3)

**Table 2: Sample Requirements for Samples Analyzed by Minto Lab.**

Analysis Name	Analysis Code	Parameters	Bottle (plastic)	Filter	Preservative
Physical Parameters/ Nutrients	RAW	TSS, NO <sub>2</sub> , NO <sub>3</sub> , NH <sub>4</sub>	1 L	Not required	Not required
Total Metals	TM	Al, Cd, Cu, Se	120 mL	Not required	1 mL Nitric Acid (HNO3)
Dissolved metals	DM	Al, Cd, Cu, Se	120 mL	Required (0.45 µm filter)	1 mL Nitric Acid (HNO3)

***Under Snow or Ice Sampling***

During winter months water quality monitoring stations will freeze over and water quality samples will need to be collected from under snow and/or ice. Only field staff specifically trained in ice safety will follow these procedures:

- Store and transport chisels, axes and augers in clean environments to limit contamination.
- When sampling on ice always work with a partner and proceed with caution at all times. If the ice is unsafe or you are unsure stop work immediately.
- Ice thickness must be tested with an axe or chisel prior to walking onto a frozen water body and every few steps afterwards. Special care must be taken at outflow and inflow areas.
- Clear snow and loose ice away from the sampling location and drill through the ice with an ice auger, either motorized or a hand auger. The area around the drill hole should be kept clean and free from potential contamination such as gas, dirt from the drill or work boots, etc.

- Once the hole is drilled, all the ice chips and slush should be removed from the hole using a slotted spoon, etc. Allow several minutes for the water to flow freely under the ice, allowing potential contaminants to clear before taking a sample.

### **Field Notes and Photographic Record**

In addition to recording water quality field parameters and the samples collected at each site, trained field staff must document all relevant environmental conditions observed at the time of sampling and any unusual occurrences. Deviations from standard protocols whether deliberate or accidental (e.g. samples taken from a different location due to safety or access considerations, procedures used that differ from those outlined in this SOP) must be recorded in the field notes.

Standard field forms are used as much as possible to ensure all the required information, water samples and field parameters are collected. A current copy of the Minto Water Quality Field Form is provided in Appendix 2. If a field notebook is used, as a minimum the field notes must include the following information:

- Station name, date, time, and names of field staff present;
- Weather conditions and observations on the physical conditions at the sampling location;
- GPS coordinates for new sites or when the sampling location has changed (more specific to winter sampling); and
- Details of any other site specific information relevant to the sampling event.

Field notes must always be clear, concise, and include the station name and date. All field notes should be completed on site. Finally, it is good practice to refrain from erasing mistakes when recording field notes. Crossing out the error and rerecording the data is preferred. Field notes are entered into the Minto Water Quality Database upon return from the field and all field notes and field forms are stored on site.

Photographs can be taken during any sampling event to document current conditions at each station. At a minimum, photos must be taken to show changes in physical conditions at the sampling location. Photos from one sampling event will typically include one upstream and one downstream facing shot. Aerial photos should also be taken when the opportunity is available. Photographs are an important tool to assist with data interpretation. Photos are stored in digital format and must be accurately labeled by field staff upon return from the field.

### **Sample Custody and Shipment**

Water quality samples are handled at all times to prevent damage and potential sample loss, thereby reducing the risk of contamination. Samples are transported around the mine site in sealed coolers with sufficient ice packs until they are placed in a sample fridge or delivered to the Minto Lab. Samples are stored upright in clean

refrigerators equipped with thermometers. Samples are maintained as close to 4°C as possible from the time of collection until they are delivered to a laboratory.

After surface water quality samples have been transported back to the office, field staff are responsible for inspecting the samples to ensure they are properly preserved, labeled, and sealed. If the samples are to be analyzed on site they should be delivered to the Minto Lab as soon as possible.

Samples that require external analysis must be shipped to the appropriate laboratory with a completed chain of custody (COC) form. An example of a COC form is provided in Appendix 3. This form is used to request sample analysis and track sample custody. Filling out a COC should be done with field forms and samples on hand to confirm that all the sample containers for each station are accounted for and labeled correctly.

All samples must be submitted to the appropriate laboratory for analysis based on the maximum sample hold time. Each parameter has a specific hold time that ensures the results generated are accurate. However, due to the remoteness of Minto Mine the maximum hold times for some samples will not be met. For this reason it is essential that samples be shipped to the laboratory as soon as possible. It may be necessary to ship samples on the same day as they are collected to preserve the accuracy of the sample analysis. It is the responsibility of field staff to ensure the hold times are met where possible.

All samples must be well sealed and packed with paper, bubble wrap, etc. to prevent spills or breakage. Pack each cooler with sufficient ice packs to maintain the samples at 4°C. Samples collected during the winter will be cooler and will not require the same amount of packaging and ice packs as samples collected in the summer. Samples must not be permitted to freeze. If samples are being shipped in temperatures significantly below freezing, collapsible jugs of warm water may need to be added to the packaging.

Enclose a printed copy of the COC form in a sealed plastic bag or envelope and place it inside one of the coolers with the sample shipment. Label all coolers or shipping containers with the address of the laboratory and the sender and attach it with enough clear tape to protect the label. An example of a laboratory shipping label is provided in Appendix 1.

## **Data Management**

All water quality data including field notes, photographs, completed COC forms and laboratory results are carefully handled, organized and stored to ensure the information can be located for future use. The information collected during water quality sampling events is critical to the interpretation of the data, in some cases even several months or years after the sampling event has taken place.

The following surface data management procedures are followed by trained Minto staff:

- After completing a COC form, an electronic copy is saved with the appropriate file name to the designated location on the server.

- When samples are received at the lab, an automated confirmation email is sent to Minto environment staff. The lab job number is entered into the Minto Water Quality Database.
- When lab results are received by email they are reviewed by supervising staff at the earliest opportunity. Supervisors are responsible for importing the data into the Minto Water Quality Database regularly.
- If reviewing new results in comparison to past trends suggests that results are suspect, or if the results exceed the applicable standards for a particular parameter, an investigation will be initiated. The lab should be requested to review their QA/QC for that batch and re-run the sample, or analyze waters from another sample bottle for the suspect parameter(s).
- Unless it is obvious that the anomalous result that is over discharge criteria is false, new samples should be taken and sent immediately.

## 6. Quality Assurance and Quality Control

The Minto Quality Assurance and Quality Control plan has been created to provide confidence in the data collected for all environmental monitoring and sampling programs. QA/QC is an integral component to quality surface water quality sampling. General QA/QC procedures that apply to the Water Quality Monitoring Program are described in this section.

### Quality Control

Quality control protocols are the set of routine procedures and methods designed to achieve and maintain a recognized level of quality. Therefore, the collection of reliable surface water quality field data at Minto is accomplished by following the procedures described in this document. Quality assurance includes the procedures that keep track of those procedures and provide a check on the quality of the data produced.

Some of the most common quality-related problems introduced in surface water quality sampling include the mislabelling or switching of bottles, failure to add proper preservatives, improper storage conditions, and sample contamination from sampling equipment or other sources.

Quality control samples are collected and analyzed to verify the integrity of water samples, detect errors introduced during sampling. Quality control samples represent 10% of the total number of samples collected and consist of a random combination of the types provided in Table 3. Field staff are responsible for documenting where quality control samples are prepared on the field forms and in the Minto Water Quality Database.

**Table 3: Quality Control Sample Descriptions**

Type	Description and Sample Purpose
Trip Blank (TB)	A sealed container of deionized water sent from the laboratory used to detect any widespread contamination during transport and storage. The trip blank is transported with the sample bottles for the entire duration of the sampling event. Trip blanks indicate contamination within the bottle or from volatile compounds.
Field Blank (FB)	A sample of deionized water that is prepared in the field using the same procedures for collecting the field sample. Preservative is added after the sample is collected. Field blanks measure contamination from bottles, collection methods, the sampling environment, and preservatives.
Duplicate (DUP)	Duplicate samples are independent samples collected from the same place and time to determine the precision of environment and laboratory heterogeneity. Duplicate samples measure the reproducibility of the sampling and analysis.
Field Split (FS)	Aliquots taken from the same sample container and assumed to be identical. Split samples can be sent to separate laboratories for analysis and the results can be used to determine inter-lab variability. Care must be taken to ensure that the samples are split homogeneously.

### Quality Assurance

Quality assurance protocols help ensure that the Minto Water Quality Monitoring Program is quantifiable and able to produce quality data. Minto Mine is continuously involved in consultation with professionals and technical experts regarding program design, standard operating procedures, and data review. Ongoing staff training and inspections of staff (especially new hires) performing monitoring activities ensure data collection and results are consistent, representative and high quality.

The steady improvement of quality assurance protocols involves developing more detailed and program specific verification processes and automated checks, as well as peer reviews and audits by external professionals on a regular basis. Effective quality assurance will identify potential problem areas and necessary corrections to procedures and data management, and facilitates evaluation and improvement of the monitoring program.

### *Quality Assurance on Data*

Examination and evaluation of field data and data entry is an integral part of quality control. While it is not possible to check all aspects of input data, calculations, and interpretations, checks can be performed on selected sets of data at appropriate intervals. A review of work procedures and data collection methods will identify potential sources of error.

Reported water quality data is reviewed, and evaluated by Minto Mine staff on a monthly and annual basis. The water quality database is audited by Minto Mine and a professional consultant on an annual basis. As mentioned previously the Minto water quality database is checked on a monthly basis and is completed by cross checking

the database with the sample tracking and log spreadsheet. If inconsistencies are found, further investigation is performed using field notes, COC, and lab result files depending on the nature of the error.

## **7. Closure**

Not all of the situations encountered by field staff have been included in this document (e.g. water column/depth profile sampling) as they are not part of routine sampling events. A JHA should be conducted prior to completing any new or irregular task to identify what work will take place, list all of the potential hazards that could be encountered during the work, and the measures necessary to avoid or mitigate the hazards.

## **8. References**

Resources Information Standards Committee (RISC). 2003. Ambient Freshwater and Effluent Sampling Manual.

Environment Canada. 2001. Guidance Document for the Sampling and Analysis of Metal Mining Effluents.

Canadian Council of Ministers of the Environment (CCME). 2011. Protocols Manual for Water Quality Sampling in Canada.



Appendix 1: Current Maxxam Contact and Shipping Label

**Minto Explorations Ltd.**

Suite 900-999 West Hastings Street  
Vancouver, BC V6C 2W2  
Mine Tel: (604) 759 0860

**COC # \_\_\_\_\_**

**Maxxam Analytics Inc.**

attn: Kelly Janda  
**4606 Canada Way**  
**Burnaby, BC V5G 1K5**  
Ph: (604) 638 5019

***Air North Cargo: Please deliver to address above  
c/o Air North Account # 15979218***

**Regular Delivery**

Appendix 2: Minto Environment Water Quality Field Form

**Minto Water Quality Field Form**

Sample Site:		Date:		Time:		Sampler(s):					
Sky:		Temp:		Precip:		Wind:					
Lab Analysis?		QA/QC taken?		Y		N					
E		I		DUP		TB		FB			
Photos?			Y	N	YSI Calibration?			Y		N	
RAW 1 L	RAW 500 ml	NUT 120 ml	TM 120 ml	DM 120 ml	DOC 120 ml	TOC 120 ml	Ra 226 1L	Bioassay <i>various</i>			
Temp C		DO %	DO mg/L	SPC $\mu$ s/cm	EC $\mu$ s/cm	pH	ORP mv	Turb NTU			
Flow Recorded?		Staff Gauge (m):		Flume RIGHT (ft):		Flume LEFT (L/S):					
Y		N									
<b>Notes</b> (site conditions or variations from normal, i.e. ice cover, sediment, flows, etc.)											
Data entered:						Data reviewed:					

Appendix 3: Sample Chain of Custody Form



Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5 Ph: (604) 734-7276 Fax: (604) 731-2386, Toll Free: (800) 665-8566

**CHAIN OF CUSTODY RECORD**

[Click here to get the COC number](#)

Maxxam Job #: [REDACTED]

COC #: **EB530912**

Page: 1 of 1

Invoice To: Require Report? Yes  No

**Report To:**

Company Name: Minto Explorations Ltd  
 Contact Name: Elvina Wong  
 Address: Suite 900 - 999 West Hastings St  
Vancouver, B.C. PC: V6C 2W2  
 Phone / Fax#: Ph: 604-684-8894 Fax: 604-688-2120  
 E-mail: \_\_\_\_\_

Company Name: Minto Explorations Ltd  
 Contact Name: Minto Environment  
 Address: Suite 900-999 West Hastings St  
Vancouver, B.C. PC: V6C 2W2  
 Phone / Fax#: Ph: 604-684-8894 Fax: 604-688-2120  
 E-mail: minto\_environment@mintomine.com

PO #:	113796
Quotation #:	
Project #:	
Proj. Name:	Minto Env. Monitoring
Location:	Yukon
Sampled by:	

**REGULATORY REQUIREMENTS: SERVICE REQUESTED:**

- CSR
- CCME
- BC Water Quality
- Other \_\_\_\_\_
- DRINKING WATER
- Regular Turn Around Time (TAT)  
(5 days for most tests)
- RUSH (Please contact the lab)
- 1 Day
- 2 Day
- 3 Day

**SPECIAL INSTRUCTIONS:**

Return Cooler  Ship Sample Bottles (please specify)

**ANALYSIS REQUESTED**

Sample Identification	Lab Identification	Sample Type	Date/Time(24hr) Sampled	Field Filtered?	Field Acidified?	Field Acidified?	Nitrite	Ammonia	Total Suspended Solids (TSS)	pH	Conductivity	Chloride	Fluoride	Sulphate	Phosphate	DOC (Diss'd Organic Carbon)	TOC (Total Organic Carbon)	Ra 226	Number of Containers	
				Dissolved Metals (DM)	Total Metals	Nitrate	Turbidity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity	Alkalinity		Alkalinity
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

Print name and sign			Print name and sign			Laboratory Use Only							
*Relinquished By:	Date (yy/mm/dd):	Time (24hr):	Received by :	Date (yy/mm/dd):	Time (24 hr):	Time Sensitive	Temperature on Receipt (°C)			Custody Seal		Yes	No
							A) [ ] B) [ ] C) [ ]	Present?		[ ]	[ ]	[ ]	[ ]
							Just sampled & rec'd on ice: <input checked="" type="checkbox"/>	Intact?		[ ]	[ ]	[ ]	[ ]

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