**MELIADINE GOLD PROJECT**

**WATER MANAGEMENT PLAN**

**August 2010**

# DOCUMENT CONTROL

| Version | Date (YMD) | Section | Page | Revision |
|---|---|---|---|---|
| 1 | 10/08/25 | | | The 2007 Plan and 2009 addendums were consolidated and updated to include recent license amendments. |
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## 1.0 Introduction

The **Water Management Plan** pertains to Nunavut Water Board License No. 2BB-MEL0914 issued to Comaplex Minerals Corp. for the Meliadine Gold Project. The Project was purchased by Agnico-Eagle Mines Limited (AEM) in early July 2010. This Plan addresses water use and waste disposal, geotechnical drilling within 31 metres of water, and exploration activities on the property including ongoing surface diamond drilling and the extension of the underground exploration/bulk sample program. This update is in response to a July 8, 2010 letter from the Nunavut Water Board.

## 2.0 Plan Objectives

The purpose and objectives of this plan include the following:

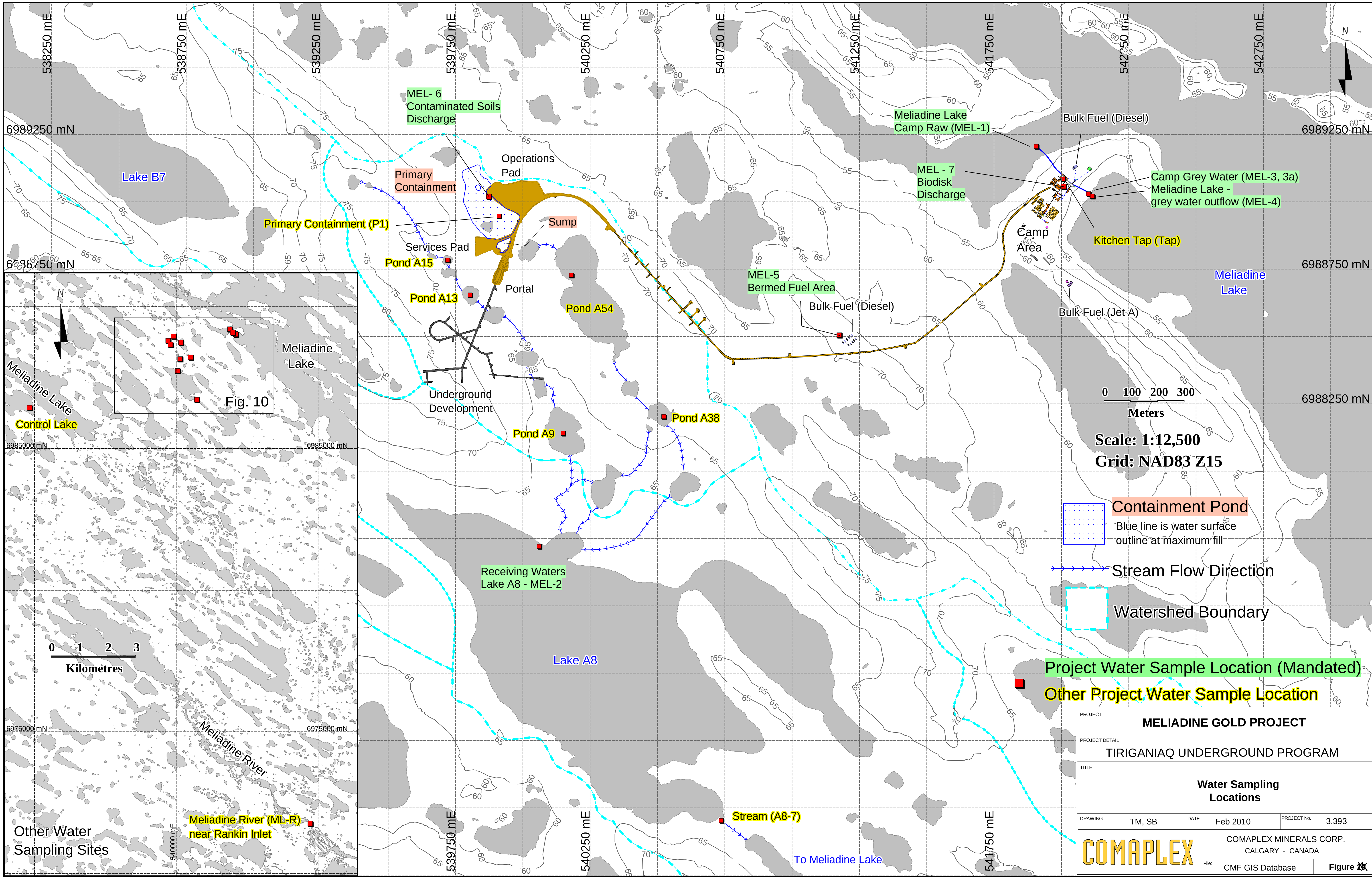
- to monitor specified water quality parameters at the camp domestic water intake and gray water outlet;
- to monitor the performance of the BIODISK Rotating Biological Contactor wastewater treatment plant;
- to monitor the effect of underground operations on the water quality in the primary containment area;
- to contain site runoff from the underground program within a single drainage basin while minimizing the effect on the surrounding terrestrial environment;
- to document the effect of long term storage of waste rock, ore and overburden on the local downstream water quality with an emphasis on trace metals and nutrients;
- to document water use for routine exploration activities such as geotechnical and surface diamond drilling, and also for underground exploration; and
- to report the quantity of water used and the results of water quality monitoring activities.

## 3.0 Project Overview

The exploration camp has been used for exploration activities since 1997. It is currently supports ongoing surface exploration activities initiated in 1997, geotechnical drilling along the proposed road right-of-way from the site to Rankin Inlet, and in the near future the proposed extension of the underground exploration program.

Table 1 below outlines the monitoring requirements for the 8 monitoring locations specified in Water License 2BB-MEL0914 while figure 1 shows their locations. The camp water is drawn from Meliadine Lake from location Mel-1, which remains unchanged since 1997. Water for the underground exploration program and proximal surface drilling is drawn from Lake A8[1]. Water use for drill sites distant from Lake A8 is drawn from lakes and ponds near the drilling targets. Waste water is sampled at monitoring stations MEL-3, MEL-3a,

[1] Also identified as MEL-2 in the Water License, and Pump Lake in earlier documents.


MEL- 6
Contaminated Soils
Discharge
Meliadine Lake
Camp Raw (MEL-1)
Bulk Fuel (Diesel)
Operations
Pad
Primary
Containment
Lake B7
MEL - 7
Biodisk
Discharge
Camp Grey Water (MEL-3, 3a)
Meliadine Lake -
grey water outflow (MEL-4)
Primary Containment (P1)
Sump
Kitchen Tap (Tap)
Camp
Area
Services Pad
Pond A15
MEL-5
Bermed Fuel Area
Meliadine
Lake
Portal
Bulk Fuel (Diesel)
Bulk Fuel (Jet A)
Pond A13
Pond A54
Underground
Development
Pond A38
Pond A9
Receiving Waters
Lake A8 - MEL-2
Lake A8
Stream (A8-7)
To Meliadine Lake
Meliadine
Lake
Fig. 10
Meliadine Lake
Control Lake
Meliadine River
Meliadine River (ML-R)
near Rankin Inlet
Other Water
Sampling Sites
0 1 2 3
Kilometres
0 100 200 300
Meters
Scale: 1:12,500
Grid: NAD83 Z15
Containment Pond
Blue line is water surface
outline at maximum fill
Stream Flow Direction
Watershed Boundary
Project Water Sample Location (Mandated)
Other Project Water Sample Location
PROJECT
MELIADINE GOLD PROJECT
PROJECT DETAIL
TIRIGANIAQ UNDERGROUND PROGRAM
TITLE
Water Sampling
Locations
DRAWING TM, SB
DATE Feb 2010
PROJECT No. 3.393
COMAPLEX
COMAPLEX MINERALS CORP.
CALGARY - CANADA
File: CMF GIS Database
Figure 1

MEL-4, and MEL-7. The waste water is discharged on the other side of the peninsula from where the fresh water intake is located as shown on figure 1.

**Table 1. Water License Water Quality Monitoring Stations**

| Monitoring Program Station | Location | Description |
|---|---|---|
| MEL-1 | Raw water supply intake at Meliadine Lake | The volume of water used by the camp is recorded for this location. The limit is 25 $m^3$/day. |
| MEL-2 | Raw water supply intake at Pump Lake Active | The volume of water used by the underground program and proximal surface drilling is recorded for this location. The limit is 265 $m^3$/day. |
| MEL-3 | Immediately downstream of old gray water sump prior to effluent entering wetland area, when flow is observed. | This monitoring location will be phased out once the BIODISK treatment system is fully commissioned At that point, it will receive all waste water from the camp. Samples are analyzed for Biochemical Oxygen Demand – $BOD_5$, Faecal Coliforms, Total Suspended Solids, pH, and Oil and Grease. |
| MEL-3a | Immediately downstream of upgraded sump prior to the effluent entering the upgraded wetland area, when flow is observed | This monitoring location will become active once the BIODISK treatment system is fully commissioned and treated water is released to the sump and wetland. Samples will be analysed for the same water quality parameters as listed for MEL-3. |
| MEL-4 | At a point immediately upstream of the discharge from the wetland area / upgraded wetland area to Meliadine Lake | This monitoring location is active in monitoring the quality of the waste water after it has passed through the sump and wetland. Samples will be analyzed for the same water quality parameters as listed for MEL-3 and trace metals, nutrients, major ions and physical parameters. |
| MEL-5 | Point of discharge for the Bermed Fuel Containment Facilities | This monitoring station is presently inactive as there has been no discharge from the lined, bermed area. |
| MEL-6 | Point of discharge for the contaminated soil storage | The monitoring station is inactive. Independent testing of the soil indicates that it is no longer contaminated. The soil meets both Nunavut soil quality guidelines and the CCME Petroleum Hydrocarbon Guideline in Soil for Residential / Parkland. This being the most stringent guideline. |
| MEL-7 | Final effluent discharge from the BIODISK treatment system | This monitoring station is active with samples collected monthly at end of pipe. Samples will be analyzed for the same water quality parameters as listed for MEL-3. |

Ablution products from the camp (Pacto) toilets are presently incinerated on site. However, the BIODISK wastewater treatment plant is presently being commissioned, and by the end of the summer of 2010 the incineration of ablution products will cease. However, the Pacto toilets will remain as back-up in the event of the BIODISK experiencing operating problems.

Gray water from the shower, laundry and kitchen is presently discharged to a sump which drains to a wetland before reaching Meliadine Lake. All gray water will report to the BIODISK by the end of the summer of 2010 with the treated water being released to a sump/wetland situated parallel to the existing sump/wetland as shown on figure 2.

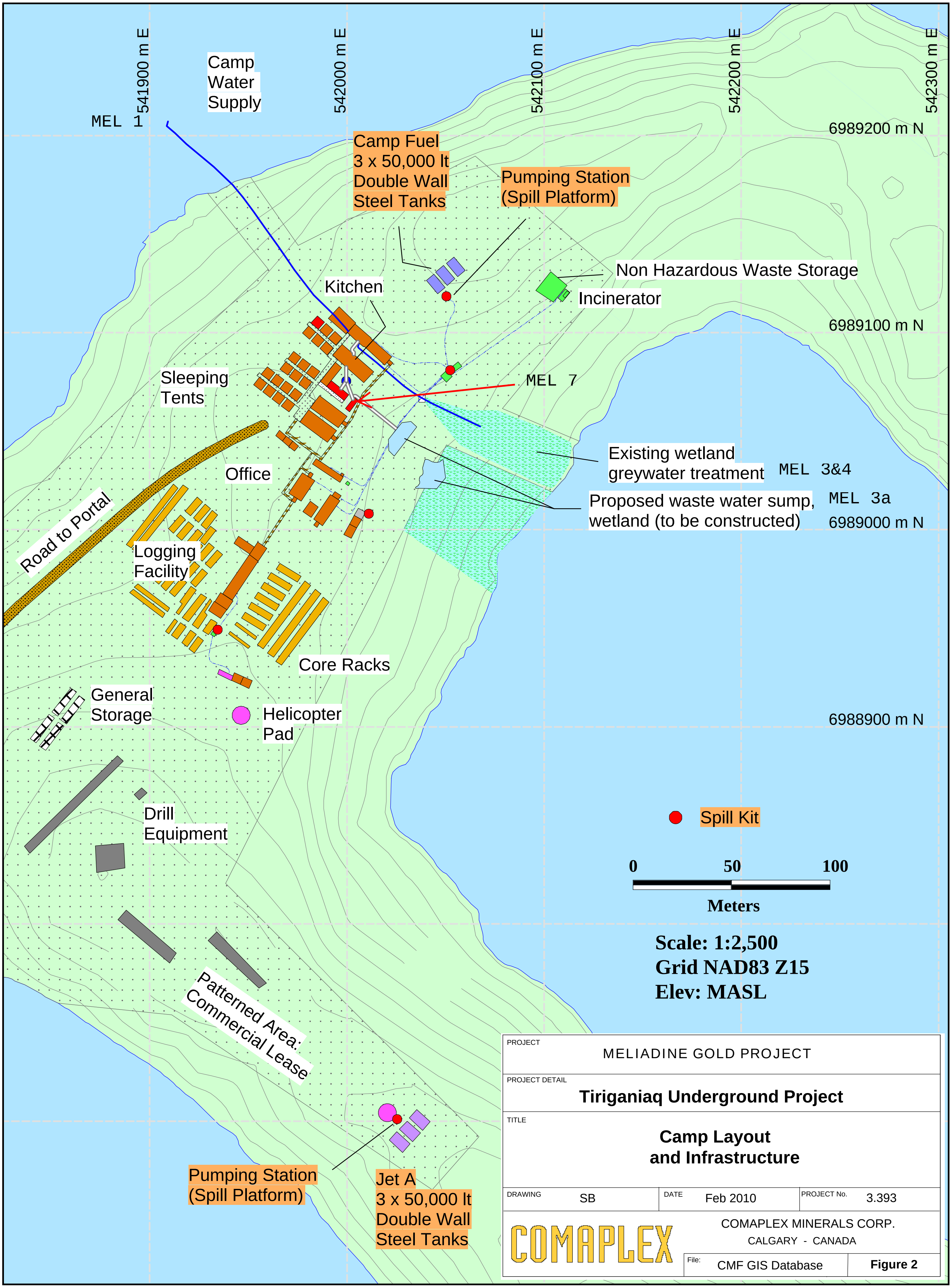
## 4.0 Permits for Exploration and the Camp

AEM maintains the right to explore and carry out diamond drilling on all of its existing leases, claims and NTI concessions through a series of land use permits and licenses as outlined in table 2. Access to these land parcels is typically by helicopter in summer months, but also via overland routes that are licensed for winter access. The scope of the project was changed in 2007 with the initiation of the underground exploration program, which commenced in August of 2007. Water license 2BB-MEL0709 was granted in response to this change in scope and was renewed for 5 years in 2009, license 2BB-MEL0914 . The scope of the project remains unchanged for the proposed 2011-2013 extension of the underground exploration program.

**TABLE 2. Permits and Licenses held by the Meliadine Gold Project – July 2010**

| Type | Permit Number | Issuing Agency | Expiry date |
|---|---|---|---|
| Type B Water License | 2BB-MEL0914 | Nunavut Water Board | 31 Jul 2014 |
| Type B Water License | 2BE-MEP0813 | Nunavut Water Board | 31 Oct 2013 |
| Exploration Land Use License | KVL100B195 | Kivalliq Inuit Association | 31 Oct 2011 |
| Exploration Land Use License | KVL302C268 | Kivalliq Inuit Association | 1 Jul 2011 |
| Exploration Land Use License | KVL308C07 | Kivalliq Inuit Association | 13 Jun 2011 |
| Overland Right-of-Way | KVRW07F02 | Kivalliq Inuit Association | 26 Oct 2011 |
| Meliadine Lake Right-of-Way | KVRW98F149 | Kivalliq Inuit Association | 30 April 2011 |
| Commercial Lease | KVCL102J168 | Kivalliq Inuit Association | 30 Jun 2011 |
| Mainland esker Quarry Permit | KVCA07Q08 | Kivalliq Inuit Association | 15 Sep 2011 |
| Meliadine Production Lease | KVPL10D02 | Kivalliq Inuit Association | To be determined |
| Permanent Road Quarries Lease | KVCA10Q03 | Kivalliq Inuit Association | To be determined |
| Permanent Road Right-of-Way | KVRW10F04 | Kivalliq Inuit Association | To be determined |
| WCB Program Authorization | | Worker's Compensation Board | 31 Dec 2010 |
| CWM Claims Drilling Permit | N2007C0041 | Indian and Northern Affairs | 13 Apr 2011 |
| PB1 – Geotechnical Drilling | N2010C0002 | Indian and Northern Affairs | 11 Apr 2011 |
| Meliadine Lake Quarry Permit | N2007Q0040 | Indian and Northern Affairs | 13 Apr 2011 |
| Hamlet Disposal Authorization | Letter of approval | Hamlet of Rankin Inlet | No end date |

The extension of the underground exploration program is designed to provide information that will help establish the feasibility of mine development at Meliadine Lake. The program will run from 2011 until mid to late 2013. Table 3 below shows the tonnes and volume of rock brought to surface in 2007 – 2008 and what is expected from the underground extension program 2011-2013. In the table, the volume of loose cubic metres represents broken rock on the surface. Concurrent surface drilling will continue during the underground extension program.


541900 m E
542000 m E
542100 m E
542200 m E
542300 m E
6989200 m N
6989100 m N
6989000 m N
6988900 m N
MEL 1
Camp Water Supply
Camp Fuel 3 x 50,000 lt Double Wall Steel Tanks
Pumping Station (Spill Platform)
Non Hazardous Waste Storage
Incinerator
Kitchen
MEL 7
Sleeping Tents
Existing wetland greywater treatment
MEL 3&4
Office
Proposed waste water sump, wetland (to be constructed)
MEL 3a
Road to Portal
Logging Facility
Core Racks
General Storage
Helicopter Pad
Drill Equipment
Spill Kit
0
50
100
Meters
Scale: 1:2,500
Grid NAD83 Z15
Elev: MASL
Patterned Area: Commercial Lease
Pumping Station (Spill Platform)
Jet A 3 x 50,000 lt Double Wall Steel Tanks
PROJECT
MELIADINE GOLD PROJECT
PROJECT DETAIL
Tiriganiaq Underground Project
TITLE
Camp Layout and Infrastructure
DRAWING
SB
DATE
Feb 2010
PROJECT No.
3.393
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File:
CMF GIS Database
Figure 2

**Table 3. Underground Exploration Program Waste Rock and Ore**

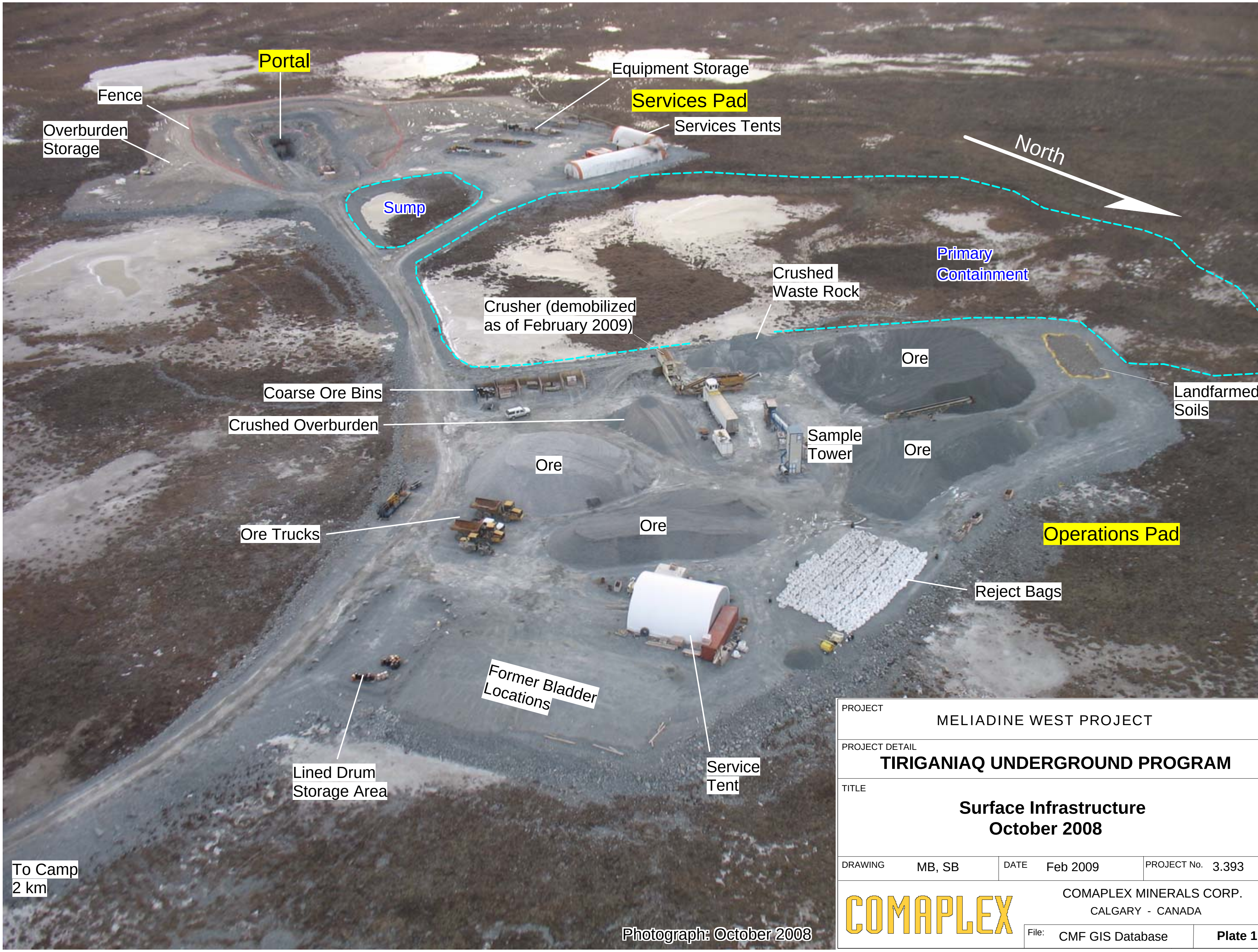
| Underground exploration program | 2007 - 2008 | | 2011 - 2013 | |
|---|---|---|---|---|
| | tonnes | loose $m^3$ | tonnes | loose $m^3$ |
| Overburden Portal | 25,890 | 19,417 | NA | NA |
| Waste Rock Portal | 17,609 | 9,435 | NA | NA |
| Waste Rock Decline | 82,328 | 44,105 | 213,190 | 114,209 |
| Ore | 25,521 | 13,065 | 22,156 | 11,460 |
| Total Rock | 125,458 | 66,605 | 235,346 | 125,669 |

Additions to the existing waste rock pads, as shown in plate 1, will be situated alongside and behind existing primary containment in the same watershed as the first program as shown on figure 3. The rock being extracted is largely identical to that accessed earlier in 2007 – 2008 and poses no acid rock drainage (ARD) risk.

## 5.0 General Water Management

General code of conduct guidelines for exploration activities with respect to water management have been in place since before AEM took over management of the Meliadine Gold Project. In summary these are:

- there is to be no diamond drilling within 31 m of a natural water body or water course unless authorized to do so;
- there is to be no fuel storage or the handling of fuel vessels within 31 m of a natural water body or water course unless authorized to do so;
- a spill contingency plan is to be implemented for fuel spill prevention and preparedness;
- drill cuttings are to be controlled and contained in depressions near the drill hole. Insta-berms (water filled berms) and/or silt fences are deployed to prevent drill cutting from entering receiving waters;
- for drill holes within 31 metres of water, the drill cuttings will be pumped to a depression at least 31 metres from the water body;
- if necessary, flocculants are to be employed to reduce the Total Suspended Solids in the waste water coming from the drills;
- water is to be recycled at each drill so as to reduce the daily water use per drill from the present 53 $m^3$;
- drill-sites are to be rehabilitated; and
- when drilling through lake ice is planned, before and after water samples are collected to measure if the lake was impacted by the drilling.




| | |
|---|---|
| PROJECT | MELIADINE WEST PROJECT |
| PROJECT DETAIL | **TIRIGANIAQ UNDERGROUND PROGRAM** |
| TITLE | **Surface Infrastructure October 2008** |

| DRAWING | DATE | PROJECT No. |
|---|---|---|
| MB, SB | Feb 2009 | 3.393 |

COMAPLEX

COMAPLEX MINERALS CORP.
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File: CMF GIS Database **Plate 1**

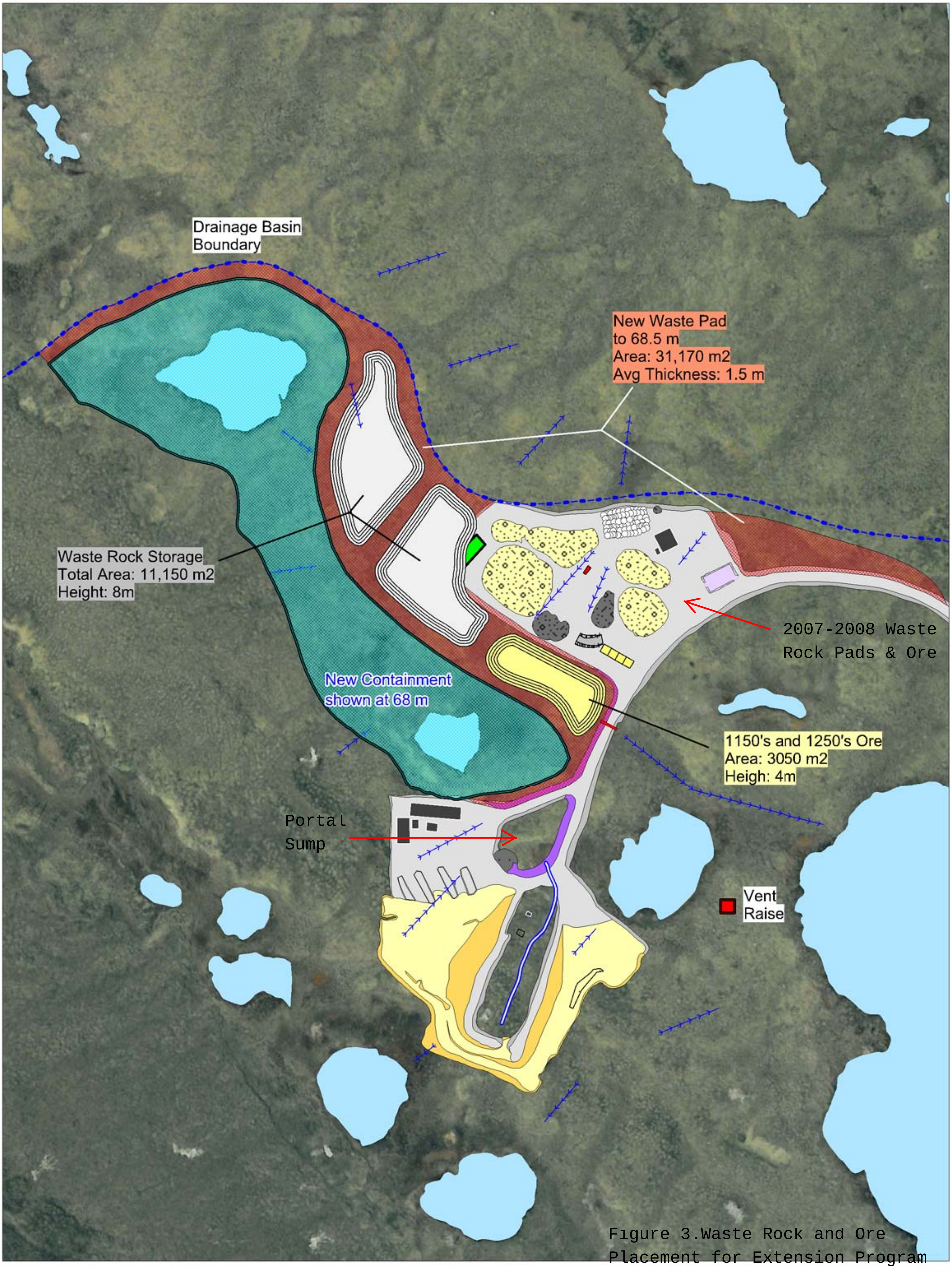



Figure 3.Waste Rock and Ore Placement for Extension Program

### 6.0 Water Consumption Records

A water meter was installed in the camp to record water consumption in the camp. In 2009, an average of 4.3 $m^3$/day was used while the camp was in operation. Once the BIODISK treatment system is fully commissioned in 2010 and flush toilets are being used, it is anticipated that approximately 7 to 10 $m^3$/day of water will be used in camp. This will be confirmed by metering the water used on a daily basis.

The drills operate on a flow through system in order to keep the water lines from freezing. Flow through systems work on the principle that moving water will not freeze. Consequently, water is pumped on a continuous basis and diverted to the mud tanks as required. The water that is not used just passes out the other end of the pipe and back to the same or nearest lake, this being an indirect use of water.

On August 12$^{th,}$ 2009, meters were installed on the drills. It was agreed with the inspector to record water use by the drills until October 1$^{st}$ or the end of the drilling season, whatever came first. The average daily use over the period of record would serve as an average going forward, especially during winter drilling when the recording of water use is not practical. To the end of drilling in mid September 2009, the average water use was 53 $m^3$/day/drill. Efforts will be made in 2010 forward to reduce the quantity of water used at each drill through the removal of drill cuttings from the drill waste water thereby allowing recycling of the water.

Water use for 2009 is detailed in Table 4. From August 2009 forward, the quantity of water is based on the metered volume.

A water license amendment was granted on 28 June 2009 increasing the allowable water use from 90 $m^3$/day to 290 $m^3$/day. This is sufficient water for the camp and 5 drills based on present water use. The camp is allocated 25 $m^3$ and all other uses such as drilling, 265 $m^3$.

**Table 4. 2009 Water Use**

| | MEL – 1 Meliadine Lake ($m^3$/day) | MEL-1 Meliadine Lake ($m^3$/month) | MEL-2 Lake A8 (Pump) ($m^3$/day) | Mel -2 Lake A8 (Pump) ($m^3$/month) |
|---|---|---|---|---|
| January 2009[1] | 1.0 | 31 | - | |
| February 2009 | 1.0 | 28 | - | |
| March 2009 | 1.5 | 46.5 | - | |
| April 2009[2] | 4.3 | 129 | 75 | 1,050 |
| May 2009 | 4.3 | 133.3 | 75 | 2,325 |
| June 2009 | 4.3 | 129 | 75 | 2,250 |
| July 2009 | 4.3 | 133.3 | 75 | 2,325 |
| August 2009 | 4.3 | 133.3 | 159 | 4,929 |
| September 2009[3] | 4.3 | 129 | 159 | 2,544 |
| October 2009[4] | 1.9 | 9.5 | - | |
| November 2009 | - | | - | |
| December 2009 | - | | - | |

[1]An application for an amendment was sent to the NWB on 21 January 2010 asking for an increase in the allowable water from 90$m^3$/day to 290 $m^3$/day. This was granted 28 June 2010
[2]Drilling commenced April 16th, 2009. The monthly quantity of water used is for the last 14 days of the month.
[3]Drilling stopped September 16th, 2009. The monthly quantity of water used is for the first 16 days of the month.
[4] The camp was shut down 5 October 2009.

## 7.0 Camp Water Management

The camp domestic water system has been in use since 1997 and is drawn from Meliadine Lake at pumping station labeled MEL 1 on Figure 1. Four 1400 litre and one 2500 litre plastic tanks are located within the dry/wash facility and in the wash car, respectively. These are filled on a demand basin. The water is used for cooking and cleaning, bathroom sinks, showers, laundry and flush toilets. Kitchen, shower and laundry effluent from the dry area is piped to a sump immediately east of the kitchen / dry facility and allowed to seep through a natural wetland environment (Figure 2, MEL 3) before draining into Meliadine Lake (Figure 2, MEL 4).

By late summer 2010, there will be no gray water discharge from the dry, showers and laundry to the natural wetland environment. All waste water from these facilities will be directed to the BIODISK as the commissioning continues. Discharge of treated water from the BIODISK will flow to a newly constructed sump and wetland to the west of the existing one, (Mel-3a).

The BIODISK sewage treatment system is highly dependent on the growth of bacteria within the system. Because these bacteria react adversely to antibacterial soap, strong detergents and harsh cleaners such as Javex, these are being phased out of use and will be replaced by biodegradable cleaning products.

## 8.0 Diamond Drilling Water and Sludge Management

AEM will not drill within 31 metres of an open body of water unless authorized to do so. Drill cuttings (ground rock) are not allowed to flow into any body of water through the use of Aquadams and/or silt currents. Once the sludge has settled and TSS removed, the water flows into a natural water course. Presently, a drill uses 53 cubic metres of water each day, this being measured using meters during the late summer of 2009. Five drills can operate simultaneously based on the 265 $m^3$/day of water allowed under the Water License. In the near future, water recycling measures will be employed to reduce the quantity of water used by the drills.

Quite commonly, the process of drilling creates a depression around the borehole and the sludge is concentrated in and adjacent to that depression. Experience has shown that if the drilling sludge is spread as a thin layer around the hole, the area will re-vegetate completely within a couple of years. If a thick layer of drill sludge is deposited into depressions, re-vegetation is hindered. The present approach to drill site re-habilitation has worked well for the last 15 years.

All efforts are made to stabilize and re-contour the ground upon completion of work. However, the restoration of the drill holes and disturbed areas to natural conditions immediately upon completion of drilling is not possible. Anecdotally, restoration occurs slowly over time with wet areas re-vegetating first and dry sites much later.

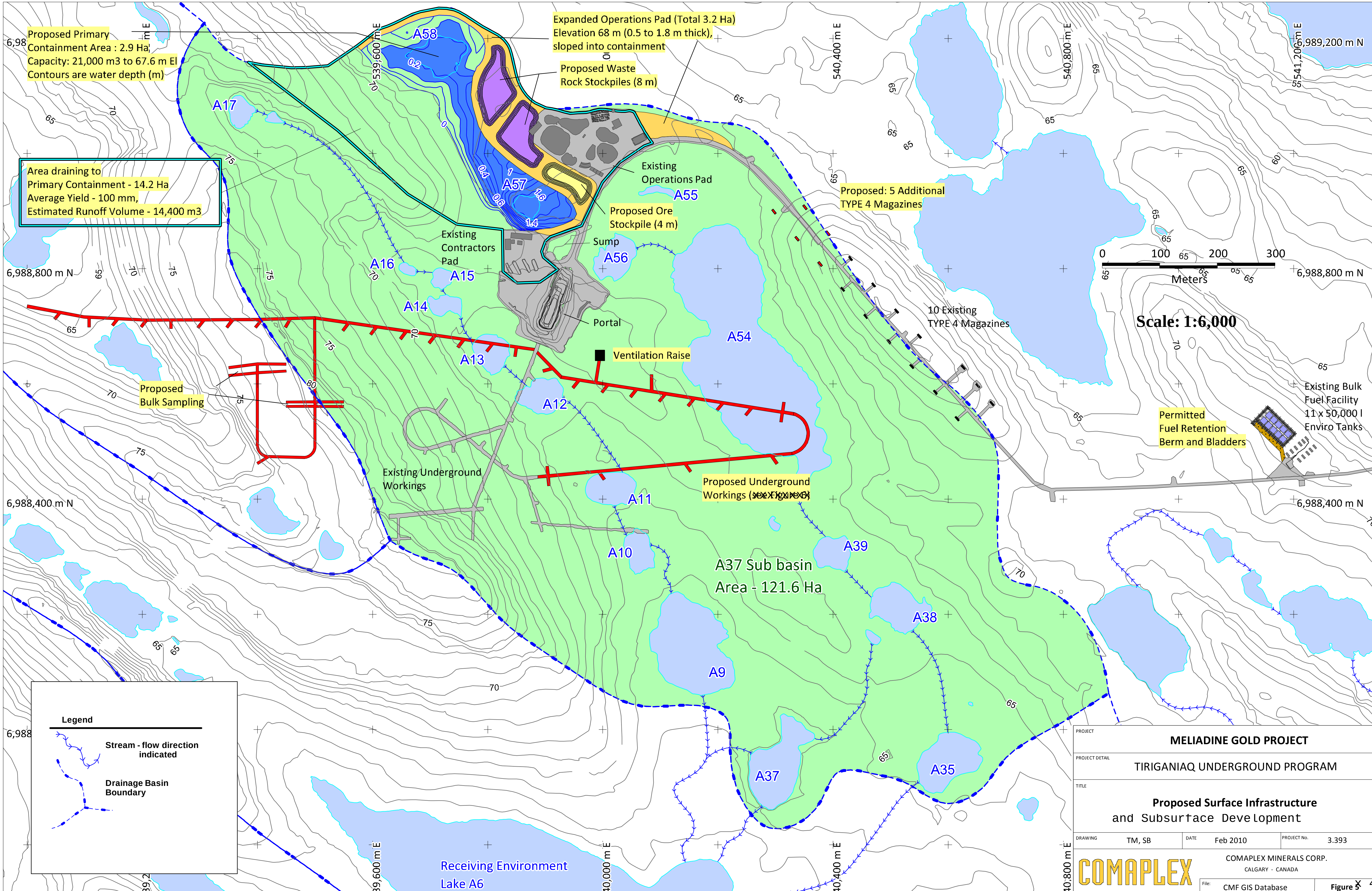
Following the completion in drilling a hole, all attempts are made to pull the casing. Where this is not possible, the casing is cut off at or below surface. Water flowing into the hole or cut off casing will freeze as all drill holes are in areas of permafrost. No drill holes had artesian flow. Some drill holes did, however, penetrate the lower permafrost boundary, which on occasion resulted in water flow part way up the drill stem but not to surface.

**9.0 Underground Exploration Site Water Containment Plan**

The initial underground exploration site configuration was engineered such that all runoff from the workings, the stored overburden, the waste rock pads, and ore piles on the waste rock pads was directed to the portal sump and primary containment area in 2007 -2008 as shown on figure 3. This was done by grading the surfaces of the waste rock pad and overburden to drain towards the two containment areas. The capacity of the sump near the portal is 2,500 $m^3$ and the primary containment, 21,000 $m^3$.

Figure 4 also shows the sub–area of the Lake A54 watershed that contributes runoff to the primary containment area. This sub-area is 142,000 square metres in area. Rounding the expected 97 mm yield to 0.1 metres suggests a yield of 14,200 cubic metres of water each year, mostly from snow melt in the spring. The primary containment area is capable of holding about 21,000 cubic metres of water to the 67.6 m elevation, with a maximum depth of 1.6 metres. Consequently the Primary Containment Area is capable of containing the spring runoff from the sub–area of Lake A54 basin[2]. To lessen the volume of water accumulating in the Primary Containment Area, snow that is cleared out of the ramp leading to the portal and off the pad is placed in basin A54, downstream of the containment areas. Future plans call for building a cover over the ramp leading to the portal. This will eliminate the collection of snow in this location.

[2] Appendix C is Chapter 4 of the 2000 Water Balance Study completed for the project by AMEC Earth and Environmental Ltd. The chapter details how the water balance for sub-basin A54 was determined.



Proposed Primary Containment Area : 2.9 Ha
Capacity: 21,000 m3 to 67.6 m El
Contours are water depth (m)
Expanded Operations Pad (Total 3.2 Ha)
Elevation 68 m (0.5 to 1.8 m thick),
sloped into containment
Proposed Waste Rock Stockpiles (8 m)
Area draining to Primary Containment - 14.2 Ha
Average Yield - 100 mm,
Estimated Runoff Volume - 14,400 m3
Existing Operations Pad
Proposed Ore Stockpile (4 m)
Proposed: 5 Additional TYPE 4 Magazines
Existing Contractors Pad
Sump
Portal
Ventilation Raise
10 Existing TYPE 4 Magazines
Scale: 1:6,000
0 100 200 300
Meters
Proposed Bulk Sampling
Existing Bulk Fuel Facility
11 x 50,000 l Enviro Tanks
Permitted Fuel Retention Berm and Bladders
Existing Underground Workings
Proposed Underground Workings
A37 Sub basin
Area - 121.6 Ha
A58
A57
A17
A16
A15
A14
A13
A12
A11
A10
A9
A55
A56
A54
A39
A38
A37
A35
Receiving Environment Lake A6
6,989,200 m N
6,988,800 m N
6,988,400 m N
539,600 m E
540,000 m E
540,400 m E
540,800 m E
Legend
Stream - flow direction indicated
Drainage Basin Boundary
PROJECT
MELIADINE GOLD PROJECT
PROJECT DETAIL
TIRIGANIAQ UNDERGROUND PROGRAM
TITLE
Proposed Surface Infrastructure and Subsurface Development
DRAWING TM, SB
DATE Feb 2010
PROJECT No. 3.393
COMAPLEX
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Figure 5

The north side of the road along the primary containment and the south side of the sump were lined with a woven polypropylene / polyvinyl liner to contain site runoff in late 2007. However, a failure in the liner near a culvert in the primary containment allows the water to trickle downstream to Lake A54 over the summer.

Future plans for the containment area, as part of the extension of the underground program in 2011 - 2013, would see the culvert pulled out of the road and the road widened so as to better hold water in the primary containment area. The extra width and removal of the culvert will assist in holding the water for a longer time period each spring as permafrost is expected to move up into the road bed over the winter and temporarily act as a dam.

Following the repair, decanting of the primary containment area will occur in early spring, after testing the water and receipt of analytical results showing that the Metal Mining Effluent Regulations limits were met. Should the water not meet the MMER limits, the water would continue to be held and, if necessary, treated. This would be followed by re-sampling and testing once more.

Upon receipt of the analytical results showing that the MMER limits are being met, a maximum amount of water would be pumped downstream thereby reducing the water held in the containment area to a minimum. The volume pumped would on average be approximately 18,000 cubic metres, this being a combination of runoff and also water used in the underground.

If a significant volume of water were to be held for an extended period in the containment area, the warmth of the water could thaw the permafrost that moved into the roadbed, and allow water to seep downstream. Periodic pumping of the containment area can be expected to follow summer storms, providing the analysis of the water supports its release.

## 10.0 Underground Water Management

The underground workings are in permafrost, which is thought to extend 450 m below surface. No ice lenses were found during the 2007 – 2008 underground exploration program and none are expected in 2011 -2013 when the underground program will extend the decline to 400 m below surface so as to sample the deeper ore. There is no natural ground or surface water inflow to the underground workings.

Some water is needed for dust suppression during underground drilling and mucking. Because of the permafrost environment, this is in the form of brine at a $CaCl_2$ concentration varying between 15% to 30% by weight, dependent on air temperatures. The brine is mixed in 2000 litre batches. The mixing takes place in the contractor’s shop area and the complete batch is piped from the mixing plant to a sump underground. No change is expected for the 2011 – 2013 underground program.

From the underground sumps, brine is piped to the working face, where it is used for dust suppression. As brine gathers on the floor at the working face, it is pumped back to the underground sump.

A gradual loss of brine occurs in damp, broken rock removed to surface. The underground brine system is therefore recharged with fresh batches mixed on surface. The typical rate of supply of brine to the underground drills is approximately 4000 litres per day. The typical production of broken rock from underground is 200 loose cubic metres per day. The maximum amount of water contained in broken rock is therefore 20 litres per loose cubic metre, likely much less considering system loss underground. This water adheres to dust and the faces of rock fragments, the back, and the side walls underground, as well as the broken rock that comes to surface. An unknown amount of drilling water is also lost as it is converted to water vapor during drilling operations which is carried away in the mine air.

Using a conservative number of 20 litres of water per loose cubic metre and approximately 108,000 $m^3$ of rock brought to surface to surface in 2007 – 2008; this resulted in a maximum of 2200 $m^3$ of water added to the Primary Containment Area as a result of mining. For 2011 – 2013 and approximately 235,000 $m^3$ of rock brought to surface; this results in a maximum of 4,700 $m^3$ of water added to the primary containment due to mining over 2 years. Even so, this estimated quantity is likely too high due to the surface loss due to sublimation and evaporation. The total natural runoff combined with that coming from underground would not exceed the holding capacity of the primary containment.

In the early stages of the decline advance in 2007, a sump for surface water was constructed at the base of the portal. As the underground workings were extended, two new sumps were built deeper underground, one sump for each branch of the ramp. The original sump just inside the portal is used to intercept surface runoff so that it does not enter the underground workings. The intercepted surface run-off water is pumped from the sump back to the surface sump adjacent to the portal ramp.

## 11.0 Local Water Quality

Local surface water quality monitoring was initiated in 1994 by Dillon Consulting followed by WMC International Ltd in 1996. Between 1997 and 2000, water sampling was conducted by RL & L under contract to WMC International Ltd. The KIA has collected water samples since 2004 and Comaplex initiated its water sampling program in 2007.

Rock, ore and till data collected by AEM and others close to the ore bodies show arsenic being naturally elevated in these samples. Because of exploration and the earlier 2007 – 2008 underground program, some 2009 water samples collected close to the area of development show concentrations of ammonia, nitrate and arsenic above the Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life, particularly within the primary containment area. On a less frequent basis, a few local samples occasionally had concentrations of copper, nickel, and iron over the Guidelines.

All analytical results for all 2009 samples were below the Metal Mining Effluent Regulations limits and can be found in Appendix B.

Water samples will continue to be collected within and downstream of the primary containment area to document the fate of trace metals and nutrients. The sampling locations are shown on figure 1 while table 5 below presents the water quality data for arsenic, an element of concern, from all studies and for all years within the watershed having the ore piles and waste rock pads. The data for 2008 and 2009 is for samples collected after the pads were built; the earlier data, before their construction.[3]

The collection of samples after building of the waste pads was timed to correspond with spring runoff and monthly thereafter until freeze-up. These samples are analyzed for physical parameters, major ions, nutrients and trace metals with a monthly report being sent to NWB and KIA. The NWB places the monthly reports on their ftp site.

**Table 5. Water Quality Data for Arsenic from the Primary Containment Area to downstream Lakes and Streams (mg/L)[1]**

| Date | Primary Containment Area (P1) | Lake A54 (Peanut Lake) | Lake A38 | Lake A8 (Pump Lake & MEL-2) | Stream A8-7 | Lake A6[2] |
|---|---|---|---|---|---|---|
| August 1994 | | | | 0.001 | | 0.001 |
| 1996 (no date) | | 0.004 | 0.005 | 0.003 | | 0.003 |
| 1996 (no date) | | | | 0.004 | | |
| April 1997 | | | | 0.002 | | |
| June 1997 | | | | | 0.001 | |
| July 1997 | | | | 0.002 | | 0.002 |
| April 1998 | | | | 0.002 | | 0.005 |
| June 1998 | | | | | 0.002 | |
| July 1998 | | | | 0.002 | 0.002 | 0.001 |
| July 1999 | | | | | | 0.004 |
| July 2000 | | | | | | 0.003 |
| July 2004 | | | | | | 0.001 |
| September 2004 | | | | | | 0.002 |
| July 2005 | | | | | | 0.003 |
| September 2005 | | | | | | 0.002 |
| July 2006 | | | | | | 0.001 |
| September 2006 | | | | | | 0.002 |
| July 2007 | | | 0.004 | 0.002 | 0.002 | |
| October 2007 | | 0.003 | | | | |
| May 2008 | 0.004 | 0.002 | | | | |
| June 2008 | 0.012 | 0.003 | 0.003 | 0.001 | 0.001 | |
| July 08 | | 0.001 | | 0.002 | 0.003 | |
| August 2008 | 0.029 | 0.004 | | 0.002 | | |
| October 2008 | 0.004 | 0.003 | | 0.002 | 0.002 | |
| April 2009 | | | | 0.003 | | 0.006 |
| June 2009 | | 0.003 | 0.003 | 0.002 | 0.001 | |
| July 2009 | | | | | | <0.005 |
| August 2009 | 0.014 | 0.003 | 0.004 | 0.002 | | |
| September 2009 | 0.011 | 0.004 | 0.006 | 0.003 | 0.002 | |

[1]The CCME Freshwater aquatic life guideline for As is 0.005 mg/L. The Metal Mining Effluent Regulation for As is 0.5 mg/L. Values above the guideline are highlighted in yellow.
[2]Lake A6 is two lakes downstream of Lake A8.

[3] What is noteworthy is that the mean for As in all downstream samples before the pads were built is 0.0025 mg/L while the mean for all downstream samples after the pads were built is 0.0028 mg/L.

In Appendix B, the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life and the Metal Mining Effluent Regulations are compared to the 2009 data collected by Comaplex. This data is for the local area of the underground development and where most diamond drilling has occurred. The sampling locations are shown in figure 1.

The monitoring program is continuing in 2010.

**12.0 Regional Water Quality**

A summary of all regional water quality from 1997 to the end of 2009 is presented in the 2009 Aquatic Synthesis Report[4] prepared by Golder Associates. The report summarizes the general water quality for streams in the area as follows:

> *Baseline water quality parameters were less than Canadian Water Quality Guidelines (CWQG) for the protection of freshwater aquatic life (Canadian Council of Ministers of the Environment [CCME] 2007) and Guidelines for Canadian Drinking Water Quality (GCDWQ; Health 2008) with the exception of some parameters (i.e., nitrite, cadmium, chromium, lead, iron, manganese, selenium, silver, and phenol).*

The general water quality of lakes is characterized as:

> *Baseline water quality parameters were less than CWQG and GCDWQ with the exception of some parameters (i.e., dissolved oxygen, pH, cyanide, arsenic, cadmium, chromium, copper, lead, iron, manganese, zinc, and phenol).*

**13.0 Potential Risks, Related Mitigation Measures, and Monitoring**

**13.1 Human Health Risk**

Notwithstanding the long standing use of the camp and operation of its domestic water systems, vigilance is required for ensuring clean water for domestic use. Water for potable use is first passed through a charcoal filter followed by treatment using an ultraviolet disinfection system.

Monitoring

- Ongoing water quality monitoring will include sample collection at the Mel 1 and Mel 2 locations. A complete suite of analyses as shown in table 6 are carried out at both stations. Mel 2 is also identified as Lake A8 and is downstream of the primary containment area.
- When drilling on ice and passing through the water column, water samples are collected before and after drilling. The samples are analyzed for physical parameters and trace metals as set out in clause J6 of water license 2BB-MEL0914.

[4] The Aquatic Synthesis Report has been posted on the NWB ftp site.

- Gray water and related issues will be monitored with samples collected at the Mel 3, Mel 3a, Mel 4 and/or Mel 7 sites. What commonly occurs in mid-summer is that the flow through the sump and wetlands moves underground and is not evidenced on the surface. As a result, samples are not collected on occasion at Mel 3 or Mel 3a.

  Parameters for which the samples are tested include: $BOD_5$, TSS, Oil and Grease, Feacal Coliforms and pH. These tests are required by Section J 4, Water Board License No. 2BB-MEL0914.

### 13.2 Leachate Risk from the Waste Rock Pads and Ore Stockpiles

The waste rock pads and ore piles can be a source for explosive residues of ammonium nitrate, and trace metals. Runoff from natural precipitation or snow melt can dissolve and/or mobilize compounds from the waste rock and ore and carry these into the containment areas. While ammonium nitrate serves as a fertilizer in the natural environment, at elevated concentrations ammonia can be toxic to aquatic organisms, in particular fish.

For the 2011 – 2013 extension of the underground exploration program, care will be taken to minimize the quantity of ammonium nitrate lost underground. The following measures will be employed:

Mitigation Measures

- Diligent use and storage of explosives underground to keep the amount of ammonium nitrate residue to a minimum.
- Keep the potential runoff from the pads to a minimum by pushing as much accumulated snow from the pads as possible before spring snow melt. The snow will be pushed downstream of the pads so as to minimize contact with the broken rock.
- Keep water use in underground mining to a minimum.

Monitoring

- Water quality in the area of the underground exploration area and water bodies downstream will continue to be monitored with samples collected at all sites indicated on figure 1. The full suite of parameters as shown in table 6 will be analyzed at all sites.

**Table 6. Full Suite of Parameters for Water Quality Sampling**

| |
|---|
| **Physical Parameters**: pH (field and laboratory), temperature (field), alkalinity, bicarbonate, carbonate, electrical conductivity, hardness, hydroxide, ion balance, oil & grease, total dissolved solids, total suspended sediments, turbidity |
| **Nutrients:** $NH_4$, $NO_3$, $NO_2$, $PO_4$ |
| **Major Ions:** Ca, Cl, Mg, K, Na, $SO_4$ |
| **Trace Metals:** Al, Sb, As, Ba, Be, B, Cd, Cr, Cu, Fe, Pb, Li, Mn, Hg, Mo, Ni, Se, Ag, Sr, Sn, Ti, U, V, Zn |

## 13.3 Waste and Ore Storage Risk

All waste rock from the Tiriganiaq area is non-acid generating. As a result, acid rock drainage is not a problem. The ore zone, however, is classified as having an uncertain ARD potential and should be treated as potentially acid generating. The ore from the 2007 – 2008 underground exploration program is presently stored on a waste rock pad and any leachate from the ore passes over or through the pad, thereby providing a measure of safety before reaching receiving waters.

For the extension of the underground program in 2011 – 2013, the pads will be extended with the ore once again placed on waste rock pads.

Mitigation Measures

- Placement of the ore on the waste rock storage pad will allow ample exposure of all runoff to the buffering capacity of the waste rock pad as shown in figure 3. A minimum border of 5 metres will be maintained all around the stored ore piles to ensure no runoff occurs from the ore piles directly to the toe of the pad. This border will also allow space for equipment to work on the waste pads around the edges of the ore piles, if required.

Monitoring

- Water quality in the primary containment area next to the waste rock pads and ore storage is monitored monthly with samples collected at the exit near the culvert in the road.

## 13.4 Till Storage Risk

There are two areas where the till is stored adjacent to east and west of the portal as shown on figure 3. The till contains mostly local rock with a gradation down to silt. The till is alkaline and posing no acid drainage risk. In addition to the concern with the rock alone, there is the possibility of suspended sediments coming off the surface during a severe summer weather event and moving downstream into Lake A54.

Mitigation Measures

- The east till storage area has had a waste rock berm placed around its base to prevent any creep of the till past the present confines shown in Figure 3. No berm is presently around the west till storage location as it has not shown indications of any movement of fines to date.

Monitoring

- Visual inspection of the two till piles continues each summer for any movement or runoff with noticeable suspended solids.

### 13.5 Geotechnical Drilling within 31 Metres of Water

Over the summer and fall of 2010, up to 60 geotechnical drill holes are to be drilled to an average depth of approximately 10 metres[5] with many of the holes being within 31 metres of water. The drilling is expected near various water crossings for the proposed all weather road from Rankin Inlet to site, and at possible rock and granular quarries. The holes drilled within 31 metres of water are not being drilled to look for mineralized deposits but to determine the structural integrity of the subsurface along the proposed road. While no in-stream drilling is planned, some of the drilling will be immediately adjacent to water.

Mitigation Measures

- No additives such as $CaCl_2$ will be used; the water will simply be heated to assist drilling in permafrost;
- Fuel for drilling will be delivered by helicopter on an as-needed-basis and will be held within secondary containment or double walled tanks. Only the fuel needed for immediate drilling will be within 31 metres of water. Fuel storage otherwise will be located a distance of at least 31 metres from the ordinary high water mark. All fuel containers will be inspected on a daily basis;
- Fluids, cuttings and sludge will be directed to a sump or depression at least a distance of 31 m from the ordinary high water mark and the sump will be inspected daily;
- AEM will adhere to Fisheries and Oceans' Operational Statement for Mineral Exploration Activities;
- A screen will be installed on the drill's water intake to avoid the entrainment/impingement of fish when water is drawn from small ponds near the drill site.

Monitoring

- A visual inspection will be maintained during drilling for evidence of TSS in the water body. Drilling will stop if TSS is noticed in receiving waters and the flow will be contained.

### 13.6 Water Removal from Bermed Fuel Areas

Bermed fuel areas are designed to hold in excess of 110 percent of the fuel in barrels, single walled tanks and/or bladders therein. This space, however, provides an opportunity for the accumulation of snow over the winter and rain during the summer months. This water has to be removed from the bermed areas to ensure the complete capacity is available in the event of a leak in any fuel container(s).

There remains the possibility that some hydrocarbons will be associated with the water due to inadvertent spills within the bermed area. The water will first be checked for sheen before pumping it to the environment. If the water has a surface sheen and it

[5] Geotechnical holes drilled on either side of the Meliadine and Char Rivers will be up to 30 metres deep.

cannot be removed by spill pads, a sample will be collected. The water will not be released to the environment unless it meets NWB Mel-5 limits for hydrocarbons.

Mitigation Measures

- Snow will be removed from the bermed area if it is safe to do so;
- If sheen is evidenced on the surface of the water, spill pads will be placed on the water to absorb the hydrocarbons; and
- An oil-water separator will be installed at the bermed area holding the fuel bladders. All water to be discharged from the bermed area will pass through the oil-water separator.

Monitoring

- Water samples will be collected from within the berm and analyzed for hydrocarbons. If the results meet Mel-5 hydrocarbon limits, the water will be discharged to the land; and
- If the water samples do not meet the Mel-5 hydrocarbon limits, the water will be treated before release.

**APPENDIX A**

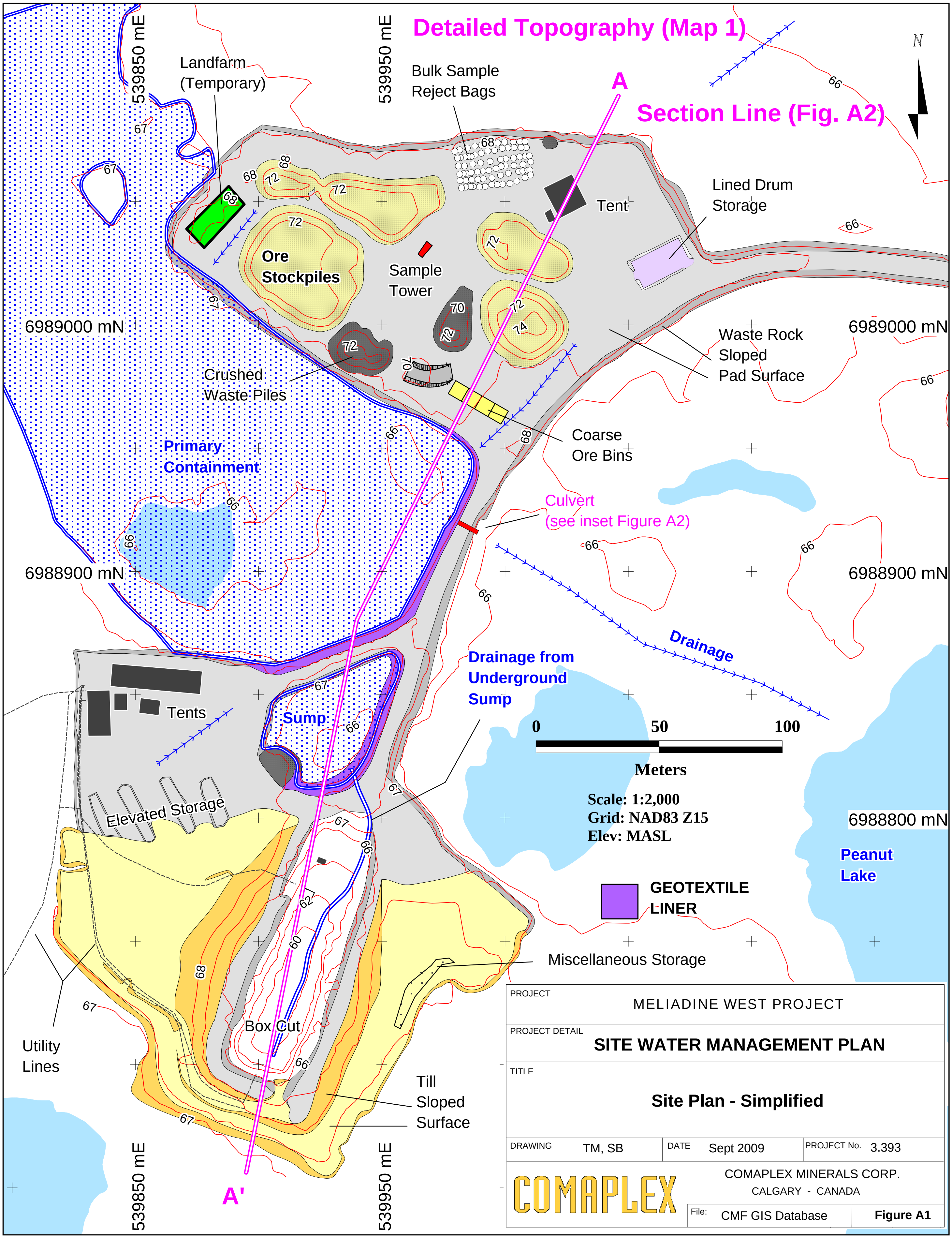
**Installation instructions for the Geo-Synthetic Liner**

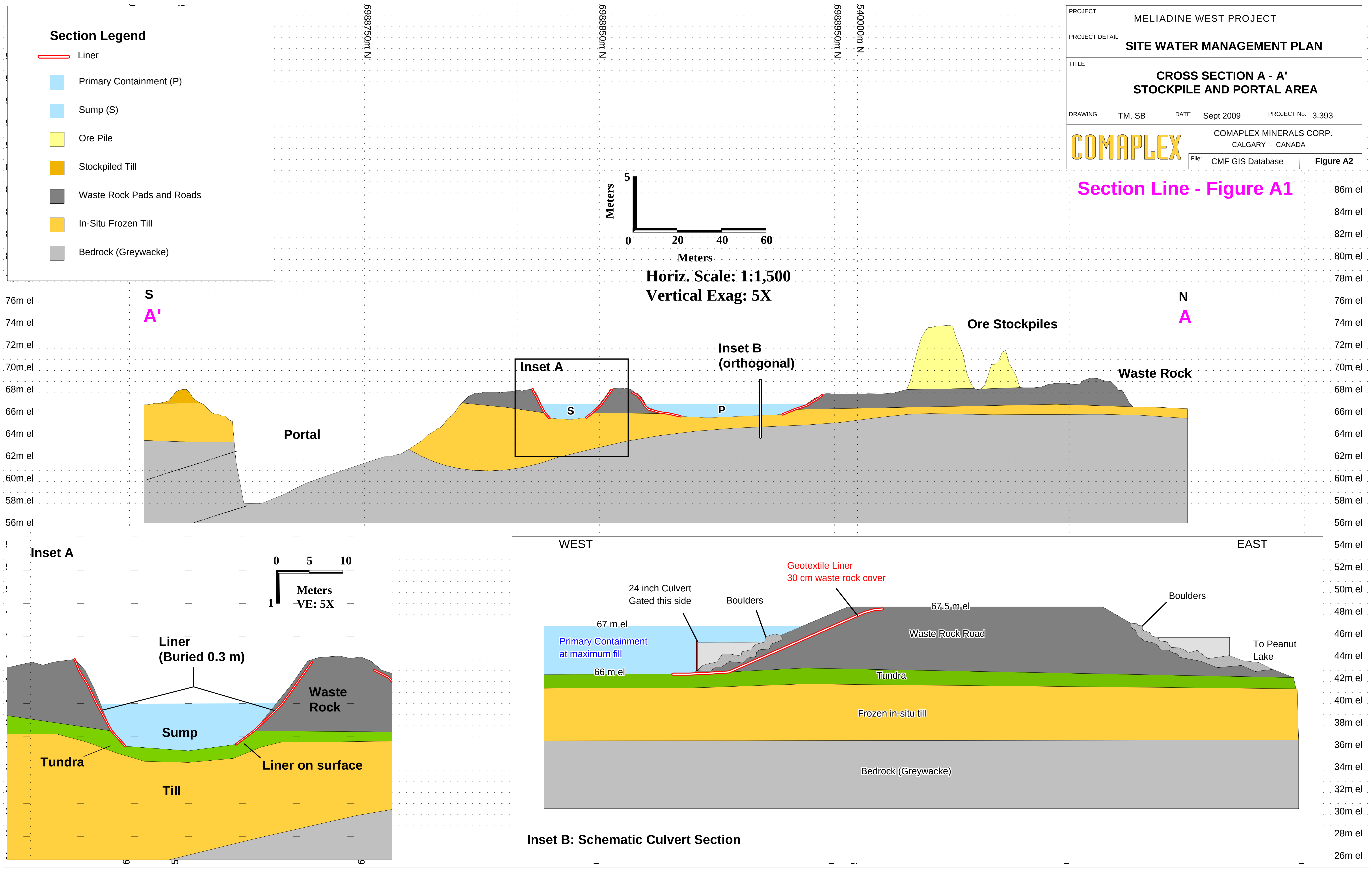
**(From September 2009 Addendum to Water Management Plan)**

**Liner Installation Details**

The geotextile liner installed along the southeast margins of the primary containment area and sump is shown on Figure A1 and Figure A2. Detailed installation plans are provided below:

- Personnel conversant in liner installation operated the equipment during the installation.
- The north facing slopes of the pad and roads were cut and sloped using the backhoe bucket in preparation for acceptance of the liner.
- The toe of the slope (tundra) was cleared of large rock.
- The top surface of the road and pad in this area was kept at 0.3m below grade prior to this period in anticipation of the liner installation.
- A backhoe smoothed and shaped the receiving slopes to ~ 45deg.
- A cut was made through the road and above the tundra at the position shown on the sketches to receive the culvert.
- A 3ft steel culvert was prepared with a four inch wide steel "I" beam frame welded onto the one end.
- The culvert and frame were lowered into position and <1" crushed rock was packed around the culvert to keep it in position.
- The tundra and road remained frozen at the time of installation (early spring 2008).
- A single length of geotextile filter material was run out in each respective area, between the positions shown on the sketches.
- The geotextile material was run out ~1m from the toe and from the crest.
- A break in the geotextile was made to allow the culvert to extend through the geotextile surface.
- Extra geotextile material was allowed in the vicinity of the culvert to allow lapping of the material into the perimeter of the culvert.
- An extra layer of geotextile was laid on top of the first layer, at, and ~4m in either direction from the culvert, to cater for any breaks in the initial layer.
- The geotextiles were intermittently anchored in position at the toe and crest of the slope with rock debris, during installation.
- Rip rap of approximately 0.3m was placed on the toe, sloped surface and crest to cover and trap the material.
- Great care was taken not to puncture the material during this process.
- <1" crushed rock was then placed, filling voids and building up a smooth surface.
- The road surface was then covered with <0.3m rock and a final layer of <1"rock to the current elevation.
- The culvert was capped off with pre-cut 4" timbers inserted into the I beam frame.
- The culvert was then further capped using several layers of <1" crushed rock and geotextile which was again lapped out onto the sloped portion of the road.


Detailed Topography (Map 1)
Section Line (Fig. A2)
A
A'
N
539850 mE
539950 mE
6989000 mN
6988900 mN
6988800 mN
Landfarm (Temporary)
Bulk Sample Reject Bags
Tent
Lined Drum Storage
Ore Stockpiles
Sample Tower
Waste Rock Sloped Pad Surface
Crushed Waste Piles
Coarse Ore Bins
Primary Containment
Culvert (see inset Figure A2)
Drainage
Drainage from Underground Sump
Tents
Sump
Elevated Storage
Box Cut
Utility Lines
Till Sloped Surface
Miscellaneous Storage
Peanut Lake
GEOTEXTILE LINER
0
50
100
Meters
Scale: 1:2,000
Grid: NAD83 Z15
Elev: MASL
PROJECT
MELIADINE WEST PROJECT
PROJECT DETAIL
SITE WATER MANAGEMENT PLAN
TITLE
Site Plan - Simplified
DRAWING TM, SB
DATE Sept 2009
PROJECT No. 3.393
COMAPLEX
COMAPLEX MINERALS CORP.
CALGARY - CANADA
File: CMF GIS Database
Figure A1



PROJECT
MELIADINE WEST PROJECT
PROJECT DETAIL
SITE WATER MANAGEMENT PLAN
TITLE
CROSS SECTION A - A'
STOCKPILE AND PORTAL AREA
DRAWING TM, SB
DATE Sept 2009
PROJECT No. 3.393
COMAPLEX
COMAPLEX MINERALS CORP.
CALGARY - CANADA
File: CMF GIS Database
Figure A2
Section Line - Figure A1
Section Legend
Liner
Primary Containment (P)
Sump (S)
Ore Pile
Stockpiled Till
Waste Rock Pads and Roads
In-Situ Frozen Till
Bedrock (Greywacke)
6988750m N
6988850m N
6988950m N
540000m N
Meters
Horiz. Scale: 1:1,500
Vertical Exag: 5X
S
A'
N
A
Portal
Inset A
S
Inset B
(orthogonal)
P
Ore Stockpiles
Waste Rock
86m el
84m el
82m el
80m el
78m el
76m el
74m el
72m el
70m el
68m el
66m el
64m el
62m el
60m el
58m el
56m el
54m el
52m el
50m el
48m el
46m el
44m el
42m el
40m el
38m el
36m el
34m el
32m el
30m el
28m el
26m el
Inset A
Meters
VE: 5X
Liner
(Buried 0.3 m)
Sump
Waste
Rock
Tundra
Liner on surface
Till
WEST
EAST
Geotextile Liner
30 cm waste rock cover
24 inch Culvert
Gated this side
Boulders
67.5 m el
Boulders
67 m el
Primary Containment
at maximum fill
66 m el
Waste Rock Road
To Peanut
Lake
Tundra
Frozen in-situ till
Bedrock (Greywacke)
Inset B: Schematic Culvert Section

# APPENDIX B

# 2009 WATER QUALITY DATA

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | | | 0.1 | 0.019 | |
| MMER | | | | | | | | | | | | |
| Sample Location | Sample_Date | Sample_Time | Label | Lab. Report | UTM E | UTM N | pH Field | Temp Field | Alkalinity, Total (as CaCO3) (mg/L) | Aluminum (Al)-Total (mg/L) | Ammonia-N (mg/L) | Antimony (Sb)-Total (mg/L) |
| A13 | 28-Jun-09 | 11:20 | A13 | L785375 | 539828 | 6988676 | 7.28 | 13.8 | 37.3 | <0.040 | <0.050 | <0.0016 |
| A15 | 28-Jun-09 | 11:13 | A15 | L785376 | 539732 | 6988798 | 6.95 | 13.4 | 27.5 | <0.040 | <0.050 | <0.0016 |
| A38 | 28-Jun-09 | 12:23 | A38 | L785377 | 540500 | 6988254 | 7.53 | 13.1 | 58.5 | <0.010 | 1.01 | <0.00040 |
| A54 | 28-Jun-09 | 11:45 | A54 | L785378 | 540135 | 6988794 | 7.52 | 12.8 | 60.4 | <0.040 | 4.56 | <0.0016 |
| A8-7 | 28-Jun-09 | 09:15 | A8-7 | L785379 | 540748 | 6986690 | 6.64 | 6.0 | 21.9 | <0.010 | <0.050 | <0.00040 |
| A9 | 28-Jun-09 | 12:15 | A10 | L785380 | 540194 | 6988142 | 7.59 | 13.3 | 44.3 | <0.040 | <0.050 | <0.0016 |
| CONTROL | 28-Jun-09 | 09:35 | CONTROL | L785381 | 535001 | 6986333 | 6.22 | 5.5 | 28.6 | <0.010 | <0.050 | <0.00040 |
| CONTROL 2 | 28-Jun-09 | 10:00 | CONTROL 2 | L785382 | 535001 | 6986333 | 6.47 | 10.5 | 20.1 | <0.010 | <0.050 | <0.00040 |
| MEL1 | 28-Jun-09 | 13:40 | MEL1 | L785383 | 541934 | 6989173 | 6.16 | 6.8 | 12.4 | <0.010 | <0.050 | <0.00040 |
| MEL2 | 28-Jun-09 | 10:00 | MEL2 | L785384 | 540681 | 6986702 | 6.38 | 5.8 | 30.0 | <0.010 | <0.050 | <0.00040 |
| MEL3 | 28-Jun-09 | 14:35 | MEL3 | L785385 | 542083 | 6989004 | 6.83 | 16.4 | 77.5 | 0.015 | 0.179 | 0.00073 |
| MEL4 | 28-Jun-09 | 14:15 | MEL4 | L785386 | 542092 | 6989012 | 6.21 | 6.4 | 12.1 | <0.010 | <0.050 | <0.00040 |
| ML-River | 28-Jun-09 | 09:30 | ML-River | L785387 | 544778 | 6971712 | 6.17 | 12.9 | 20.2 | <0.010 | <0.050 | <0.00040 |
| TAP Water | 28-Jun-09 | 14:50 | TAP Water | L785388 | | | 6.45 | 10.3 | 16.7 | | | |

| | | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCME | 0.005 | | | | | | 0.017 | | | | | 0.001 | |
| | MMER | 0.5 | | | | | | | | | | | | |
| | Sample Location | Arsenic (As)-Total (mg/L) | Barium (Ba)-Total (mg/L) | Beryllium (Be)-Total (mg/L) | Bicarbonate (HCO3) (mg/L) | Biochemical Oxygen Demand (mg/L) | Boron (B)-Total (mg/L) | Cadmium (Cd)-Total (mg/L) | Calcium (Ca)-Dissolved (mg/L) | Calcium (Ca)-Total (mg/L) | Carbonate (CO3) (mg/L) | Chloride (Cl) (mg/L) | Chromium (Cr)-Total (mg/L) | Cobalt (Co)-Total (mg/L) |
| | A13 | 0.0031 | 0.114 | <0.0040 | 45.6 | | <0.050 | <0.00020 | 123 | 112 | <5.0 | 256 | <0.0050 | <0.0020 |
| | A15 | 0.0033 | 0.230 | <0.0040 | 33.5 | | <0.050 | <0.00020 | 247.7 | 232 | <5.0 | 551 | <0.0050 | <0.0020 |
| | A38 | 0.00261 | 0.0634 | <0.0010 | 71.3 | | <0.050 | <0.000050 | 73.9 | 78.7 | <5.0 | 156 | <0.0050 | <0.0020 |
| | A54 | 0.0033 | 0.0683 | <0.0040 | 73.7 | | <0.050 | <0.00020 | 95.2 | 94.4 | <5.0 | 193 | <0.0050 | <0.0020 |
| | A8-7 | 0.00107 | 0.0124 | <0.0010 | 26.7 | | <0.050 | <0.000050 | 11.9 | 10.8 | <5.0 | 14.5 | <0.0050 | <0.0020 |
| | A9 | 0.0034 | 0.0878 | <0.0040 | 54.1 | | <0.050 | <0.00020 | 84.5 | 82.4 | <5.0 | 170 | <0.0050 | <0.0020 |
| | CONTROL | 0.00048 | 0.0106 | <0.0010 | 34.9 | | <0.050 | <0.000050 | 9.60 | 9.00 | <5.0 | 8.27 | <0.0050 | <0.0020 |
| | CONTROL 2 | <0.00040 | 0.0090 | <0.0010 | 24.5 | | <0.050 | <0.000050 | 7.17 | 7.14 | <5.0 | 8.38 | <0.0050 | <0.0020 |
| | MEL1 | <0.00040 | 0.0059 | <0.0010 | 15.2 | <2.0 | <0.050 | <0.000050 | 5.36 | 4.72 | <5.0 | 5.92 | <0.0050 | <0.0020 |
| | MEL2 | 0.00092 | 0.0185 | <0.0010 | 36.6 | <2.0 | <0.050 | <0.000050 | 17.3 | 17.0 | <5.0 | 23.4 | <0.0050 | <0.0020 |
| | MEL3 | 0.00567 | 0.0299 | <0.0010 | 94.6 | 7.5 | <0.050 | 0.000075 | 41.0 | 37.7 | <5.0 | 57.7 | <0.0050 | <0.0020 |
| | MEL4 | <0.00040 | 0.0056 | <0.0010 | 14.7 | <2.0 | <0.050 | <0.000050 | 5.43 | 4.61 | <5.0 | 6.04 | <0.0050 | <0.0020 |
| | ML-River | <0.00040 | 0.0091 | <0.0010 | 24.7 | | <0.050 | <0.000050 | 7.10 | 6.40 | <5.0 | 8.20 | <0.0050 | <0.0020 |
| | TAP Water | | | | 20.4 | | | | 6.97 | | <5.0 | 8.16 | | |

| | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | 0.002-0.004 | | | | 0.3 | 0.001-0.007 | | | | | | 0 |
| MMER | | 0.3 | | | | | 0.2 | | | | | | |
| Sample Location | Conductivity (EC) (uS/cm) | Copper (Cu)- Total (mg/L) | Hardness (as CaCO3) (mg/L) | Hydroxide (OH) (mg/L) | Ion Balance (%) | Iron (Fe)- Total (mg/L) | Lead (Pb)- Total (mg/L) | Lithium (Li)- Total (mg/L) | Magnesium (Mg)- Dissolved (mg/L) | Magnesium (Mg)-Total (mg/L) | Manganese (Mn)-Total (mg/L) | Mercury (Hg)- Total (mg/L) | MF - Fecal Coliforms (CFU/100mL) |
| A13 | 966 | <0.0040 | 359 | <5.0 | 100 | 0.390 | <0.00040 | 0.054 | 12.7 | 12.1 | 0.0132 | <0.00010 | |
| A15 | 1920 | <0.0040 | 712 | <5.0 | 98.9 | 0.554 | <0.00040 | 0.168 | 22.7 | 19.0 | 0.0309 | <0.00010 | |
| A38 | 734 | 0.0015 | 227 | <5.0 | 90.0 | 0.061 | 0.00039 | 0.017 | 10.2 | 11.3 | 0.0021 | <0.00010 | |
| A54 | 915 | <0.0040 | 290 | <5.0 | 96.8 | 0.081 | <0.00040 | <0.024 | 12.7 | 13.0 | 0.0051 | <0.00010 | |
| A8-7 | 93.7 | <0.0010 | 36.2 | <5.0 | Low EC | 0.075 | <0.00010 | <0.010 | 1.58 | 1.41 | 0.0151 | <0.00010 | |
| A9 | 690 | <0.0040 | 250 | <5.0 | 95.4 | 0.182 | <0.00040 | 0.032 | 9.39 | 9.48 | 0.0150 | <0.00010 | |
| CONTROL | 84.2 | <0.0010 | 28.2 | <5.0 | Low EC | 0.101 | <0.00010 | <0.010 | 1.02 | 0.97 | 0.0161 | <0.00010 | |
| CONTROL 2 | 72.9 | <0.0010 | 22.4 | <5.0 | Low EC | 0.034 | <0.00010 | <0.010 | 1.09 | 1.05 | <0.0020 | <0.00010 | |
| MEL1 | 52.3 | 0.0052 | 16.9 | <5.0 | Low EC | 0.025 | <0.00010 | <0.010 | 0.86 | 0.74 | 0.0051 | <0.00010 | <1 |
| MEL2 | 141 | <0.0010 | 52.3 | <5.0 | 91.3 | 0.056 | <0.00010 | <0.010 | 2.22 | 2.21 | 0.0182 | <0.00010 | |
| MEL3 | 416 | 0.0027 | 117 | <5.0 | 107 | 0.116 | 0.00359 | <0.010 | 3.64 | 3.94 | 0.0612 | <0.00010 | 4 |
| MEL4 | 52.0 | <0.0010 | 16.6 | <5.0 | Low EC | 0.015 | <0.00010 | <0.010 | 0.75 | 0.76 | 0.0044 | <0.00010 | <1 |
| ML-River | 73.5 | <0.0010 | 22.0 | <5.0 | Low EC | 0.025 | <0.00010 | <0.010 | 1.04 | 0.94 | 0.0022 | <0.00010 | |
| TAP Water | 70.0 | | 22.2 | <5.0 | Low EC | | | | 1.16 | | | | <1 |

| | | AN | AO | AP | AQ | AR | AS | AT | AU | AV | AW | AX | AY | AZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCME | 0.073 | 0.025-0.015 | 2.9 | | 0.06 | | | 6.5 - 9.0 | 0.03 | | | | |
| | MMER | | 0.5 | | | | | | 6.0 - 9.5 | | | | | |
| | Sample Location | Molybdenum (Mo)-Total (mg/L) | Nickel (Ni)-Total (mg/L) | Nitrate (as N) (mg/L) | Nitrate and Nitrite as N (mg/L) | Nitrite (as N) (mg/L) | Oil and Grease (mg/L) | Orthophosphate (PO4-P) (mg/L) | pH (pH) | Phosphorus, Total Diss_ (mg/L) | Potassium (K)-Dissolved (mg/L) | Potassium (K)-Total (mg/L) | Selenium (Se)-Total (mg/L) | Silver (Ag)-Total (mg/L) |
| | A13 | <0.0050 | 0.0040 | <0.050 | <0.071 | <0.050 | | | 7.80 | <0.020 | 5.50 | 5.88 | <0.0080 | <0.00040 |
| | A15 | <0.0050 | 0.0063 | <0.050 | <0.071 | <0.050 | | | 7.34 | <0.020 | 13.0 | 11.5 | <0.0080 | <0.00040 |
| | A38 | <0.0050 | 0.0030 | 2.46 | 2.46 | <0.050 | | | 7.85 | <0.020 | 5.93 | 6.63 | <0.0020 | <0.00010 |
| | A54 | <0.0050 | 0.0037 | 6.73 | 6.80 | 0.069 | <1.0 | | 7.84 | <0.020 | 8.67 | 9.23 | <0.0080 | <0.00040 |
| | A8-7 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | | | 7.19 | <0.020 | 0.71 | 0.64 | <0.00040 | <0.00010 |
| | A9 | <0.0050 | 0.0035 | <0.050 | <0.071 | <0.050 | | | 7.64 | <0.020 | 3.73 | 4.10 | <0.0080 | <0.00040 |
| | CONTROL | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | | | 7.18 | <0.020 | 1.19 | 0.89 | <0.00040 | <0.00010 |
| | CONTROL 2 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | | | 7.14 | <0.020 | 1.01 | 0.91 | <0.00040 | <0.00010 |
| | MEL1 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | <1.0 | <0.010 | 6.97 | <0.020 | 0.69 | 0.52 | <0.00040 | <0.00010 |
| | MEL2 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | <1.0 | <0.010 | 7.30 | <0.020 | 1.00 | 0.96 | <0.00040 | <0.00010 |
| | MEL3 | <0.0050 | 0.0069 | <0.050 | <0.071 | <0.050 | 1.1 | 0.470 | 7.75 | 0.561 | 5.62 | 5.85 | <0.0020 | <0.00010 |
| | MEL4 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | 1.1 | <0.010 | 7.35 | <0.020 | 0.64 | 0.58 | <0.00040 | <0.00010 |
| | ML-River | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | | | 7.17 | <0.020 | 1.00 | 0.86 | <0.00040 | <0.00010 |
| | TAP Water | | | <0.050 | <0.071 | <0.050 | | | 7.42 | | 0.92 | | | |

| | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | | | | 29 | | |
| MMER | | | | | | | | | | | 15 | | |
| Sample Location | Sodium (Na)-Dissolved (mg/L) | Sodium (Na)-Total (mg/L) | Strontium (Sr)-Total (mg/L) | Sulfate (SO4) (mg/L) | TDS (Calculated) (mg/L) | Thallium (Tl)-Total (mg/L) | Tin (Sn)-Total (mg/L) | Titanium (Ti)-Total (mg/L) | Total Carbon (mg/L) | Total Inorganic Carbon (mg/L) | Total Suspended Solids (mg/L) | Turbidity (NTU) | Uranium (U)-Total (mg/L) |
| A13 | 22.1 | 21.8 | 0.965 | 14.3 | 456 | <0.00040 | <0.050 | <0.0024 | | | <3.0 | 1.12 | <0.00040 |
| A15 | 41.5 | 48.6 | 2.40 | 21.6 | 914 | <0.00040 | <0.050 | <0.0024 | | | <3.0 | 2.76 | <0.00040 |
| A38 | 24.1 | 28.0 | 0.720 | 33.7 | 350 | <0.00010 | <0.050 | <0.0010 | | | 3.0 | 0.46 | 0.00031 |
| A54 | 33.3 | 36.2 | 0.794 | 43.7 | 453 | <0.00040 | <0.050 | <0.0024 | | | <3.0 | 1.38 | 0.00068 |
| A8-7 | 2.1 | 2.0 | 0.0701 | 2.14 | 46.1 | <0.00010 | <0.050 | <0.0010 | | | <3.0 | 0.49 | <0.00010 |
| A9 | 12.1 | 12.8 | 0.653 | 9.55 | 316 | <0.00040 | <0.050 | <0.0024 | | | 3.0 | 0.73 | <0.00040 |
| CONTROL | 4.5 | 4.3 | 0.0310 | 2.09 | 43.8 | <0.00010 | <0.050 | <0.0010 | | | <3.0 | 0.58 | <0.00010 |
| CONTROL 2 | 4.3 | 4.0 | 0.0329 | 3.04 | 37.1 | <0.00010 | <0.050 | <0.0010 | | | <3.0 | 0.34 | <0.00010 |
| MEL1 | 2.8 | 2.2 | 0.0267 | 2.54 | 25.6 | <0.00010 | <0.050 | <0.0010 | 6.7 | 3.0 | <3.0 | 0.26 | <0.00010 |
| MEL2 | 3.0 | 2.7 | 0.110 | 2.73 | 67.7 | <0.00010 | <0.050 | <0.0010 | 10.4 | 6.9 | <3.0 | 0.36 | <0.00010 |
| MEL3 | 34.5 | 35.1 | 0.248 | 27.4 | 216 | 0.00013 | <0.050 | 0.0020 | 40.0 | 20.0 | 4.0 | 3.18 | <0.00010 |
| MEL4 | 3.7 | 2.9 | 0.0227 | 2.42 | 26.2 | <0.00010 | <0.050 | <0.0010 | 5.9 | 3.0 | <3.0 | 0.34 | <0.00010 |
| ML-River | 4.2 | 3.6 | 0.0329 | 3.06 | 36.7 | <0.00010 | <0.050 | <0.0010 | | | <3.0 | 0.35 | <0.00010 |
| TAP Water | 4.4 | | | 2.87 | 34.5 | | | | | | <3.0 | 0.34 | |

| | | BN | BO |
|---|---|---|---|
| | CCME | | 0.03 |
| | MMER | | 0.5 |
| | Sample Location | Vanadium (V)-Total (mg/L) | Zinc (Zn)-Total (mg/L) |
| | A13 | <0.0020 | <0.016 |
| | A15 | <0.0020 | <0.016 |
| | A38 | <0.0010 | 0.0040 |
| | A54 | <0.0020 | 0.030 |
| | A8-7 | <0.0010 | 0.0261 |
| | A9 | <0.0020 | 0.031 |
| | CONTROL | <0.0010 | <0.0040 |
| | CONTROL 2 | <0.0010 | <0.0040 |
| | MEL1 | <0.0010 | <0.0040 |
| | MEL2 | <0.0010 | 0.0261 |
| | MEL3 | <0.0010 | 0.0220 |
| | MEL4 | <0.0010 | <0.0040 |
| | ML-River | <0.0010 | <0.0040 |
| | TAP Water | | |

| Sample Location | Sample_Date | Sample_Time | Label | Lab. Report | UTM E | UTM N | Alkalinity, Total (as CaCO3) (mg/L) | Aluminum (Al)-Total (mg/L) | Ammonia-N (mg/L) | Antimony (Sb)-Total (mg/L) | Arsenic (As)-Total (mg/L) | Barium (Ba)-Total (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | 0.1 | 0.019 | | 0.005 | |
| MMER | | | | | | | | | | | 0.5 | |
| A13 | 06-Aug-09 | 00:00 | A13 | L801984 | 539828 | 6988676 | 23.0 | <0.20 | <0.050 | <0.0080 | <0.0080 | 0.410 |
| A15 | 06-Aug-09 | 10:10 | A15 | L801984 | 539732 | 6988798 | 39.7 | <0.20 | <0.050 | <0.0080 | <0.0080 | 0.340 |
| A38 | 06-Aug-09 | 10:20 | A38 | L801984 | 540500 | 6988254 | 40.5 | <0.040 | <0.050 | <0.0016 | 0.0040 | 0.0941 |
| A54 | 06-Aug-09 | 10:30 | A54 | L801984 | 540135 | 6988794 | 40.1 | <0.040 | 0.387 | <0.0016 | 0.0034 | 0.0947 |
| A9 | 06-Aug-09 | 10:40 | A9 | L801984 | 540194 | 6988142 | 57.2 | <0.040 | <0.050 | <0.0016 | 0.0050 | 0.113 |
| MEL4 | 06-Aug-09 | 00:00 | MEL4 | L801984 | 542092 | 6989012 | | | | | | |
| P1 | 06-Aug-09 | 00:00 | P1 | L801984 | 539901 | 6988966 | 107 | <0.040 | 11.6 | <0.0016 | 0.0139 | 0.135 |
| P2 | 06-Aug-09 | 00:00 | Sump | L801984 | 539952 | 6988927 | 100 | <0.20 | 5.59 | <0.0080 | 0.0132 | 0.137 |
| A8 | 06-Aug-09 | 10:50 | Pump Lake | L801984 | 535000 | 6987700 | 34.7 | <0.010 | <0.050 | <0.00040 | 0.00216 | 0.0195 |

| | N | O | P | Q | R | S | T | U | V | W | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | 0.017 | | | | | 0.001 | | |
| MMER | | | | | | | | | | | | |
| Sample Location | Beryllium (Be)-Total (mg/L) | Bicarbonate (HCO3) (mg/L) | Biochemical Oxygen Demand (mg/L) | Boron (B)-Total (mg/L) | Cadmium (Cd)-Total (mg/L) | Calcium (Ca)-Dissolved (mg/L) | Calcium (Ca)-Total (mg/L) | Carbonate (CO3) (mg/L) | Chloride (Cl) (mg/L) | Chromium (Cr)-Total (mg/L) | Cobalt (Co)-Total (mg/L) | Conductivity (EC) (uS/cm) |
| A13 | <0.020 | 28.0 | | <0.080 | <0.0010 | 398 | 339 | <5.0 | 839 | <0.016 | <0.0040 | 2800 |
| A15 | <0.020 | 48.4 | | <0.080 | <0.0010 | 350 | 337 | <5.0 | 764 | <0.016 | <0.0040 | 2630 |
| A38 | <0.0040 | 49.4 | | <0.050 | <0.00020 | 111 | 120 | <5.0 | 270 | <0.0050 | <0.0020 | 1100 |
| A54 | <0.0040 | 49.0 | | <0.050 | <0.00020 | 125 | 128 | <5.0 | 284 | <0.0050 | <0.0020 | 1210 |
| A9 | <0.0040 | 69.8 | | <0.050 | <0.00020 | 114 | 92.2 | <5.0 | 214 | <0.0050 | <0.0020 | 871 |
| MEL4 | | | <2.0 | | | | | | | | | |
| P1 | <0.0040 | 131 | | <0.050 | <0.00020 | 197 | 144 | <5.0 | 361 | <0.0050 | <0.0020 | 1650 |
| P2 | <0.020 | 122 | | 0.225 | <0.0010 | 303 | 266 | <5.0 | 997 | <0.016 | 0.0044 | 4520 |
| A8 | <0.0010 | 42.3 | | <0.050 | <0.000050 | 20.8 | 21.1 | <5.0 | 24.2 | <0.0050 | <0.0020 | 161 |

| | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | 0.002-0.004 | | | | 0.3 | 0.001-0.007 | | | | | | 0 |
| MMER | 0.3 | | | | | 0.2 | | | | | | |
| Sample Location | Copper (Cu)-Total (mg/L) | Hardness (as CaCO3) (mg/L) | Hydroxide (OH) (mg/L) | Ion Balance (%) | Iron (Fe)-Total (mg/L) | Lead (Pb)-Total (mg/L) | Lithium (Li)-Total (mg/L) | Magnesium (Mg)-Dissolved (mg/L) | Magnesium (Mg)-Total (mg/L) | Manganese (Mn)-Total (mg/L) | Mercury (Hg)-Total (mg/L) | MF - Fecal Coliforms (CFU/100mL) |
| A13 | <0.020 | 1130 | <5.0 | 101 | 0.932 | <0.0020 | 0.26 | 32.4 | 27.3 | 0.0404 | <0.00010 | |
| A15 | <0.020 | 1040 | <5.0 | 101 | 0.329 | <0.0020 | 0.14 | 40.6 | 38.9 | 0.0075 | <0.00010 | |
| A38 | <0.0040 | 355 | <5.0 | 97.7 | 0.095 | <0.00040 | 0.034 | 18.9 | 20.5 | 0.0036 | <0.00010 | |
| A54 | <0.0040 | 396 | <5.0 | 97.5 | 0.020 | <0.00040 | 0.035 | 20.3 | 20.8 | <0.0020 | <0.00010 | |
| A9 | <0.0040 | 341 | <5.0 | 104 | 0.134 | <0.00040 | 0.049 | 13.8 | 11.1 | 0.0057 | <0.00010 | |
| MEL4 | | | | | | | | | | | | 1 |
| P1 | 0.0081 | 589 | <5.0 | 109 | 0.093 | 0.00064 | 0.025 | 23.5 | 17.3 | 0.0471 | <0.00010 | |
| P2 | <0.020 | 1300 | <5.0 | 107 | 0.069 | <0.0020 | <0.12 | 133 | 115 | 0.134 | <0.00010 | |
| A8 | <0.0010 | 63.3 | <5.0 | 102 | 0.051 | <0.00010 | <0.010 | 2.76 | 2.83 | 0.0080 | <0.00010 | |

| | AL | AM | AN | AO | AP | AQ | AR | AS | AT | AU | AV | AW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | 0.073 | 0.025-0.015 | 2.9 | | 0.06 | | 6.5 - 9.0 | | | | | |
| MMER | | 0.5 | | | | | 6.0 - 9.5 | | | | | |
| Sample Location | Molybdenum (Mo)-Total (mg/L) | Nickel (Ni)- Total (mg/L) | Nitrate (as N) (mg/L) | Nitrate and Nitrite as N (mg/L) | Nitrite (as N) (mg/L) | Oil and Grease (mg/L) | pH (pH) | Potassium (K)-Dissolved (mg/L) | Potassium (K)-Total (mg/L) | Selenium (Se)-Total (mg/L) | Silver (Ag)- Total (mg/L) | Sodium (Na)- Dissolved (mg/L) |
| A13 | <0.0050 | 0.0084 | <0.050 | <0.071 | <0.050 | | 7.56 | 13.9 | 11.9 | 0.0266 | <0.0020 | 39.5 |
| A15 | <0.0050 | 0.0079 | <0.050 | <0.071 | <0.050 | | 7.77 | 9.64 | 9.27 | 0.0281 | <0.0020 | 39.9 |
| A38 | <0.0050 | 0.0031 | 0.396 | 0.396 | <0.050 | | 7.88 | 9.44 | 10.3 | 0.0033 | <0.00040 | 43.5 |
| A54 | <0.0050 | 0.0032 | 5.74 | 5.86 | 0.122 | | 7.87 | 10.4 | 10.8 | 0.0045 | <0.00040 | 48.0 |
| A9 | <0.0050 | 0.0037 | <0.050 | <0.071 | <0.050 | | 7.98 | 4.49 | 3.58 | 0.0047 | <0.00040 | 16.9 |
| MEL4 | | | | | | <1.0 | | | | | | |
| P1 | <0.0050 | 0.0072 | 9.58 | 9.72 | 0.131 | | 7.98 | 16.1 | 12.0 | 0.0048 | 0.00062 | 58.4 |
| P2 | <0.0050 | 0.0474 | 21.0 | 21.2 | 0.148 | | 8.05 | 37.7 | 33.6 | 0.0303 | <0.0020 | 457 |
| A8 | <0.0050 | <0.0020 | <0.050 | <0.071 | <0.050 | | 7.90 | 1.15 | 1.09 | 0.00047 | 0.00012 | 3.8 |

| | AX | AY | AZ | BA | BB | BC | BD | BE | BF | BG | BH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | 29 | | | 0.03 |
| MMER | | | | | | | | 15 | | | 0.5 |
| Sample Location | Sodium (Na)- Total (mg/L) | Sulfate (SO4) (mg/L) | TDS (Calculated) (mg/L) | Thallium (Tl)- Total (mg/L) | Tin (Sn)- Total (mg/L) | Titanium (Ti)- Total (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Total Suspended Solids (mg/L) | Uranium (U)- Total (mg/L) | Vanadium (V)-Total (mg/L) | Zinc (Zn)- Total (mg/L) |
| A13 | 33.7 | 8.83 | 1350 | <0.0020 | <0.050 | <0.012 | 0.78 | | <0.0020 | 0.011 | <0.080 |
| A15 | 37.0 | 13.7 | 1240 | <0.0020 | <0.050 | <0.012 | 0.75 | | <0.0020 | 0.011 | <0.080 |
| A38 | 49.3 | 47.8 | 527 | <0.00040 | <0.050 | <0.0024 | 1.23 | | <0.00040 | 0.0022 | <0.016 |
| A54 | 50.1 | 63.2 | 601 | <0.00040 | <0.050 | <0.0024 | 1.65 | | <0.00040 | 0.0023 | <0.016 |
| A9 | 13.3 | 10.4 | 408 | <0.00040 | <0.050 | <0.0024 | 1.01 | | <0.00040 | 0.0024 | <0.016 |
| MEL4 | | | | | | | | <3.0 | | | |
| P1 | 43.7 | 62.5 | 826 | <0.00040 | <0.050 | <0.0024 | 13.4 | | 0.00118 | 0.0037 | 0.018 |
| P2 | 406 | 600 | 2680 | <0.0020 | <0.050 | <0.012 | 7.00 | | 0.0117 | 0.010 | <0.080 |
| A8 | 3.8 | 2.76 | 76.3 | 0.00016 | <0.050 | <0.0010 | 0.37 | | <0.00010 | <0.0010 | <0.0040 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | | 0.1 | 0.019 | | |
| MMER | | | | | | | | | | | | |
| SampleID | Sample Date | SampleTime | Label | Lab. Report | UTM E | UTM N | Alkalinity, Total (as CaCO3) (mg/L) | Aluminum (Al)-Dissolved (mg/L) | Aluminum (Al)-Total (mg/L) | Ammonia-N (mg/L) | Antimony (Sb)-Dissolved (mg/L) | Antimony (Sb)-Total (mg/L) |
| A13 | 03-Sep-09 | 14:45 | A13 | L817421 | 539828 | 6988676 | 46.9 | <0.040 | <0.040 | <0.050 | <0.0016 | <0.0016 |
| A15 | 03-Sep-09 | 14:30 | A15 | L817421 | 539732 | 6988798 | 45.9 | <0.040 | 0.044 | <0.050 | <0.0016 | <0.0016 |
| A38 | 03-Sep-09 | 11:00 | A38 | L817421 | 540500 | 6988254 | 59.8 | <0.040 | 0.059 | <0.050 | <0.0016 | <0.0016 |
| A54 | 03-Sep-09 | 13:30 | A54 | L817421 | 540135 | 6988794 | 46.9 | <0.040 | <0.040 | 0.544 | <0.0016 | <0.0016 |
| A8-7 | 03-Sep-09 | 10:30 | A8-7 | L817421 | 540748 | 6986690 | 36.3 | <0.010 | <0.010 | <0.050 | <0.00040 | <0.00040 |
| A9 | 03-Sep-09 | 12:45 | A9 | L817421 | 540194 | 6988142 | 58.8 | <0.040 | <0.040 | <0.050 | <0.0016 | <0.0016 |
| CONTROL | | | CONTROL | L817421 | 535001 | 6986333 | 25.7 | <0.010 | <0.010 | <0.050 | <0.00040 | <0.00040 |
| MEL1 | 03-Sep-09 | 09:30 | MEL1 | L817421 | 541934 | 6989173 | 14.6 | <0.010 | <0.010 | <0.050 | <0.00040 | <0.00040 |
| MEL1 DUPL | 03-Sep-09 | 09:30 | MEL1 DUPL | L817421 | 541934 | 6989173 | 15.4 | <0.010 | <0.010 | <0.050 | <0.00040 | <0.00040 |
| MEL2 | 03-Sep-09 | 10:00 | MEL2 | L817421 | 540681 | 6986702 | 37.7 | <0.010 | 0.011 | <0.050 | <0.00040 | <0.00040 |
| MEL3 | 04-Sep-09 | 07:00 | MEL3 | L817421 | 542083 | 6989004 | | | | | | |
| MEL4 | 04-Sep-10 | 07:10 | MEL4 | L817421 | 542092 | 6989012 | | | | | | |
| ML-River | 04-Sep-09 | 09:30 | ML-River | L817421 | 544778 | 6971712 | 22.0 | <0.010 | 0.019 | <0.050 | <0.00040 | <0.00040 |
| P1 | 03-Sep-09 | 14:00 | P1 | L817421 | 539901 | 6988966 | 119 | <0.040 | <0.040 | 7.10 | <0.0016 | <0.0016 |

| | | N | O | P | Q | R | S | T | U | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | 0.005 | | | | | | | | | |
| MMER | | | 0.5 | | | | | | | | | |
| SampleID | Sample Date | Arsenic (As)-Dissolved (mg/L) | Arsenic (As)-Total (mg/L) | Barium (Ba)-Dissolved (mg/L) | Barium (Ba)-Total (mg/L) | Beryllium (Be)-Dissolved (mg/L) | Beryllium (Be)-Total (mg/L) | Bicarbonate (HCO3) (mg/L) | Biochemical Oxygen Demand (mg/L) | Boron (B)-Dissolved (mg/L) | Boron (B)-Total (mg/L) | Cadmium (Cd)-Dissolved (mg/L) |
| A13 | 03-Sep-09 | 0.0032 | 0.0034 | 0.157 | 0.156 | <0.0040 | <0.0040 | 57.3 | | <0.20 | <0.050 | <0.0040 |
| A15 | 03-Sep-09 | 0.0043 | 0.0066 | 0.212 | 0.204 | <0.0040 | <0.0040 | 56.0 | | <0.20 | <0.050 | <0.0040 |
| A38 | 03-Sep-09 | 0.0037 | 0.0064 | 0.0864 | 0.0794 | <0.0040 | <0.0040 | 73.0 | | <0.20 | <0.050 | <0.0040 |
| A54 | 03-Sep-09 | 0.0033 | 0.0037 | 0.091 | 0.0879 | <0.0040 | <0.0040 | 57.3 | | <0.20 | <0.050 | <0.0040 |
| A8-7 | 03-Sep-09 | 0.00191 | 0.00237 | 0.0158 | 0.0155 | <0.0010 | <0.0010 | 44.3 | | <0.050 | <0.050 | <0.0010 |
| A9 | 03-Sep-09 | 0.0047 | 0.0074 | 0.141 | 0.142 | <0.0040 | <0.0040 | 71.7 | | <0.20 | <0.050 | <0.0040 |
| CONTROL | | 0.00057 | 0.00060 | 0.0069 | 0.0068 | <0.0010 | <0.0010 | 31.4 | | <0.050 | <0.050 | <0.0010 |
| MEL1 | 03-Sep-09 | 0.00043 | 0.00045 | 0.0058 | 0.0058 | <0.0010 | <0.0010 | 17.9 | | <0.050 | <0.050 | <0.0010 |
| MEL1 DUPL | 03-Sep-09 | 0.00043 | 0.00047 | 0.0058 | 0.0059 | <0.0010 | <0.0010 | 18.8 | | <0.050 | <0.050 | <0.0010 |
| MEL2 | 03-Sep-09 | 0.00222 | 0.00262 | 0.0198 | 0.0193 | <0.0010 | <0.0010 | 46.0 | | <0.050 | <0.050 | <0.0010 |
| MEL3 | 04-Sep-09 | | | | | | | | 6.5 | | | |
| MEL4 | 04-Sep-10 | | | | | | | | <2.0 | | | |
| ML-River | 04-Sep-09 | <0.00040 | <0.00040 | 0.0094 | 0.0093 | <0.0010 | <0.0010 | 26.9 | | <0.050 | <0.050 | <0.0010 |
| P1 | 03-Sep-09 | 0.0104 | 0.0114 | 0.105 | 0.103 | <0.0040 | <0.0040 | 145 | | <0.20 | <0.050 | <0.0040 |

| | | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | 0.017 | | | | | | 0.001 | | | | |
| MMER | | | | | | | | | | | | |
| SampleID | Sample Date | Cadmium (Cd)-Total (mg/L) | Calcium (Ca)-Dissolved (mg/L) | Calcium (Ca)-Total (mg/L) | Carbonate (CO3) (mg/L) | Chloride (Cl) (mg/L) | Chromium (Cr)-Dissolved (mg/L) | Chromium (Cr)-Total (mg/L) | Cobalt (Co)-Dissolved (mg/L) | Cobalt (Co)-Total (mg/L) | Conductivity (EC) (uS/cm) | Copper (Cu)-Dissolved (mg/L) |
| A13 | 03-Sep-09 | <0.00020 | 166 | 166 | <5.0 | 361 | <0.020 | <0.0050 | <0.0080 | <0.0020 | 1330 | <0.0040 |
| A15 | 03-Sep-09 | <0.00020 | 212 | 216 | <5.0 | 479 | <0.020 | <0.0050 | <0.0080 | <0.0020 | 1660 | <0.0040 |
| A38 | 03-Sep-09 | <0.00020 | 113 | 123 | <5.0 | 256 | <0.020 | 0.0086 | <0.0080 | <0.0020 | 1040 | <0.0040 |
| A54 | 03-Sep-09 | <0.00020 | 137 | 132 | <5.0 | 312 | <0.020 | <0.0050 | <0.0080 | <0.0020 | 1310 | <0.0040 |
| A8-7 | 03-Sep-09 | <0.000050 | 21.1 | 21.4 | <5.0 | 26.2 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 169 | <0.0010 |
| A9 | 03-Sep-09 | <0.00020 | 146 | 169 | <5.0 | 294 | <0.020 | 0.0095 | <0.0080 | <0.0020 | 1130 | <0.0040 |
| CONTROL | | <0.000050 | 8.93 | 8.86 | <5.0 | 7.62 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 78.0 | <0.0010 |
| MEL1 | 03-Sep-09 | <0.000050 | 6.31 | 6.21 | <5.0 | 7.67 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 66.3 | <0.0010 |
| MEL1 DUPL | 03-Sep-09 | <0.000050 | 6.21 | 6.31 | <5.0 | 7.63 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 65.8 | <0.0010 |
| MEL2 | 03-Sep-09 | <0.000050 | 25.5 | 25.8 | <5.0 | 36.2 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 209 | <0.0010 |
| MEL3 | 04-Sep-09 | | | | | | | | | | | |
| MEL4 | 04-Sep-10 | | | | | | | | | | | |
| ML-River | 04-Sep-09 | <0.000050 | 8.61 | 7.97 | <5.0 | 10.3 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 86.1 | 0.0011 |
| P1 | 03-Sep-09 | <0.00020 | 160 | 159 | <5.0 | 310 | <0.020 | <0.0050 | <0.0080 | <0.0020 | 1380 | <0.0040 |

| | | AJ | AK | AL | AM | AN | AO | AP | AQ | AR | AS | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | 0.002-0.004 | | | | | 0.3 | | 0.001-0.007 | | | |
| MMER | | 0.3 | | | | | | | 0.2 | | | |
| SampleID | Sample Date | Copper (Cu)-Total (mg/L) | Hardness (as CaCO3) (mg/L) | Hydroxide (OH) (mg/L) | Ion Balance (%) | Iron (Fe)-Dissolved (mg/L) | Iron (Fe)-Total (mg/L) | Lead (Pb)-Dissolved (mg/L) | Lead (Pb)-Total (mg/L) | Lithium (Li)-Dissolved (mg/L) | Lithium (Li)-Total (mg/L) | Magnesium (Mg)-Dissolved (mg/L) |
| A13 | 03-Sep-09 | <0.0040 | 496 | <5.0 | 95.6 | 0.016 | 0.602 | <0.020 | <0.00040 | 0.058 | 0.060 | 19.8 |
| A15 | 03-Sep-09 | <0.0040 | 644 | <5.0 | 94.9 | 0.025 | 0.702 | <0.020 | <0.00040 | 0.060 | 0.061 | 27.8 |
| A38 | 03-Sep-09 | <0.0040 | 362 | <5.0 | 97.9 | 0.020 | 0.455 | <0.020 | <0.00040 | 0.027 | <0.024 | 19.5 |
| A54 | 03-Sep-09 | <0.0040 | 437 | <5.0 | 99.0 | <0.010 | 0.029 | <0.020 | <0.00040 | 0.029 | 0.030 | 23.1 |
| A8-7 | 03-Sep-09 | <0.0010 | 64.7 | <5.0 | 97.2 | <0.010 | 0.074 | <0.0050 | <0.00010 | 0.0042 | <0.010 | 2.91 |
| A9 | 03-Sep-09 | <0.0040 | 433 | <5.0 | 99.3 | 0.018 | 0.358 | <0.020 | <0.00040 | 0.064 | 0.056 | 16.7 |
| CONTROL | | <0.0010 | 26.7 | <5.0 | Low EC | <0.010 | 0.036 | <0.0050 | <0.00010 | <0.0030 | <0.010 | 1.07 |
| MEL1 | 03-Sep-09 | 0.0013 | 20.3 | <5.0 | Low EC | <0.010 | 0.026 | <0.0050 | <0.00010 | <0.0030 | <0.010 | 1.11 |
| MEL1 DUPL | 03-Sep-09 | 0.0011 | 20.0 | <5.0 | Low EC | <0.010 | 0.028 | <0.0050 | <0.00010 | <0.0030 | <0.010 | 1.10 |
| MEL2 | 03-Sep-09 | <0.0010 | 78.5 | <5.0 | 97.6 | <0.010 | 0.067 | <0.0050 | <0.00010 | 0.0059 | <0.010 | 3.59 |
| MEL3 | 04-Sep-09 | | | | | | | | | | | |
| MEL4 | 04-Sep-10 | | | | | | | | | | | |
| ML-River | 04-Sep-09 | 0.0014 | 27.3 | <5.0 | Low EC | <0.010 | 0.036 | <0.0050 | <0.00010 | <0.0030 | <0.010 | 1.41 |
| P1 | 03-Sep-09 | <0.0040 | 479 | <5.0 | 98.4 | <0.010 | 0.051 | <0.020 | <0.00040 | <0.012 | <0.024 | 19.2 |

| | | AU | AV | AW | AX | AY | AZ | BA | BB | BC | BD | BE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | 0.073 | | 0.025-0.015 | 2.9 | |
| MMER | | | | | | | | | | 0.5 | | |
| SampleID | Sample Date | Magnesium (Mg)-Total (mg/L) | Manganese (Mn)-Dissolved (mg/L) | Manganese (Mn)-Total (mg/L) | Mercury (Hg)-Dissolved (mg/L) | Mercury (Hg)-Total (mg/L) | Molybdenum (Mo)-Dissolved (mg/L) | Molybdenum (Mo)-Total (mg/L) | Nickel (Ni)-Dissolved (mg/L) | Nickel (Ni)-Total (mg/L) | Nitrate (as N) (mg/L) | Nitrate and Nitrite as N (mg/L) |
| A13 | 03-Sep-09 | 19.2 | 0.0433 | 0.0491 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0074 | 0.0071 | <0.050 | <0.071 |
| A15 | 03-Sep-09 | 29.4 | 0.226 | 0.253 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0189 | 0.0190 | <0.050 | <0.071 |
| A38 | 03-Sep-09 | 20.9 | 0.0026 | 0.0123 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0046 | 0.0057 | 1.43 | 1.43 |
| A54 | 03-Sep-09 | 22.2 | <0.0020 | 0.0024 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0045 | 0.0047 | 5.57 | 5.57 |
| A8-7 | 03-Sep-09 | 2.91 | <0.0020 | 0.0046 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| A9 | 03-Sep-09 | 19.5 | <0.0020 | 0.0126 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0060 | 0.0063 | <0.050 | <0.071 |
| CONTROL | | 1.03 | <0.0020 | 0.0026 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| MEL1 | 03-Sep-09 | 1.07 | <0.0020 | 0.0027 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| MEL1 DUPL | 03-Sep-09 | 1.08 | <0.0020 | 0.0027 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| MEL2 | 03-Sep-09 | 3.51 | <0.0020 | 0.0040 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| MEL3 | 04-Sep-09 | | | | | | | | | | | |
| MEL4 | 04-Sep-10 | | | | | | | | | | | |
| ML-River | 04-Sep-09 | 1.28 | <0.0020 | 0.0038 | <0.00010 | <0.00010 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.050 | <0.071 |
| P1 | 03-Sep-09 | 18.9 | <0.0020 | 0.0089 | <0.00010 | <0.00010 | <0.020 | <0.0050 | 0.0071 | 0.0070 | 4.08 | 4.14 |

| | | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | 0.06 | | | 6.5 - 9.0 | 0.03 | | | | | | |
| MMER | | | | | 6.0 - 9.5 | | | | | | | |
| SampleID | Sample Date | Nitrite (as N) (mg/L) | Oil and Grease (mg/L) | Orthophosphate (PO4-P) (mg/L) | pH (pH) | Phosphorus, Total (mg/L) | Phosphorus, Total Diss_ (mg/L) | Potassium (K)-Dissolved (mg/L) | Potassium (K)-Total (mg/L) | Selenium (Se)-Dissolved (mg/L) | Selenium (Se)-Total (mg/L) | Silver (Ag)-Dissolved (mg/L) |
| A13 | 03-Sep-09 | <0.050 | | <0.010 | 7.72 | <0.020 | <0.020 | 5.58 | 5.22 | 0.0035 | 0.0042 | <0.020 |
| A15 | 03-Sep-09 | <0.050 | | <0.010 | 7.47 | <0.020 | <0.020 | 5.72 | 5.52 | 0.0042 | 0.0029 | <0.020 |
| A38 | 03-Sep-09 | <0.050 | | <0.010 | 7.69 | <0.020 | <0.020 | 9.04 | 9.74 | <0.0020 | 0.0026 | <0.020 |
| A54 | 03-Sep-09 | <0.050 | | <0.010 | 7.70 | <0.020 | <0.020 | 11.6 | 10.9 | 0.0032 | 0.0039 | <0.020 |
| A8-7 | 03-Sep-09 | <0.050 | | <0.010 | 7.57 | <0.020 | <0.020 | 1.07 | 1.18 | <0.00040 | <0.00040 | <0.0050 |
| A9 | 03-Sep-09 | <0.050 | | <0.010 | 7.73 | <0.020 | <0.020 | 4.98 | 5.72 | 0.0041 | 0.0050 | <0.020 |
| CONTROL | | <0.050 | | <0.010 | 7.41 | <0.020 | <0.020 | 0.91 | 1.03 | <0.00040 | <0.00040 | <0.0050 |
| MEL1 | 03-Sep-09 | <0.050 | | <0.010 | 7.20 | <0.020 | <0.020 | 0.73 | 0.80 | <0.00040 | <0.00040 | <0.0050 |
| MEL1 DUPL | 03-Sep-09 | <0.050 | | <0.010 | 7.14 | <0.020 | <0.020 | 0.76 | 0.82 | <0.00040 | <0.00040 | <0.0050 |
| MEL2 | 03-Sep-09 | <0.050 | | <0.010 | 7.56 | <0.020 | <0.020 | 1.29 | 1.40 | 0.00061 | 0.00061 | <0.0050 |
| MEL3 | 04-Sep-09 | | <1.0 | | 7.76 | | | | | | | |
| MEL4 | 04-Sep-10 | | <1.0 | | 7.20 | | | | | | | |
| ML-River | 04-Sep-09 | <0.050 | | <0.010 | 7.27 | <0.020 | <0.020 | 1.00 | 1.00 | <0.00040 | <0.00040 | <0.0050 |
| P1 | 03-Sep-09 | 0.060 | | <0.010 | 7.99 | <0.020 | <0.020 | 10.9 | 10.9 | 0.0028 | 0.0029 | <0.020 |

| | | BQ | BR | BS | BT | BU | BV | BW | BX | BY | BZ | CA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | | | | | | |
| MMER | | | | | | | | | | | | |
| SampleID | Sample Date | Silver (Ag)- Total (mg/L) | Sodium (Na)- Dissolved (mg/L) | Sodium (Na)- Total (mg/L) | Strontium (Sr)- Dissolved (mg/L) | Sulfate (SO4) (mg/L) | TDS (Calculated) (mg/L) | Thallium (Tl)- Dissolved (mg/L) | Thallium (Tl)- Total (mg/L) | Tin (Sn)- Dissolved (mg/L) | Tin (Sn)- Total (mg/L) | Titanium (Ti)- Dissolved (mg/L) |
| A13 | 03-Sep-09 | <0.00040 | 19.6 | 19.1 | 1.22 | 13.9 | 614 | <0.20 | <0.00040 | <0.20 | <0.050 | <0.0040 |
| A15 | 03-Sep-09 | <0.00040 | 23.7 | 23.6 | 1.26 | 17.6 | 793 | <0.20 | <0.00040 | <0.20 | <0.050 | <0.0040 |
| A38 | 03-Sep-09 | <0.00040 | 41.5 | 44.7 | 1.00 | 46.1 | 527 | <0.20 | <0.00040 | <0.20 | <0.050 | <0.0040 |
| A54 | 03-Sep-09 | <0.00040 | 53.9 | 51.3 | 1.20 | 66.8 | 657 | 0.00046 | <0.00040 | <0.20 | <0.050 | <0.0040 |
| A8-7 | 03-Sep-09 | <0.00010 | 3.9 | 4.1 | 0.117 | 3.26 | 80.2 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| A9 | 03-Sep-09 | <0.00040 | 19.0 | 22.3 | 1.08 | 10.2 | 526 | <0.20 | <0.00040 | <0.20 | <0.050 | <0.0040 |
| CONTROL | | <0.00010 | 4.3 | 4.2 | 0.0277 | 1.79 | 40.0 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| MEL1 | 03-Sep-09 | <0.00010 | 4.0 | 4.0 | 0.0288 | 3.08 | 31.7 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| MEL1 DUPL | 03-Sep-09 | <0.00010 | 4.0 | 3.9 | 0.0285 | 3.06 | 32.0 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| MEL2 | 03-Sep-09 | <0.00010 | 4.8 | 4.9 | 0.156 | 3.80 | 97.8 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| MEL3 | 04-Sep-09 | | | | | | | | | | | |
| MEL4 | 04-Sep-10 | | | | | | | | | | | |
| ML-River | 04-Sep-09 | <0.00010 | 5.7 | 5.2 | 0.0398 | 3.49 | 43.7 | <0.050 | <0.00010 | <0.050 | <0.050 | <0.0010 |
| P1 | 03-Sep-09 | <0.00040 | 41.1 | 40.9 | 1.11 | 44.0 | 675 | <0.20 | <0.00040 | <0.20 | <0.050 | <0.0040 |

| | | | CB | CC | CD | CE | CF | CG | CH | CI | CJ | CK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCME | | | | 29 | | | | | | | 0.03 |
| | MMER | | | | 15 | | | | | | | 0.5 |
| | SampleID | Sample Date | Titanium (Ti)-Total (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Total Suspended Solids (mg/L) | Turbidity (NTU) | Uranium (U)-Dissolved (mg/L) | Uranium (U)-Total (mg/L) | Vanadium (V)-Dissolved (mg/L) | Vanadium (V)-Total (mg/L) | Zinc (Zn)-Dissolved (mg/L) | Zinc (Zn)-Total (mg/L) |
| | A13 | 03-Sep-09 | <0.0024 | 0.55 | | 2.96 | <0.00040 | <0.00040 | <0.0040 | <0.0020 | 0.0082 | <0.016 |
| | A15 | 03-Sep-09 | <0.0024 | 0.47 | | 2.12 | <0.00040 | <0.00040 | 0.0012 | <0.0020 | 0.0078 | <0.016 |
| | A38 | 03-Sep-09 | <0.0024 | 1.00 | | 0.78 | <0.00040 | 0.00042 | <0.0040 | 0.0023 | 0.0067 | <0.016 |
| | A54 | 03-Sep-09 | <0.0024 | 1.71 | | 0.47 | 0.00051 | 0.00050 | <0.0040 | <0.0020 | 0.0096 | <0.016 |
| | A8-7 | 03-Sep-09 | <0.0010 | 0.48 | | 0.52 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0055 | <0.0040 |
| | A9 | 03-Sep-09 | <0.0024 | 0.87 | | 1.75 | <0.00040 | <0.00040 | <0.0040 | 0.0027 | 0.0063 | <0.016 |
| | CONTROL | | <0.0010 | 0.45 | | 0.67 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0088 | <0.0040 |
| | MEL1 | 03-Sep-09 | <0.0010 | 0.29 | | 0.50 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0055 | <0.0040 |
| | MEL1 DUPL | 03-Sep-09 | <0.0010 | 0.31 | | 0.52 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0098 | <0.0040 |
| | MEL2 | 03-Sep-09 | <0.0010 | 0.63 | | 0.55 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0094 | <0.0040 |
| | MEL3 | 04-Sep-09 | | | 4.0 | | | | | | | |
| | MEL4 | 04-Sep-10 | | | <3.0 | | | | | | | |
| | ML-River | 04-Sep-09 | 0.0012 | 0.26 | | 0.53 | <0.00010 | <0.00010 | <0.0010 | <0.0010 | 0.0041 | 0.0047 |
| | P1 | 03-Sep-09 | <0.0024 | 8.91 | | 0.71 | 0.00129 | 0.00128 | <0.0040 | <0.0020 | 0.0043 | <0.016 |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| CCME | | | | 0.1 | 0.019 | | 0.005 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MMER | | | | | | | 0.5 | | | | | |
| SampleID | Sample Date | Sample Time | Alkalinity, Total (as CaCO3) (mg/L) | Aluminum (Al)-Total (mg/L) | Ammonia-N (mg/L) | Antimony (Sb)-Total (mg/L) | Arsenic (As)-Total (mg/L) | Barium (Ba)-Total (mg/L) | Beryllium (Be)-Total (mg/L) | Bicarbonate (HCO3) (mg/L) | Biochemical Oxygen Demand (mg/L) | Boron (B)-Total (mg/L) |
| MEL1 | 30-Sep-09 | 09:35 | 17.0 | <0.010 | <0.050 | <0.00040 | 0.00050 | 0.0074 | <0.0010 | 20.8 | <2.0 | <0.050 |
| MEL1A (DUP) | 30-Sep-09 | 10:25 | 16.9 | 0.015 | <0.050 | <0.00040 | 0.00057 | 0.0076 | <0.0010 | 20.6 | <2.0 | <0.050 |
| MEL2 | 30-Sep-09 | 10:35 | 40.1 | 0.039 | <0.050 | <0.00040 | 0.00361 | 0.0224 | <0.0010 | 49.0 | <2.0 | <0.050 |
| MEL3 | 30-Sep-09 | 11:08 | 198 | 0.018 | 0.298 | <0.00040 | 0.00578 | 0.0369 | <0.0010 | 242 | 3.2 | <0.050 |
| MEL4 | 30-Sep-09 | 11:02 | 16.0 | 0.053 | <0.050 | <0.00040 | 0.00059 | 0.0072 | <0.0010 | 19.5 | <2.0 | <0.050 |
| TAP | 30-Sep-09 | 11:25 | 16.8 | | | | | | | 20.4 | | |

| CCME | | 0.017 | | | | 0.001 | | | 0.002-0.004 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MMER | | | | | | | | | 0.3 | | | |
| SampleID | Sample Date | Cadmium (Cd)-Total (mg/L) | Calcium (Ca)-Total (mg/L) | Carbonate (CO3) (mg/L) | Chloride (Cl) (mg/L) | Chromium (Cr)-Total (mg/L) | Cobalt (Co)-Total (mg/L) | Conductivity (EC) (uS/cm) | Copper (Cu)-Total (mg/L) | Hardness (as CaCO3) (mg/L) | Hydroxide (OH) (mg/L) | Ion Balance (%) |
| MEL1 | 30-Sep-09 | <0.000050 | 7.62 | <5.0 | 8.31 | <0.0050 | <0.0020 | 73.9 | 0.0011 | 24.2 | <5.0 | Low EC |
| MEL1A (DUP) | 30-Sep-09 | 0.000319 | 7.30 | <5.0 | 8.20 | <0.0050 | <0.0020 | 74.2 | 0.0026 | 23.3 | <5.0 | Low EC |
| MEL2 | 30-Sep-09 | 0.000205 | 27.2 | <5.0 | 40.2 | <0.0050 | <0.0020 | 231 | 0.0023 | 83.4 | <5.0 | 94.5 |
| MEL3 | 30-Sep-09 | <0.000050 | 68.1 | <5.0 | 142 | <0.0050 | 0.0023 | 923 | 0.0014 | 196 | <5.0 | 94.2 |
| MEL4 | 30-Sep-09 | 0.000060 | 6.57 | <5.0 | 8.49 | <0.0050 | <0.0020 | 72.6 | 0.0015 | 21.2 | <5.0 | Low EC |
| TAP | 30-Sep-09 | | 6.54 | <5.0 | 8.18 | | | 72.9 | | 20.9 | <5.0 | Low EC |

| CCME | | 0.3 | 0.001-0.007 | | | | | | 0.073 | 0.025-0.015 | 2.9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MMER | | | 0.2 | | | | | | | 0.5 | | |
| SampleID | Sample Date | Iron (Fe)- Total (mg/L) | Lead (Pb)- Total (mg/L) | Lithium (Li)- Total (mg/L) | Magnesium (Mg)-Total (mg/L) | Manganese (Mn)-Total (mg/L) | Mercury (Hg)- Total (mg/L) | MF - Fecal Coliforms (CFU/100mL ) | Molybdenum (Mo)-Total (mg/L) | Nickel (Ni)- Total (mg/L) | Nitrate (as N) (mg/L) | Nitrate and Nitrite as N (mg/L) |
| MEL1 | 30-Sep-09 | 0.042 | 0.00028 | <0.0030 | 1.26 | 0.0053 | <0.00010 | <1 | <0.0050 | <0.0020 | <0.050 | <0.071 |
| MEL1A (DUP) | 30-Sep-09 | 0.054 | 0.00177 | <0.0030 | 1.24 | 0.0049 | <0.00010 | <1 | <0.0050 | <0.0020 | <0.050 | <0.071 |
| MEL2 | 30-Sep-09 | 0.249 | 0.00043 | 0.0059 | 3.77 | 0.0257 | <0.00010 | | <0.0050 | <0.0020 | <0.050 | <0.071 |
| MEL3 | 30-Sep-09 | 0.247 | 0.00160 | 0.0045 | 6.34 | 0.242 | <0.00010 | 11 | <0.0050 | 0.0098 | 0.086 | 0.086 |
| MEL4 | 30-Sep-09 | 0.142 | 0.00046 | <0.0030 | 1.16 | 0.0109 | <0.00010 | 1 | <0.0050 | <0.0020 | <0.050 | <0.071 |
| TAP | 30-Sep-09 | | | | 1.12 | | | <1 | | | <0.050 | <0.071 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | 0.06 | | | 6.5 - 9.0 | 0.03 | | | | | | |
| MMER | | | | | 6.0 - 9.5 | | | | | | | |
| SampleID | Sample Date | Nitrite (as N) (mg/L) | Oil and Grease (mg/L) | Orthophosphate (PO4-P) (mg/L) | pH (pH) | Phosphorus, Total (mg/L) | Potassium (K)-Total (mg/L) | Selenium (Se)-Total (mg/L) | Silver (Ag)-Total (mg/L) | Sodium (Na)-Total (mg/L) | Sulfate (SO4) (mg/L) | TDS (Calculated) (mg/L) |
| MEL1 | 30-Sep-09 | <0.050 | <1.0 | <0.010 | 7.32 | <0.020 | 0.91 | <0.00040 | <0.00010 | 4.5 | 3.69 | 36.5 |
| MEL1A (DUP) | 30-Sep-09 | <0.050 | <1.0 | <0.010 | 7.23 | <0.020 | 0.89 | <0.00040 | <0.00010 | 4.4 | 3.57 | 35.7 |
| MEL2 | 30-Sep-09 | <0.050 | 1.2 | <0.010 | 7.61 | <0.020 | 1.51 | <0.0020 | <0.00010 | 5.4 | 5.61 | 108 |
| MEL3 | 30-Sep-09 | <0.050 | 2.3 | 1.18 | 7.98 | 1.34 | 5.34 | <0.0020 | <0.00010 | 98.7 | 43.5 | 483 |
| MEL4 | 30-Sep-09 | <0.050 | <1.0 | <0.010 | 7.28 | <0.020 | 0.80 | <0.00040 | <0.00010 | 4.4 | 3.29 | 34.3 |
| TAP | 30-Sep-09 | <0.050 | | | 7.16 | | 0.85 | | | 4.3 | 3.59 | 34.7 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CCME | | | | | | | 29 | | | 0.03 |
| MMER | | | | | | | 15 | | | 0.5 |
| SampleID | Sample Date | Thallium (Tl)-Total (mg/L) | Tin (Sn)-Total (mg/L) | Titanium (Ti)-Total (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Total Organic Carbon (mg/L) | Total Suspended Solids (mg/L) | Uranium (U)-Total (mg/L) | Vanadium (V)-Total (mg/L) | Zinc (Zn)-Total (mg/L) |
| MEL1 | 30-Sep-09 | <0.00010 | <0.050 | <0.0010 | 0.27 | 3.3 | <3.0 | <0.00010 | <0.0010 | 0.0039 |
| MEL1A (DUP) | 30-Sep-09 | <0.00010 | <0.050 | <0.0010 | <0.20 | 3.2 | <3.0 | <0.00010 | <0.0010 | 0.0148 |
| MEL2 | 30-Sep-09 | <0.00010 | <0.050 | 0.0018 | 0.55 | 4.7 | 7.0 | <0.00010 | <0.0010 | 0.0122 |
| MEL3 | 30-Sep-09 | <0.00010 | <0.050 | 0.0044 | 1.84 | 23.8 | 5.0 | <0.00010 | 0.0016 | 0.0188 |
| MEL4 | 30-Sep-09 | <0.00010 | <0.050 | 0.0046 | 0.23 | 3.1 | 5.0 | <0.00010 | <0.0010 | 0.0061 |
| TAP | 30-Sep-09 | | | | | | <3.0 | | | |

## APPENDIX C

## WATER BALANCE FOR LAKE A54 WATER BASIN

## (FROM AMEC 2000)

# WMC INTERNATIONAL LTD.
# MELIADINE WEST GOLD PROJECT
# WATER BALANCE STUDY
# 2000 DATA REPORT

Submitted to:

**WMC International Ltd.**
Nepean, Ontario

Submitted by:

**AMEC Earth & Environmental Limited**
Calgary, Alberta

December 2000

CW1525.2

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# 4.0 MONITORING IN THE LAKE A37 SUB-BASIN

## 4.1 Introduction

The probable area in which initial development of a mine is proposed is in the Tiriganiaq Zone, which is located in the sub-basin draining largely through Lake A37 into Lake A8 (Pump Lake), as shown on Figure 4.1. Mine development may interrupt the natural drainage pattern, requiring water diversion and other water management facilities. It was therefore decided to obtain further data on the hydrologic characteristics of the Lake A37 sub-basin. Monitoring was conducted in the Lake A37 sub-basin for both snowpack water equivalent (snow depth and density), and the snowmelt runoff.

## 4.2 Snowpack Monitoring

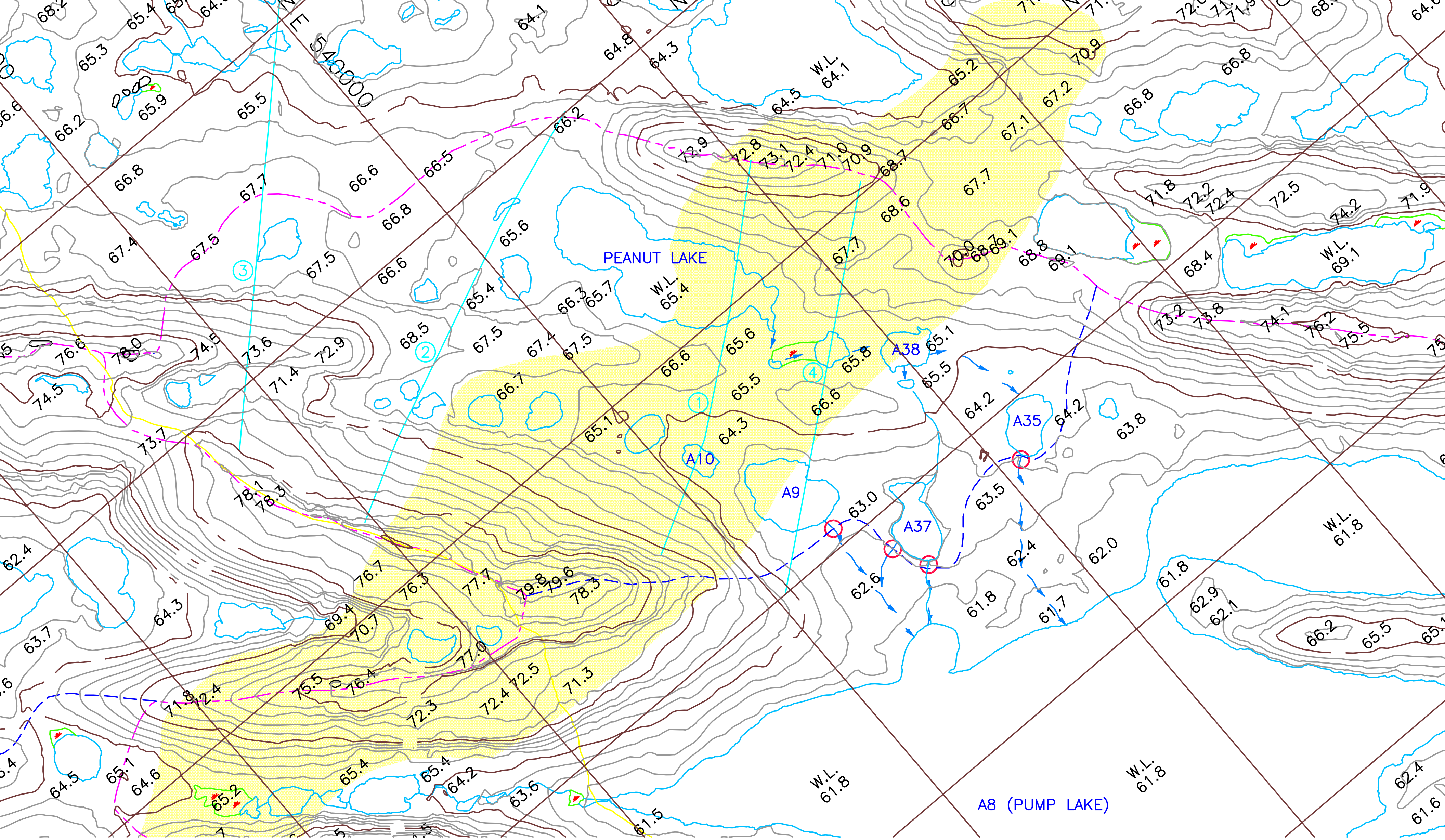
Snow surveys to determine the spring snowpack snow water equivalents (SWE) in the Lake A37 sub-basin were conducted on 13 May 2000. Four transects were located and surveyed, as shown on Figure 4.1.

The measured snow depths and densities and the topography traversed by each transect are shown graphically on Figures 4.2 through 4.5. A complete tabulation of the snow survey data are provided on Tables C.1.1 through C.1.4 in Appendix C.1. The tables include the GPS coordinates for the transect end points as observed in the field.

The Lake A37 sub-basin was analysed using GIS methods and ten terrain units were classified, as described in the AGRA 1998 Data Report. The definition of the terrain units is given in Appendix C.2. The definitions developed in 1998 were retained except that the definition for the “crest” terrain unit (no. 3) was revised slightly to reduce its overall area. The distribution of the terrain units within the Lake A37 sub-basin is shown in Figure 4.6.

The characteristic snow water equivalent (SWE) for each terrain unit was obtained by manually examining the data shown in Figures 4.2 through 4.5 and dividing transects into terrain unit segments. The data points within each terrain unit were then averaged to obtain the characteristic SWE. The results are summarized in Table 4.1.

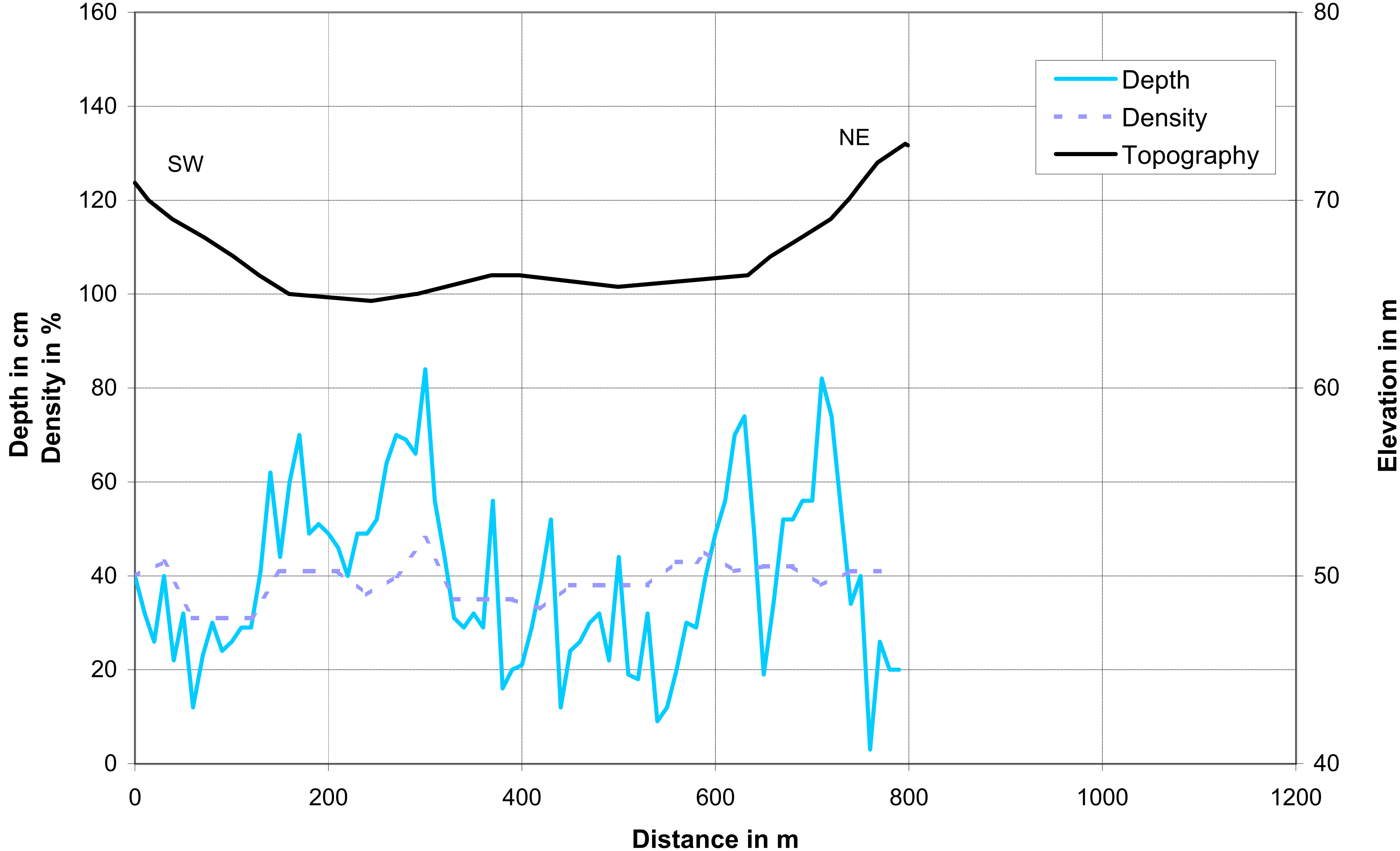
The snow survey did not provide sufficient data points to characterize SWE values for terrain units 9 and 10, which together account for only 2.2 percent of the Lake A37 sub-basin area. The SWE values for terrain units 9 and 10 were therefore estimated by applying the ratio of the 2000 to 1998 SWE values for unit 4 (equal to 1.7) to the 1998 SWE values for units 9 and 10.



PEANUT LAKE
W.L. 65.4
A8 (PUMP LAKE)
W.L. 61.8
W.L. 64.1
W.L. 69.1
A35
A37
A38
A9
A10
E 540000


PROJECT:

## Snow Survey 2000
## Transect 1
## Topography, Snow Depth and Density

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Snow2000.xls [T1]
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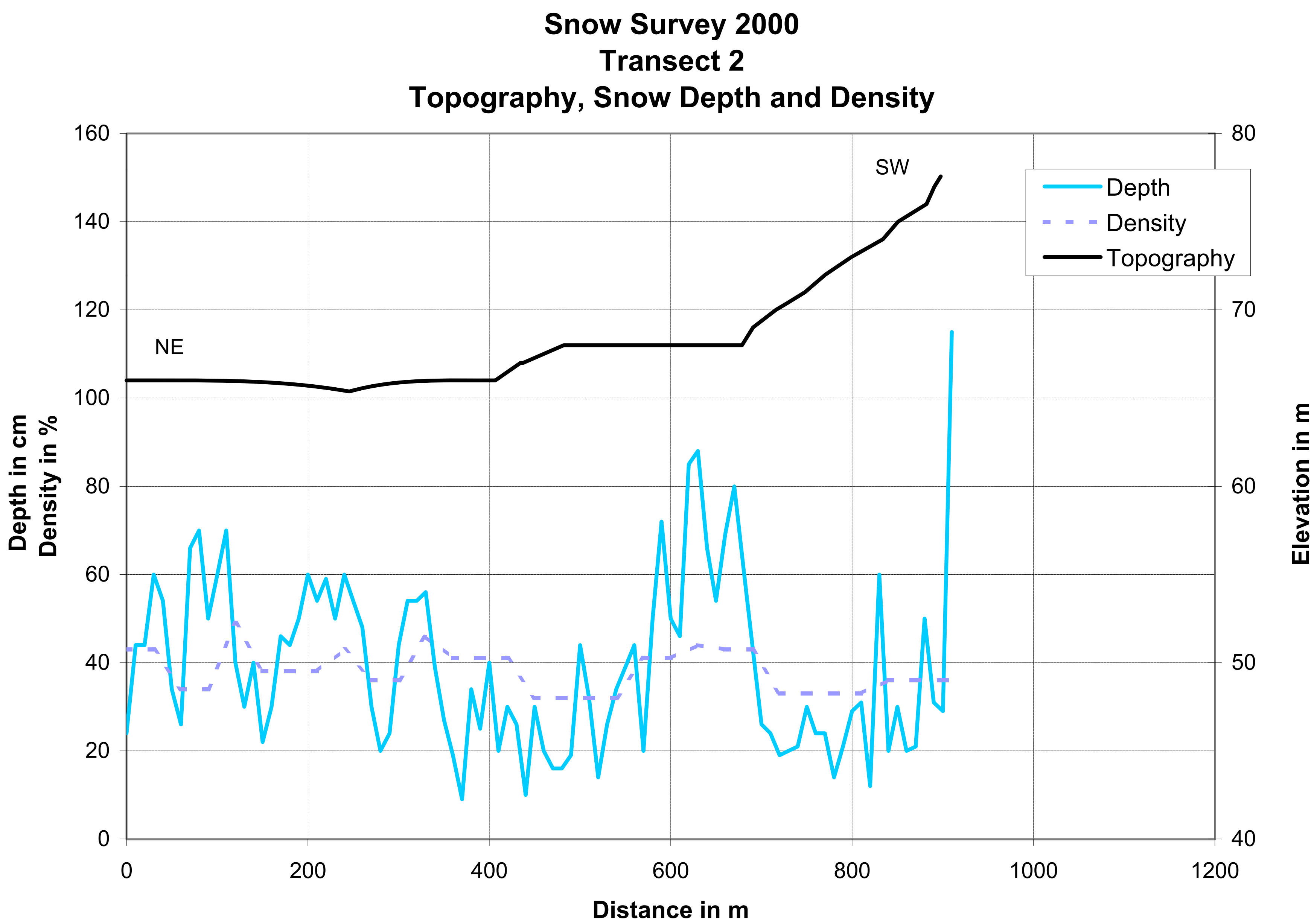
**Figure 4.2**

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Snow2000.xls [T2]
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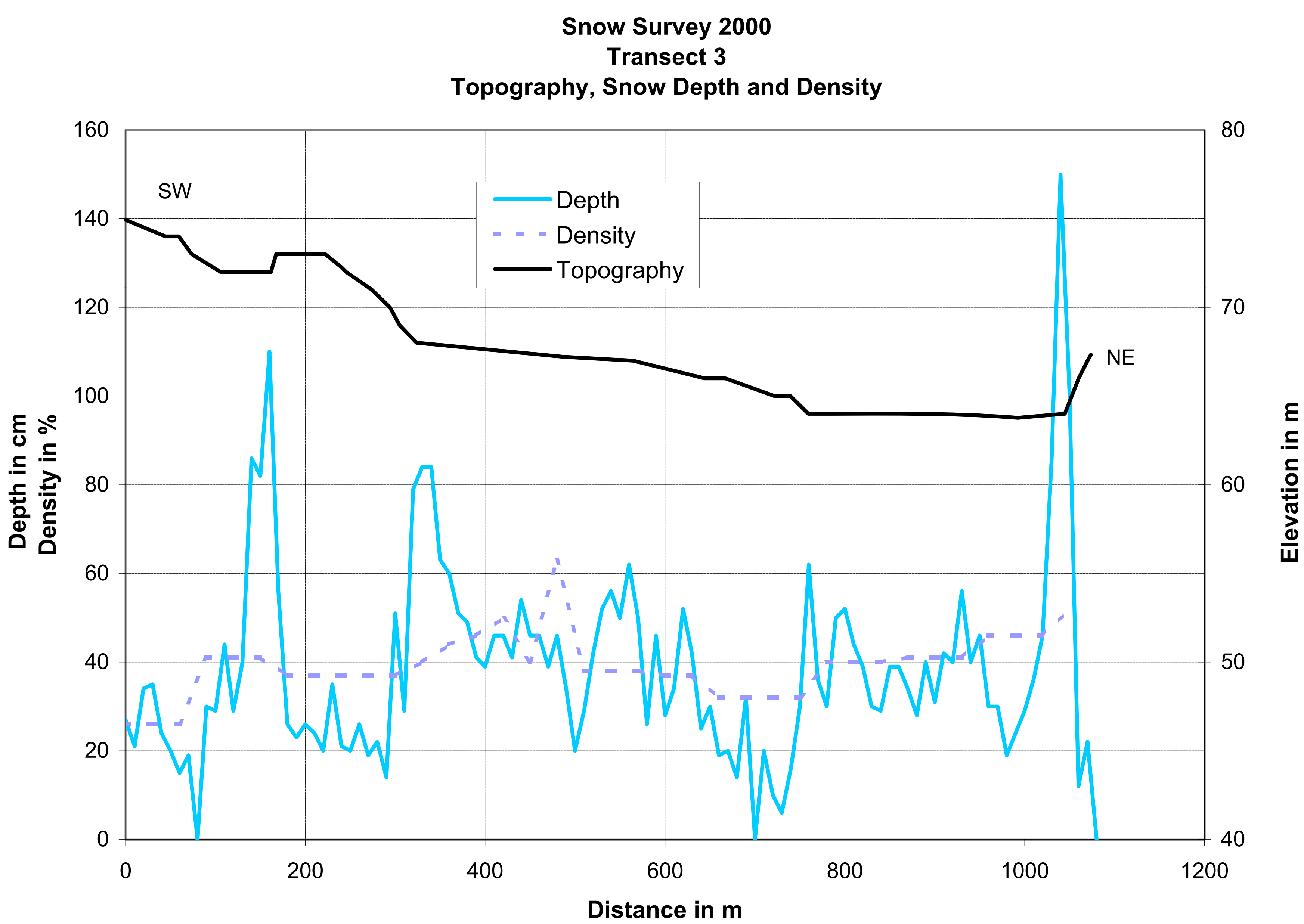
Figure 4.3

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Snow2000.xls [T3]
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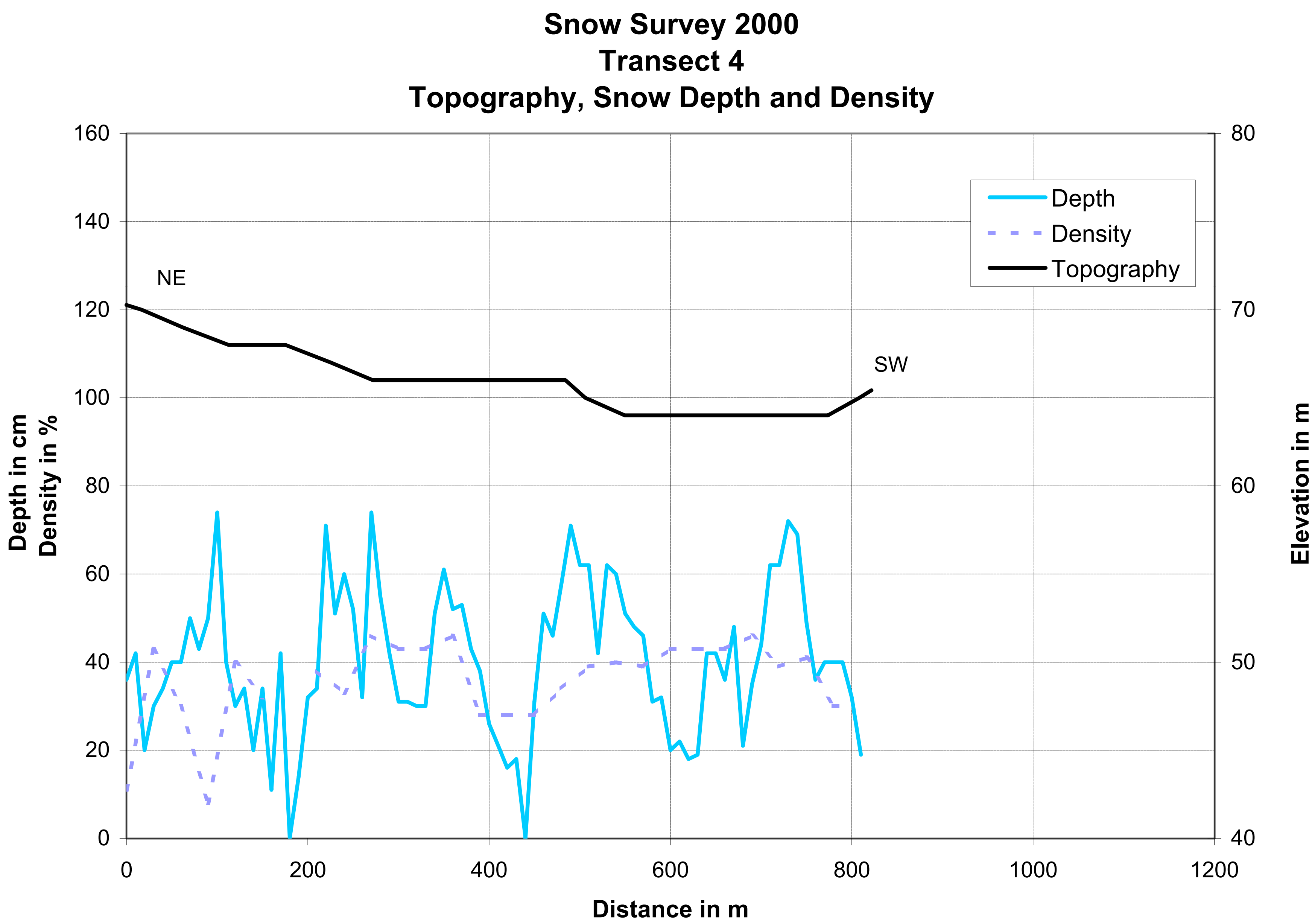
**Figure 4.4**

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Snow2000.xls [T4]
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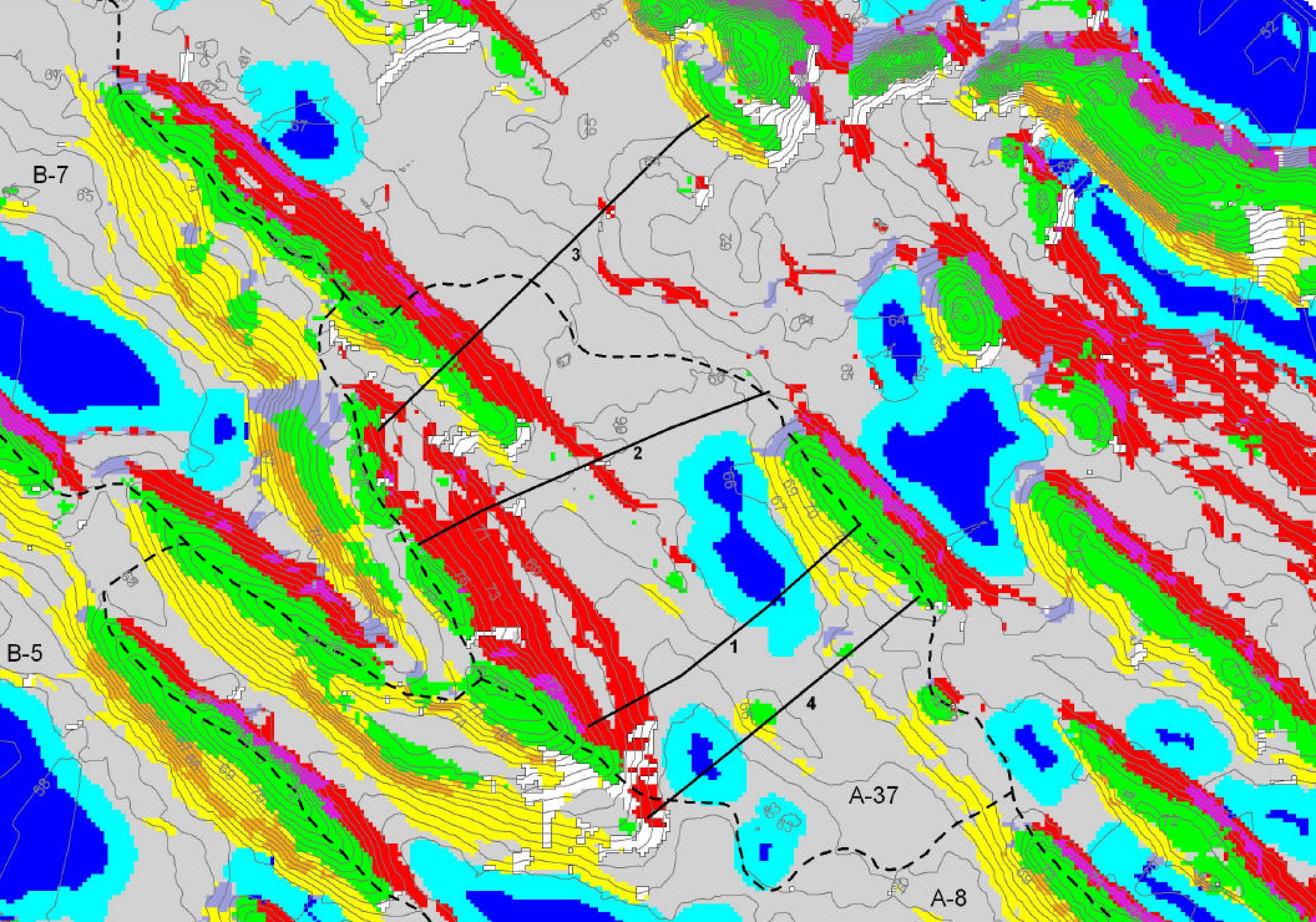
**Figure 4.5**




Legend

Terrain Units

Low Slopes (< 3%)

SW Slopes (>8.5%)

CLIENT: WMC International Limited

DATE:

# TABLE 4.1
## 2000 Snow Survey Results
## Terrain Units and Characteristic Snow Water Equivalent (SWE)

| Terrain Unit | | Snow Course Transect | Start Station | End Station | SWE (mm) | |
|---|---|---|---|---|---|---|
| No. | Description | | | | Mean | SD[2] |
| 1 | Lake | 1 | 500 | 560 | 85.8 | 45.1 |
| | | 4 | 590 | 700 | 137.3 | 48.7 |
| | | Combined | 170[1] | | **118.3** | **52.7** |
| 2 | Lake Edges | 1 | 570 | 630 | 211.1 | 71.4 |
| | | 3 | 850 | 1020 | 154.8 | 36.2 |
| | | 4 | 710 | 740 | 265.5 | 201.0 |
| | | Combined | 260[1] | | **183.6** | **60.1** |
| 3 | Crest | 1 | 760 | 790 | 70.7 | 40.6 |
| | | 3 | 180 | 290 | 85.1 | 19.1 |
| | | 3 | 1060 | 1080 | 58.9 | 57.3 |
| | | Combined | 160[1] | | **77.9** | **31.1** |
| 4 | Low Slopes (<3%) | 1 | 200 | 490 | 160.7 | 84.5 |
| | | 2 | 0 | 640 | 161.7 | 79.2 |
| | | 3 | 370 | 840 | 150.0 | 68.0 |
| | | 4 | 0 | 480 | 129.7 | 71.8 |
| | | 4 | 750 | 810 | 123.3 | 43.7 |
| | | Combined | 1940[1] | | **149.5** | **75.3** |
| 5 | NE Slopes (3-8.5%) | 1 | 0 | 190 | 140.2 | 68.1 |
| | | 2 | 650 | 870 | 125.8 | 86.3 |
| | | 3 | 0 | 130 | 87.3 | 49.5 |
| | | 3 | 300 | 360 | 260.4 | 85.0 |
| | | Combined | 600[1] | | **136.6** | **86.5** |
| 6 | NE Slopes (>8.5%) | 2 | 880 | 910 | **202.5** | **145.1** |
| 7 | SW Slopes (3-8.5%) | 1 | 640 | 750 | 287.3 | 165.3 |
| | | 4 | 490 | 580 | 207.3 | 42.3 |
| | | Combined | 230[1] | | **250.9** | **129.4** |
| 8 | SW Slopes (>8.5%) | 3 | 140 | 170 | 335.0 | 91.4 |
| | | 3 | 1030 | 1050 | 560.9 | 172.3 |
| | | Combined | 50[1] | | **431.8** | **169.3** |
| 9 | NW Slopes (>3%) | estimated | | | **554.0** | - |
| 10 | SE Slopes (>3%) | estimated | | | **699.0** | - |

Notes:
1. Total length of transects used to obtain characteristic snow values.
2. SD = standard deviation of sample data.

The characteristic SWE values listed in Table 4.1 were checked by comparing the observed total SWE value for all the transect data points with the total SWE value obtained by applying the characteristic SWE values to the transect terrain units. The results agreed to within 98 percent. No adjustments were therefore made to the characteristic SWE values obtained from the transect data.

The characteristic SWE values were applied to the Lake A37 sub-basin according to the distribution of the terrain units, and a snow water volume obtained of 203.36 $dam^3$, which equals a depth of 163.7 mm over the drainage area of 1.2425 $km^2$. To obtain the snow water depth for the June 14 start of snow melt runoff, the total precipitation amount of 3.3 mm recorded at Rankin Inlet over the period May 14 to June 14 was added to the above, giving 167.0 mm.

The above procedure was also applied to the other monitored basins, as the GIS and terrain unit data were available from the updated 1998 model. The resulting values are summarized in Table 4.2, along with a comparison to the 1998 results.

**Table 4.2**
**Lake A37 and Peninsula Basins 2000 Snow Water Equivalents (SWE)**

| Basin | Area $km^2$ | Snow Survey SWE | | Post Survey SWE | 2000 Total SWE | 1998 Total SWE | Ratio of 2000/1998 SWE |
|---|---|---|---|---|---|---|---|
| | | $dam^3$ | mm | mm | mm | mm | |
| Lake A37 | 1.2425 | 203.36 | 163.7 | 3.3 | 167.0 | N/A | N/A |
| Lake A1 | 9.3913 | 1673.9 | 178.2 | 3.3 | 181.5 | 135.6 | 1.34 |
| Lake B7 | 2.393 | 410.25 | 171.4 | 3.3 | 174.7 | 130.6 | 1.34 |
| Lake B2 | 22.3178 | 4056.43 | 181.8 | 3.3 | 185.1 | 134.5 | 1.38 |

The SWE value obtained for the Lake A37 sub-basin is compared to the snowmelt runoff in the following section. The SWE values obtained for the Lake A1, B7 and B2 basins are discussed further in Section 5.6.

### 4.3 Snowmelt Runoff Monitoring

Snowmelt runoff was monitored during the snowmelt period in June. Monitoring consisted of spot measurements of the outflow discharged from the sub-basin, over the period 15 June – 20 June. Water level datalogger monitoring stations were not set up.

Outflow from the sub-basin to Lake A8 was observed to occur via the outlets from Lakes A9, A37 and A35, as shown on Figure 4.1. Lake A37 discharged from two outlets: a west outlet which joined the Lake A9 outlet, and an east outlet. The discharge measurement data are summarized in Table 4.3.

**TABLE 4.3**

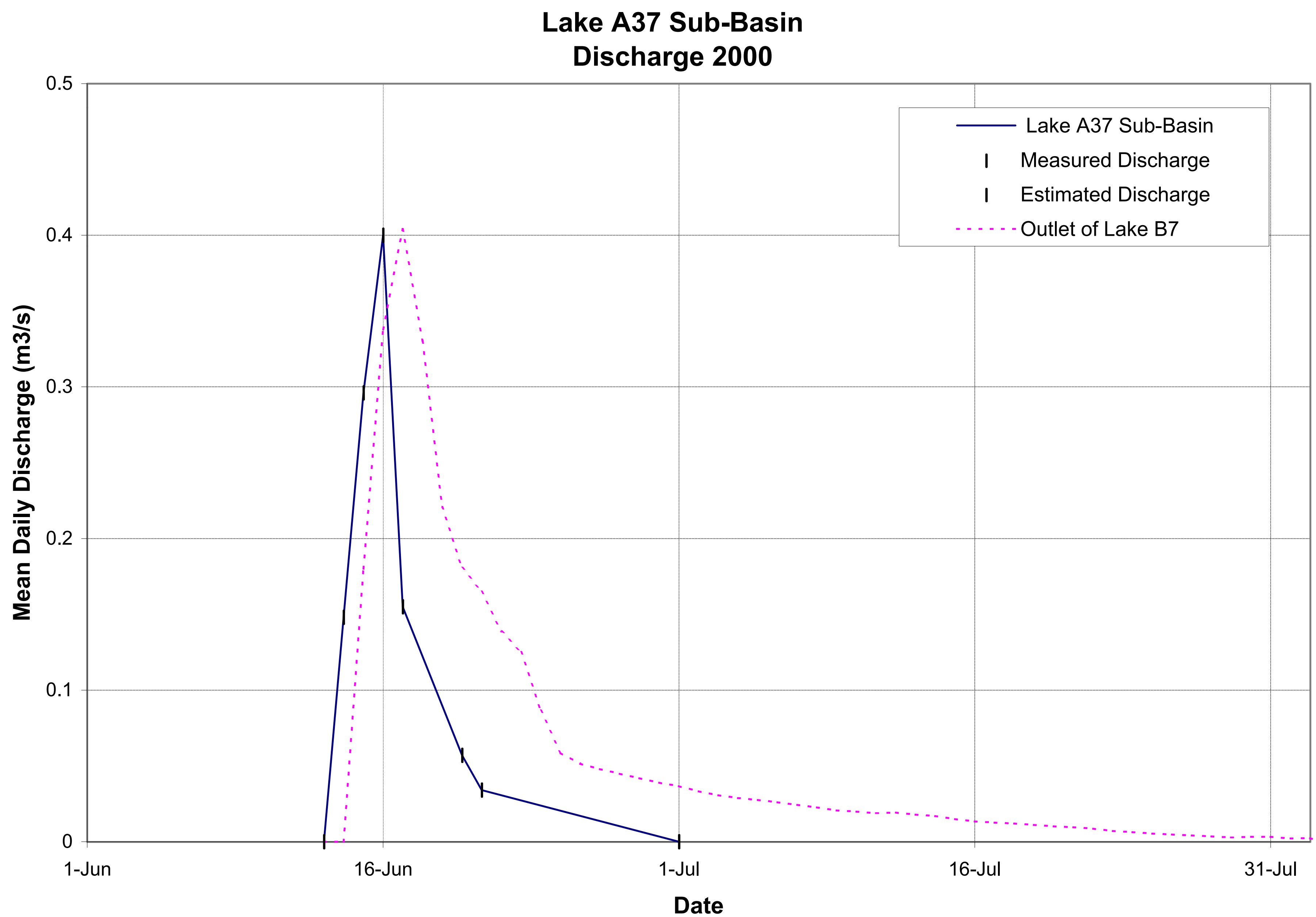
**Lake A37 Sub-Basin**
**Snowmelt Runoff Monitoring Data**

| Date | Discharge in $m^3/s$ | | | | | |
|---|---|---|---|---|---|---|
| | A9 | A37 West | A37 East | A35 | A37+A35 | Total Sub-Basin |
| 15-Jun | 0.101 | 0.011 | 0.051 | 0.133 | 0.195 | **0.296** |
| 16-Jun | 0.072 | | | | | |
| 17-Jun | 0.070 | 0.004 | 0.018 | 0.063 | 0.085 | **0.155** |
| 20-Jun | 0.029 | 0.001 | 0.004 | 0.023 | 0.028 | **0.057** |

Observations of the sub-basin during the 21 – 24 July 2000 monitoring showed that outflow was not occurring from any of the outlets of Lakes A9, A35, and A37. This zero outflow condition was also observed on 18 September 2000. It is concluded that the runoff was essentially zero from the Lake A37 sub-basin after completion of snowmelt runoff, i.e., rainfall over the summer (July - September) produced no runoff. It was estimated that snowmelt runoff ceased on 30 June 2000.

The discharge hydrograph for the Lake A37 sub-basin was estimated by interpolation between measured discharges (Table 4.3) and the observed zero outflow conditions, using the discharge hydrograph for Lake B7 as a guide. Lake B7 data were used as Lake B7 is the most comparable lake for which data are available (those data are reported in Section 5.5). The results are shown on Figure 4.7. It was estimated that the last day of zero discharge was 13 June, that discharge started on 14 June, and that the peak occurred on 16 June.

The total snowmelt runoff is estimated from Figure 4.7 to equal 119 $dam^3$, which corresponds to a yield of 96 mm over the sub-basin drainage area of 1.24 $km^2$. The estimated runoff amount represents 57 percent of the snow water equivalent available. The peak discharge from the sub-basin was estimated to equal 0.40 $m^3/s$.

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A37_volume_new.xls[Q]
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Figure 4.7