Appendix C

Laboratory Test Results

EBA Engineering Consultants Ltd.

MOISTURE CONTENT TEST RESULTS

Project: Knight Piesold 2010 Misc. Materials Testing BH No: n/a

Project No.: Y14101302 Date Tested: July 19-21, 2010

Location: Thor Lake By: NR

Client: Knight Piesold. Attn: Corey Aurala

Test No.	Sample ID.	Depth (meters)	Sample No.	Wet+Tare	Dry+Tare		% Moisture Content
5352-1	BP4	1.1m - 1.2m	1	776.2	689.6	16.4	12.9
5352-2	BP11A	0.6m - 0.8m	6	No Sample			
5352-3	BP12	0.9m - 1.1m	7	1503.5	1338.3	13.3	12.5
5352-4	BP16	0.4m - 0.5m	8	938.9	835.0	13.3	12.6
5352-5	BP19	0.4m - 0.8m	10	521.3	455.1	13.1	15.0
5352-6	BP26	0.4m - 0.5m	12	762.2	654.6	16.2	16.9
5352-7	BP27	0.7m - 1.0m	13	1120.5	1053.2	14.9	6.5
5352-8	PP7	0.3m - 0.6m	17	937.5	772.2	14.7	21.8
5352-9	PP13	0.5m - 0.7m	21	654.7	559.8	14.7	17.4
5352-10	PP15	1.4m - 1.6m	22	812.0	686.2	14.9	18.7
5352-11	PP17	0.8m - 0.9m	23	595.6	503.2	14.8	18.9
5352-12	PP21	1.4m - 2.0m	25	687.2	582.4	13.4	18.4
5352-13	PP22	0.8m - 1.1m	26	552.5	481.4	14.0	15.2
5352-14	PP23	0.2m - 0.6m	27	487.6	453.1	13.4	7.8
5352-15	PP24	0.4m - 0.6m	28	963.4	821.7	13.5	17.5
5352-16	TP3	0.4m - 0.6m	33	428.5	386.1	13.4	11.4
5352-17	TP6	0.8m - 0.9m	34	777.6	643.6	13.5	21.3
5352-18	TP8	1.0m - 1.4m	36	541.9	450.2	13.6	21.0
5352-19	TP18(001)	0.3m - 0.5m	40	671.0	599.4	13.4	12.2
5352-20	TP21	0.4m - 0.6m	41	320.6	275.4	13.8	17.3
5352-21	TP30	0.3m - 0.5m	42	No Sample			
5352-22	TP31	0.6m - 0.8m	43	662.9	546.2	14.0	21.9
5352-23	TP33	0.4m - 0.5m	44	1435.6	1289.8	13.5	11.4
5352-24	TP34	0.3m - 0.7m	45	822.2	768.0	13.6	7.2
5352-25	TP34	1.6m - 1.7m	46	684.5	586.4	13.7	17.1

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

Project: Knight Piesold 2010 Misc. Materials Testing

Project Number: Y14101302 Thor Lake

Client: Knight Piesold

Attention: Mr. Corey Aurala

Date Tested: July 21, 2010

Borehole Number: n/a

Depth: 0.9 - 1.1 m

Sample ID: BP12

Lab Number: 5352-3

Soil Description: SILT and SAND, trace clay, trace gravel, with org. material

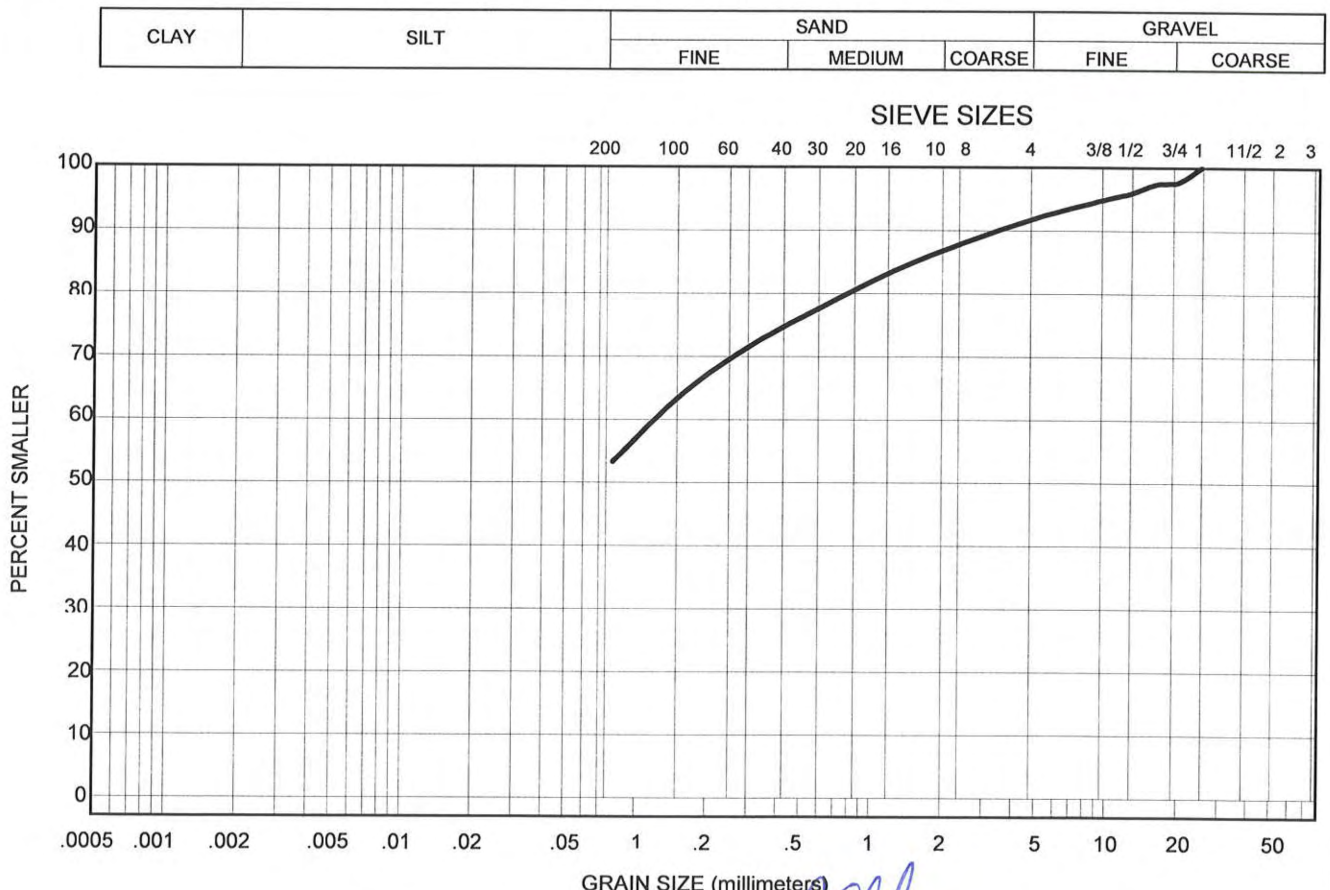
Natural Moisture Content: 12.5%

Remarks:

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE	PERCENTAGE PASSING
40	
25	100
20	98
16	97
12.5	96
10	95
5	92
2.5	88
1.25	84
0.63	78
0.315	72
0.16	64
0.08	53



Reviewed By: ____________________ P.Eng.

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EBA Engineering Consultants Ltd.

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

Project: Knight Piesold 2010 Misc. Materials Testing

Project Number: Y14101302

Client: Knight Piesold

Attention: Mr. Corey Aurala

Date Tested: July 21, 2010

Borehole Number: n/a

Depth: 0.4 - 0.5 m

Sample ID: BP16

Lab Number: 5352-4

Soil Description: SAND and SILT, some gravel, trace clay, with org material.

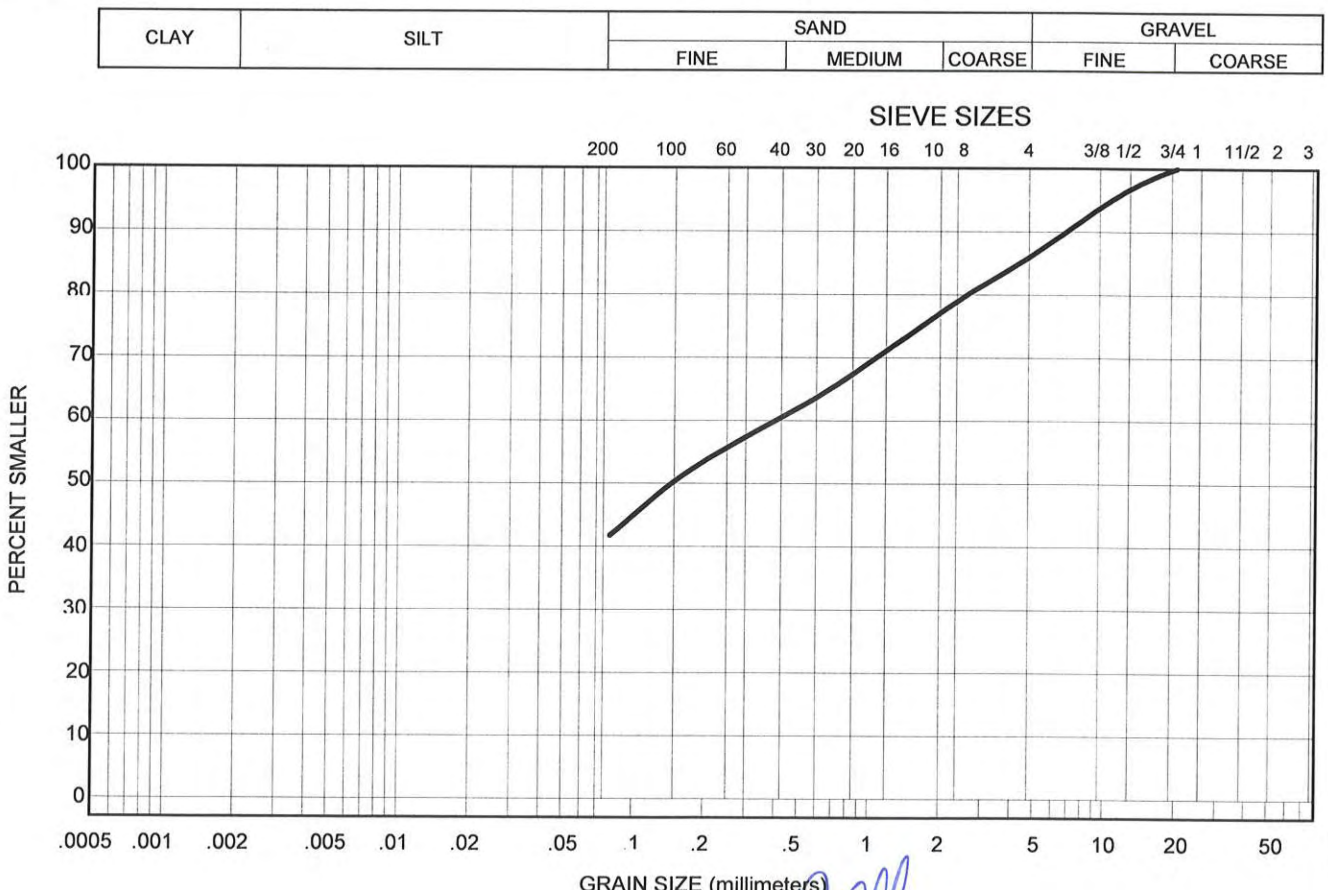
Natural Moisture Content: 12.6%

Remarks:

* The upper clay size of 2 μm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE	PERCENTAGE PASSING
40	
25	
20	100
16	99
12.5	97
10	94
5	86
2.5	79
1.25	72
0.63	64
0.315	58
0.16	51
0.08	42



Reviewed By: ____________________ P.Eng.

EBA Engineering Consultants Ltd.

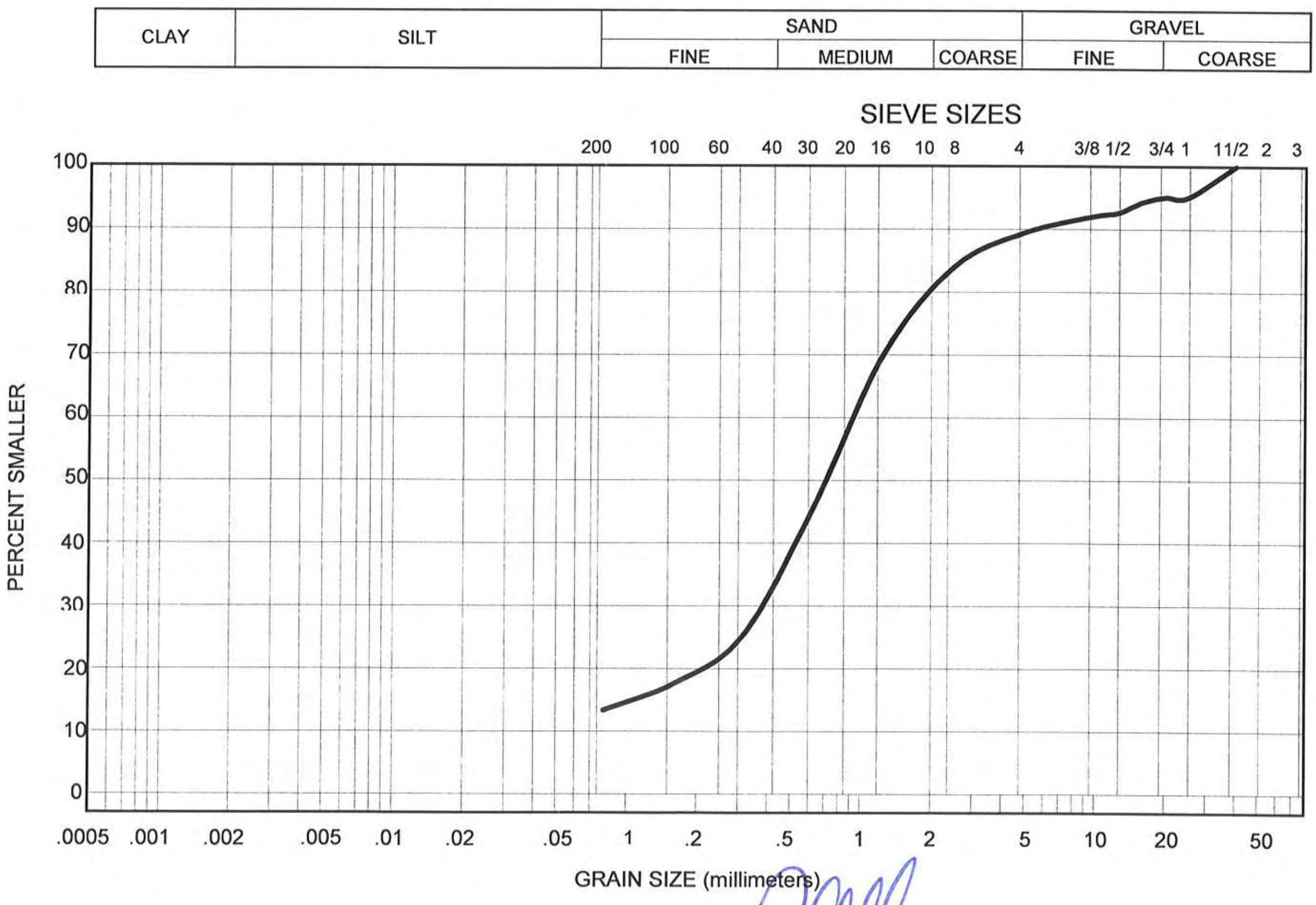
PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

Project: Knight Piesold 2010 Misc. Materials Testing
Project Number: Y14101302 Thor Lake
Client: Knight Piesold
Attention: Mr. Corey Aurala
Date Tested: July 21, 2010
Borehole Number: n/a
Depth: 0.7 - 1.0 m
Sample ID: BP27
Lab Number: 5352-7
Soil Description: SAND, some gravel, some fines, with org. material
Natural Moisture Content: 6.5%
Remarks:

* The upper clay size of 2 μm is as per the Canadian Foundation Manual.
** The soil description is visually based, subject to EBA description protocols.

SIEVE	PERCENTAGE PASSING
40	100
25	95
20	95
16	94
12.5	93
10	92
5	89
2.5	84
1.25	70
0.63	46
0.315	25
0.16	18
0.08	13



Reviewed By: ______________ P.Eng.

EBA Engineering Consultants Ltd.

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

Project: Knight Piesold 2010 Misc. Materials Testing

Project Number: Y14101302 Thor Lake

Client: Knight Piesold

Attention: Mr. Corey Aurala

Date Tested: July 21, 2010

Borehole Number: n/a

Depth: 0.4 - 0.5 m

Sample ID: TP33

Lab Number: 5352-23

Soil Description: SAND and SILT, gravelly, trace clay, with org. material

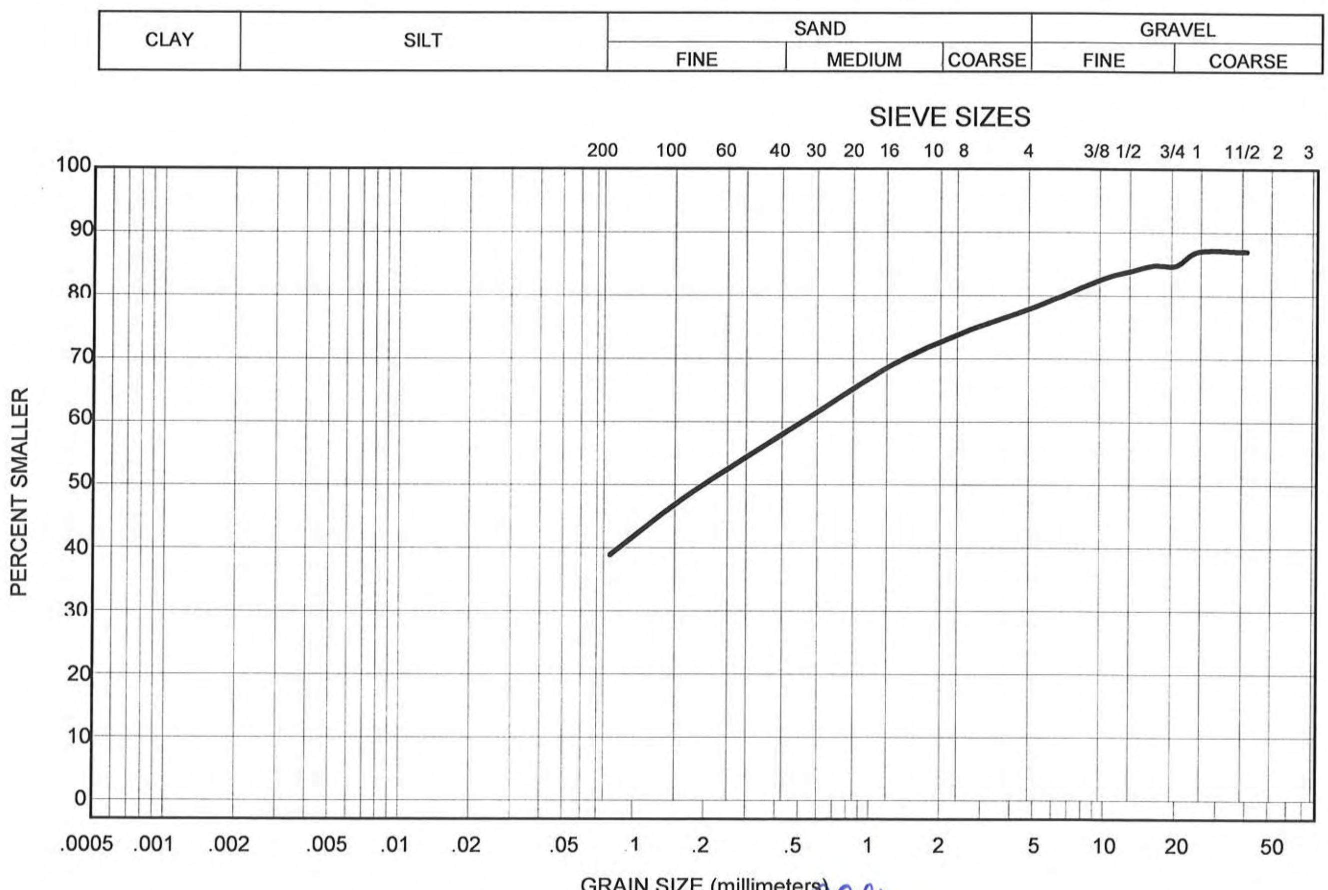
Natural Moisture Content: 11.4%

Remarks:

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE	PERCENTAGE PASSING
40	87
25	87
20	85
16	85
12.5	84
10	83
5	78
2.5	74
1.25	69
0.63	62
0.315	55
0.16	48
0.08	39



Reviewed By: ____________________ P.Eng.

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EBA Engineering Consultants Ltd.

Appendix C.12

Thor Lake Project – Pine Point Hydrometallurgical Site Clarification. Report NB11-00008

Knight Piésold
CONSULTING

MEMORANDUM

To:	Mr. David Swisher	Date:	January 6, 2011
Copy To:	Bill Mercer, Rick Hoos	File No.:	NB101-390/2-A.01
From:	Matthew Parfitt	Cont. No.:	NB11-00008
Re:	Thor Lake Project – Pine Point Hydrometallurgical Site Clarification		

David:

This memo provides clarification regarding naming of historic open pits at the Pine Point Site and a proposed change to the Hydrometallurgical Tailings Management Facility (HTMF) layout as proposed in our previous memo Re: Pine Point Hydrometallurgical Site Tailings Review dated November 3, 2010 (Cont. No. NB10-0488). The clarification and change is the result of recently receiving Traditional Knowledge information from the community of Fort Resolution in conjunction with a clarification email brought to our attention on December 23rd by Mr. Wayne Starling regarding historic operations at the site from Avalon.

As per our previous memo NB10-0488, the concept for the HTMF is to discharge tailings within one of the existing open pits. Once the solids have settled, excess water will be pumped for infiltration into the Pr'esquile Aquifer at an adjacent pit. The concept as described in Memo NB10-0488 indicates that the tailings will be deposited within the N-38 Pit and excess water would be discharged to the N-33 Pit. Based on the recent information, the following clarifications and changes are required:

- The pit selected for tailings deposition is not the N-38 Pit as earlier thought, but the L-37 Pit as shown on Figure 1. The N-38 Pit is a smaller pit located southwest of the L-37 Pit which is now infilled with waste rock as shown on Figure 1. Therefore, the tailings solids receptor location proposed is actually the L-37 Pit. As reported by Hannigan, the L-37 Pit was mined to exploit a 3.4 million tonne tabular ore deposit about 900 m long by 375 m wide by 4 to 12 m deep, to produce 34,000 tonnes of Lead and 116,000 tonnes of zinc.
- What was earlier thought to be the N-33 Pit is actually the N-32 Pit as shown on Figure 1. Based on the recently received historical information (email from Wayne Starling dated December 23, 2010), it is understood that the N-32 Pit was used as a long-term solid waste disposal site for the previous Pine Point Mine operations. Based on this new information, it is not recommended that excess water be discharged into the N-32 Pit due to the potential for mobilizing contaminants from the solid waste. It is now proposed to discharge excess water from tailings deposition to the N-42 Pit located southwest of the L-37 Pit. The N-42 Pit was mined to exploit a 3.0 million tonne normal prismatic ore deposit about 490 m long by 180 m wide by up to 28 m deep, to produce 157,000 tonnes of Lead and 281,000 tonnes of zinc as reported by Hannigan.

A revised general arrangement has been developed for the Pine Point Hydrometallurgical Site layout as shown on Figure 2 as well as a revised preliminary water balance flow sheet (Figure 3) based on the clarification and changes noted above. This layout arrangement will be used for development of the project design moving forward.

Signed: Matthew Parfitt, P.Eng.
Specialist Engineer/Project Manager

Approved: Ken D. Embree, P.Eng.
Managing Director

1650 Main Street West, North Bay, ON P1B 8G5
Phone: 705-476-2165 Facsimile: 705-474-8095

Attachments:

Figure 1	Pine Point Site Localized Existing Plan
Figure 2	Hydrometallurgical Site General Arrangement
Figure 3	Preliminary Water Balance Flow Sheet

References:

Hannigan, P, 2007 Metallogeny of the Pine Point Mississippi Valley-Type Zinc-Lead District, Southern Northwest Territories, Geological Survey of Canada

/mrp

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	07JAN'11	ISSUED WITH MEMO	MRP	SIR	DMMD	MRP

AVALON RARE METALS INC.

THOR LAKE PROJECT

PINE POINT AREA
LOCALIZED EXISTING PLAN

Knight Piésold CONSULTING

P/A NO. NB101-390/2

REF NO. NB11-00008

FIGURE 1

REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	07JAN'11	ISSUED WITH MEMO	MRP	SIR	MRP	MRP

LEGEND:

- HISTORIC TAILINGS
- PROPOSED WATER PONDS
- PROPOSED HYDROMETALLURGICAL TAILINGS
- PROPOSED ACCESS ROAD
- HYDRO POWER SUPPLY
- PROPOSED TAILINGS PIPELINE ROUTE
- PROPOSED WATER SUPPLY PIPELINE
- PROPOSED EXCESS WATER DISCHARGE ROUTE

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 11N.
2. IMAGE PROVIDED BY AVALON METALS INC.

SCALE A 600 300 0 1000 2000 3000 m

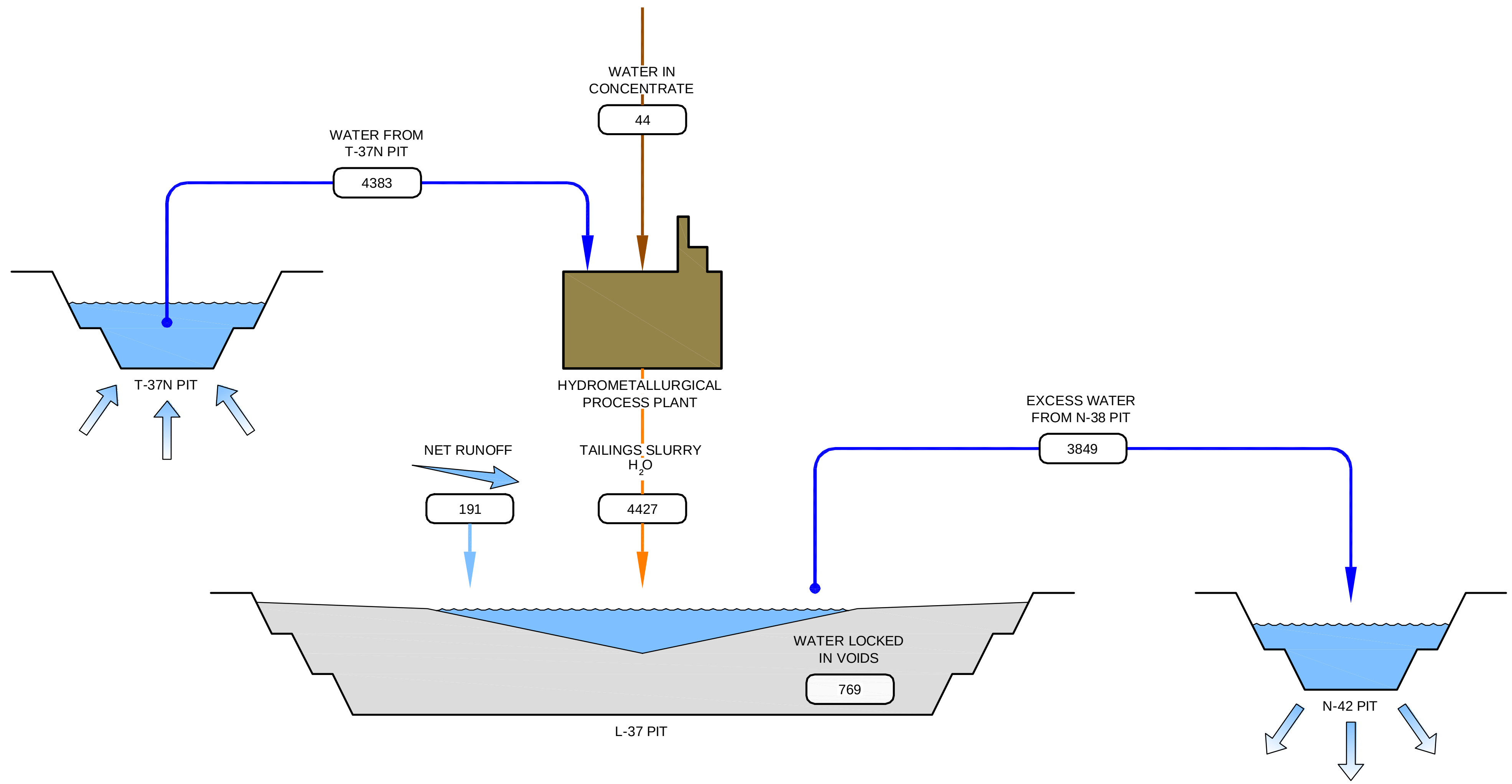
AVALON RARE METALS INC.

THOR LAKE PROJECT

PINE POINT AREA HYDROMETALLURGICAL SITE GENERAL ARRANGEMENT

Knight Piésold CONSULTING

P/A NO.	REF NO.	
NB101-390/2	NB11-00008	
FIGURE 2		REV 0



LEGEND:

1000 ESTIMATED AVERAGE FLOW (m^3/DAY)

NOTES:

1. ESTIMATES ARE FOR AVERAGE PRECIPITATION CONDITIONS AND DO NOT INCLUDE EXTREME PRECIPITATION EVENTS.

AVALON RARE METALS INC.

THOR LAKE PROJECT

PINE POINT AREA
PRELIMINARY WATER BALANCE FLOW SHEET

Knight Piésold CONSULTING

P/A NO.	REF NO.
NB101-390/2	NB11-00008

FIGURE 3 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	07JAN'11	ISSUED WITH MEMO	MRP	SIR	DMMD	MRP

May 2011

Appendix C.13

Thor Lake Project – (Updated) Feasibility Study Water/Solids Balance Analysis Results. Report NB11-00148

Knight Piésold
CONSULTING

MEMORANDUM

To:	Mr. David Swisher	Date:	March 11, 2011
Copy To:	John Goode, Bill Mercer, Rick Hoos, Brian Delaney, Kevin Hawton	File No.:	NB101-390/2-A.01
From:	Michelle Liu	Cont. No.:	NB11-00148
Re:	Thor Lake Project – (Updated) Feasibility Study Water/Solids Balance Analysis Results		

A Feasibility level water/solids balance analysis has been completed for the Avalon Rare Metals Inc. (Avalon) Thor Lake Project to determine the Tailings Management Facility (TMF) capacity and embankment staging as well as water availability for the Flotation plant. This memo supersedes the previously issued (Updated) Feasibility Study Water/Solids Balance Analysis Results memo (Cont. No. NB11-00100, Rev 0). The water balance analysis was updated to account for the following changes since the results were originally issued:

- The volume of Thor Lake is 5,054,270 m^3, based on the corrected bathymetry data provided by Stantec (2011)
- The mine inflows predicted from modelling and presented in memo NB11-00076 result in approximately 157,700 m^3 of mine water available on an annual basis for use in the Flotation Plant

The proposed TMF will consist of a Tailings Basin (TB) and a Polishing Pond (PP) if required for water treatment. The main objectives of this water balance are as follows:

1. Provide an estimate of the volumes of water reporting to the TMF and to Thor Lake in order to predict the operating requirements under average climatic conditions as well as dry and wet (extreme) conditions.
2. Determine the minimum embankment and spillway elevations for the TMF to provide the required storage for tailings, water and ice as well as the 1 in 25 year, 24 hour Environmental Design Storm (EDS) event.

Monthly water balance analyses were completed for a 9 month pre-production period, a projected 20-year mine life, and a 2 year post-production period. A deterministic approach was taken using average precipitation conditions and a probabilistic approach was taken using a risk based/simulation analysis which forecasts a range of wet and dry (extreme) precipitation conditions as well as the 1 in 25 year 24-hour EDS.

Updates to the water balance from the Pre-Feasibility Study analyses (presented in Memo NB09-00751, Rev 0), include:

- Mining rate is 2000 dtpd throughout the mine life, with the exception of a 1200 dtpd, 3 month ramp up period at the start of production
- The projected and modelled mine life has been increased to 20 years
- A thickener will be utilized in the Flotation Plant, which has raised the outgoing slurry solids content to 50% for Years 1 to 4 and 31.5% for Years 5 to 20 (after the Paste Plant begins operations)
- As a result of the decrease in water being sent to the TMF, the minimum and maximum supernatant pond volumes have been adjusted
- Based on updated test results the estimated specific gravity of the tailings has changed to 2.85 and the estimated dry density has changed to 1.3 t/m^3

- Monte Carlo simulation analysis has been incorporated into the model to simulate dry and wet climatic conditions for the site and their effects

This memo provides a summary of the updated analysis results, based on various design and process criteria. Included herein are a description of the site layout, the design constraints, the methodology for completing the water/solids balance analysis and a discussion of the results.

Site Layout and Water Management

The Project site is located in the Thor Lake watershed (2100 ha) area which drains into a larger watershed (6700 ha) area downstream before flowing into Great Slave Lake as shown on Figure 1. Sub-catchment areas within the Thor Lake watershed have been identified as shown on Figure 2. Background information and on site hydrological characteristics have been previously summarized in the "Review of Hydrological Data for Thor Lake Project" (KPL Cont. No. NB09-00546). Information shown on Figures 1 and 2 has been updated to account for additional mapping received since issuing memo NB09-00546.

The proposed site water management for the Thor Lake Project consists of a closed loop system to minimize impact to the natural hydrologic flows. The TMF is located within a basin in the upper portion of the northern watershed area reporting to Thor Lake. Water will be withdrawn from Thor Lake and recycled from the TMF to operate the Flotation Plant. Excess water from the TMF will be treated (if necessary) and discharged to Drizzle Lake from the PP. Ultimately, all excess water from the TMF will return to Thor Lake via the Drizzle Lake / Murky Lake drainage system. A runoff collection sump will be established to collect runoff water from the Flotation Plant Site and may also be used to reclaim small amounts of water for use in the Flotation Plant.

Figures 3 and 4 show the proposed general arrangement of the TMF for Phases 1 and 2, respectively. Phase 1 consists of the proposed arrangement for the first two years of operations where Buck Lake will act as the PP. Phase 2 consists of the arrangement for Years 3 onwards where the TB will encompass both Ring and Buck Lakes and the PP will be constructed if necessary for water treatment. The water balance flowsheet is provided on Figure 5. The flowsheet depicts the water management arrangement/model proposed for the Project and the estimated annual volumes of water that will flow between the various facilities and water bodies based on average precipitation conditions.

Design Criteria

The design basis and process criteria used for the water/solids balance are based on the available information and operational requirements confirmed with Avalon. The background information and basis of developing the design parameters, including meteorological parameters and site hydrological characteristics, are summarized in the memos "Review of Meteorological Data for Thor Lake Project" (KPL Cont. No. NB09-00477) and "Review of Hydrological Data for Thor Lake Project" (KPL Cont. No. NB09-00546), respectively. The key process criteria adopted for the water/solids balance have been summarized in the memo "Thor Lake Project Tailings & Water Management Design Basis for Feasibility Study" (KPL Cont. No. NB10-00591). Additional criteria/assumptions are summarized below:

- Estimated Potable Water Extraction Rate from Thor Lake - 10,950 m^3/year (30 m^3/day)
- Assumed Seepage Rate from the TB and the PP - 1,825 m^3/year (5 m^3/day)
- Estimated amount of water in paste backfill is 0.25 m^3/tonne

- The amounts of Water in Concentrate and Water in Ore have been applied according to the "Thor Lake Flotation Plant Water Balance" table (2000 dtpd case) provided by Bruce Fielder in an email dated December 14, 2009
- Assumed Pumping Rate for Mine Dewatering - 157,680 m^3/year (432 m^3/day)
- Assumed Reclaim Rate from Plant site runoff collection sump to Flotation Plant - 27,500 m^3/year (75.3 m^3/day), which includes runoff collected in the sump from the collection ditches on the perimeter of the Plant site
- It is assumed that all runoff from the Flotation Plant site will be collected and routed to the TMF via the Plant
- The estimated maximum ice thickness used in the water/solids balance model is 1.0 m based on experience at the Project site and recent baseline investigations by Stantec

It should be noted that the design criteria are subject to change as more information about the Project site becomes available and the project design details are developed.

Water Management Constraints

Various water management constraints have been incorporated into the water/solids balance model. The constraints include minimum and maximum water pond storage capacities which determine the amount of water that will be stored within the systems, recycled for use in the Flotation Plant and decanted or discharged. In addition, storm surcharge storage and maximum recycle rates have been established. The various constraints are summarized as follows:

- Minimum Pond Volume - This is the minimum pond volume for each of the ponds. There will be no discharge from the basin if the volume is equal to or less than this amount. For the first two full years of the Project operations, Ring Lake will act as the TB and Buck Lake will act as the PP. At the start of Year 3, the constructed PP will become operational, if required, and the TB will encompass both Ring and Buck Lakes.
  - The TB Minimum Supernatant Pond Volume for Years 1 and 2 is the volume of Ring Lake - 179,367 m^3, and the TB Minimum Supernatant Pond Volume for Years 3 and onwards is 50,000 m^3, which will provide the equivalent of 30 days of retention time based on the process flow.
  - The PP Minimum Pond Volume for Years 1 and 2 is the volume of Buck Lake - 138,583 m^3, and the PP Minimum Pond Volume for Years 3 and onwards is 0 m^3 as there will be no reclaim from the PP.

- Maximum Pond Volume - This is the maximum operating pond volume for each of the ponds. Excess water above this volume will be decanted or discharged over a spillway.
  - The Maximum Operating TB Supernatant Pond Volume will be the minimum required pond volume (50,000 m^3) plus 6 months of recycle water volume (to collect runoff from spring and summer to maintain recycle through winter) = 200,000 m^3. This is based on the need to have an adequate amount of water available to maintain recycle to the Flotation Plant, particularly in the winter months.
  - For the PP, the Maximum Operating Pond Volume in Years 1 and 2 is the volume of Buck Lake - 138,583 m^3, and the Maximum Operating Pond Volume in Years 3 and onwards has been selected as approximately 30 days of retention time, or 50,000 m^3, to provide capacity for water polishing.

- Environmental Design Storm (EDS) - This is the amount of storage, above the Maximum Operating Pond Volume, required to contain the proposed 1 in 25 year 24-hour storm event of 46.44 mm. This is applicable to the TB and the PP, and it is recommended that the TB and PP embankments be constructed to provide storage capacity for both the Maximum Operating Supernatant Pond Volume and the EDS, in addition to the 2 m of freeboard specified for these dams to accommodate the inflow design flood and wave run-up.

- The supernatant pond in the TB will serve as the primary source for recycled water for the Flotation Plant. Based on the process criteria for the project, supernatant pond water will be returned to the plant at a maximum rate of 50% of the process flow, with fresh water from Thor Lake, as well as mine water, plant site runoff, and water in ore, making up the remainder of the process flow. If required, the water recycled from the TB will be treated at the plant prior to being added into the process.

Methodology

The water balance analysis was completed using a spreadsheet approach, and was developed for a nine month pre-production period (January 1 - September 30) followed by the projected 20 year mine life (Oct 1 start-up for operations). The water balance model estimates the water surplus/deficit for the TB, PP, and Thor Lake on a monthly basis, using various inputs including catchment areas, runoff coefficients, and precipitation, snowmelt and evaporation data. The volumes of water reporting to the TB, PP and Thor Lake (through Drizzle and Murky Lakes) is calculated on a monthly basis by adding the total inputs and outputs (losses).

Snowpack and ice melt parameters for the model were estimated such that the accumulated snow and ice up to the months of March, April and May is assumed to melt at a rate of 15 percent in March, 70 percent in April and 15 percent in May, meaning that 100 percent of the accumulated snow and ice will be melted by the end of May.

Catchment areas for all of the areas incorporated in the water balance are as shown on Figure 2. The selection of runoff coefficients for the various catchment areas was based on the results described in the "Discharge and Runoff" section of the Hydrological Data Review Memo (KP Cont. No. NB09-00546). The runoff coefficients for the tailings active and dry beaches have been determined based on past experience with similar tailings disposal facilities and on consideration for sublimation of falling snow based on work done for the Mackenzie River Basin (Burford, 1998).

The water balance spreadsheet model also incorporates elevation versus storage capacity data for the TB and PP derived from the topography of the site. The elevation versus capacity relationship allows the required operating elevations for the TB and PP to be estimated over the mine life.

Two different precipitation conditions were analyzed as follows:

1. Average precipitation and evaporation conditions
2. Dry/wet (extreme) precipitation conditions

Average precipitation and evaporation conditions were analysed using deterministic analysis and dry/wet precipitation conditions were analysed using probabilistic analysis, as described below.

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Deterministic Analysis

The deterministic analysis was completed using average precipitation and evaporation data, as well as average estimated snowmelt data to estimate the expected water reporting to the TB, PP and Thor Lake over the course of the mine life.

Simulation or Risk Based Analysis

A simulation or risk based approach was applied to the water balance to estimate the potential climatic variability (wet/dry conditions). This analysis used synthetic total monthly precipitation data generated randomly from statistical parameters based on the historic precipitation data. Probable precipitation for each month was modelled as truncated distributions. The distributions were truncated on their lower tail at zero since it is not possible to have negative precipitation. Upon analysis of the highly variable rainfall data, the Lognormal distribution function was selected for each month. The Lognormal distribution function was chosen because it requires only the mean and standard deviation for the historical rainfall data, which is readily available.

The modelling utilized the Microsoft Excel add-on program @RISK, which permits cell inputs to be modelled as the chosen distributions rather than as single values. The @RISK program has the capability to perform Monte Carlo type simulations and track the various outputs that result from variations in the input. This allows for a prediction of how the water availability and discharge may vary over a certain period of time under a range of possible climatic conditions. The model was run for 10,000 iterations, such that 10,000 different sequences of monthly precipitation over the mine life were considered.

Selected outputs from the water balance model are presented as a range including the 5th percentile, mean and 95th percentile results. The 5th percentile volume is statistically the lowest volume of water anticipated with a 5 percent chance of the volume being below this level (extreme dry case). The 95th percentile volume is statistically the highest volume of water anticipated with a 5 percent chance of the volume exceeding this level (extreme wet case).

Results

The results of the deterministic and probabilistic (risk-based) water/solids balance analyses are provided on Figures 5 to 16 and are summarized as follows:

- Figure 5 shows the average results from the water balance analyses on a flowsheet. There is a net loss of water from the environment during operations, as some water ultimately remains locked in the tailings voids within the TMF and paste backfill.
- Figure 6 represents the anticipated solids and water storage levels and associated dam crest elevations for the TB and PP over the mine life
- It is judged that Ring Lake will supply adequate storage for tailings deposition during Years 1 and 2 (Stage 1) with Buck Lake being used as the PP. A temporary coffer dam or separator dyke may be required as shown on Figure 3 to maintain two separate basins during Phase 1. This will allow sufficient time to evaluate the water quality and treatment requirements, if any, for discharge water and determine whether the permanent PP is required.
- The proposed final dam crest elevation for the TB is El. 256 (as shown on Figure 4 and 6) m to provide a total solids storage capacity of approximately 4.79 million m^3, and specified water management storage and freeboard over the mine life

- Based on the design criteria and water management constraints applied, the TB will contain up to a maximum of approximately 370,000 m^3 of supernatant pond water and ice during the winter months (Figure 7) to be able to maintain the minimum pond volume (50,000 m^3) under the ice and recycle
- The estimated PP dam crest elevation of El. 249 m will store up to 66,000 m^3 of water (plus ice) as shown on Figure 10. A conceptual arrangement for the Phase 2 final layout is shown on Figure 4
- Discharge from the TMF during the winter months (December through April) will approach zero due to temporary losses to ice build-up and lack of runoff inflow. Maximum temporary losses to ice build-up in the TB during winter months are estimated to vary up to 370,000 m^3 through the mine life (Figure 7).
- Available water within the TB pond will vary between 50,000 m^3 in winter months (minimum) and 130,000 m^3 to 200,000 m^3 through summer months depending on precipitation conditions (Figure 8)
- The annual water discharge from the TB will be about 130,000 m^3 for average precipitation conditions and vary from 110,000 m^3 for dry years to 160,000 m^3 for wet years (Figure 9)
- Figure 10 shows the total monthly volume of water (with and without ice) in the PP for average conditions
- Figure 11 shows the total volume of available water (under ice) in the permanent PP under wet, average and dry conditions which ranges from 6,000 m^3 in the winter months to between 49,000 and 58,000 m^3 in summer months depending on precipitation conditions
- As shown on Figure 12, the monthly recycle or reclaim from the TB will be at the full 50% process flow value for spring, summer, fall and early winter. Reclaim will be less during late winter due to ice losses and low runoff inflows.
- Figure 13 indicates that the annual volume recycled to the Flotation Plant from the TMF will be about 264,500 m^3 or about 88 % of the maximum reclaim rate (299,300 m^3 per year) based on 50% of process flow
- Figure 14 shows the annual total discharge from the TMF (via the PP) to Drizzle Lake under dry, average and wet conditions. Annual volumes of excess water discharged to Drizzle Lake ranges from approximately 133,000 m^3 for dry conditions to 191,000 m^3 in year 5 for wet conditions. Under average precipitation conditions, annual discharge to Drizzle Lake will vary from 160,000 m^3 in earlier years to 122,000 m^3 in later years of operations.
- The water balance model predicts that the net maximum volume extracted from Thor Lake over the winter months will vary from 51,000 m^3 during initial years to about 38,000 m^3 during later years of operations, for average conditions based on 50 % reclaim and full inflow during winter months (Figure 15). In addition, there is a possibility that Thor Lake could be drawn down by a volume of approximately 55,000 m^3 during an exceptionally dry year (5 % case).
- A sensitivity analysis for drawdown of Thor Lake was conducted for a case where no reclaim from the TB was completed and with reduced inflow (no inflow for 4 months in winter). As shown on Figure 16, the total drawdown will range up to 82,000 m^3 in winter and to about 37,000 m^3 in summer.
- Based on Fisheries and Oceans (DFO Protocol for Winter Withdrawal in the Northwest Territories, June 21, 2010), the total water withdrawal from a single water body is not to exceed 10% of the available water volume estimated under the expected maximum ice thickness. The available 10% withdrawal volume for Thor Lake is estimated to be 360,000 m^3.
- Based on the water/solids balance results it is predicted that during the 20 year mine life, winter water withdrawal from Thor Lake will be significantly less than the 10% limit stipulated by DFO

Conclusions/Recommendations

With the design parameters used in these analyses, there will be adequate water available on an annual basis from Thor Lake for use in the Flotation Plant. When the worst case scenario of 0% reclaim and reduced inflow into Thor Lake (zero inflow for four months of the year) was modelled, it was determined that the water withdrawal from Thor Lake would still fall well within acceptable limits. Given the mine water volumes expected to contribute to the Flotation Plant, the fresh water requirement from Thor Lake is further decreased.

The proposed crests of the TB and PP are at elevations such that they will provide 2 m of freeboard above the spillway invert under average precipitation, melt and evaporation conditions. During operations, it is recommended that site meteorological conditions and flows continue to be measured and used to help refine the water balance model to improve ongoing performance predictions.

We trust that this memo provides you with the information that you require at this time. Should you have any questions or comments, please feel free to contact us.

Signed: Michelle Liu, Approved: FOR

Michelle Liu, E.I.T.
Civil Engineering

Kevin Hawton, P.Eng.
Senior Engineer

References:

1. Burford, J. and Stewart, R., "The Sublimation of Falling Snow Over the Mackenzie River Basin", York University, July 1998.
2. DFO Protocol for Winter Water Withdrawal for Ice-Covered Water Bodies in the Northwest Territories and Nunavut, Department of Fisheries and Oceans, Government of Canada, 2010.
3. Stantec, Environmental Baseline Report: Volume 3 - Aquatics and Fisheries, Final Report, January 2011.

Attachments:

Figure 1 Rev 0	Regional Watershed Plan
Figure 2 Rev 0	Estimated Project Site Watershed Areas
Figure 3 Rev 0	Phase 1 Tailings Facility Plan and Water Management Concept
Figure 4 Rev 0	Final (Phase 2) Tailings Facility Plan and Water Management Concept
Figure 5 Rev 0	Site Water Balance Flow sheet - Average Precipitation Conditions
Figure 6 Rev 0	Tailings Basin and Polishing Pond Water and Dam Crest Elevations - Average Conditions
Figure 7 Rev 0	Total Volume of Water in Tailings Basin
Figure 8 Rev 0	Total Volume of Available Water in Tailings Basin (Not Including Ice)
Figure 9 Rev. 0	Total Annual Discharge from Tailings Basin
Figure 10 Rev 0	Total Volume of Water in Polishing Pond
Figure 11 Rev 0	Total Volume of Available Water in Polishing Pond
Figure 12 Rev 0	Total Reclaim from Tailings Basin
Figure 13 Rev 0	Total Reclaim from Tailings Basin Annually
Figure 14 Rev 0	Total Discharge from Polishing Pond
Figure 15 Rev 0	Thor Lake Volume - 50% Reclaim Rate & Reduced Inflow - Wet, Dry and Average Conditions
Figure 16 Rev 0	Thor Lake Volume - 0% Reclaim Rate & Reduced Inflow - Wet, Dry and Average Conditions

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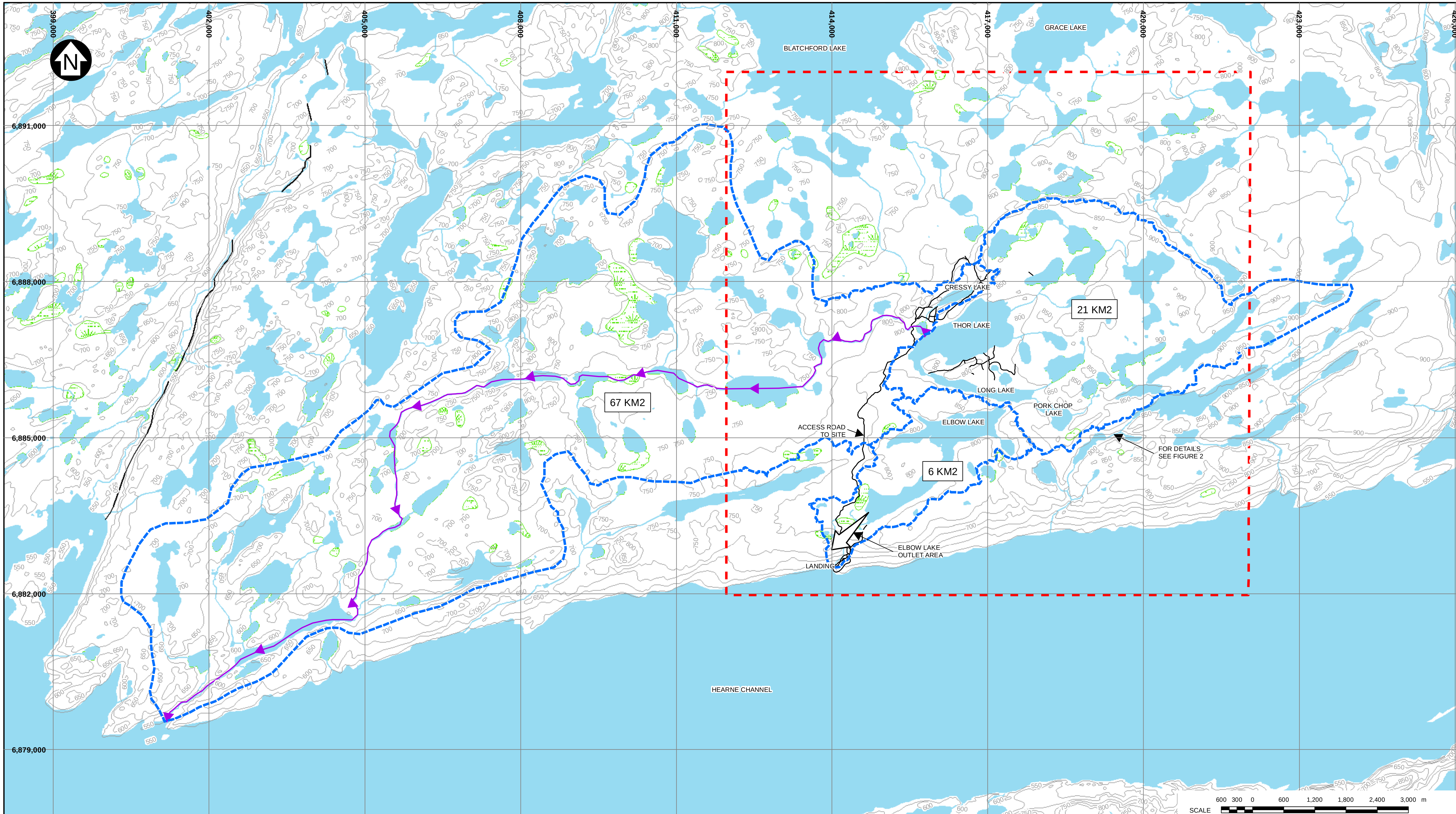

LEGEND:

- WATER
- WETLAND
- ELBOW LAKE OUTLET AREA
- THOR LAKE DRAINAGE TO GREAT SLAVE LAKE
- RIVER/STREAM/DRAINAGE
- ROAD
- LIMITS OF SATELLITE IMAGERY AND DETAILED TOPOGRAPHIC MAPPING
- REGIONAL WATERSHED BOUNDARY

NOTES:

1. BASE MAP: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004). ALL RIGHTS RESERVED.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 12 AND IS IN METRES.
3. CONTOUR INVTERVAL IS IN METRES. CONTOUR INTERVAL IS 50 METRES.

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
REGIONAL WATERSHED PLAN

Knight Piésold CONSULTING

P/A NO.	REF NO.
NB101-390/2	NB11-00148

FIGURE 1 REV 0

0	11MAR'11	ISSUED WITH MEMO	MRP	ASM	CLS	KEH
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D

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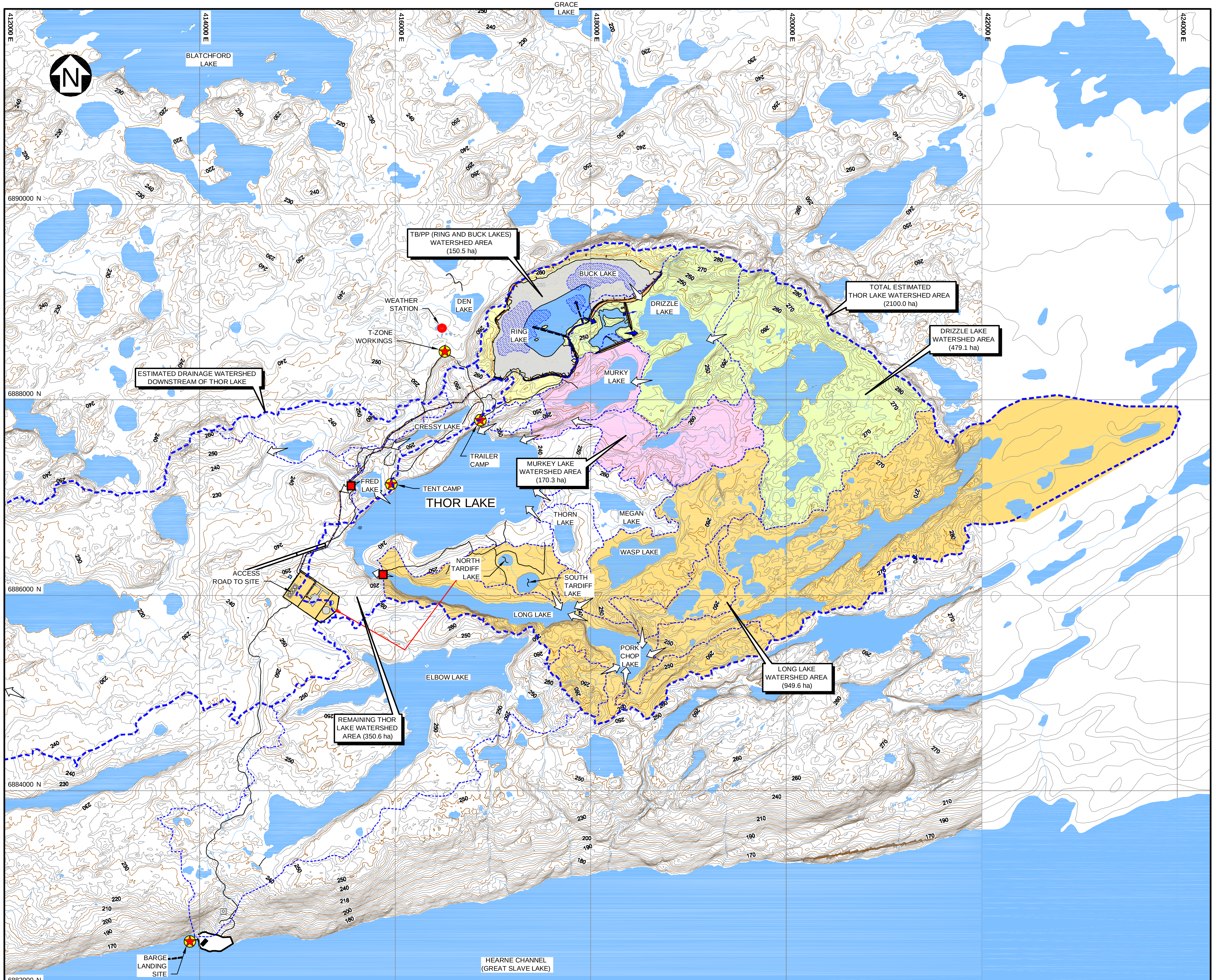


LEGEND:

- WATER
- ROAD
- WATERSHED BOUNDARY
- SUB WATERSHED DIVIDE
- DRAINAGE DIRECTION
- BASELINE MONITORING LOCATION
- WEATHER STATION

NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
2. PLAN BASED ON INFORMATION PROVIDED BY AVALON RARE METALS INC.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2 METRES.
4. LAKE AREAS ARE INCLUDED IN CATCHMENT AREA TOTAL.

SCALE 400 200 0 400 800 1200 1600 2000 m

AVALON RARE METALS INC.

THOR LAKE PROJECT

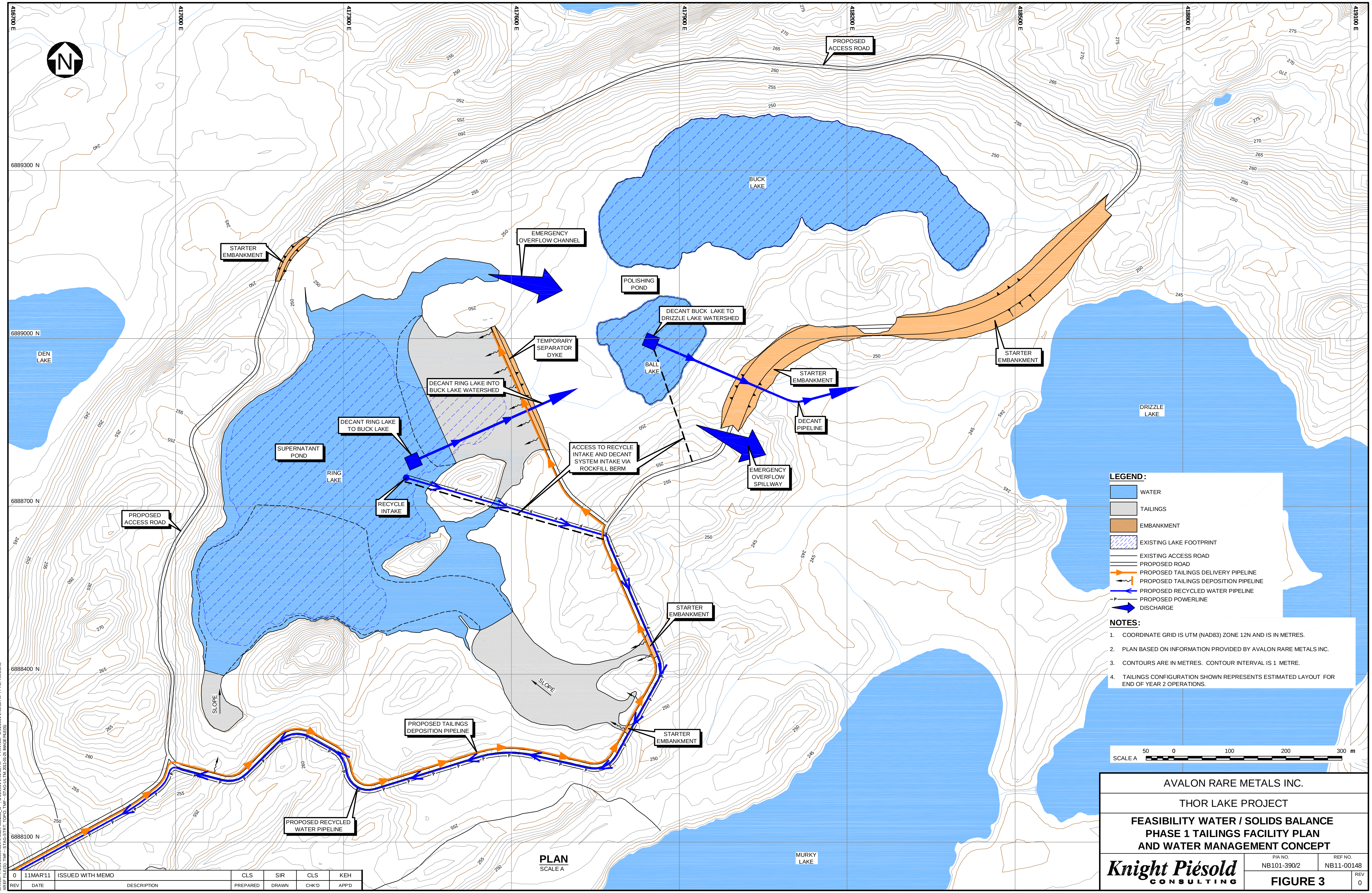
FEASIBILITY WATER/SOLIDS BALANCE
ESTIMATED PROJECT SITE WATERSHED AREAS

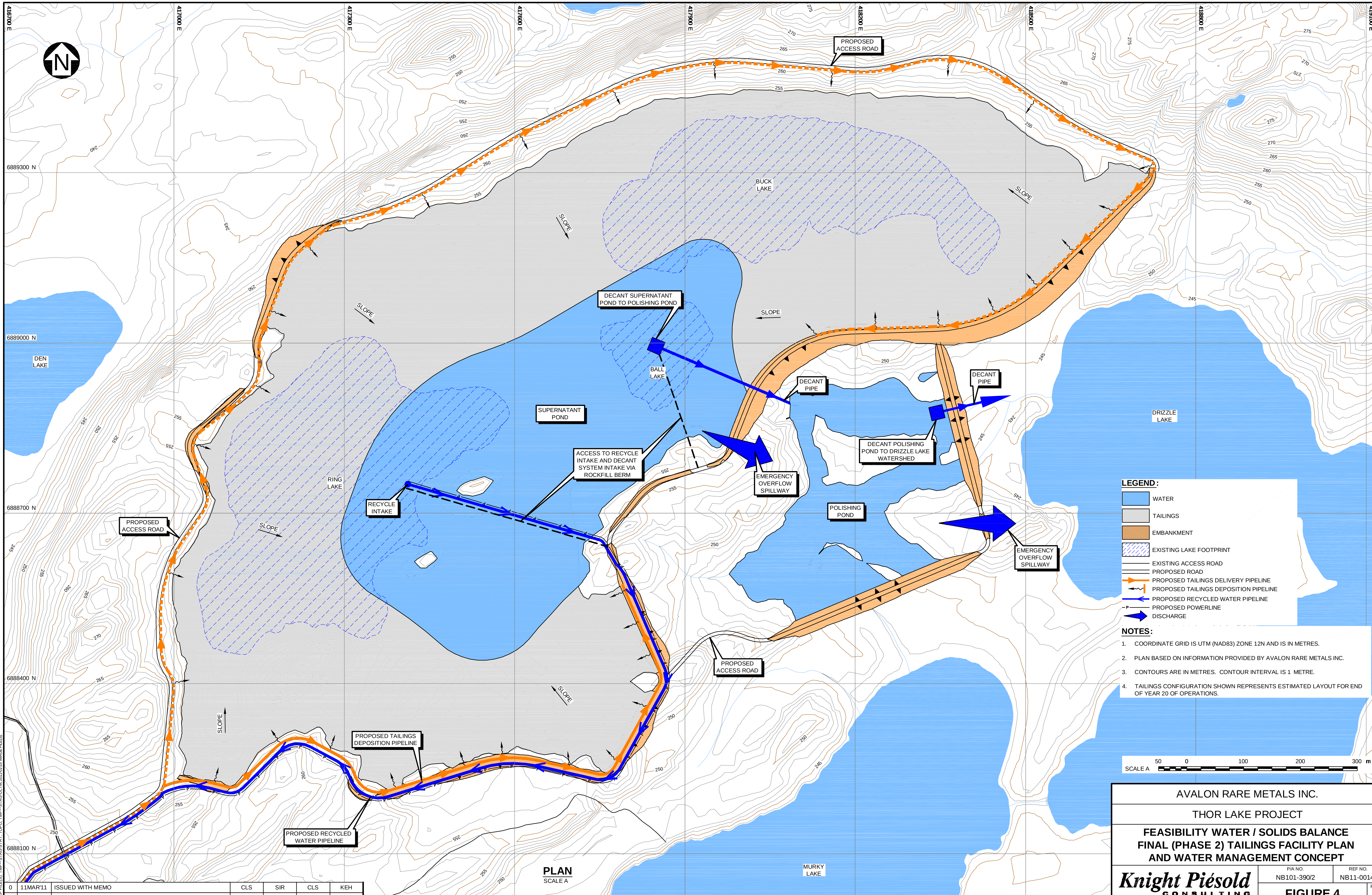
Knight Piésold CONSULTING

P/A NO.	REF NO.
NB101-390/2	NB11-00148

FIGURE 2 REV 0

0	11MAR'11	ISSUED WITH MEMO	MRP	SIR	CLS	MRP
REV	DATE	DESCRIPTION	PREPARED	DRAWN	CHK'D	APP'D


PROPOSED ACCESS ROAD
STARTER EMBANKMENT
EMERGENCY OVERFLOW CHANNEL
POLISHING POND
BUCK LAKE
DECANT BUCK LAKE TO DRIZZLE LAKE WATERSHED
TEMPORARY SEPARATOR DYKE
DECANT RING LAKE INTO BUCK LAKE WATERSHED
BALL LAKE
STARTER EMBANKMENT
STARTER EMBANKMENT
DECANT PIPELINE
DRIZZLE LAKE
DEN LAKE
DECANT RING LAKE TO BUCK LAKE
SUPERNATANT POND
RING LAKE
ACCESS TO RECYCLE INTAKE AND DECANT SYSTEM INTAKE VIA ROCKFILL BERM
EMERGENCY OVERFLOW SPILLWAY
RECYCLE INTAKE
PROPOSED ACCESS ROAD
STARTER EMBANKMENT
SLOPE
SLOPE
PROPOSED TAILINGS DEPOSITION PIPELINE
STARTER EMBANKMENT
PROPOSED RECYCLED WATER PIPELINE
MURKY LAKE
PLAN
SCALE A
LEGEND:
WATER
TAILINGS
EMBANKMENT
EXISTING LAKE FOOTPRINT
EXISTING ACCESS ROAD
PROPOSED ROAD
PROPOSED TAILINGS DELIVERY PIPELINE
PROPOSED TAILINGS DEPOSITION PIPELINE
PROPOSED RECYCLED WATER PIPELINE
PROPOSED POWERLINE
DISCHARGE
NOTES:
1. COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
2. PLAN BASED ON INFORMATION PROVIDED BY AVALON RARE METALS INC.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1 METRE.
4. TAILINGS CONFIGURATION SHOWN REPRESENTS ESTIMATED LAYOUT FOR END OF YEAR 2 OPERATIONS.
SCALE A 50 0 100 200 300 m
AVALON RARE METALS INC.
THOR LAKE PROJECT
FEASIBILITY WATER / SOLIDS BALANCE
PHASE 1 TAILINGS FACILITY PLAN
AND WATER MANAGEMENT CONCEPT
Knight Piésold CONSULTING
P/A NO. NB101-390/2
REF NO. NB11-00148
FIGURE 3
REV 0
0 11MAR'11 ISSUED WITH MEMO CLS SIR CLS KEH
REV DATE DESCRIPTION PREPARED DRAWN CHK'D APP'D



NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
2. PLAN BASED ON INFORMATION PROVIDED BY AVALON RARE METALS INC.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1 METRE.
4. TAILINGS CONFIGURATION SHOWN REPRESENTS ESTIMATED LAYOUT FOR END OF YEAR 20 OF OPERATIONS.

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER / SOLIDS BALANCE FINAL (PHASE 2) TAILINGS FACILITY PLAN AND WATER MANAGEMENT CONCEPT

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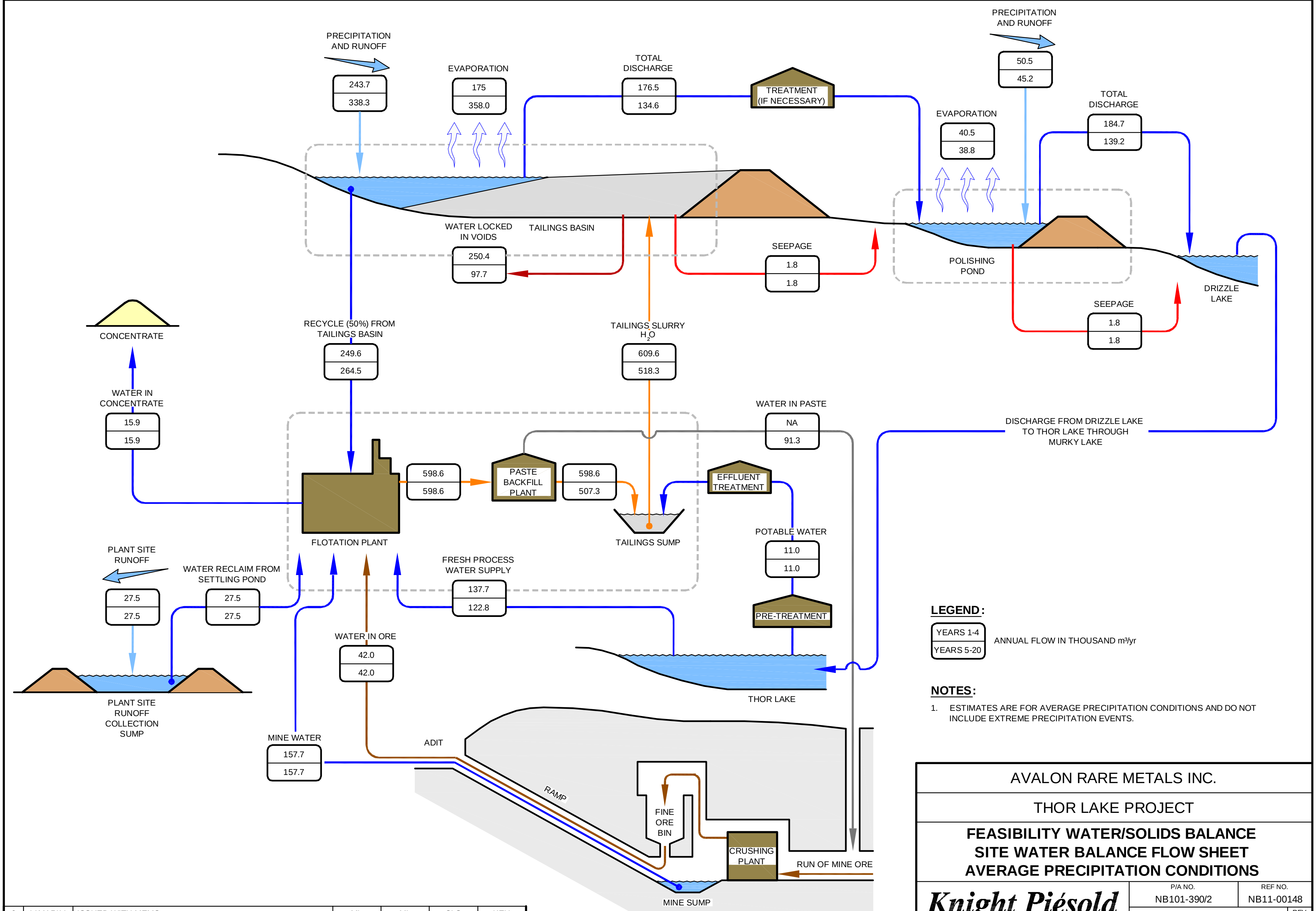
P/A NO.	REF NO.
NB101-390/2	NB11-00148

FIGURE 4 REV 0

REV	DATE	DESCRIPTION	PREPARED	DRAWN	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	CLS	SIR	CLS	KEH



AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
SITE WATER BALANCE FLOW SHEET
AVERAGE PRECIPITATION CONDITIONS

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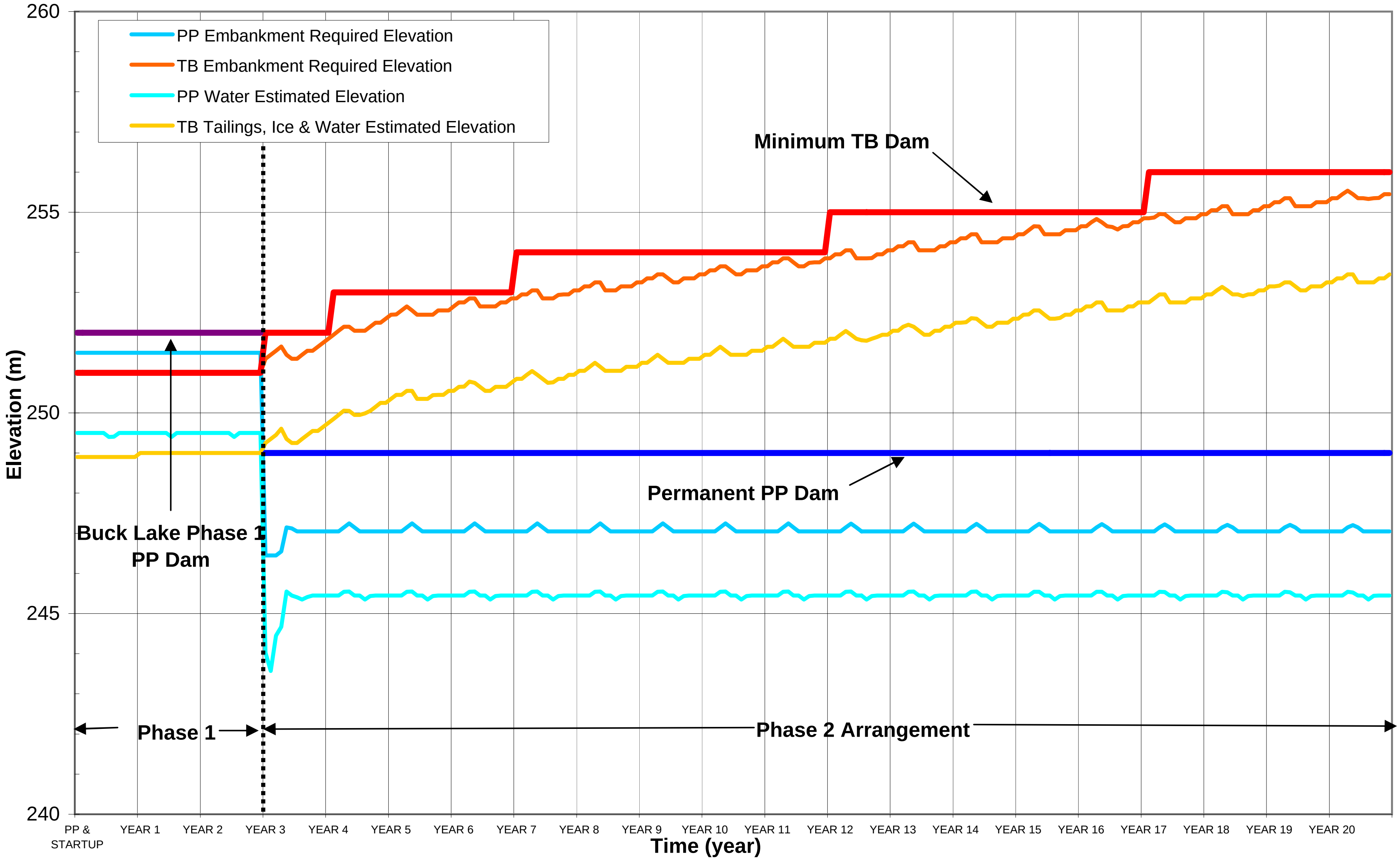
P/A NO. NB101-390/2

REF NO. NB11-00148

FIGURE 5

REV 0

REV	DATE	DESCRIPTION	PREPARED	DRAWN	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	ML	CLS	KEH



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TAILINGS BASIN AND POLISHING POND WATER AND DAM CREST ELEVATIONS-AVERAGE CONDITIONS

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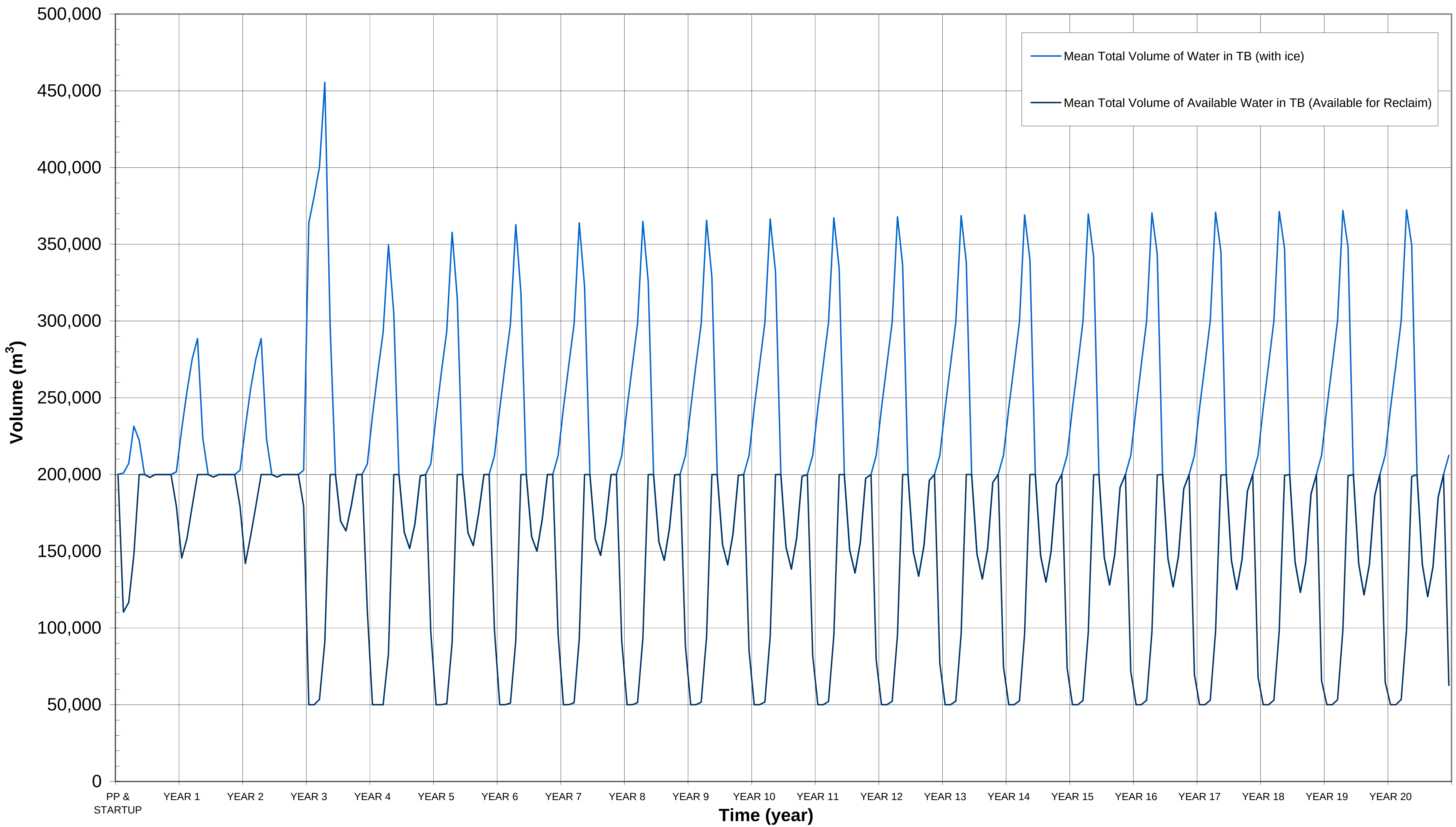
P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 6 REV 0

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH

AVALON RARE METALS INC.

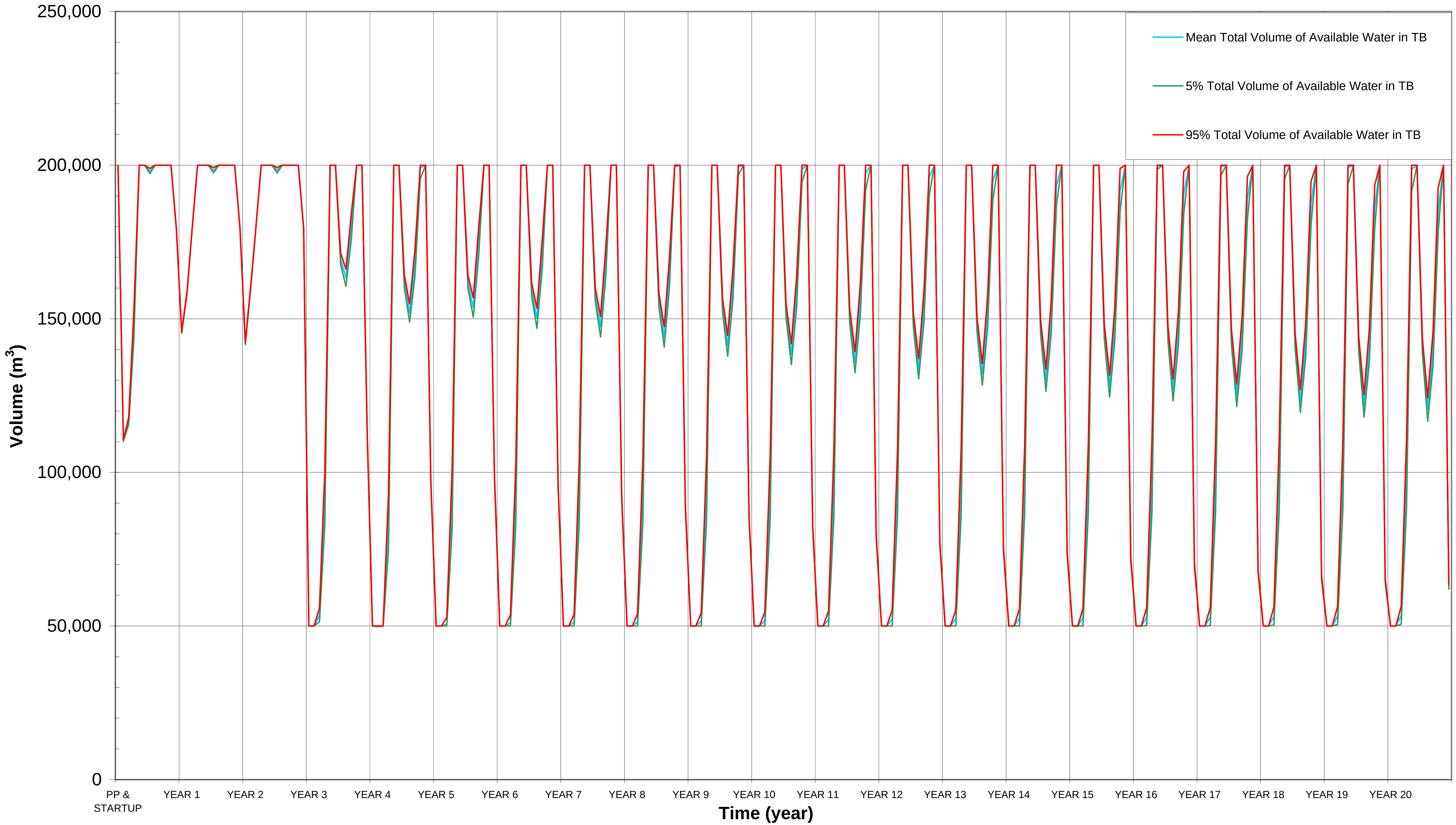
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL VOLUME OF WATER IN TAILINGS BASIN

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 7 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH

AVALON RARE METALS INC.

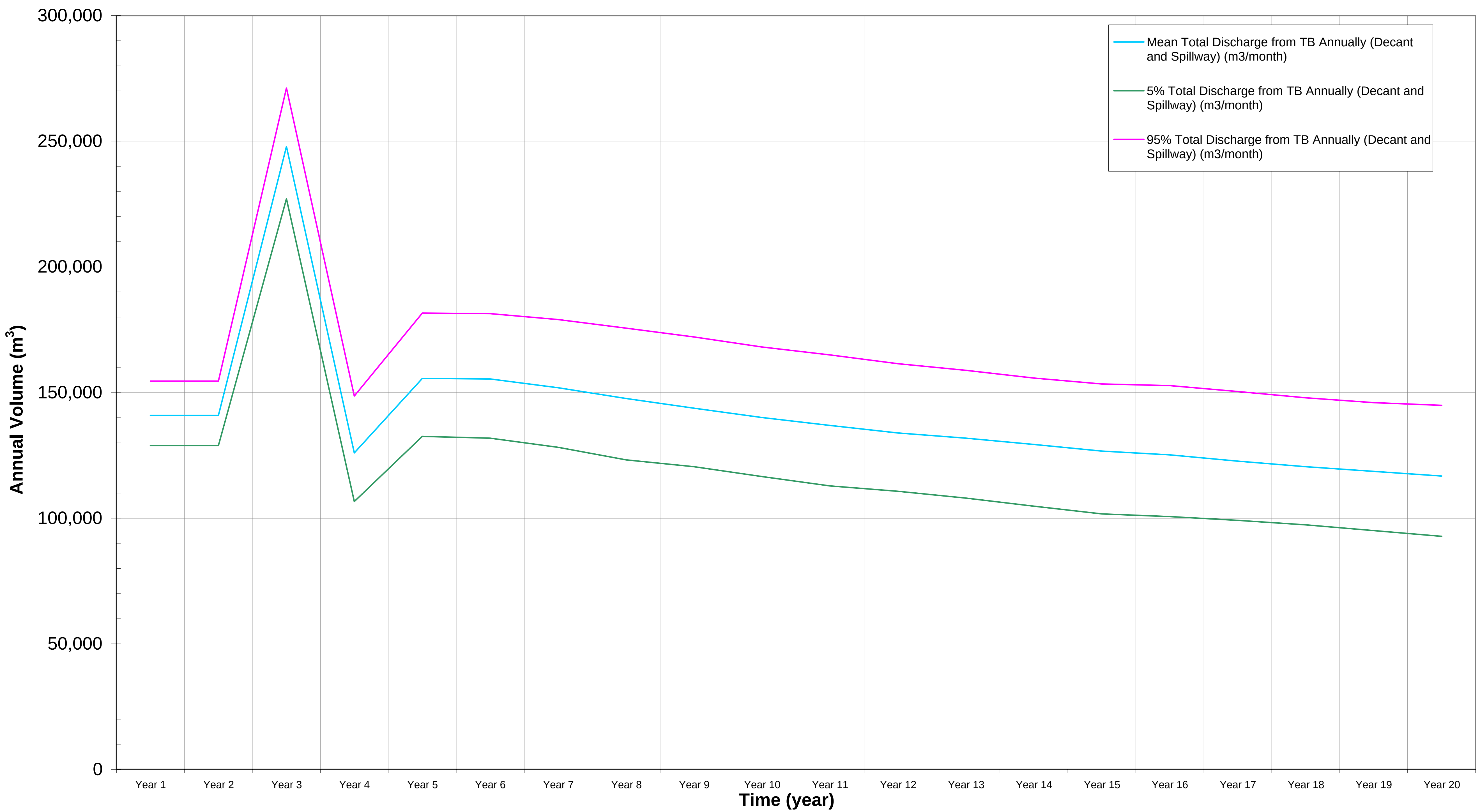
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL VOLUME OF AVAILABLE WATER IN TAILINGS BASIN (NOT INCLUDING ICE)

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 8 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL ANNUAL DISCHARGE FROM TAILINGS BASIN

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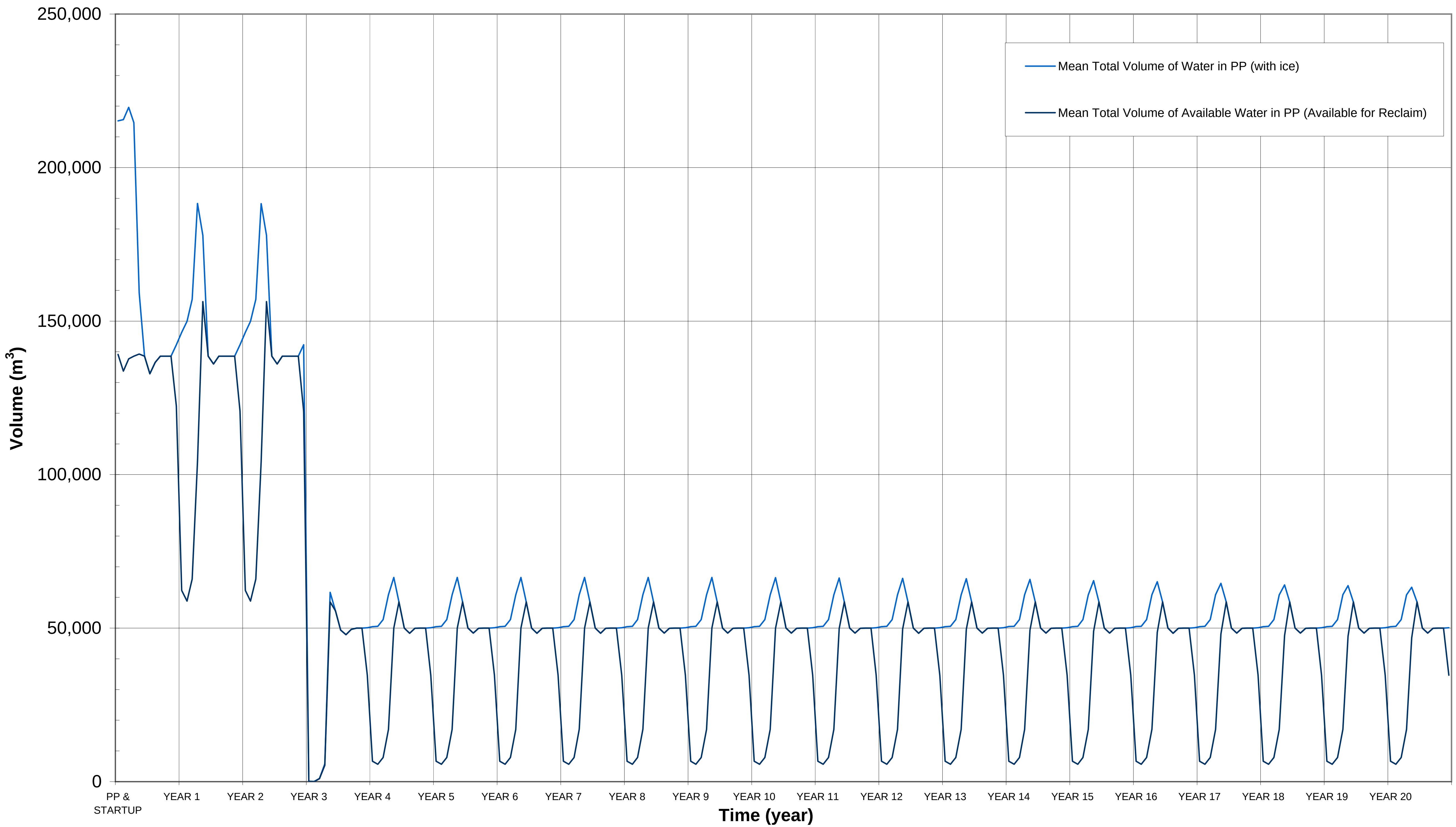
P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 9 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.

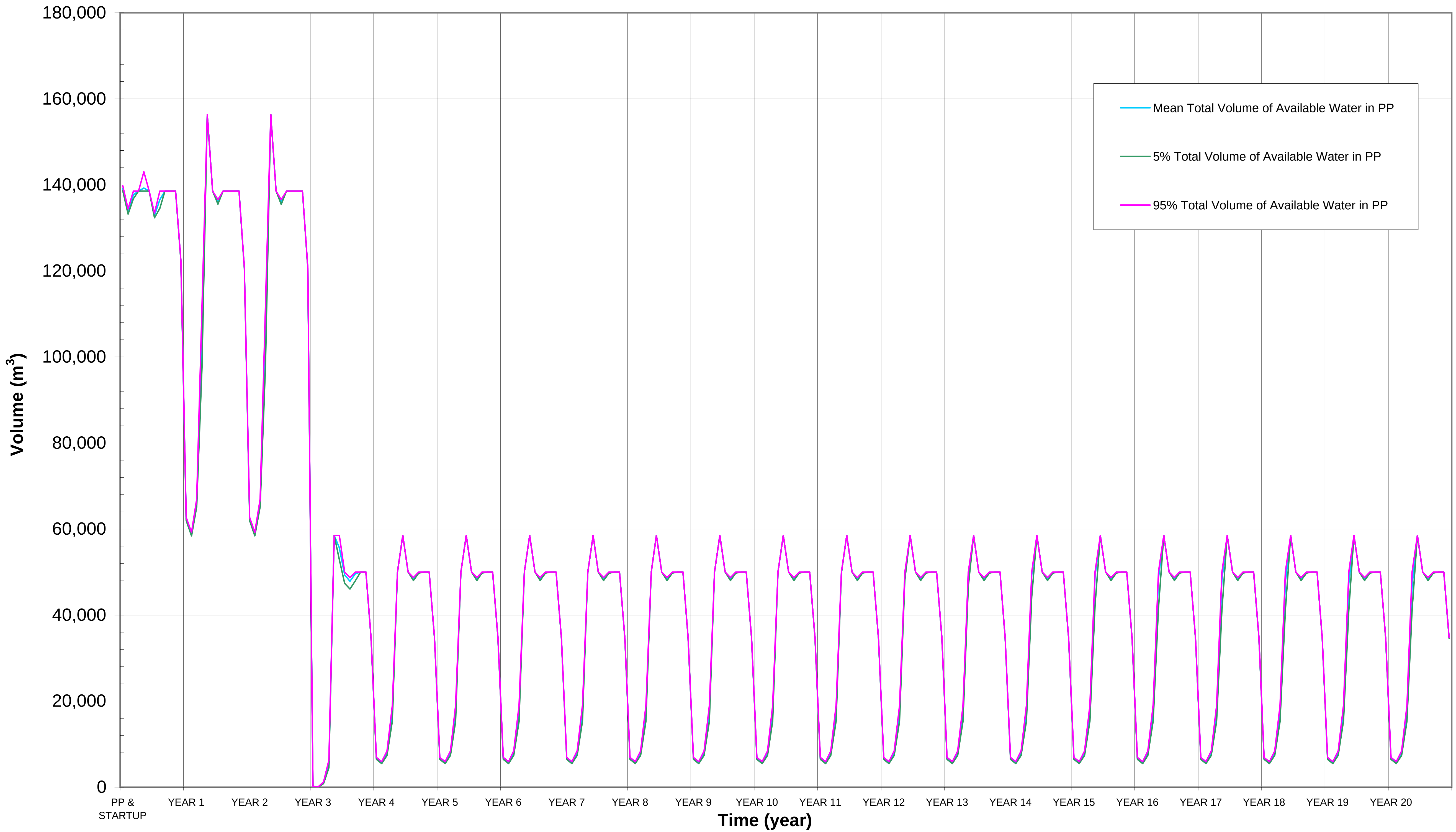
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL VOLUME OF WATER IN POLISHING POND

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 10 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH

AVALON RARE METALS INC.

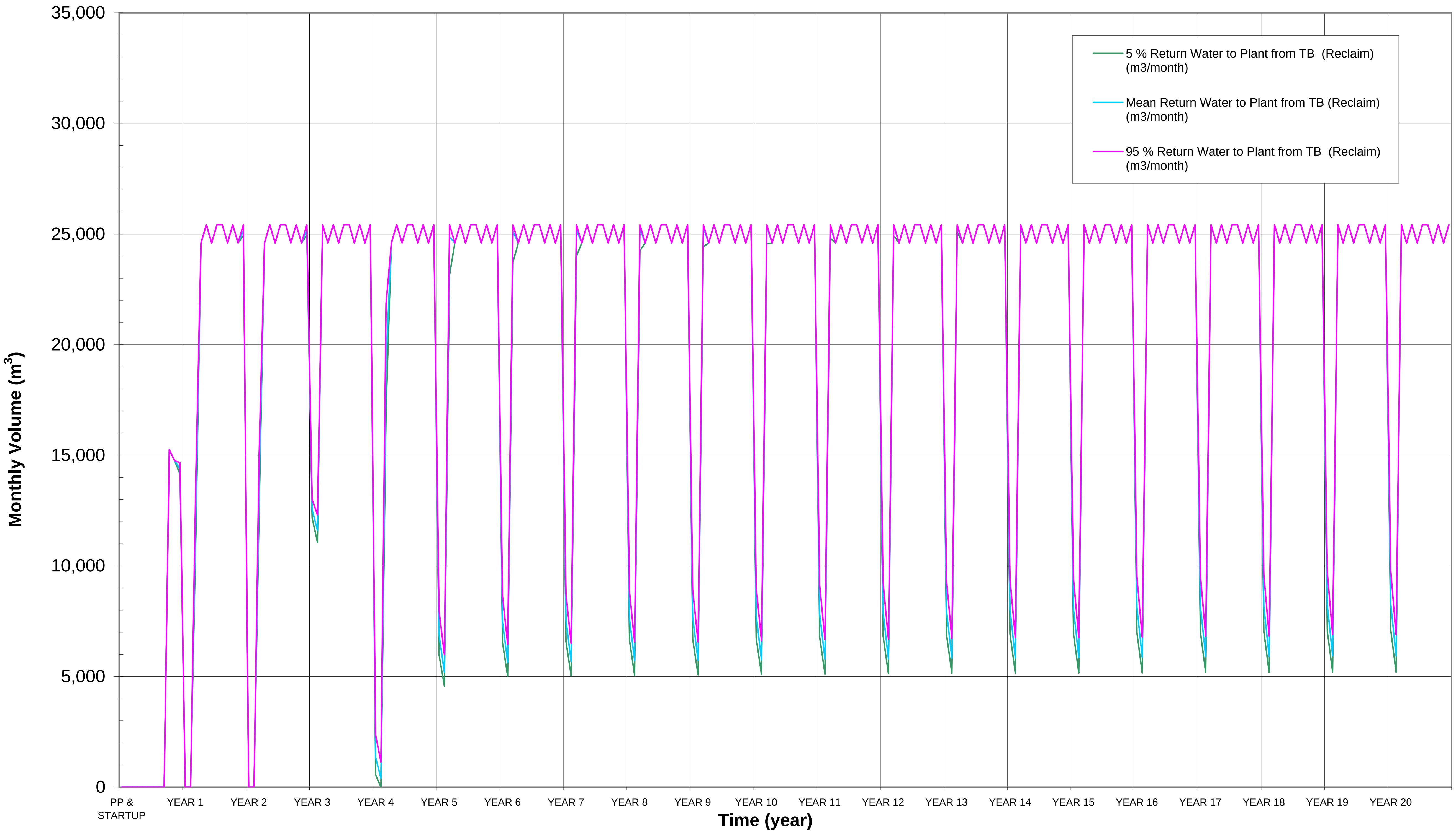
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL VOLUME OF AVAILABLE WATER IN POLISHING POND

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 11 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL RECLAIM FROM TAILINGS BASIN

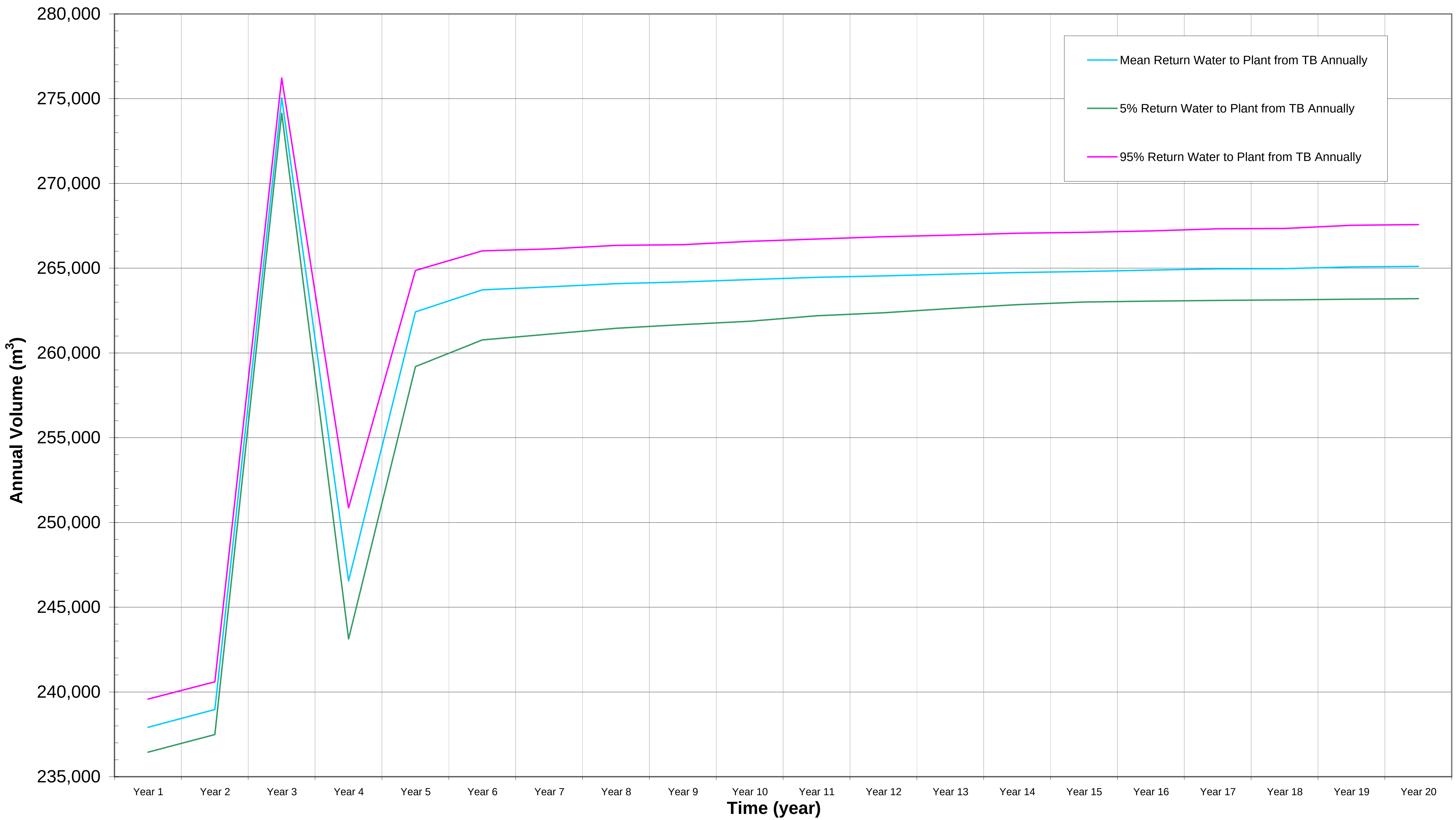
Knight Piésold CONSULTING

P/A NO. NB101-390/2

REF. NO. NB11-00148

FIGURE 12

REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.

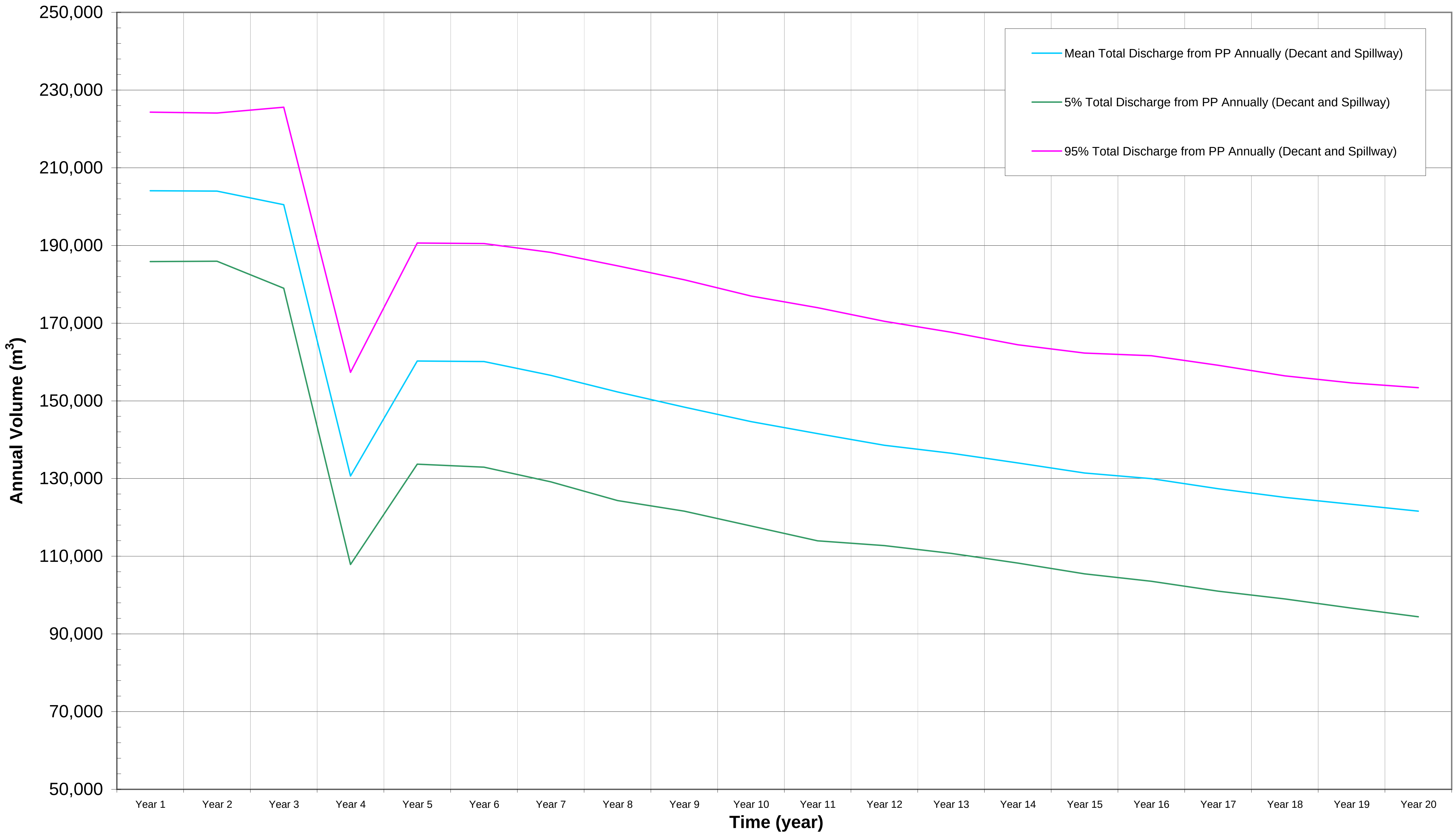
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL RECLAIM FROM TAILINGS BASIN ANNUALLY

Knight Piésold CONSULTING

P/A NO. NB101-390/2 | REF. NO. NB11-00148

FIGURE 13 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. AT THE START OF YEAR 3, BUCK LAKE IS AMALGAMATED WITH THE TB AND THE CONSTRUCTED PP IS OPENED, IF REQUIRED (START OF PHASE 2).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH

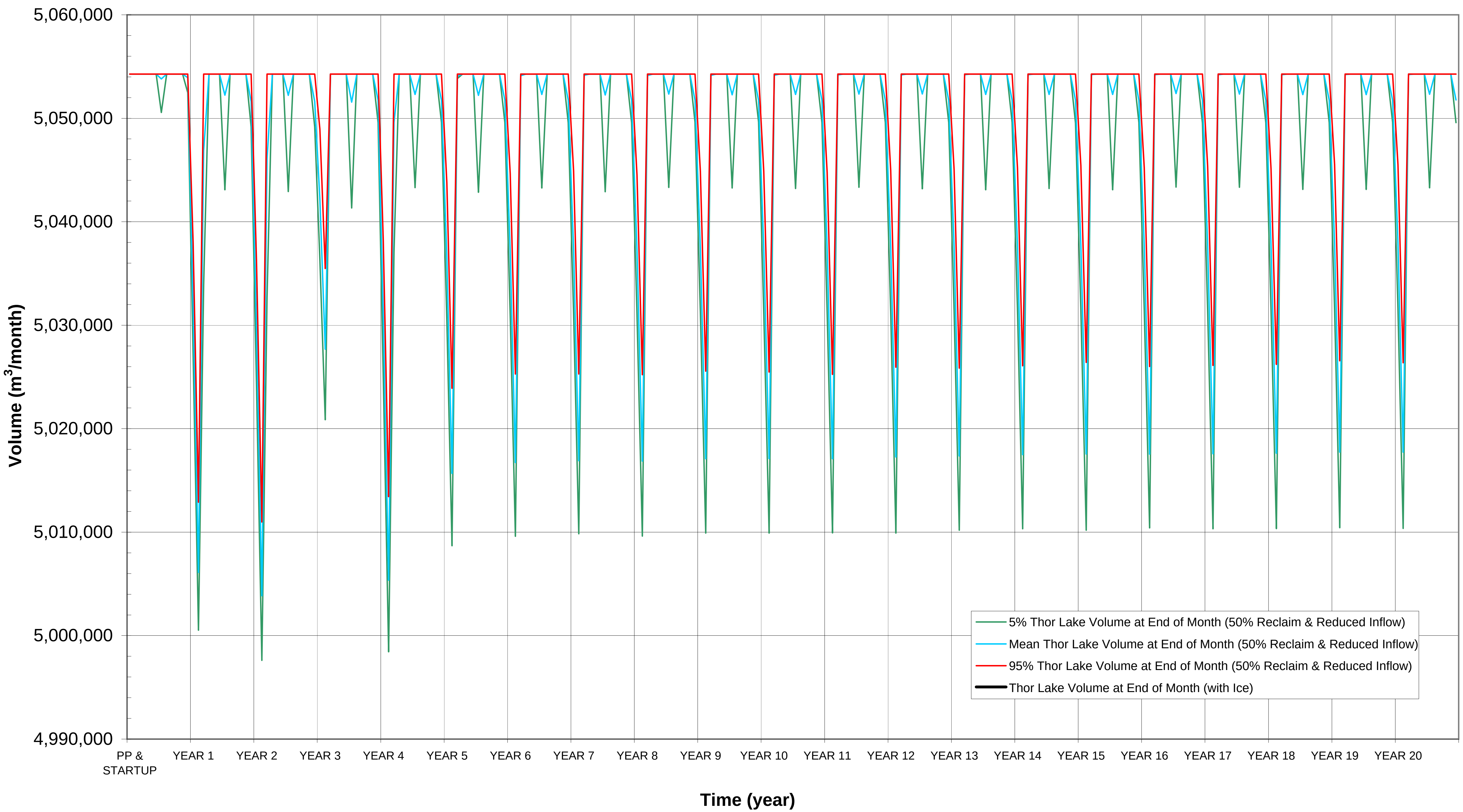
AVALON RARE METALS INC.
THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
TOTAL DISCHARGE FROM POLISHING POND

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 14 REV 0



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. "REDUCED INFLOW" MEANS THAT THE INFLOW REPORTING TO THOR LAKE FROM RUNOFF AND PRECIPITATION HAS BEEN ELIMINATED FOR THE MONTHS OF DECEMBER THROUGH MARCH (INCLUSIVE) EACH YEAR. "FULL INFLOW" MEANS THAT THAT RUNOFF AND PRECIPITATION ESTIMATED BY THE WATER/SOLIDS BALANCE MODEL HAS BEEN INCLUDED FOR EACH FULL YEAR SHOWN.

AVALON RARE METALS INC.

THOR LAKE PROJECT

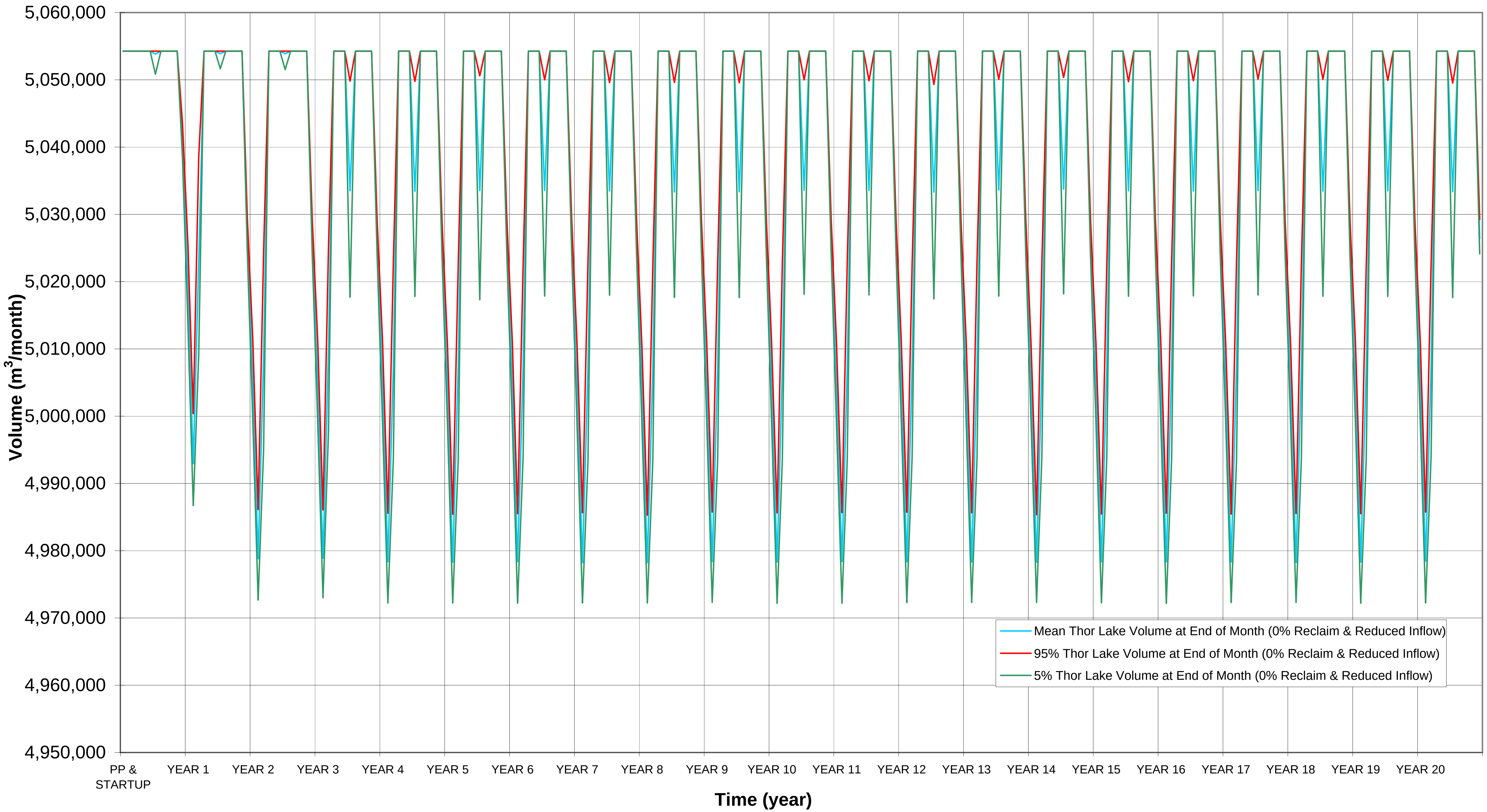
FEASIBILITY WATER/SOLIDS BALANCE
THOR LAKE VOLUME - 50% RECLAIM RATE & REDUCED INFLOW-WET, DRY AND AVERAGE CONDITIONS

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 15 REV 0

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



NOTES:
1. OPERATIONS BEGIN OCTOBER 1. THE 9 MONTH PERIOD AT THE BEGINNING OF THE FIRST YEAR IS THE BASELINE/PRE-PRODUCTION PERIOD.
2. THE MINE LIFE IS PROJECTED TO BE 20 YEARS IN LENGTH.
3. "REDUCED INFLOW" MEANS THAT THE INFLOW REPORTING TO THOR LAKE FROM RUNOFF AND PRECIPITATION HAS BEEN ELIMINATED FOR THE MONTHS OF DECEMBER THROUGH MARCH (INCLUSIVE) EACH YEAR. "FULL INFLOW" MEANS THAT THAT RUNOFF AND PRECIPITATION ESTIMATED BY THE WATER/SOLIDS BALANCE MODEL HAS BEEN INCLUDED FOR EACH FULL YEAR SHOWN.

0	11MAR'11	ISSUED WITH MEMO	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.

THOR LAKE PROJECT

FEASIBILITY WATER/SOLIDS BALANCE
THOR LAKE VOLUME - 0% RECLAIM RATE & REDUCED INFLOW-WET, DRY AND AVERAGE CONDITIONS

Knight Piésold CONSULTING

P/A NO.	REF. NO.
NB101-390/2	NB11-00148

FIGURE 16 REV 0