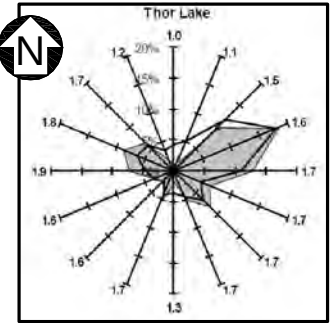
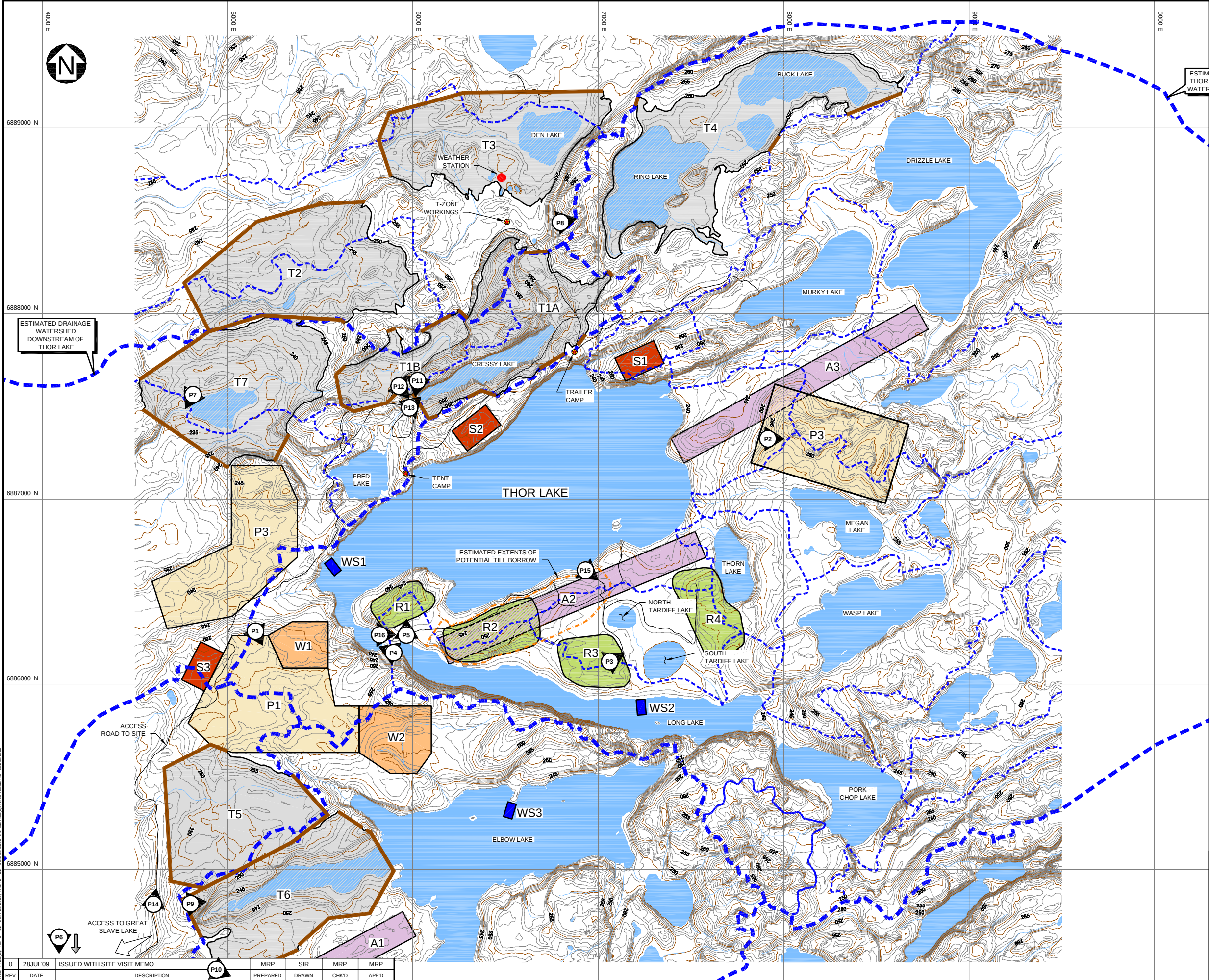




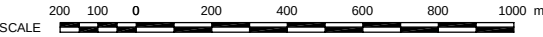
WIND ROSETTE
NTS

NOTE:
WIND ROSETTE PROVIDED BY AVALON RARE METALS INC.

- LEGEND:**
- R** POTENTIAL RAMP PORTAL LOCATION
 - P** POTENTIAL PROCESS PLANT AREA
 - T** POTENTIAL TAILINGS MANAGEMENT AREA
 - S** POTENTIAL STAFF ACCOMMODATIONS AREA
 - A** POTENTIAL AIR STRIP LOCATION
 - W** POTENTIAL WASTE ROCK STORAGE SITE
 - WS** POTENTIAL WATER SUPPLY LOCATION
 - WATER**
 - ROAD**
 - WATERSHED BOUNDARY**
 - SUB WATERSHED DIVIDE**
 - POTENTIAL TILL BORROW**
 - POTENTIAL DAM LOCATION**
 - WEATHER STATION**
 - P2** PHOTO LOCATION

- NOTES:**
- COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
 - PLAN BASED ON INFORMATION PROVIDED BY AVALON RARE METALS INC
 - CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1 METRE.

FOR INFORMATION ONLY



AVALON RARE METALS INC.

THOR LAKE PROJECT

PROJECT LAYOUT OPTIONS

Knight Piesold
CONSULTING

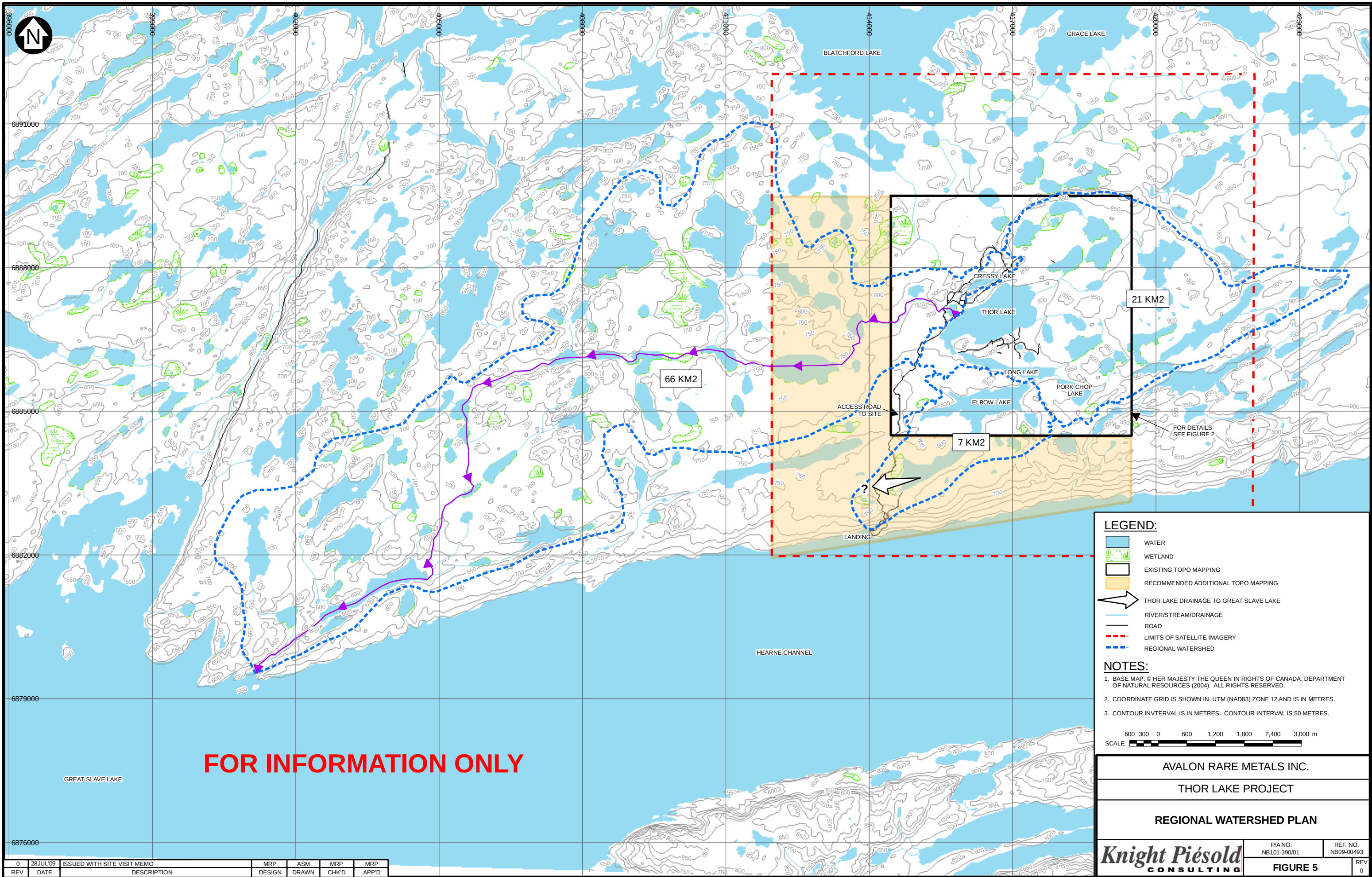
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REF NO.
NB09-00493

FIGURE 4

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Appendix C.2

Review of the Hydrogeological Information of the Thor Lake Project. Report NB09-00655

MEMORANDUM

To:	Mr. Bill Mercer	Date:	October 30, 2009
Copy To:	Paul Schmidt, Jason Cox, David Swisher	File No.:	NB101-390/1-A.01
From:	Érika Voyer	Cont. No.:	NB09-00655
Re:	Review of the Hydrogeological Information for the Thor Lake Project		

This memorandum outlines the review of the current available information related to hydrogeology for Avalon Rare Metals Inc. Thor Lake Project (the Project), as part of the pre-feasibility study support. This review has been conducted to comment on potential dewatering conditions for the proposed underground mining operations and make recommendations for further work that should be considered for feasibility level studies.

BACKGROUND

The Thor Lake ore body is located at the southern margin of the Archean Slave Province of the Canadian Shield within the Blatchford Lake complex¹. The mineralized zone occurs for the most part within the western part of the Thor Lake Syenite but does cross into the Grace Lake Granite to the northwest. The principal rock types in the intrusion are syenites, granites and gabbros and associated pegmatitic phases hosting rare metal mineralization. Review of available logs from the 2009 exploration drilling program completed as summarized in Knight Piésold Memo Cont. NB09-00577 dated September 11, 2009 suggest the following:

- The basic rock mass characteristics are very consistent and suggest a homogenous rock mass with very few regions of reduced rock mass quality (*e.g.*, shears, faults, rubblized and/ or broken zones)
- The only exception to this are some low RQD values closer to surface that may be due to potential near-surface weathering, etc.
- The photos also suggest a trend of increasing rock mass quality with depth

When dealing with hard crystalline rock masses such as those present at Thor Lake, discontinuities are a prime concern as significant fluid movement can only take place through the fractures². Therefore the definition of the geometry of the fracture network is an important consideration when assessing hydraulic conductivity. Direct intersection of a significant water bearing discontinuity at a few hundred meters depth can lead to inflows greater than 100 litres per second (1585 usgpm)³. Such inflows can cause significant practical and economical problems, including poor working conditions, reduced safety standards and costly operational delays⁴. With adequate detection and forewarning such features can be isolated from development openings through pre-treatment by grouting or freezing to minimize schedule delays and associated costs. In particular, larger scale regional features such as faults and dykes are of interest as they may be quite continuous over a large surface exposure and may provided some hydraulic connection between surface water bodies and mine workings at depth.

REVIEW OF THE AVAILABLE INFORMATION

Knight Piésold's review of hydrogeological information for the project is based on:

- Topographical mapping and satellite imagery provided by Avalon
- Bedrock surface estimated from exploration boreholes completed by Avalon
- Monitoring well installation information and baseline water level readings provided by Jacques Whitford (September 2008 to June 2009)
- Hydraulic conductivity results for 1 borehole (L09-152) provided by Jacques Whitford
- Photographs of borehole drilled in 2008 provided by Avalon
- Geological logs for boreholes drilled in 2009 provided by Avalon

As reported in Wardrop's "Thor Lake - Lake Zone Mineral Resource Update" Report (Ref. No. 0851530201-REP-R0002-01), a set of north-easterly trending faults are running through the deposit. Based on review of satellite imagery it is postulated that some large scale features oriented north-west or south-east may be also present. In particular, the possibility of a large scale feature under Long Lake is of interest due to the proposed ramp location as shown on Figure 1. Based on the layout for the ramp shown on Figure 1, it will be located within 25 m or so of the bottom of Long Lake.

As part of the geomechanical information review, some evidence of possible groundwater flow was identified in select drillholes, such as infill and broken zones. Table 1 presents a summary of the most up to date information regarding these indications of possible water flow.

A total of 6 monitoring wells installed by Jaques Whitford (4 in 2008 and 2 in 2009) located between Thor Lake and Long Lake provide some preliminary information about groundwater levels for the Thor Lake Project. Their locations are presented on Figure 1 along with 3 boreholes (L08-123, L08-124, and L08-125) where groundwater levels have been monitored. A section view presented on the Figure 2 shows the arrangement of the monitoring wells, their elevations and recent groundwater level elevations measured. As shown, groundwater levels are typically within 1 to 2 m of surface. Groundwater levels for wells with screens installed in the overburden (Till) have higher levels than those with screened intervals in the bedrock. Based on work by Jacques Whitford⁵ to date indicate that the project site is located in an area of extensive discontinuous permafrost. This may be a factor causing some perched water tables within the overburden compared to deeper bedrock. Additional information including geological logs, monitoring well installation logs and indications of permafrost would be valuable for additional interpretation of the local groundwater regime. Table 2 presents monitoring well information and groundwater elevations recorded throughout the baseline characterization in 2008 and 2009 as provided by Jaques Whitford.

Packer tests were conducted by Jaques Whitford on one borehole (L09-152). The tests were conducted between depths of 20.01 m and 208.61 m below ground surface. The average hydraulic conductivities (summarized in Table 3) range from $1.66 \cdot 10^{-6}$ m/s to $3.82 \cdot 10^{-8}$ m/s, which are generally very low. The hydraulic conductivity values are higher close to the ground surface, and decrease with depth. It should be noted that no log has been provided for the borehole that was tested. Therefore only a general comparison of geomechanical features to hydraulic conductivity has been done at this stage. A plot of discontinuity frequency versus depth and hydraulic conductivity is shown on Figure 3. As shown, there is a basic correlation between discontinuity frequency and hydraulic conductivity. Very limited hydraulic conductivity data are available for the upper 70 m of the borehole, with no data for 0 to 20 m, 23 to 59 m and 63 to 69 m.

CONCLUSION

Based on a review of the available information, hydrogeological parameters appear to be favourable for mine development. The very low hydraulic conductivity values obtained from packer testing at one borehole, and the geomechanical logging at select boreholes suggests high quality, relatively homogeneous and impermeable rock mass. Indications reported from drillholes review to date signify possible areas of groundwater flow that should be targeted in future test programs. The presence of regional large scale geological features can significantly influence the hydrogeological pattern of the underground area developed. If significant geological features are ultimately discovered to be present at or near Long Lake, their impact on the ramp design and alignment will need to be evaluated. In general, it appears that dewatering flows from the underground mine development will be low and that the risk of large inflows is minimal. Additional studies targeted at key structures (both large and small scale) and project development sites will be beneficial for future hydrogeological risk definition.

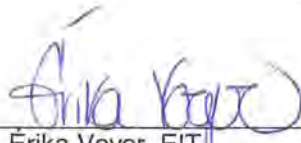
RECOMMENDATIONS

In order to enhance the understanding of hydrogeological conditions at the Thor Lake site and make more definite conclusions regarding underground dewatering flows and impacts of mine development, the following work is recommended for consideration:

- Information on underground mine development design including ramp location and proposed mining openings and dimensions at various stages of development
- Slug tests should be performed at select existing drillholes. These tests can provide a reasonable easy determination of the hydraulic conductivity.
- Review of any available surface geological mapping data and structural geology reports to determine locations and characteristics of large geological features that might intersect the deposit or proposed development workings
- Additional drillholes should be made and packer tests conducted in the areas where significant geological features are suspected, in order to gain knowledge of their specific locations and of the hydraulic conductivity. These boreholes should be drilled in locations expected to intersect features indicative of possible groundwater flow. Packer tests should be performed over intervals in which such features are noted. The completion of these tests is especially important in the upper 70 m, where only limited data is currently available and because higher hydraulic conductivity values are noted in this region. This information would be required at a future stage to evaluate the effect of the geological features in the area, in order to provide final de-watering recommendations for feasibility level design and costing.
- Review of surface overburden conditions including soil types and extents as well as permafrost extents and effects on surface and groundwater flows
- Following collection of pertinent information, a mine water inflow estimate can be made using suitable analytical techniques



Signed:


Erika Voyer, EIT
Geological Engineering

Approved:


Matthew Parfitt, P.Eng.
Project Manager

Attachments:

- Table 1 Rev 0 Indications of Possible Groundwater Flow by Drillhole
- Table 2 Rev 0 Groundwater Monitoring Well and Borehole Summary (From Jacques Whitford) – Baseline Characterisation 2008-2009
- Table 3 Rev 0 Hydraulic Conductivity from Packer Tests (From Jacques Whitford) – Baseline Characterisation 2008-2009
- Figure 1 Rev 0 Site Investigation Plan – Monitoring Well and Drillhole Locations
- Figure 2 Rev 0 Site Investigation Sections – Monitoring Well Locations
- Figure 3 Rev 0 Hydrogeological Review - Discontinuity Frequency to Hydraulic Conductivity Comparison

References:

1. Cerny and Thompson, 1985, Polyolithinite from the rare-metal deposits of the Blachford Lake alkaline complex. N.W.T. Canada.
2. Witherspoon, P.A., Gale, J.E. Hydrogeological Testing to Characterize a Fractured Granite. Bulletin of the International Association of Engineering Geology; 1983.
3. Daw, G.P., Scott, R.A. Hydrological Testing for Deep Shafts and Tunnels. Bulletin of the International Association of Engineering Geology, No. 26-27, Paris, 1983
4. Lloyd, J.W., Edwards M.G. Estimation of Groundwater Inflow to an Underground Mining Operation. The International Journal of Mine Water; Volume 7, No. 1, Pages 25 – 47. 2006.
5. Jacques Whitford Stantec AXYS Ltd., Thor Lake Rare Earths Project, Environmental Baseline Program Overview Summary, October 23, 2009

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TABLE 1
AVALON RARE METALS INC.
THOR LAKE PROJECT
INDICATIONS OF POSSIBLE GROUNDWATER FLOW BY DRILLHOLE

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Drillhole	Depth (m)	Indication of Possible Water Flow
L09-165	2.6 - 19.6	Calcite Infill <5mm, Secondary Calcite Infill (x 5)
	51.7 - 126.5	Hematite Infill <5mm, Secondary Hematite Infill (x 9)
	50.4	Calcite Infill <5mm
	153.8	Calcite Infill <5mm
L09-166	24.4 - 43.7	Calcite Infill <5mm (x 3)
	88.0 - 88.6	Possible broken zone with some alteration/staining
	90.4 - 90.8	Possible broken zone with some alteration/staining
	139.7	Calcite Infill <5mm
L09-168	2.3	Calcite Infill <5mm
	2.8 - 3.6	Clay Infill <5mm (x 2)
	18.5 - 18.6	Possible broken zone
	42.0	Secondary Hematite Infill
	90.8	Secondary Clay Infill
	121.4 - 121.6	Possible broken zone
	138.8	Secondary Hematite Infill
	144.6 - 146.1	Secondary Calcite Infill (x 2)
L09-169	1.8 - 9.0	Clay Infill <5mm (x 2)
	78.3 - 165.0	Hematite Infill <5mm, Secondary Hematite Infill (x 21)
L09-171	5.5 - 8.5	Clay Infill <5mm (x 2)
	15.8 - 16.3	Broken Zone
	17.4 - 17.6	Broken Zone
	28.0 - 28.6	Broken Zone
	66.8 - 84.0	Clay Infill <5mm (x 7)
	153.0 - 162.0	Hematite Infill <5mm and Secondary Hematite Infill (x 4)
L09-176	111.1 - 117.6	Secondary Clay Infill (x 13)
	127.5 - 194.9	Hematite Infill <5mm, Secondary Hematite Infill (x 20)
	140.0 - 186.3	Clay Infill <5mm, Secondary Clay Infill (x 16)
	186.3 - 194.9	Calcite Infill <5mm, Secondary Calcite Infill (x 4)
L09-179	14.5 - 15.8	Secondary Clay Infill (x 3)
	39.0	Possible shear zone
	39.2	Possible shear zone
	41.9 - 43.0	Hematite Infill <5mm, Secondary Hematite Infill (x 2)
	70.2 - 75.3	Hematite Infill <5mm, Secondary Hematite Infill (x 2) Secondary Calcite Infill (x 1)
	96.7	Secondary Clay Infill
	117.5 - 174.5	Hematite Infill <5mm, Secondary Hematite Infill (x 20) Secondary Clay Infill (x 13)
L09-184	13.7 - 21.9	Clay Infill <5mm, Secondary Clay Infill (x 9) Secondary Calcite Infill (x 1)
	117.3	Calcite Infill <5mm
	122.0	Clay Infill <5mm
	143.3	Hematite Infill <5mm
	156.1	Calcite Infill <5mm
L09-190	96.9	Possible shear zone
	98.5 - 99.2	Secondary Hematite Infill (x 3)
	121.9 - 149.4	Calcite Infill <5mm, Secondary Calcite Infill (x 16)
	132.8 - 137.6	Secondary Clay Infill (x 6)
	169.5 - 173.4	Hematite Infill <5mm (x 2) Secondary Calcite Infill (x 1) Secondary Clay Infill (x 1)
	181.0 - 181.1	Calcite Infill <5mm (x 2)
L09-191	20.6 - 62.5	Secondary Calcite Infill (x 17)
	87.7 - 90.6	Secondary Hematite Infill (x 2)
	100.9 - 147.1	Calcite Infill <5mm (x 17)
	108.9 - 118.4	Hematite Infill <5mm (x 2)
	191.1	Secondary Clay Infill

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NOTES:

1. DEPTH INTERVAL INDICATES THAT POSSIBLE GROUNDWATER FLOW HAS BEEN INDICATED IN SOME SECTIONS.
2. FREQUENCY OF OBSERVED INDICATION WITHIN DEPTH INTERVAL IS MARKED IN BRACKETS.

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TABLE 2

AVALON RARE METALS INC.
THOR LAKE PROJECT

GROUNDWATER MONITORING WELL AND BOREHOLE SUMMARY (FROM JACQUES WHITFORD)
BASELINE CHARACTERIZATION 2008-2009

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Monitoring Well / Borehole ID	Date	Elevation of T.O.C. (m)	Elevation at Grade (m)	EOH (mb T.O.C.)	Screened (mb T.O.C.)	Stick up (m)	Depth to Water from T.O.C. (m)	Groundwater Elevation (masl)	Comments
L08-123	October, 2008	238.957	238.457	207.90	Open core hole	0.50	0.822	238.135	Depth to water
	March, 2009						2.925	236.032	Depth to ice
L08-124	September, 2008	241.714	241.594	198.25	Open core hole	0.12	2.370	239.344	Depth to water
	October, 2008						2.114	239.600	Depth to water
	March, 2009						3.320	238.394	Depth to ice
MWL08-127	September, 2008	238.543	238.043	201.30	6.86 - 16.10	0.50	0.996	237.547	Depth to water
	October, 2008						0.910	237.633	Depth to water
	March, 2009						0.990	237.553	Depth to ice
	June, 2009						1.100	237.443	Depth to water
	June, 2009						4.180	234.363	Depth to ice
MWL08-128	September, 2008	240.820	240.276	213.50	3.05 - 10.27	0.54	1.435	239.385	Depth to water
	October, 2008						0.921	239.899	Depth to water
	March, 2009						0.920	239.900	Depth to ice
	June, 2009						1.360	239.460	Depth to water
	June, 2009						1.520	239.300	Depth to ice
MWL08-130	September, 2008	246.131	246.041	198.25	7.62 - 13.72	0.09	1.175	244.956	Depth to water
	October, 2008						0.679	245.452	Depth to water
	March, 2009						1.180	244.951	Depth to ice
	June, 2009						1.220	244.911	Depth to ice
MWL08-134	September, 2008	242.309	242.309	231.80	9.14 - 14.54	0.00	Dry	>227.069	Depth to water
	October, 2008						Dry	>227.069	Depth to water
	March, 2009						1.880	240.429	Depth to ice
	June, 2009						1.030	241.279	Depth to water
	June, 2009						1.300	241.009	Depth to ice
MWL09-151	March, 2009	Not surveyed	Not surveyed	96.21	81.21 - 95.21	0.65	1.880		Depth to water
	June, 2009						2.260		Depth to water
	June, 2009						2.450		Depth to ice
MWL09-152	March, 2009	Not surveyed	Not surveyed	193.85	84.66 - 99.66	0.40	1.538		Depth to water
	June, 2009						2.470		Depth to ice

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NOTES:

1. T.O.C. - TOP OF CONTROL
2. MASL - METERS ABOVE SEA LEVEL
3. mb - METERS BELOW
4. MONITORING WELLS SURVEYED TO GROUND ADJACENT TO CONTROL
5. L08-123 AND L08-124 ARE BOREHOLES.

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TABLE 3

AVALON RARE METALS INC.
THOR LAKE PROJECT

HYDRAULIC CONDUCTIVITY FROM PACKER TESTS (FROM JACQUES WHITFORD)
BASELINE CHARACTERIZATION 2008-2009

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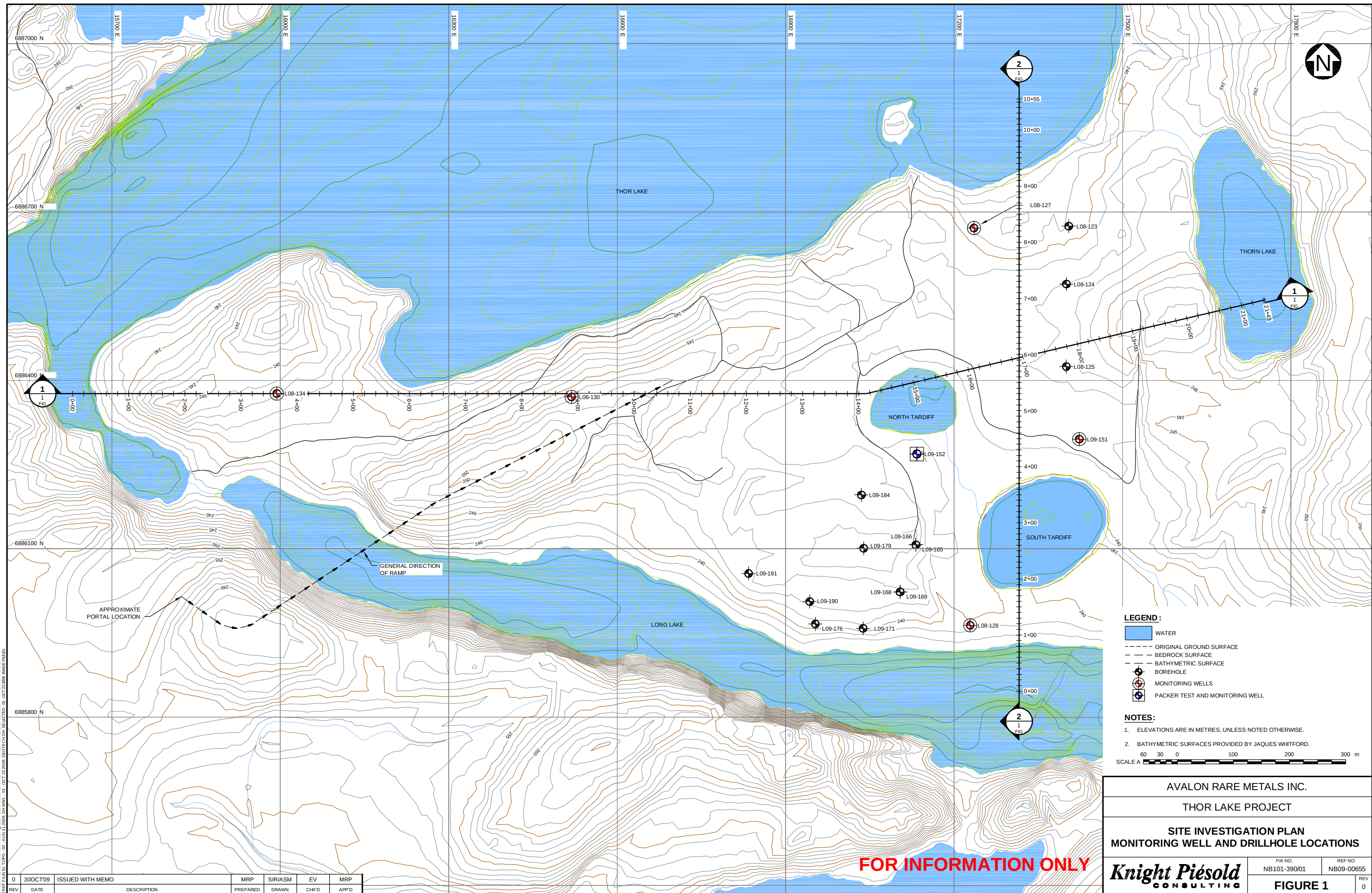
Monitoring Well ID	Interval Tested (m)			Length of Interval (m)	Hydraulic Conductivity (m/s * 10 ⁻⁶)		
	From	To	Midpoint		Min	Max	Average
MWL09-152	20.01	23.29	21.65	3.28	1.26 · 10 ⁻⁶	2.02 · 10 ⁻⁶	1.66 · 10 ⁻⁶
	59.37	62.65	61.01	3.28	2.13 · 10 ⁻⁷	4.48 · 10 ⁻⁷	3.84 · 10 ⁻⁷
	69.21	208.61	138.91	139.40	3.45 · 10 ⁻⁸	5.36 · 10 ⁻⁸	4.10 · 10 ⁻⁸
	102.01	208.61	155.31	106.60	1.86 · 10 ⁻⁸	5.30 · 10 ⁻⁸	2.90 · 10 ⁻⁸
	134.48	208.61	171.54	74.13	2.96 · 10 ⁻⁸	5.43 · 10 ⁻⁸	3.82 · 10 ⁻⁸

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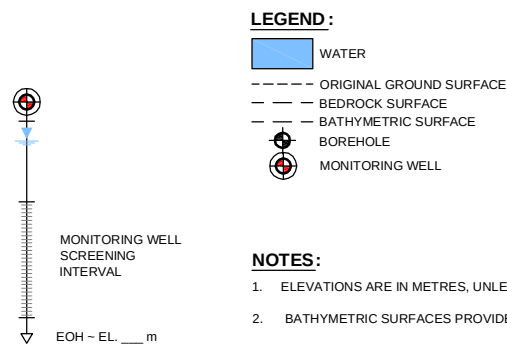
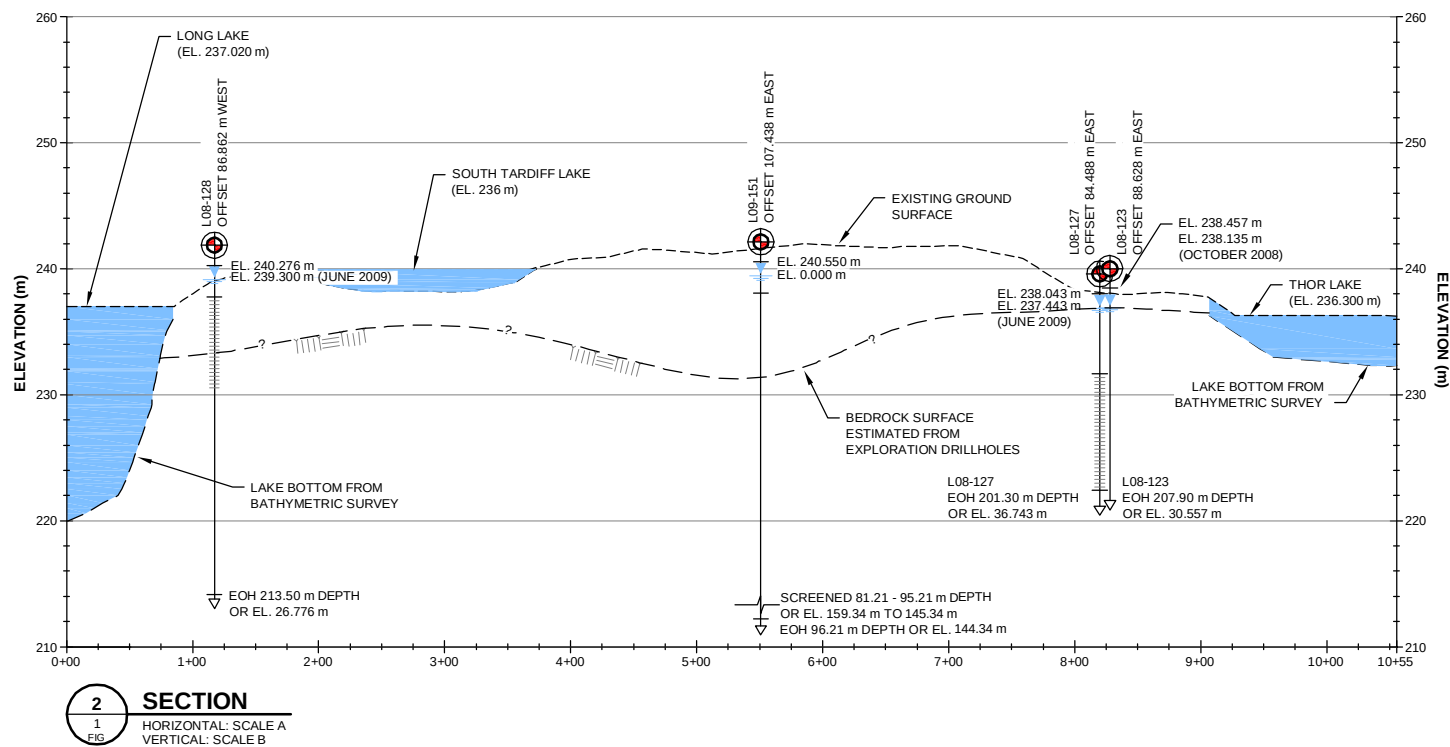
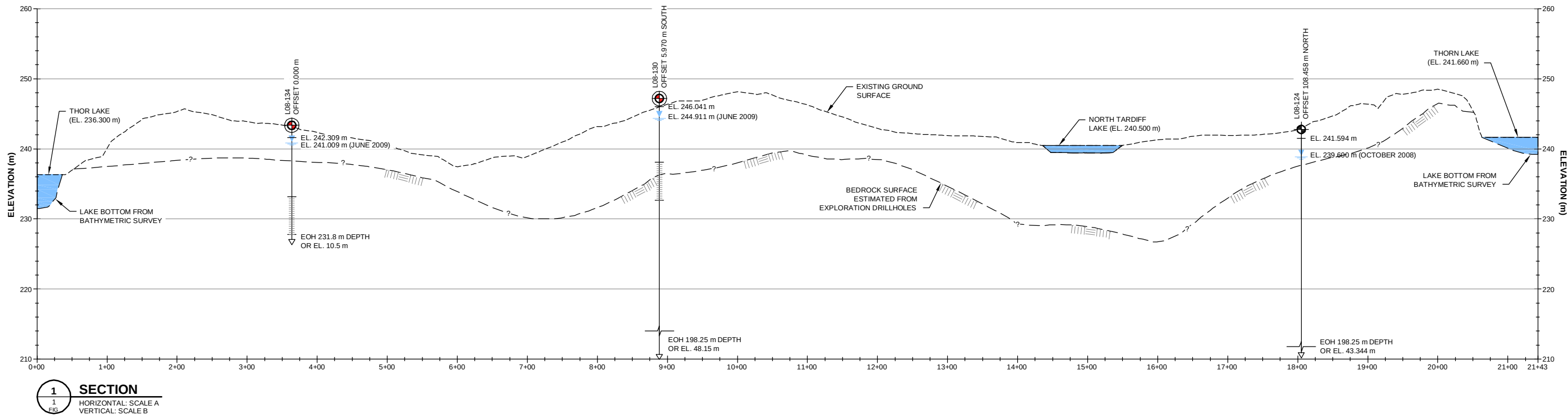
NOTE:

1. AVERAGE HYDRAULIC CONDUCTIVITY OBTAINED FROM THE AVERAGE OF ALL HYDRAULIC CONDUCTIVITY OBTAINED.

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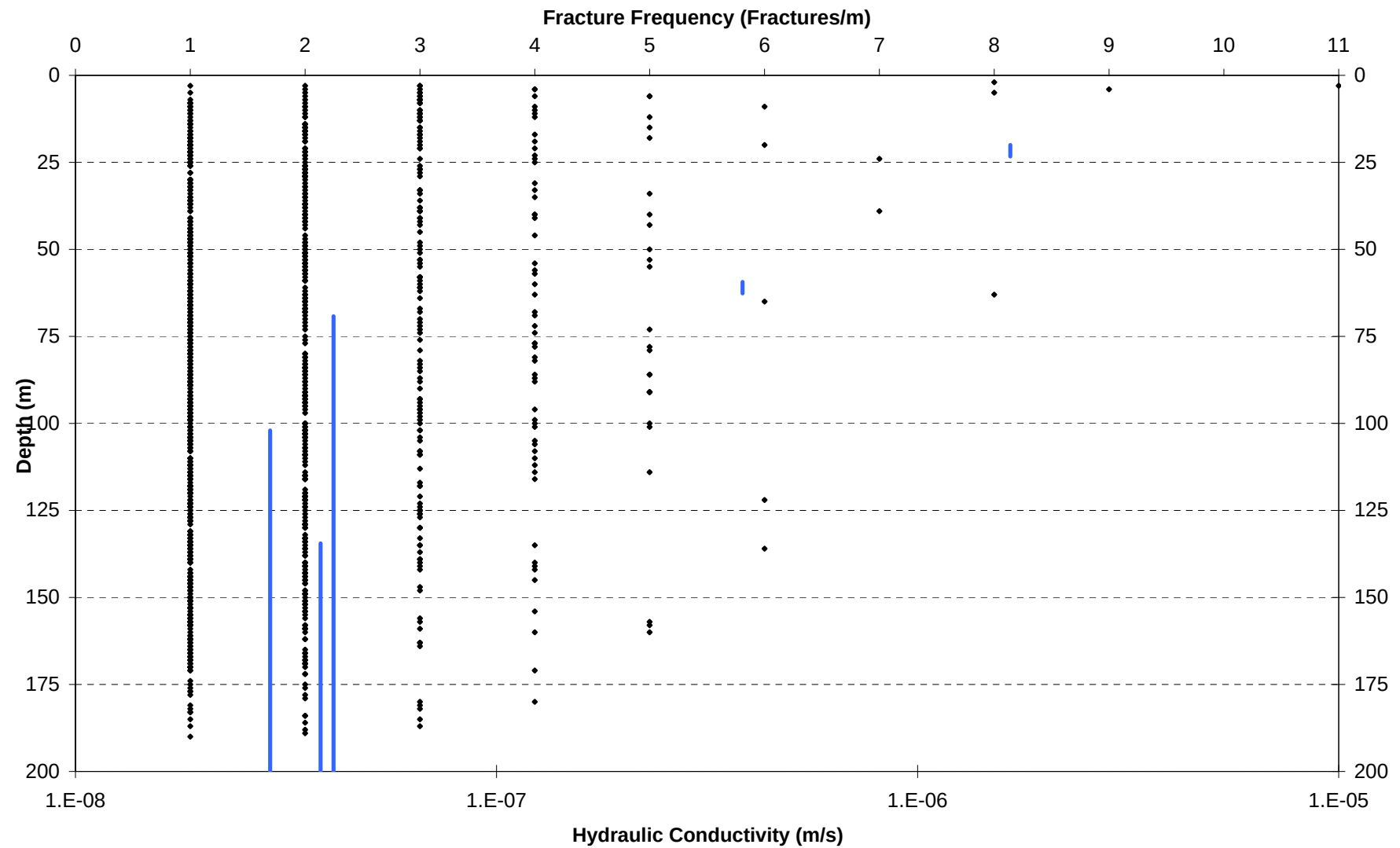


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AVALON RARE METALS INC.		
THOR LAKE PROJECT		
SITE INVESTIGATION SECTIONS MONITORING WELL LOCATIONS		
Knight Piesold CONSULTING	P/A NO. NB101-390/01	REF NO. NB09-00655
	FIGURE 2	
		REV 0



- L09-165
- L09-168
- L09-171
- L09-179
- L09-190
- L09-166
- L09-169
- L09-176
- L09-184
- L09-191

— Hydraulic Conductivity

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AVALON RARE METALS INC.		
THOR LAKE PROJECT		
HYDROGEOLOGICAL REVIEW DISCONTINUITY FREQUENCY TO HYDRAULIC CONDUCTIVITY COMPARISON		
<i>Knight Piésold</i> CONSULTING	P/A NO. NB101-390/01	REF. NO. NB09-00655
	FIGURE 3	
		REV 0