MIRAMAR HOPE BAY LIMITED

QUALITY ASSURANCE and QUALITY CONTROL PLAN

In Compliance with

Boston Water Use License Number: 2BB-BOS0712

Hope Bay Regional Exploration Water Use License Number: 2BE-HOP0712

Prepared by:

Exploration Environmental
Miramar Hope Bay Ltd.
North Vancouver, BC

Prepared & Revised by:

Matthew Kawei
Senior Environmental Coordinator
MHBL Exploration Environmental
Miramar Hope Bay Limited

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DOCUMENT CONTROL RECORD

Approved By:

Position	Name	Signature	Date
General Manager, Environment	Larry Connell		
Exploration Manager	Darren Lindsay		

The re-issues of this document, listed below, have been reviewed and approved by Quality Assurance and Management and are authorized for use within the Miramar Hope Bay Ltd organization.

DOCUMENT CONTROL REVISION HISTORY					
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1	All	Review	Hugh Wilson		Mar 2004
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**Conditional Approval subject to revisions to the original document to include specific concerns raised by Nunavut Water Board*

1.0 INTRODUCTION

1.1 Overview

The Quality Assurance & Quality Control Plan was prepared for the Miramar Hope Bay Limited (MHBL) in the Nunavut Settlement Area. The Plan is intended to meet the requirements of the Surveillance Network Program as outlined in the Nunavut Water Board issued Water Use License 2BB-BOS0712 and 2BE-HOP0712 to MHBL to carryout it's Exploration activities on the Hope Bay Belt, West Kitikmeot region of Nunavut.

Quality assurance (QA) & Quality Control (QC) are vitally important components of the Environmental Management System (EMS) program for the Exploration activities along the Hope Bay Belt. This QA/QC Plan has been prepared in accordance with "QA/QC Guidelines for use by Class "A" Licensees in Meeting Surveillance Network Program Requirements and for Submission of a QA/QC Plan" published in July 1996 by the Water Resources Division of the Department of Indian and Northern Affairs and the Northwest Territories Water Board.

Through the Quality Assurance and Quality Control (QA/QC) Plan, MHBL ensure that the sampling methods and analytical data are of the highest quality. Approved environmental management practices are employed throughout the sampling program. All samples are delivered to an accredited external environmental laboratory for determinations.

1.2 Purpose and Scope of the Landfarm Operations and Maintenance Manual

This document describes the procedures to be used by MHBL personnel when conducting environmental water and soil sampling. Minimum criteria for sample collection, preservation, documentation, transportation, and data management are established and applied to samples from the MHBL. These procedures have been developed from literature and guidelines intended to promote good practices in field sampling and sample handling, which will provide assurance of the quality of the resulting data. These procedures will be periodically reviewed and updated.

Although the QA/QC Plan is submitted to the Nunavut Water Board as a condition of the Surveillance Network Programs annexed to the site Water License, it is primarily intended to be read, understood, and implemented by company personnel involved in water quality monitoring. The procedures are applied to ***all environmental water samples***, whether analyzed for the purpose of regulatory compliance monitoring, or for the purpose of internal environmental management.

1.3 Responsibility

- Exploration Manager – The Exploration Manager has overall responsibility for this management plan and will be the party to provide the resources to ensure compliance to this Plan.

- Environmental Coordinator – The MHBL Environmental Coordinator has responsibility to: keep this Quality Assurance and Quality Control Plan updated annually; provide technical expertise to the summer environmental field samplers on the procedures

contained in this document; sampling of the contaminated soil and assessment of whether remediation has met conditions stipulated in Water Use Permits Numbers 2BB-BOS0712 and 2BE-HOP0712. Sampling of lake water and grey water samples and assessment of whether analytical results have met conditions stipulated in the above Water Use Permits. Ensure all sampling equipment are available and in good working conditions at respective camps at the start up of the exploration program. Provide weekly, monthly and annual reports to the Exploration Manager and General Manager Environment. Provide compliance monthly report to the Manager, Environmental Auditing and Licensing.

2.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance (QA) is a set of operating principles that, if strictly followed during sample collection and analysis, will produce data of known and defensible quality. As such, the accuracy of the analytical result can be stated with a high level of confidence. A high level of quality assurance can be achieved by applying the following principles:

- Personnel involved in water sampling and analysis are trained and competent;
- Facilities and equipment are reliable, suitable, maintained, and always kept in good working condition;
- Standard procedures are implemented for the collection and transportation of samples, based on acceptable good operating practice;
- Standard analytical procedures are developed and implemented, based on recognized methods suited to the samples being analyzed and required data quality;
- Laboratory instruments are calibrated using procedures, and at a frequency, recommended by the manufacturer, or recognized as good operating practice;
- Laboratory water, reagents and other supplies are of consistent high quality;
- Quality Control (QC) programs are developed and implemented, based on recognized good operating practice, to assess the quality of the analytical data and provide warning of unacceptable analytical errors;
- Prompt remedial action is taken when deficiencies are identified; and
- Analytical results and QC program results are reported internally and externally using standard procedures.

Quality control (QC) is a set of specific procedures used to measure the quality of the data produced and correct deficiencies in sampling or analysis, as they occur. Quality control is used by the analyst and sampler to achieve standards of measurement for the three principal components of quality: precision, accuracy and reliability. The components are defined as follows:

Precision: A measure of the closeness with which multiple analyses of a given sample agree with each other.

Accuracy: A measure of the closeness of the analytical result to the true value.

Reliability: A measure of the frequency at which the standards of precision and accuracy are achieved.

Although each component of quality can be achieved without the other, true quality can only be achieved with a combination of all three components.

Different quality control methods can be used to measure each of the components of quality and can isolate the probable source of errors detected. For this reason, a good QC program is made up of a number of recognized methods.

3.0 SAMPLING LOCATIONS

The following sampling locations were obtained from Water Use Permits Number 2BE-HOP0712 and 2BB-BOS0712. Additional sampling sites will be added on a need to do bases. These will include locations of where samples are taken on ice for water quality before and after drilling, site of previous petroleum product spills, new spills and spring runoffs. All sampling sites coordinates will be recorded using a GPS. The sampling locations are illustrated in Appendix A, C and D.

4.0 FIELD SAMPLING

4.1 SAMPLE COLLECTION

Environmental water sampling and contaminated soil sampling at the Hope Bay Regional Exploration and the Boston Exploration Program worksites are conducted to provide information required by the company for effective environmental management of the site, to provide information on follow-up monitoring of previous spill sites and to monitor regulatory compliance. Although the majority of sampling and analytical work is related to compliance monitoring, it is necessary to ensure sample integrity is maintained for all samples collected. Therefore, proven practical management practices are employed during collection of all samples, whether they are for regulatory compliance or site environmental management given any environmental conditions which are site specific.

4.1.1 Sampling Locations and Frequency

A Surveillance Network Program (SNP) as attached to the Water License prescribes a specific water-sampling program for the site, including sampling locations, sampling frequency, and parameters to be analyzed. A map of the property showing the prescribed sampling locations is on file with the Nunavut Water Board. Site specific photographs with details of sampling locations are provided in Appendices A, C and D.

The SNP sampling stations will be clearly identified in the field by posted signs. The location of signs and the precise location of sampling will be approved by the designated Inspector for the site. Samples must always be taken at the same location on each sampling occasion, unless the Inspector has approved a new location.

The frequency of sampling at a given location will be monthly and annually as prescribed in the permits. Appendices B and E outlines the sampling frequency and parameters analyzed for each of the sampling stations Windy Lake Camp and Patch Lake Shop and Boston Camp respectively.

4.1.2 Sample Types

At any given location, either grab samples or composite samples may be taken, as prescribed in the respective water use permits. All of the samples taken will be grabs.

Samples are normally taken from natural lakes, streams, treatment ponds or process streams. Wherever possible, where possible, samples should be taken from just under the surface to avoid floating debris that may contaminate the sample.

4.1.3 Sample Containers

Sample containers vary in size and material of construction, depending on the analysis to be conducted. The method used to analyze for a particular parameter dictates the minimum size of the sample bottle. One litre chemically resistant polyethylene bottles and closures with inert liners as the standard sample container, with the one exception being that for Oil & Grease. Samples to be analyzed for Oil & Grease must be collected in glass containers as hydrocarbons are attracted to the walls of plastic bottles and may not be released when sample aliquots are transferred from the bottle. Glass bottles will be used to collect soil samples. Plastic bottles are suitable for all other analyses. All samples containers will be prepared by the contracting laboratory and shipped to site at the beginning of each exploration program. Sample containers for each analysis are shown in Tables 1 and 2.

Sample containers may be new or previously used. The risk of cross contamination should be reduced with careful preparation and handling of the bottles. In the event used sample bottles are put into service, they would be prepared as follows:

- Rinse well with hot tap water for 30 seconds;
- Empty the bottle and add 10% nitric acid (HNO_3) to about 1/3 capacity. Shake well for 60 seconds;
- Rinse vigorously with hot tap water for 60 seconds;
- Rinse three times with distilled water; and
- Empty bottle and rinse again three times with distilled water.

On occasion there is a request for bacterial testing, usually in respect to the potable water systems. As bottles to be used for bacterial testing must be autoclaved (sterilized), they are obtained directly from the laboratory that is conducting the analysis.

4.1.4 Field Sampling Log Book

Details of all sampling exercises are recorded in a field logbook. The individual collecting the samples should record the date and time that sampling was conducted, the sampling stations visited, and the samples taken at each station. The results of any field measurements should be

recorded. The sampler should indicate whether the sample was preserved and should initial each entry.

Additional information can be useful when inquiries are made into the meaning of sample data at a later date. The sampler should record any information that may have a bearing on water quality, such as weather conditions, stream flow rates and unusual conditions at the site. Any necessary deviations from standard procedures or sampling location must be recorded.

4.1.5 Hope Bay Regional Sampling Requirements

Table 1: Hope Bay Regional Exploration lake water, grey water and contaminated soil sampling requirements: 2BE-HOP0712

	Analysis	Bottle Type	Preservative	Supplier	HOP-1	HOP-2	HOP-3	HOP-4	HOP-5	HOP-6	Drill Sites	Spill sites	Quantity Required Annually
Water	Fecal Coliforms	Sterile	None	Taiga	1		1	1					3 x 12 = 36
	BOD_5	Purple	None		1		1	1					3 x 12 = 36
	Routine	500 mL plastic	None	ALS Laboratories	1	1	1	1	1	1	1	1	8 x 12 = 96
	Acute Lethality – Rainbow Trout	2 x 20 L carboy	None					2*					1 x 2 + 1 = 3
	Acute Lethality – Daphnia Magna	2 x 1 L clear glass	None					2*					1 x 2 +1 = 3
	Total Metals	250 mL plastic	5 mL 20% nitric acid			1			1	1	1	1	5 x 12 = 60
	Oil & Grease (HEM)	1 L amber glass	2 mL HCl		1	1	1	1	1	1	1		7 x 12 = 84
	Phenols	100 mL amber glass	1 mL H_2SO_4						1	1	1		3 x 12 = 36
	PAH	2 x 1 L clear glass	None						2	2	2		6 x 12 = 72
	BTEX, F1	3 x 40 mL vials	Sodium bisulphate (precharged)						3	3	3		9 x 12 = 114
	F2, F3, F4	1 L amber glass	None						1	1	1		3 x 12 = 36
	Ammonia	500 mL plastic	2 mL H_2SO_4									1	1 x 12 = 12
Soil	Jars	125 mL	No headspace										
		250 mL											
		500 mL											
	Bags	2 lb Ziploc	No headspace										

Note: Drill sites, spill sites and spring runoff's are some locations that will be added to the program.

4.1.6 Boston Project Sampling Requirements

Table 2: Boston Exploration Project lake water, grey water and contaminated soil sampling requirements: 2BB-BOS0712

	Parameters (Analysis)	Bottle Type	Preservative	Supplier	BOS-1	BOS-2	BOS-3	BOS-4	BOS-5	BOS-6	BOS-7	BOS-8	Quantity Required Annually
Water	Fecal Coliforms	Sterile	None	Taiga	1		1	1					3 x 12 = 36
	BOD_5	Purple	None		1		1	1					3 x 12 = 36
	Routine	500 mL plastic	None	ALS Laboratories	1	1	1	1	1	1	1	1	8 x 12 = 96
	Acute Lethality – Rainbow Trout	2 x 20 L carboy	None					2*					1 x 2 + 1 = 3
	Acute Lethality – Daphnia Magna	2 x 1 L clear glass	None					2*					1 x 2 +1 = 3
	Total Metals	250 mL plastic	5 mL 20% nitric acid			1			1	1	1	1	5 x 12 = 60
	Oil & Grease (HEM)	1 L amber glass	2 mL HCl		1	1	1	1	1	1	1		7 x 12 = 84
	Phenols	100 mL amber glass	1 mL H_2SO_4						1	1	1		3 x 12 = 36
	PAH	2 x 1 L clear glass	None						2	2	2		6 x 12 = 72
	BTEX, F1	3 x 40 mL vials	Sodium bisulphate (precharged)						3	3	3		9 x 12 = 114
	F2, F3, F4	1 L amber glass	None						1	1	1		3 x 12 = 36
	Ammonia	500 mL plastic	2 mL H_2SO_4									1	1 x 12 = 12
Soil	Jars	125 mL	No headspace										
		250 mL											
		500 mL											
	Bags	2 lb Ziploc	No headspace										

** Samples taken annually instead of monthly.*
Note: Quantity required annually is based on a projected 12 months of operation to include extras.

4.1.7 Field Measurements

On most samples pH and temperature of the water are measured and recorded in the field when the sample is taken. The field pH meter is calibrated prior to each sampling campaign, using two calibration standards of known pH. Measurements should be taken directly from the water body being sampled. Where this is impractical, perhaps due to the high velocity of a sample stream, the measurements can be taken from a sample bottle. Record pH and temperature to one place decimal.

4.2 Sampling Methods

The following procedures should be used to collect water samples, as appropriate to the sampling location.

4.2.1 Streams

The sample should be collected as close as practical to the middle of the stream, where water flows freely and is free of debris. After getting into position, the sampler should wait to allow any sediment that may have been stirred up to settle or wash away.

The sample bottle should be partially filled with the water to be sampled and rinsed with the cap in place at least three times. Note that sampling for Oil and Grease and Bacteria are the exceptions to this procedure - Oil & Grease, and Bacteria sample bottles should NOT be field rinsed before taking the sample. Care should be taken to empty rinse water downstream from the sampling point, so that stream sediments are not disturbed.

If possible, plunge the bottle into the stream to a depth of approximately half the total stream depth and allow it to fill with the mouth facing upstream. In shallow streams, where plunging the sample bottle will not allow it to fill completely and may disturb sediment; a smaller bottle can be used to transfer water to the larger sample bottle. Bottles should be filled to near full capacity, allowing enough room for preservative addition and mixing (the neck of wide-mouthed bottles is sufficient space for this).

4.2.2 Lakes and Ponds

Surface samples from lakes and ponds should be collected using the same procedures as above. Subsequent samples should always be taken at the same location. Sample bottles should be plunged into the water to a depth of about six inches below the water surface.

Although not currently required for SNP sampling, information on water quality at depth in lakes and ponds may be required at times. These samples will usually be collected with a Van Dorn type sampler, which is lowered to the required depth and triggered to trap a sample of water by releasing a “messenger” from the surface. Both the sampler and sample bottle are rinsed with the water to be sampled a total of three times and the sample is retrieved on the fourth submersion of the sampler to the given depth.

4.2.3 Process Streams (Pipes, Valves and Auto-Samplers)

Some sampling of process streams may be required by the Surveillance Network Program and for environmental management purposes. These may be grab samples, which are taken from a valve or a pipe discharge, or composite samples collected over an extended time period by an automated sampling system.

The same principles used in natural stream sampling should be applied when collecting grab samples. The sample bottle should be rinsed with the water to be sampled three times, with the exception of sampling for Oil and Grease analysis, as noted above. Valves should be open for at least one minute before taking the sample, to ensure that the water is representative of the process stream.

4.3 Soil Sampling

The Environmental Protection Service of the Nunavut Department of Sustainable Development has a published an "Environmental Guideline for Soil Remediation" that provides guidance as to acceptable levels for the remediation of hydrocarbon contaminated soils in Nunavut. These guidelines are derived from the CCME 1991 Interim Criteria and the CCME 1997 Recommended Soil Quality Guidelines.

MHBL will use the industrial remediation guideline to determine when soil has been remediated to a level acceptable for removal from the land treatment area (LTA) facility for use in site remediation.

A record will be kept by MHBL's on-site Senior Environmental Coordinator of the amount of contaminated soil and snow placed in the LTA and the location of each batch of contaminated soil within the LTA by contaminant type and length of remediation. The LTA will be monitored weekly during summer months by the Environmental Coordinator to ensure proper operating conditions of soil moisture and aeration.

A sampling plan will include sampling methods (grid, composite) and frequency (number of samples per surface area). Since the LTA material is relatively thinly applied and homogenized through tilling, only one depth of sample collection is required. The samples should then be analyzed for the contaminants of interest and compared with the remediation guidelines. These protocols are recommended for the LTA soils to determine at which point the soils have been remediated and the LTA can be closed. Monitoring of contaminant levels in the leachate is only required prior to discharge to the environment; during recirculation, testing may be done for purposes of tracking remediation progress.

Soil samples will be collected at least twice per year by MHBL and tested for CWS-PHC fractions (Fraction F1 thru F4), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Total Petroleum Hydrocarbons (TPH) and total metals using a 36 element ICP-MS scan (see Appendices B & E). Soil hydrocarbon concentrations will be monitored to ascertain the point where soils are no longer considered contaminated. There are no CCME guidelines for density of soil sampling in LTA. Each separate pile within the LTA be divided into quadrants, and sampled with a target density of one composite of ten samples per 25 m^3 to adequately characterize the

soil's hydrocarbon levels. As for samples collected at spill sites, sufficient amount of contaminated soil will be sampled depending on the amount of topsoil in the area. Care should be taken not to expose the underlying tundra.

4.4 SAMPLE HANDLING

Best Management Practices are employed during collection of all samples, whether they are for regulatory compliance or site environmental management.

4.4.1 Sample Identification

Before starting a campaign of water sampling, the required number of sample bottles, of the correct size and material, should be selected. The sample location (SNP station number), the sampling date, and parameters to be analyzed should be marked on each bottle using previously prepared printed labels before heading into the field.

When sampling and sample preservation is completed, the bottles should be clearly marked with all information that the laboratory analyst will need to report the result. As a minimum, the following information should be included:

- Sample location (or SNP station number)
- Date of sampling
- Parameters to be analyzed
- Preservation method used
- Name or initials of sampler
- Temperature and pH where applicable

As the samples are to be sent to an external laboratory, the company and property name must also be included.

In some cases permanent markers can be used to identify sample bottles, however these markings can be erased with wear and may not be clearly legible. Whenever possible, and always when sending samples to external laboratories, mark the bottles with pre-printed gummed labels. Labels should only be applied to dry surfaces.

4.5 Chain of Custody Forms

A Chain of Custody form has to be filled out. The form is located on the Shared drive at Windy *(Z:\Environmental\Hope Bay 2007\Legal Obligation\2BE-HOP0712\Water Samples\ALS Environmental Laboratory\Chain of Custody Original Form)* and Boston *(Z:\Environmental\Boston Project 2007\Legal Obligation\2BB-BOS712\Water Samples\ALS Environmental Laboratory\Chain of Custody Original Form).*

The filled out form is to be printed as a PDF and filled on the shared drive under Environmental at respective camp sites. An example of the form can be seen in Appendix F.

4.6 Preservation

As samples cannot be delivered to the analytical laboratory within two hours of sampling, preservation is required. In all cases, specific preservatives must be added to the samples to prevent chemical changes that may alter the concentration of the parameter of interest. The samples must be preserved within two hours of sampling. In most cases samples can be preserved away from the field at the end of the campaign. The appropriate preservation methods are provided in Tables 1 and 2 for respective worksites.

4.7 Transportation

A major objective of the field sampler is to minimize any chemical changes to the sample between the time of sample collection and delivery to the laboratory, and which may alter the concentration of the parameter of interest. Heat, light, and agitation can all impact the water chemistry and the samples should be protected from these effects.

Samples should be delivered to the analytical laboratory as soon as possible after collection. All samples should be stored and transported at a temperature <10 degrees Celsius. Coolers and ice packs are provided for field transportation and samples should be refrigerated as soon as possible following arrival at the laboratory.

5.0 QUALITY CONTROL

As outlined in Section 2.0, accepted quality control practices are employed throughout the environmental sampling program. The following samples are collected and analyzed for the same constituents being monitored in the Surveillance Network Program as part of the quality control check on monitoring activities:

5.1 FIELD BLANKS

Field blanks are samples of pure water that are subjected to exactly the same procedures as routine samples, following which they are analyzed for the same parameters as the field samples. Any measurement of the parameter of interest, above method detection limits, will indicate any analytical error, impurities in the laboratory distilled water supply, contaminated sample preservatives, or contamination of the sample during the handling process. Combined with the results of other quality control procedures, analysis of field blanks can help identification of sources of contamination.

A set of field blanks should be made up once each month and taken into the field when the active SNP stations are sampled. New sample bottles should be used and prepared using distilled water from the normal laboratory water supply. This set should represent all of the parameters routinely analyzed. They should be preserved in the field and submitted to the laboratory identified as field blanks.

5.2 REPLICATE SAMPLES

Replicate sampling (or sometimes referred to as duplicate sampling) is the collection of more than one sample for a given analysis at a given location. The replicate samples are collected, handled, and analyzed using the standard procedures applied to routine samples. Replicate sampling, combined with the results of other quality control procedures, can help indicate sources of error and are particularly useful in identifying problems with accuracy and sampling methods.

Once per operating season, for each active SNP, a set of duplicate samples will be taken, representing as many of the routine analyses as possible. Where possible, this should be carried out in conjunction with audit sampling conducted by the designated inspector. Replicate sampling should alternate between the prescribed SNP stations.

5.3 METHOD "SPIKED" SAMPLES

The recovery of "known additions" from "spiked" samples is used as a check on the recovery of the parameter to be analyzed using a given analytical procedure. It is periodically carried out at the laboratories employed to analyze the samples and normally forms part of that laboratory's QA/QC program.

5.4 SPLIT SAMPLES

Two or more representative sub-samples are removed from one collected sample and analyzed separately at the laboratory. This data is used as a check of the precision of the analytical procedure employed by the laboratory and normally forms part of the laboratory QA/QC program.

6.0 LABORATORY ANALYSIS

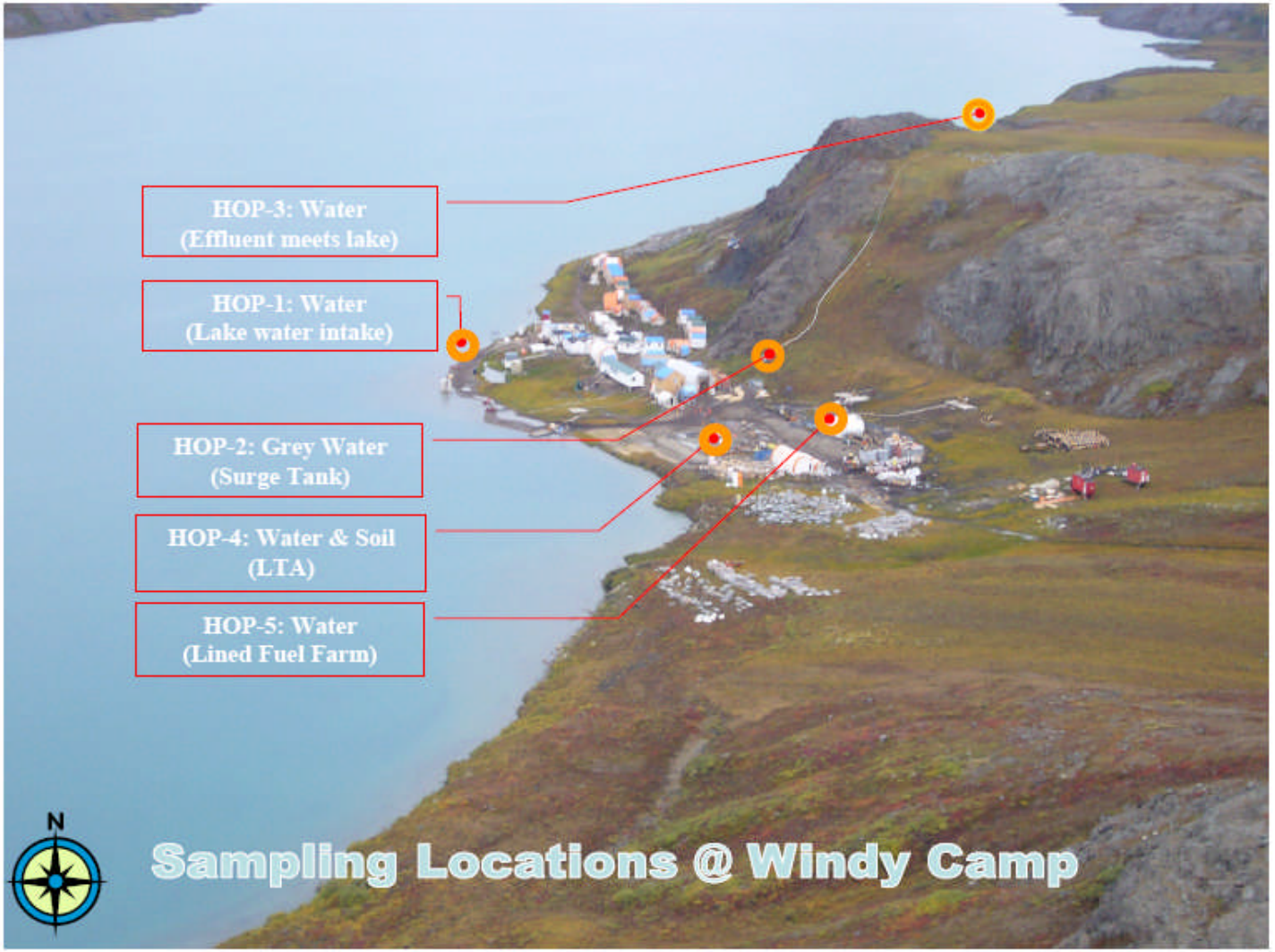
As MHBL does not maintain an analytical laboratory on site, all analyses are performed at an accredited Environmental Laboratory.

7.0 REPORTING

In all analytical results are forwarded to the Exploration Senior Environmental Coordinator via email. Copies of all results are also sent to mhblenvironmental@miramarmining.com for filing purposes. These results are screened for anomalies, following which they are placed into the appropriate environmental files. Results that appear to be anomalous are flagged and either the analysis is repeated or, if possible, a new sample is taken to confirm the value. The environmental files are maintained on the server and filed on the MHBL Vancouver electronic filing system as a management tool for environmental risk assessment and in preparation of summary reports for the regulatory agencies and company officials. In compliance with the Surveillance Network Program, reports of analytical results for SNP samples are submitted in hard copy and electronically to the Nunavut Water Board within 30 days following the month in which the samples were taken. The reports present all required analytical results for SNP

sampling stations that were sampled during the month. The Nunavut Water Board distributes the reports to other agencies and interested parties.

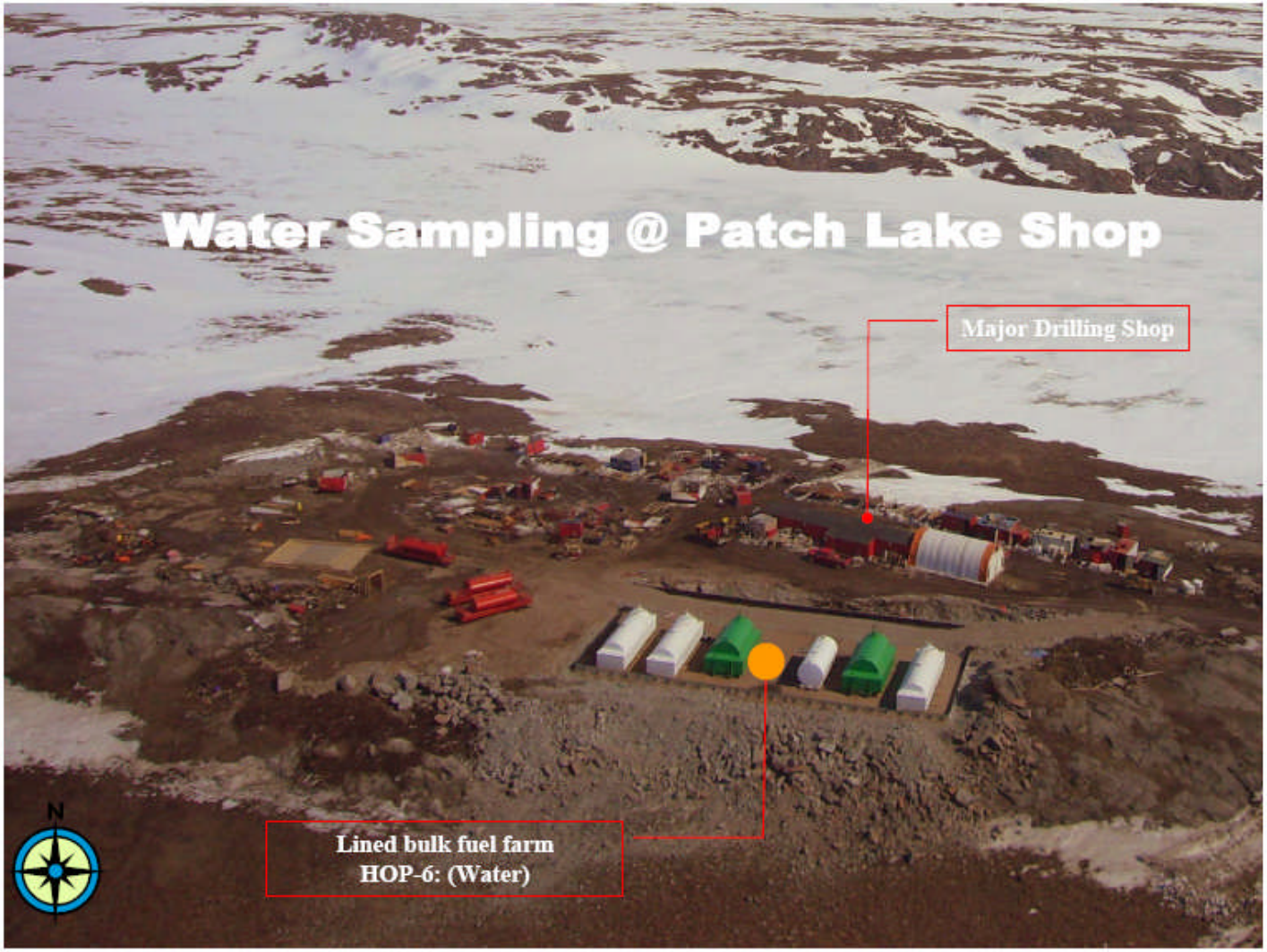
APPENDIX A : Windy Lake Camp Aerial Photograph of Sampling Sites



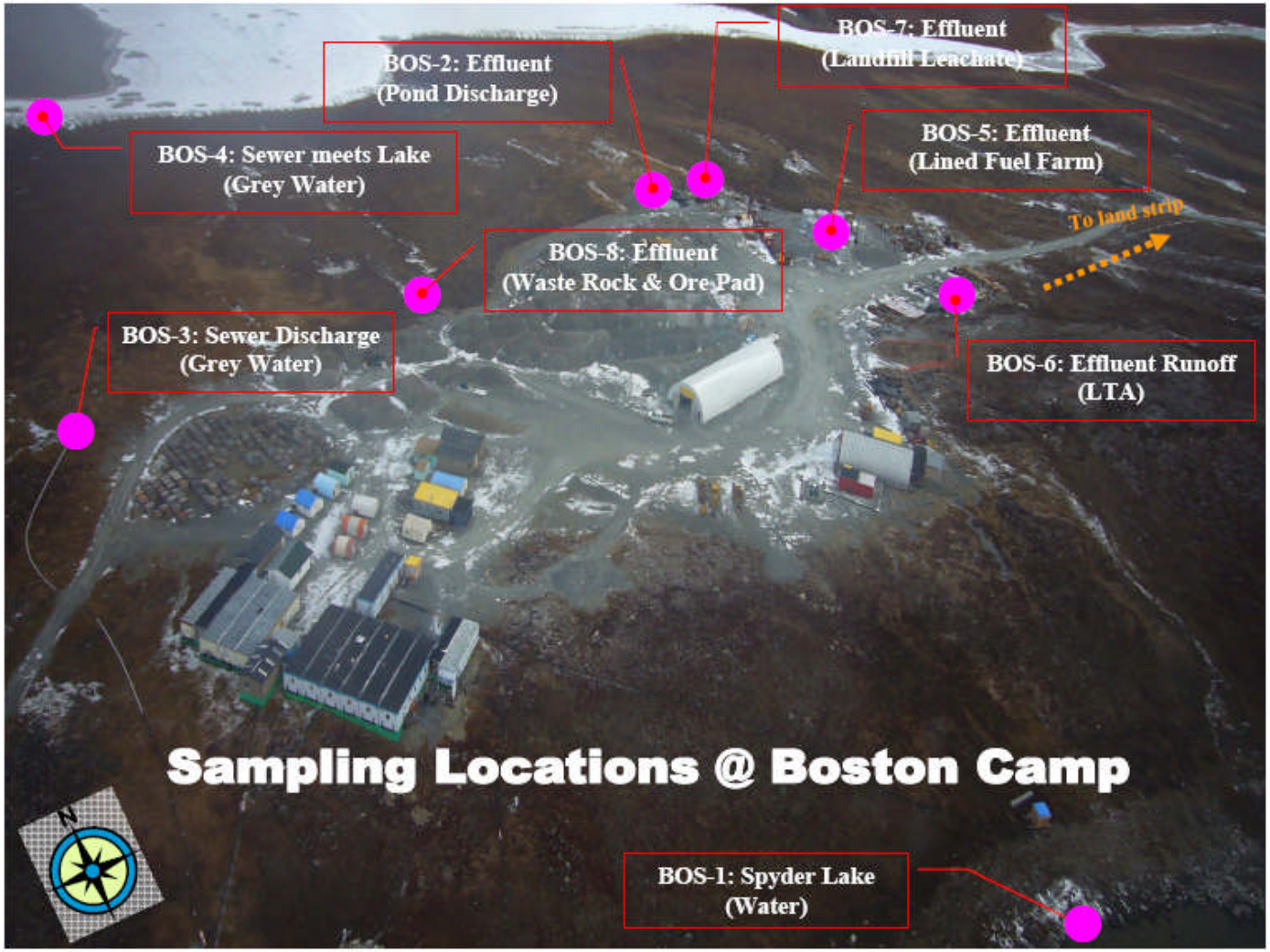
APPENDIX B : Windy Lake Camp sampling locations, frequencies and test parameters as stipulated in Water Use Permit # 2BE-HOP0712

Monitoring Station Number	Description	Reference	Frequency of Sampling	Parameters of Analysis
HOP-1	Raw water supply intake at Windy Lake	Not specified	Monthly	*Due diligence* (Do tests for similar to that of HOP-2)
HOP-2	WWTF effluent discharge@ surge tank	Part D, Item 10 Part J, Item 2	Monthly	BOD_5, TSS, Faecal Coliforms, pH, Oil and grease (non-visible film)
HOP-3	Effluent meets Lake	Part D, Item 10 Part J, Item 2	Monthly	BOD_5, TSS, Faecal Coliforms, pH, Oil and grease (non-visible film)
		Part J, Item 3	Annually	Non-acute toxicity to Rainbow Trout and Daphnia magna
HOP-4	Treated Effluent from LTA prior to discharge to surge tank	Part D, Item 17 Part J, Item 4	Monthly @ water removal	CCME TPH, PAH, BTEX (F1), pH, Oil and grease, EC, NO_3-NO_2, Total Phenols, Total Alkalinity, Total Hardness, Ca, Mg, K, Na, SO4, Total Metals (As, Cd, Cu, Cr, Fe, Pb, Hg, Ni)
HOP-5	Effluent from fuel farm @ Windy Camp prior to release	Part D, Item 17	Monthly @ water removal	CCME TPH, PAH, BTEX (F1), pH, Oil and grease, EC, NO_3-NO_2, Total Phenols, Total Alkalinity, Total Hardness, Ca, Mg, K, Na, SO_4, Total Metals (As, Cd, Cu, Cr, Fe, Pb, Hg, Ni)
HOP-6	Effluent from fuel farm @ Patch Lake prior to release	Part D, Item 17	Monthly @ water removal	Oil and grease, BTEX (F1), TSS, pH, SO_4, EC, Total Trace Metals as determined by a standard ICP Scan (Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn, As, Hg)
Location Non-specific Description			Frequency of Sampling	Parameters of Analysis
Water column below any ice (Part F, Item 7)			Representative samples	TSS, pH, EC, Total Trace Metals as determined by a standard ICP Scan (Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn, As, Hg)
Windy (LTA) Landfarm soil			Representative samples	TPH, BTEX (F1), Pb

APPENDIX C : Patch Lake Fuel Farm Aerial Photograph of Sampling Sites



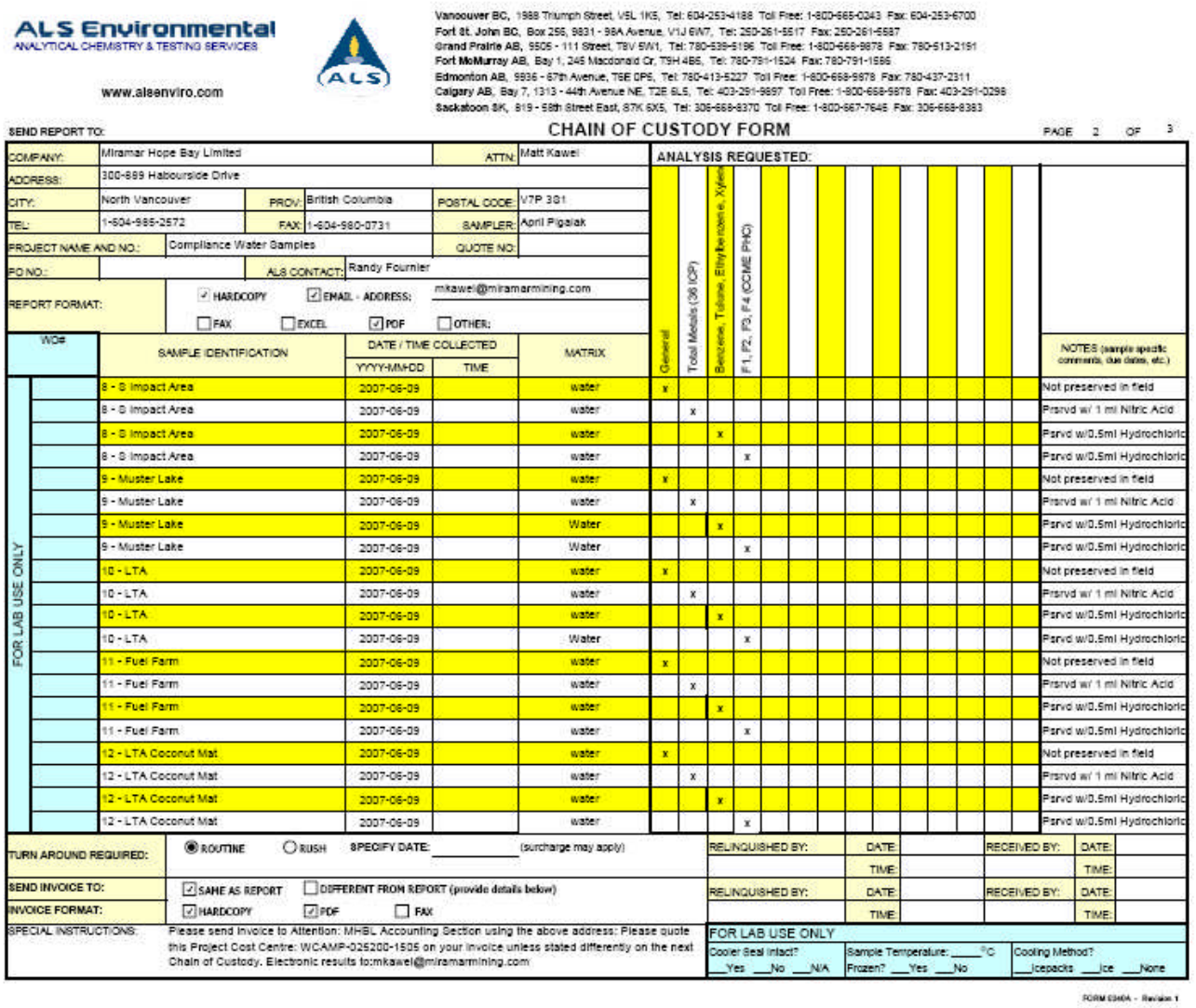
APPENDIX D : Boston Camp Aerial Photograph showing Sampling Sites



APPENDIX E : Boston Camp sampling locations, frequencies and test parameters as stipulated in Water Use Permit # 2BB-BOS0712

New Station Number	Old Station Number	Description	Frequency of Sampling	Parameters of Analysis
BOS-1	1652-1a	Raw water supply intake at Spyder Lake	Does not specify	Does not specify
BOS-2	1652-2	Containment Pond discharge	Once prior to discharge Weekly Once near end of discharge	See D8 (refers to condition in 2BB-BOS0712)
BOS-3	1652-3	Sewage Disposal Facility final discharge	Monthly during discharge	BOD_5, TSS, Oil and Grease (and visual) Fecal Coli forms, pH
BOS-4	1652-4	Treated sewage effluent point prior to entry into Spyder Lake	Monthly during discharge	
			Annually	Acute lethality to Rainbow Trout Acute lethality to Daphnia magna
BOS-5	N/A	Effluent from the Bulk Storage Facility prior to release to a location	Monthly during water removal	CCME TPH, PAH, BTEX (F1), pH, EC, NO_3-NO_2, Oil and Grease (and visual) Total Phenols, Total Alkalinity Total Hardness, Ca, Mg, K, $NaSO_4$, Total metals (As, Cd, Cu, Cr, Fe, Pb, Mg, Ni)
BOS-6	N/A	Effluent from the Landfarm Treatment Facility prior to release	Monthly during water removal	
BOS-7	N/A	Landfill leachate	During periods of observed flow	
BOS-8	N/A	Waste Rock and Ore Storage Pad	Initially during spring thaw Monthly, at minimum, during flow	pH, SO_4, EC, TSS, Total N, Total metals (ICP Scan 36 metals - Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn)
Location Non-specific Description			Frequency of Sampling	Parameters of Analysis
Water column below any ice (Part F, Item 7)			Representative samples (Before & after drilling)	TSS, pH, EC, Total Trace Metals (ICP Scan 36 - Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn, As, Hg)

APPENDIX F : Example of a Chain-of-Custody Form



ALS Environmental
ANALYTICAL CHEMISTRY & TESTING SERVICES

www.alsenviro.com

Vancouver BC, 1988 Triumph Street, V5L 1K5, Tel: 604-253-4188 Toll Free: 1-800-665-0243 Fax: 604-253-6700
Fort St. John BC, Box 256, 9831 - 98A Avenue, V1J 6W7, Tel: 250-261-5517 Fax: 250-261-5687
Grand Prairie AB, 9505 - 111 Street, T8V 5W1, Tel: 780-539-5196 Toll Free: 1-800-668-9878 Fax: 780-513-2191
Fort McMurray AB, Bay 1, 245 Macdonald Cr, T9H 4B6, Tel: 780-791-1524 Fax: 780-791-1586
Edmonton AB, 9936 - 67th Avenue, T6E 0P5, Tel: 780-413-5227 Toll Free: 1-800-668-9878 Fax: 780-437-2311
Calgary AB, Bay 7, 1313 - 44th Avenue NE, T2E 6L5, Tel: 403-291-9697 Toll Free: 1-800-668-9878 Fax: 403-291-0298
Saskatoon SK, 819 - 58th Street East, S7K 6X5, Tel: 306-668-8370 Toll Free: 1-800-667-7648 Fax: 306-668-8383

SEND REPORT TO:

CHAIN OF CUSTODY FORM

PAGE 2 OF 3

COMPANY:	Miramar Hope Bay Limited			ATTN:	Matt Kawel
ADDRESS:	300-889 Harbourside Drive				
CITY:	North Vancouver	PROV:	British Columbia	POSTAL CODE:	V7P 3S1
TEL:	1-604-985-2572	FAX:	1-604-980-0731	SAMPLER:	April Pigalak
PROJECT NAME AND NO.:	Compliance Water Samples			QUOTE NO:	
PO NO.:		ALS CONTACT:	Randy Fournier		
REPORT FORMAT:	☑ HARDCOPY ☑ EMAIL - ADDRESS: mkawel@miramarmining.com ☐ FAX ☐ EXCEL ☑ PDF ☐ OTHER:				

ANALYSIS REQUESTED:

FOR LAB USE ONLY	WO#	SAMPLE IDENTIFICATION	DATE / TIME COLLECTED YYYY-MM-DD	TIME	MATRIX	General	Total Metals (36 ICP)	Benzene, Toluene, Ethylbenzene, Xylenes	F1, F2, F3, F4 (CCME PHC)	NOTES (sample specific comments, due dates, etc.)
		8 - S Impact Area	2007-06-09		water	x				Not preserved in field
		8 - S Impact Area	2007-06-09		water		x			Prsrvd w/ 1 ml Nitric Acid
		8 - S Impact Area	2007-06-09		water			x		Prsrvd w/0.5ml Hydrochloric
		8 - S Impact Area	2007-06-09		water				x	Prsrvd w/0.5ml Hydrochloric
		9 - Muster Lake	2007-06-09		water	x				Not preserved in field
		9 - Muster Lake	2007-06-09		water		x			Prsrvd w/ 1 ml Nitric Acid
		9 - Muster Lake	2007-06-09		Water			x		Prsrvd w/0.5ml Hydrochloric
		9 - Muster Lake	2007-06-09		Water				x	Prsrvd w/0.5ml Hydrochloric
		10 - LTA	2007-06-09		water	x				Not preserved in field
		10 - LTA	2007-06-09		water		x			Prsrvd w/ 1 ml Nitric Acid
		10 - LTA	2007-06-09		water			x		Prsrvd w/0.5ml Hydrochloric
		10 - LTA	2007-06-09		Water				x	Prsrvd w/0.5ml Hydrochloric
		11 - Fuel Farm	2007-06-09		water	x				Not preserved in field
		11 - Fuel Farm	2007-06-09		water		x			Prsrvd w/ 1 ml Nitric Acid
		11 - Fuel Farm	2007-06-09		water			x		Prsrvd w/0.5ml Hydrochloric
		11 - Fuel Farm	2007-06-09		water				x	Prsrvd w/0.5ml Hydrochloric
		12 - LTA Coconut Mat	2007-06-09		water	x				Not preserved in field
		12 - LTA Coconut Mat	2007-06-09		water		x			Prsrvd w/ 1 ml Nitric Acid
		12 - LTA Coconut Mat	2007-06-09		water			x		Prsrvd w/0.5ml Hydrochloric
		12 - LTA Coconut Mat	2007-06-09		water				x	Prsrvd w/0.5ml Hydrochloric

TURN AROUND REQUIRED:	◉ ROUTINE ○ RUSH SPECIFY DATE: _____ (surcharge may apply)	RELINQUISHED BY:	DATE:		RECEIVED BY:	DATE:	
			TIME:			TIME:	
SEND INVOICE TO:	☑ SAME AS REPORT ☐ DIFFERENT FROM REPORT (provide details below)	RELINQUISHED BY:	DATE:		RECEIVED BY:	DATE:	
INVOICE FORMAT:	☑ HARDCOPY ☑ PDF ☐ FAX		TIME:			TIME:	

SPECIAL INSTRUCTIONS: Please send Invoice to Attention: MHBL Accounting Section using the above address: Please quote this Project Cost Centre: WCAMP-026200-1505 on your invoice unless stated differently on the next Chain of Custody. Electronic results to:mkawel@miramarmining.com

FOR LAB USE ONLY

Cooler Seal intact?	Sample Temperature: ____°C	Cooling Method?
___Yes ___No ___N/A	Frozen? ___Yes ___No	___Icepacks ___Ice ___None

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