hydrostratigraphic and hydraulic conductivity data available, especially for areas north and west of Thor Lake.

Groundwater flow within the shallow aquifer occurs in the active layer (i.e., in the layer of seasonal thawing and freezing). The highest groundwater levels are expected to occur during the snowmelt in late spring after thawing the shallow sediments. Groundwater flow is expected to be characterized by local, small-scale flow, and the flow direction is assumed to follow the local topography.

5.2 Deep Aquifer

A deeper bedrock aquifer underlies permafrost. The bedrock lithology mainly consists of intrusive zoned syenite and granite, with dykes and sills throughout the pluton.

Groundwater flow in the bedrock aquifer is expected to occur, predominantly, in fractures and fault zones. Groundwater flow in fractured media is complex, depending on the local hydrogeological and structural geological conditions. Transmissivity values can differ over several orders of magnitude within the same rock mass, and groundwater flow may be largely controlled by a few conductive fractures or other rock mass discontinuities.

Groundwater within the bedrock aquifer is thought to occur beneath the permafrost, which may or may not be in hydraulic connection with some of the taliks surrounding the larger and deeper lakes. In general, though it is expected that there is very little connection between the shallow and deep aquifers. Due to the limited number of groundwater monitoring wells there is little information to estimate flow direction of water in the bedrock. From a conceptual perspective, it is likely that the deep aquifer flows southward and is ultimately in hydraulic connection with deeper sections of Great Slave Lake.

Packer tests performed in the deep aquifer suggest a hydraulic conductivity that ranges over several orders of magnitude (4.1×10^{-8} m/s to 1.7×10^{-6} m/s). The range of hydraulic conductivity is within the expected range for fractured crystalline rock, (Freeze and Cherry, 1979). Hydraulic conductivity generally decreased with depth, which is expected due to the increasing competence of the bedrock with depth. Although the hydraulic conductivity data is consistent with fractured crystalline rock, the spatial variability across the study area is not well known at this time.

6 CLOSURE

Stantec has prepared this report for the sole benefit of Avalon for the purpose of documenting baseline conditions at its Thor Lake site. The report may not be relied upon by any other person or entity, other than for its intended purposes, without the express written consent of Stantec and Avalon. Any use of this report by a third party, or any reliance on decisions made based upon it, are the responsibility of such third parties.

The information provided in this report was compiled from existing documents and data provided by Avalon and field data compiled by Stantec (formerly Jacques Whitford AXYS Ltd.).This report represents the best professional judgment of our personnel available at the time of its preparation. Stantec reserves the right to modify the contents of this report, in whole or in part, to reflect any new information that becomes available. If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

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APPENDIX A

Figures

AVALON RARE METALS INC

Scale:	1:2,000,000
Date:	01/12/2009
Drawn By:	KS
Approved By:	NL

Avalon Rare Metals INC.

Site Location

Draft Technical Data Report

Thor Lake Project, Nechalacho Deposit

PREPARED BY Stantec

Figure: 1

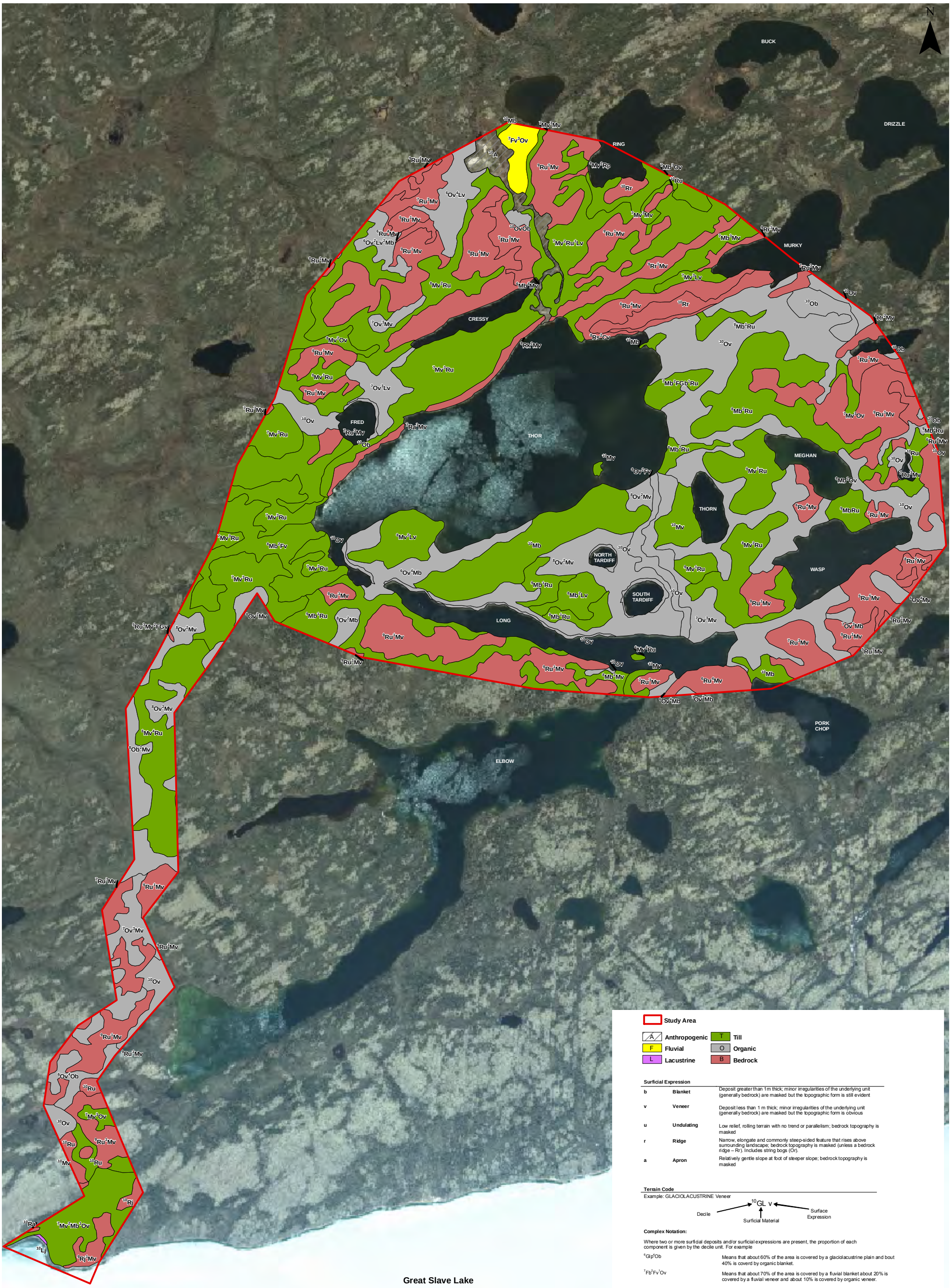
Draft Technical Data Report
Thor Lake Project, Nechalacho Deposit

Local Study Area

AVALON RARE METALS INC.

Stantec

DRAFT DATE 21/12/2009				SCALE 1:25,000	
REVISION DATE				PROJECT 1036222	FIGURE NO. 2
DRAWN KS	CHECKED RH	APPROVED NL		VOL	



Draft Technical Data Report
Thor Lake Project, Nechalacho Deposit

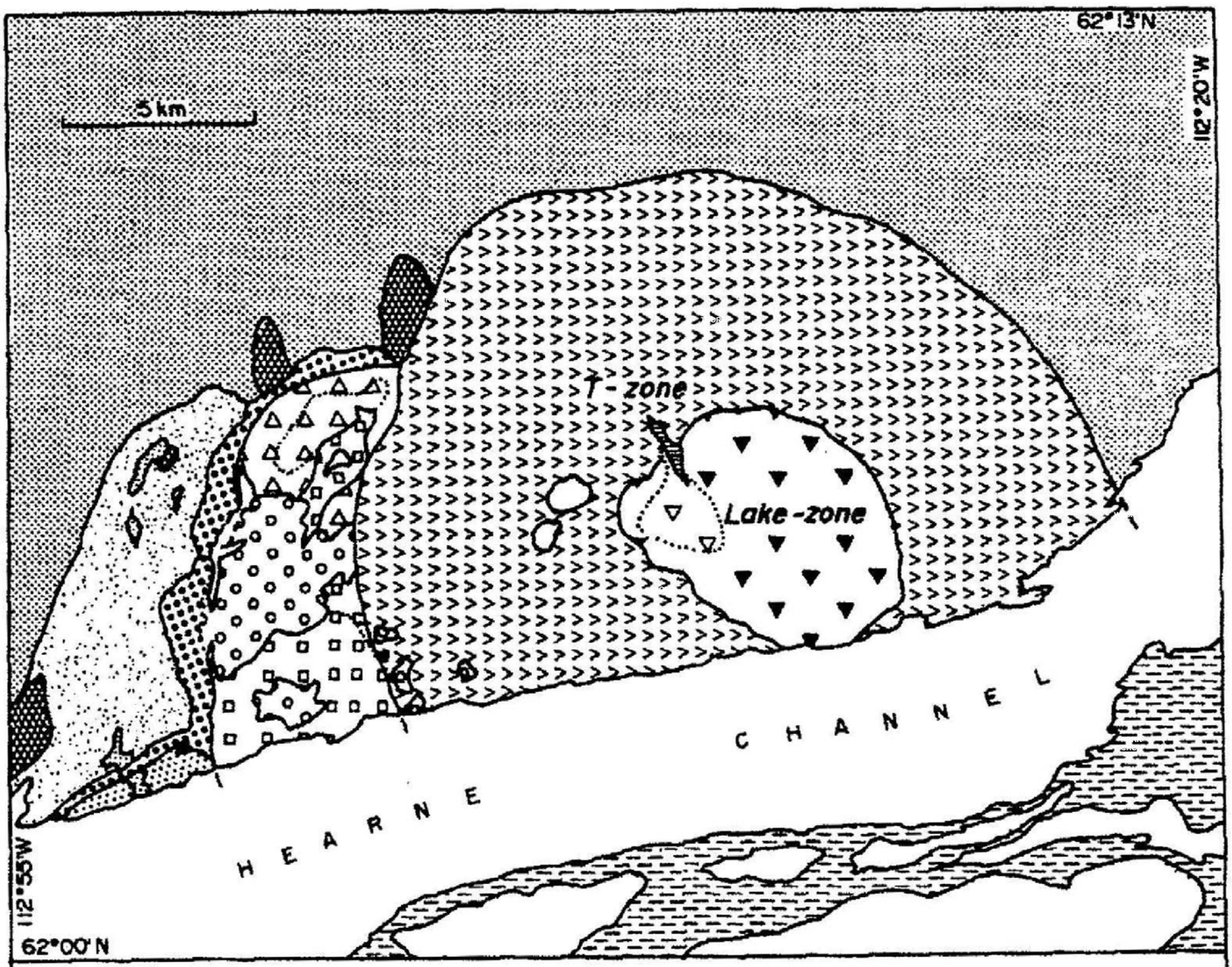
Surficial Geology of Thor Lake Study Area

AVALON RARE METALS INC.

0 0.25 0.5 1
Kilometres

PREPARED BY
Stantec

DRAFT DATE 21/12/2009			SCALE 1:20,000	
REVISION DATE			PROJECT 1036222	FIGURE NO. 3
DRAWN KS	CHECKED RH	APPROVED NL	VOL	



Great Slave Lake

Source: Avalon Ventures 2007

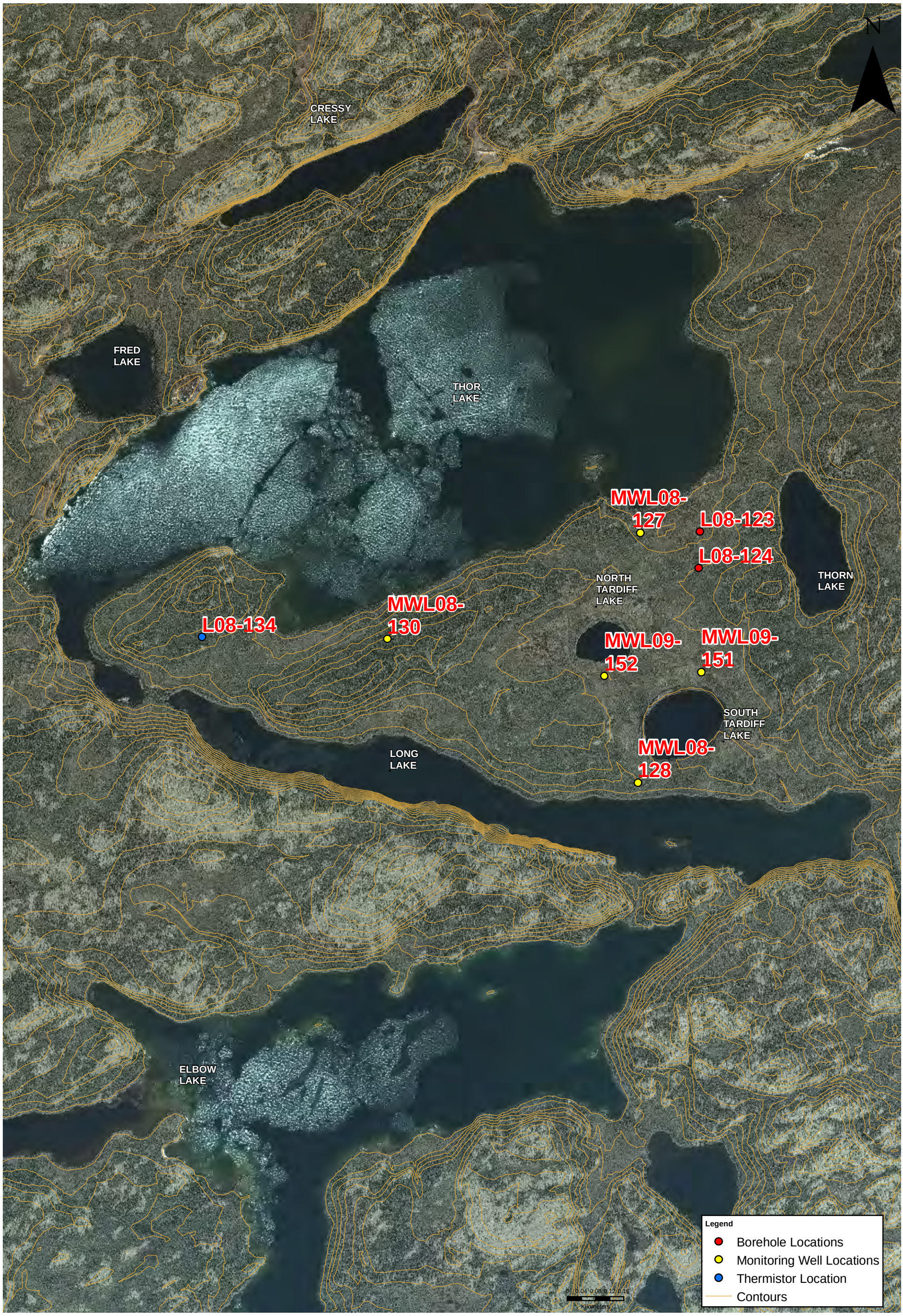
Draft Technical Data Report
Thor Lake Project, Nechalacho Deposit

Bedrock Geology

AVALON RARE METALS INC.

PREPARED BY Stantec

DRAFT DATE 21/12/2009			SCALE Not to scale	
REVISION DATE			PROJECT 1036222	FIGURE NO. 4
DRAWN KS	CHECKED RH	APPROVED JT	VOL	



Draft Technical Data Report
Thor Lake Project, Nechalacho Deposit

Monitoring Well Locations

AVALON RARE METALS INC.

PREPARED BY Stantec

DRAFT DATE 18/12/2009				SCALE 1:10,000	
REVISION DATE				PROJECT 1036222	FIGURE NO. 5
DRAWN RH	CHECKED JT	APPROVED NL		VOL	

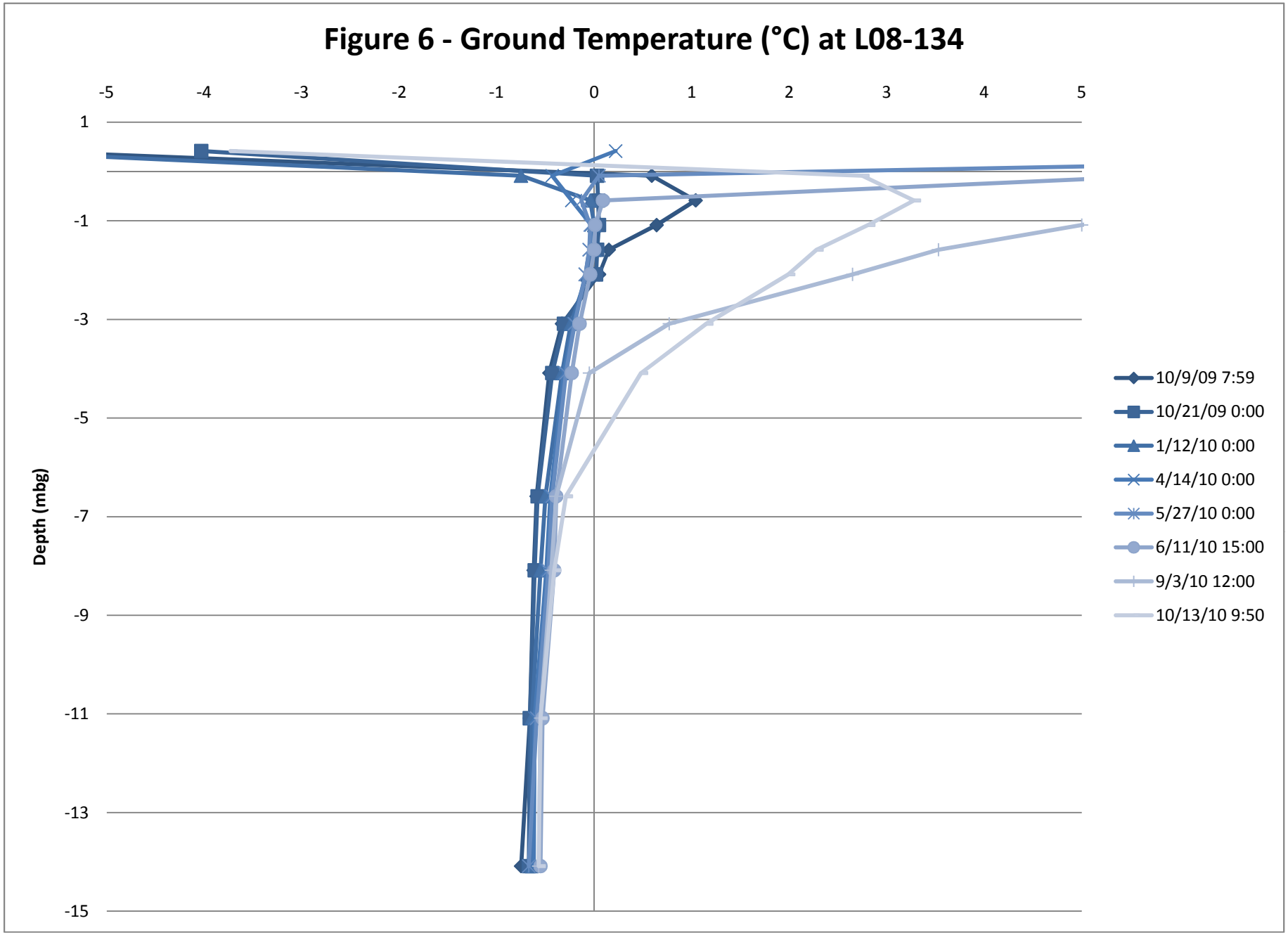


Figure 6 - Ground Temperature (°C) at L08-134
-5
-4
-3
-2
-1
0
1
2
3
4
5
1
-1
-3
-5
-7
-9
-11
-13
-15
Depth (mbg)
10/9/09 7:59
10/21/09 0:00
1/12/10 0:00
4/14/10 0:00
5/27/10 0:00
6/11/10 15:00
9/3/10 12:00
10/13/10 9:50

APPENDIX B

Borehole Logs

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **238.46 m**
SITE DATUM: N/A

BOREHOLE NO:
L08-123

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated Surficial Deposits			GW = 0.32 mbg	
		Altered Aegirine Syenite			steel casing	
10.0						230.0
20.0						220.0
		- Albitized Syenite at 26.7 m				
30.0						210.0
		- Altered Aegirine Syenite at 31.9 m				
40.0						200.0
		- Pegmatite at 42.7 m				
		- Altered Aegirine Syenite 46.6 m				
50.0						190.0
60.0						180.0
		- Albitized Syenite at 60.0 m				
70.0						170.0
		- Altered Aegirine Syenite at 70.7 m				
80.0						160.0
90.0						150.0
		- Albitized Syenite at 94.6 m				
100.0						140.0
		- Altered Aegirine Syenite at 101.2 m				
110.0					open corehole	130.0
						120.0

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 1, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **238.46 m**
SITE DATUM: N/A

BOREHOLE NO:
L08-123

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
130.0						110.0
140.0		- Layered Aegirine Syenite Cumulate at 141.6 m				100.0
150.0						90.0
160.0						80.0
170.0						70.0
180.0						60.0
190.0						50.0
200.0						40.0
		End of borehole at 207.4 m Top of Pipe (TOP) Elevation = **238.957** m Groundwater Information: Depth to groundwater from TOP = **0.82** m () Open Borehole				

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 1, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **241.59 m**
SITE DATUM: N/A

BOREHOLE NO:
L08-124

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated Surfical Deposits		▼	GW = 2.25 mbg	240.0
		Albitized Syenite			steel casing	
10.0						230.0
20.0						220.0
		- Altered Syenite at 24.6 m				
30.0						210.0
40.0						200.0
50.0						190.0
		- Aegirine Foyaite at 54.6 m				
		- Altered Aegirine Syenite at 58.3 m				
60.0						180.0
70.0						170.0
80.0						160.0
		- Aegirine Foyaite at 83.4 m				
90.0						150.0
		- Heterogeneous Altered Syenite at 95.3 m				
100.0						140.0
					open corehole	
110.0						130.0

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 4, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **241.59 m**
SITE DATUM: N/A

BOREHOLE NO:
L08-124

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
130.0						120.0
140.0						110.0
150.0						100.0
160.0						90.0
170.0						80.0
180.0		- Nepheline Aegirine Syenite at 179.25 m				70.0
190.0						60.0
						50.0
		End of borehole at 198.3 m Top of Pipe (TOP) Elevation = **241.714** m Groundwater Information: Depth to groundwater from TOP = **2.37** m () Open Borehole				

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 4, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **238.04 m**
SITE DATUM: N/A

BOREHOLE NO: **MW08-127**

DEPTH [m]	SOIL DESCRIPTION	COMPLETION NOTES	ELEVATION [m]
	Undifferentiated Surficial Deposits	GW = 0.50 mbg; well box, 0.53 m stickup, jplug	
	Altered Syenite	steel casing keyed into bedrock at 2.5 mbg	
		bentonite seal	
		10/20 silica sand	230.0
10.0		50 mm 010 slot PVC pipe	
		end cap	220.0
20.0		Van Duzen plug	
	- MRZ at 23.0 m		
			210.0
30.0			
			200.0
40.0			
			190.0
50.0			
			180.0
60.0			
			170.0
70.0			
			160.0
80.0			
	- Heterogeneous Altered Syenite at 84.7 m		
			150.0
90.0			
			140.0
100.0			
			130.0
110.0		Open Corehole	
			120.0

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 13, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **238.04 m**
SITE DATUM: N/A

BOREHOLE NO:
MW08-127

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
130.0						110.0
140.0		- Layered Cumulate at 144.6 m				100.0
150.0						90.0
160.0						80.0
170.0						70.0
180.0		- Aegirine Foyaite at 182.5 m - Altered Aegirine Syenite at 184.6 m				60.0
190.0						50.0
200.0						40.0
		End of borehole at 201.3 m Completion Information: Screened interval from 6.9 m to 16.4 m below surface Top of Pipe (TOP) Elevation = **238.543** m Groundwater Information: Depth to groundwater from TOP = **1.00** m () Borehole plugged with Van Duzen Plug				

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 13, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **240.28 m**
SITE DATUM: N/A

BOREHOLE NO:
MW08-128

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated Surficial Material		GW = 0.89 mbg	well box, ø 53 m stickup, jplug bentonite seal steel casing keyed into bedrock at 8.0 mbg	
10.0		**Albitized Syenite** vuggy in more intensely albitized sections, porous			50 mm 010 slot PVC pipe end cap Van Duzen plug	230.0
20.0						220.0
30.0						210.0
40.0						200.0
50.0		- Altered Porphyritic Syenite at 52.1 m				190.0
60.0		- Albitized Syenite at 64.0 m				180.0
70.0		- Altered Porphyritic Syenite at 72.7 m				170.0
80.0						160.0
90.0						150.0
100.0						140.0
110.0		- Albitized Syenite at 110.5 m, locally vuggy			Open Corehole	130.0

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 16, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **240.28 m**
SITE DATUM: N/A

BOREHOLE NO:
MW08-128

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		- Very vuggy from 123.0 m to 149.0 m				
130.0						110.0
140.0						100.0
150.0		- Pegmatitic Syenite at 148.0 m, fractured and locally vuggy - Foyaite at 151.0 m				90.0
160.0						80.0
170.0						70.0
180.0						60.0
190.0						50.0
200.0		- Pegmatitic Syenite at 199.4m				40.0
210.0						30.0
		End of borehole at 213.5 m Completion Information: Screened interval from 8.0 m to 10.3 m below surface Top of Pipe (TOP) Elevation = **240.820** m Groundwater Information: Depth to groundwater from TOP = **1.44** m () Borehole plugged with Van Duzen Plug				

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 16, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **246.04 m**
SITE DATUM: N/A

BOREHOLE NO:
MW08-130

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated Surficial Deposits		GW = 1.09 mbg	well box, 0.53 m stickup, jplug	
					bentonite seal	240.0
					steel casing keyed into bedrock at 8.8 mbg	
10.0		**Albitized Syenite**			50 mm 010 slot PVC pipe	
					end cap	230.0
					Van Duzen plug	
20.0						
						220.0
30.0						
						210.0
40.0						
						200.0
50.0						
						190.0
60.0		- Altered Nepheline Aegirine Foyaite at 59.4 m				
						180.0
70.0						
						170.0
80.0						
						160.0
90.0						
						150.0
100.0						
					Open Corehole	140.0
110.0						
						130.0

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 24, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **246.04 m**
SITE DATUM: N/A

BOREHOLE NO:
MW08-130

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
130.0		- Very vuggy after 134.0 m				120.0
140.0						110.0
150.0		- Nepheline Aegirine Syenite at 153.6 m				100.0
160.0						90.0
170.0						80.0
180.0						70.0
190.0						60.0
						50.0
		End of borehole at 198.3 m Completion Information: Screened interval from 7.6 m to 13.7 m below surface Top of Pipe (TOP) Elevation = **246.131** m Groundwater Information: Depth to groundwater from TOP = **1.18** m () Borehole plugged with Van Duzen Plug				

INVESTIG. METHOD: Diamond Drill - NW
INVESTIG. DATE: August 24, 2009
LOGGED BY: AM
BOREHOLE DIAMETER: 0.0889 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **240.55 m**
SITE DATUM: N/A

BOREHOLE NO:
MW09-151

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated surficial deposits			well box, 0.53 m stickup, jplug steel casing keyed into bedrock at 2.5 mbg	240.0
		Feldspathite homogeneous, very porous and vuggy, negligible fracture fill or vein development				
10.0						230.0
20.0						220.0
30.0						210.0
40.0		- Abrupt end to vuggyness at 37.4 m				200.0
50.0		- Altered Syenite at 51.2 m				190.0
		- MRZ / Altered Chlorite Syenite at 55.6 m				
60.0					bentonite seal	180.0
70.0		- Albitized Syenite at 67.9 m				170.0
80.0		- Altered Syenite at 82.7 m			10/20 silica sand	160.0
90.0					50 mm 010 slot PVC pipe	150.0
100.0					end cap Van Ruth plug	140.0
110.0		- Altered Foyaitic Syenite at 112.2 m				130.0

INVESTIG. METHOD: Diamond Drill - NQ
INVESTIG. DATE: March 21, 2009
LOGGED BY: CP
BOREHOLE DIAMETER: 0.0757 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **240.55 m**
SITE DATUM: N/A

BOREHOLE NO:
MW09-151

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		- MRZ at 120.3 m				120.0
		- Heterogeneous Altered Albitized Syenite / MRZ at 125.4 m				
130.0		- Altered Foyaitic / Heterogeneous Syenite / MRZ at 131.4 m				110.0
140.0						100.0
150.0					open corehole	90.0
160.0						80.0
170.0		- Altered Porphyritic Syenite at 167.0 m, subvertical fracturing infilled with carbonate and chlorite				70.0
180.0						60.0
190.0		- Altered Aegiring Syenite at 189.5 m				50.0
200.0						40.0
210.0						30.0
		End of borehole at 215.2 m Completion Information: Screened interval from 81.2 m to 95.2 m below surface Groundwater Information: Depth to groundwater from TOP = **1.88** m () Borehole plugged with Van Ruth Plug				

INVESTIG. METHOD: Diamond Drill - NQ
INVESTIG. DATE: March 21, 2009
LOGGED BY: CP
BOREHOLE DIAMETER: 0.0757 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **241.05 m**
SITE DATUM: N/A

BOREHOLE NO:
MW09-152

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
		Undifferentiated Surficial Material			well box, 0.53 m stickup, jplug steel casing keyed into bedrock at 2.5 mbg	240.0
		Albitized Syenite / Feldspathite occasional finely porous interval				
10.0						230.0
20.0						220.0
30.0		- Heterogeneous Syenite / MRZ at 28.0 m				210.0
40.0						200.0
50.0		- Feldspathite / Albitized Syenite at 52.0 m				190.0
60.0					bentonite seal	180.0
70.0						170.0
80.0					10/20 silica sand	160.0
90.0		- Altered / Albitized Syenite at 88.5 m			50 mm 010 slot PVC pipe	150.0
100.0					end cap Van Ruth plug	140.0
110.0		- Feldspathaite at 105.5 m, vuggy - Altered / Albitized Syenite at 112.0 m				130.0

INVESTIG. METHOD: Diamond Drill - NQ
INVESTIG. DATE: March 26, 2009
LOGGED BY: CP
BOREHOLE DIAMETER: 0.0757 m (OD)

Stantec

CLIENT: **Avalon Ventures**
PROJECT: **Thor Lake**
Thor Lake
NWT

BOREHOLE RECORD

PROJECT NO: **1036222**
SURFACE ELEVATION: **241.05 m**
SITE DATUM: N/A

BOREHOLE NO:
MW09-152

DEPTH [m]	SOIL TYPE	SOIL DESCRIPTION	WELL COMPLETION	WATER LEVEL	COMPLETION NOTES	ELEVATION [m]
130.0		- MRZ / Foyaitic Syenite at 128.1 m				120.0
140.0						110.0
150.0					open corehole	100.0
160.0		- Aegirine Syenite / Foyaitic Syenite at 153.0 m				90.0
170.0						80.0
180.0						70.0
190.0						60.0
						50.0
		End of borehole at 193.9 m				

Completion Information:
Screened interval from 84.7 m to 99.7 m below surface

Groundwater Information:
Depth to groundwater from TOP = **1.54** m ()

Borehole plugged with Van Ruth Plug

INVESTIG. METHOD: Diamond Drill - NQ
INVESTIG. DATE: March 26, 2009
LOGGED BY: CP
BOREHOLE DIAMETER: 0.0757 m (OD)

Stantec

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L08-123	**Drilled By:**	Peak Drilling	**Objective:**	Lake Zone Delineation Drilling	**Downhole Survey Tests**
Zone:	Lake Zone	**Started:**	2008-07-29			
Easting_GPS:	417,400	**Finished:**	2008-08-01	**Summary:**		
Northing_GPS:	6,886,675	**Core Size:**	NQ2			
Elev_GPS:	-999	**Surveyed?:**	☐			
East_Plot:	-999.00	**Logged By:**	Emma Sheard			
North_Plot:	-999.00	**Length (m):**	207.40			
Elev_Plot:	-999.00	**Note: Collar Coords in NAD83 / Zone 12**				

Hole No. L08-123

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	3.05	9	OVERBURDEN													
3.05	26.70	1a	ALTERED AEGIRINE SYENITE Medium grained to locally pegmatitic syenite, altered by biotite, chlorite, magnetite, albite and strong hematization. Remnant k-spar laths (0.5cm in length on average) are randomly oriented in a mafic matrix of minor biotite, chlorite and sericite but predominantly hematite. Primary aegirines are completely replaced by hematite and more rarely specular hematite. At the start of the hole are several patches of relatively fresh apple green secondary aegirine. There is also an orange feldspar in the matrix around 4.00m, which could be altered nepheline? Often rims k-spar laths. Locally pegmatitic between 7.70-8.50m: anhedral k-spar megacrysts with angular spaces filled by interstitial albite, hematite, specular hematite and minor magnetite. 9.20m: 3cm wide band of albite (cleavelandite) and secondary aegirine, almost subhorizontal. Rare patches of weak mineralization, for example @ 11.80m (0.1Dy, all else is relatively low). 18.75-19.00m: coarse rhomb shaped primary aegirines are entirely replaced by hematite and specular hematite. Below is a 10cm wide band of pervasive albitization. Porphyritic texture created by coarser primary aegirines altered by biotite, chlorite and sericite, rimmed by dark green serpentine. More euhedral aegirines replaced entirely by hematite and specular hematite are rimmed by biotite.												

Hole No.		L08-123																		
Depth (m)				Samp_id	From	To	Length	TREO	HREO	Y	Ce	Nd	Dy	Nb	Ta	P2O5
From	To	Lithocode	Description		(m)	(m)	(m)	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%
			More abundant patches of mineralization towards the end of this unit @ for example 25.00m: 0.2Ce, 0.1La, 0.1Dy, 0.08Nd, 0.02Y and @ 24.85m: 0.08Dy, 0.16Nd, 0.33Ce, 0.16La, 0.2Nb, 0.3Zr, 0.2Y (mix of zircon and other REE minerals).															
26.70	31.85	4a	ALBITIZED SYENITE Gradational contact into this zone with white albite (cleavelandite) a pervasive secondary phase in the matrix; replaced both mafic and felsic minerals. Porphyritic texture with remnant anhedral biotite, chlorite and sericite (aegirine precursor?) - replaced around the margins by cleavelandite. Others are entirely replaced by clay minerals. Weak mineralization throughout. Gradational contact with a decrease in the degree of albitization.															
31.85	42.70	1ac	ALTERED AEGIRINE SYENITE Medium grained aegirine syenite as previous. Minor albitization and more pervasive hematization. Randomly oriented k-spar laths (0.5cm in length on average) in a mafic matrix of blue-green biotite, chlorite and sericite and red hematite. Minor magnetite, specular hematite and albite (cleavelandite). Becomming locally coarser grained downhole with more abundant clay and sericite alteration.															
42.70	46.55	1ah	PEGMATITE Gradational contact into this unit. K-spar megacrysts are cut by silver muscovite and in other places, biotite. Relict rhomb shaped primary aegirines are replaced by cleavelandite, muscovite and hematite (different alteration events). 44.00-44.50m: vugs and cavities - k-spar megacrysts being resorbed and replaced by cleavelandite, muscovite and hematite. Fine grained disseminated zircon, associated with Nb enrichment @ for example 45.30m: 0.02Nd, 0.04Ce, 0.03La, 0.5Zr, 0.2Nb, 0.06Y.															
46.55	59.95	1ac	ALTERED AEGIRINE SYENITE Same unit as above the pegmatite, characterized by strong hematization and pervasive alteration by biotite, chlorite and sericite. Heterogeneous unit which is medium grained to locally pegmatitic between 48.50-49.00m. 54.80-55.20m: locally strongly albitized with primary textures almost entirely overprinted by cleavelandite. 55.75m: calcite vein @ 80 degrees to core axis. Downhole, mafics are replaced by hematite and k-spars are brecciated into angular fragments of variable sizes. Trace interstitial fine grained bastnaesite (weakly mineralized).															

Hole No.		L08-123																		
Depth (m)				Samp_id	From	To	Length	TREO	HREO	Y	Ce	Nd	Dy	Nb	Ta	P2O5
From	To	Lithocode	Description		(m)	(m)	(m)	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%
59.95	70.70	4a	ALBITIZED SYENITE Gradational contact into this unit which is strongly albitized. White cleavelandite overprints primary textures and replaces both mafic and felsic minerals. Remnant randomly oriented k-spar laths are visible beneath the albite overprint. Precursor: same unit as above, this horizon has just been intensely albitized.															
70.70	94.60	1a	ALTERED AEGIRINE SYENITE Same as aegirine syenite above the albitized syenite: altered predominantly by hematite and biotite, chlorite, sericite (green and red alteration overprint). 80.70m: fine grained red bastnaesite is pseudomorphing a subhedral unknown mineral. Downhole, specular hematite becomes a more pervasive phase with little or no magnetite. Minor patches of albitization, associated with a patchy grey-white type 2 zircon. This is interstitial between k-spar laths and in places is rimmed by biotite. Zircon becomes increasingly abundant downhole and between 89.30-89.50m is more locally concentrated. Until 89.90m, the primary lithology is brecciated, perhaps as a result of hydrothermal brecciation. From 93.00m, primary textures are more visible with randomly oriented k-spar laths in a mafic matrix of biotite, chlorite, sericite, magnetite and moderately pervasive hematization. Patchy albitization throughout.															
94.60	101.20	4a	ALBITIZED SYENITE Precursor lithology is the same - this unit has a strong albitization overprint. Several bands up to 70cm thick of pure white cleavelandite. Between these bands, the aegirine syenite is only weakly albitized. Gradational upper contact and a more sharp lower contact.															
101.20	141.55	1a	ALTERED AEGIRINE SYENITE Coarse grained to locally pegmatitic syenite, altered by biotite, chlorite, sericite, albite, hematite and specular hematite. Heterogeneous unit with finer grained sections characterized by hematite and specular hematite alteration. Repeated pegmatitic intervals with k-spars commonly fractured and these fractures infilled by hematite. Local patches of serpentinization (green, waxy lustre). Minor disseminated pyrite throughout. Contacts between these pegmatitic intervals are obscured by alteration, therefore it is difficult to confirm whether or not these represent a separate intrusive event. They are often characterized by brecciation. Pervasive hematization along fracture planes. Rare subhedral patches of bastnaesite and zircon intergrown. 116.00m: begin to see different phenocryst phases. (1) elongate lath shaped phenocrysts and (2) flattened rectangular/square shaped phenocrysts. Both are															

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			typically altered by hematite and/or specular hematite and are inclusions within larger k-spar megacrysts. Often these phases grow inwards into spaces infilled by albite (cleavelandite). Some coarse k-spar laths are euhedral with sharp crystal termination. 134.20m: calcite vein along fracture plane, infilled by disseminated pyrite. Hematization along upper contact of this vein. Downhole the phenocryst phases are entirely replaced by hematite and occasionally rimmed by biotite. 139.00-139.50m: pervasive calcite veining @ 80 degrees to core axis. Becoming finer grained into the next layered unit.													
141.55	207.40	1ade	LAYERED AEGIRINE SYENITE CUMULATE With the exception of one pegmatitic interval, the layers become coarser grained downhole, though there is variation in grain size within each layer. At the top of the unit: alternating fine grained red and green layers. Generally see sharp, knife-edge igneous contacts between these layers @ 60 degrees to core axis. These could also be alteration fronts where either hematization (red) or serpentinization (green) dominate. Pervasive calcite veining @ 80 degrees to core axis and one or two patches of fine grained zircon, associated with weak mineralization. Fine grained red layers are very homogeneous; composed of hematite and cleavelandite; up to 2m in thickness. Within these red layers, often see rounded patches of white cleavelandite @ for example 148.85m. Becomes locally pegmatitic @ 150.00m after the first red, fine grained layer. No clear upper contact. Relict patches where primary textures are more evident and alteration is less strong @ for example 153.80m. Patchy disseminated zircon and REE mineralization in places, for example 156.00-156.50m. Cumulate layering becomes clearer downhole as there is less of an alteration overprint. Some of the red, hematized layers display an overall coarsening upwards in grain size up to the contact with the serpentinized layer above. Between 156.60-171.50m: the alternating red and green layers are well developed. Pervasive calcite veining throughout @ 80 degrees to core axis and subvertical. 178.00m: disseminated carbonates (mix of calcite and ankerite) and trace pyrite. 182.30-183.50m: no change in the phenocryst sizes through this medium grained layer. Primary phenocrysts are replaced by chlorite and sericite and rimmed by biotite (petrographic confirmation needed) and are fairly subheral to anhedral in shape. Sharp lower contact with phenocrysts bound by a 5mm layer of albite. 184.40-186.00m: rectangular shaped phenocrysts from 0.5-2cm in length (unknown precursor, could be aegirine?) rimemd by hematite in a fine grained matrix of feldspar													

Hole No. L08-123																			
Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %			
			and secondary aegirine which is wrapped around the phenocrysts. Grain size increase downhole to the bottom of the layer, attributed to crystal settling. Some phenocrysts are aligned subhorizontally but most are randomly oriented. Could be a component of flow differentiation also? 186.55-186.95m: phenocrysts now in a matrix of white/pink cleavelandite. Sharp upper and lower contacts - alteration fronts? 191.20-192.00m: patches of zircon and REE mineralization in the matrix. Locally well mineralized (0.16Nd, 0.34Ce, 0.21La, 0.15Nb, 0.2Zr, 0.15Y). Downhole, see repeated cycles of fining upward cumulates with mineralized patches decreasing in abundance towards the end of the hole. 198.20m: secondary aegirine cuts phenocrysts rimmed by hematite. Thus, the aegirine is part of a relatively late stage alteration event. Bands of secondary green aegirine from 5-10cm thick in the last 2.5m of the hole.															

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L08-124	**Drilled By:**	Peak Drilling	**Objective:**	Lake Zone Delineation Drilling	**Downhole Survey Tests**	
Zone:	Lake Zone	**Started:**	2008-08-01				
Easting_GPS:	417,400	**Finished:**	2008-08-04	**Summary:**			
Northing_GPS:	6,886,575	**Core Size:**	NQ2				
Elev_GPS:	-999	**Surveyed?:**	☐				
East_Plot:	-999.00	**Logged By:**	Angela Martin				
North_Plot:	-999.00	**Length (m):**	198.25				
Elev_Plot:	-999.00	**Note: Collar Coords in NAD83 / Zone 12**					

Hole No. L08-124

Depth (m) From	Depth (m) To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	4.00	9	Overburden													
4.00	24.60	4a	Aibitized Syenite Buff to pink kspar phenocrysts in dark mafic matrix up to 5m, with abundant medium grained silver zircon pseudomorphs. Generally, highly feldpathic; kspar ranges from megacrystic to more commonly coarse to medium grained and anhedral (fractured megacrysts?). Commonly strongly albitized (cleavelandite). Remnant coarse grained mafics, weakly to strongly chloritized, often partially replaced by magnetite. Silver zircon commonly associated with more altered mafic sections. Matrix composed mainly of coarse grained, salmon pink kspar and prismatic albite. Minor light green intersertal clay alteration. Common thick (4-6cm) carbonate veins, with open fracture filling eudhedral kspar and pyrite. Vein/fracture is approximately parallel to core axis. Partial white calcite replacement of remnant mafic laths. Common local intersertal purple fluorite. Unmineralized.												
24.60	54.60	3a	Altered Syenite													

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			Weakly to strongly altered; textures partially obscured by hematite/biotite/chlorite alteration. Local bright pink, hematite-stained kspar. Matrix becoming increasingly albitized downhole. Texture fairly heterogeneous, with variations in grain size. Mafics strongly chloritized. Shear zones @ 36.1 and 36.4; abrupt reduction in grain size, with abundant chlorite/illite. Contact crumbly and ~ 80 degrees to core axis. Short foyaitic sections. 31.0-31.65: alternating bands of sub-pegmatitic, coarse to medium grained and highly albitized sections. 46.5-46.85; foyaitic, albitized and mafics chloritized.													
54.60	58.30	1ac	Aegirine Foyaite Coarse to very coarse grained; two generations of aegirine (?), very coarse grained, amorphous, green (chloritized) and medium to coarse grained hematized prisms, pointed terminations. Possible bastnaesite at 58; red, amorphous; 1.8 Ce, 0.56 Nd, 0.67 La, 0.59 Nb. Coarse grained whitish k-spar laths, generally randomly oriented.													
58.30	83.40	1a	Altered aegirine syenite Moderately altered; hematized/albitized/chloritized throughout. Marked increase in very coarse granined amorphous, partially chloritized, green/black mafic mineral.													
83.40	95.25	1c	Aegirine Foyaite Same as previous. Abundant coarse to very coarse grained, angular, subhedral green aegirine. Medium to coarse grained, randomly oriented kspar laths. Matrix moderately to strongly hematized. Common short, intensely hematized sections, often with specular hematite.													
95.25	179.25	3c	Heterogeneous Altered syenite Matrix moderately to strongly albitized locally, mafics strongly hematized. Common albite (cleavelandite) lenses and bands. Minor intersertal calcite. Common coarse to													

Hole No.	L08-124																				
Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			very coarse grained amorphous, green chloritized aegirine. 132-144: layered; alternating coarse grained foyaitic with 1-2m pegmatitic sections. 144-179.25: pervasie hematite staining. 161.4-179.25: increasingly albitized, with lenses of white and pink cleavelandite. Common specular hematite. Brecciated sections: 170-172. 172-179.25: spotted texture: hematized phenocrysts in albitized and/or dark altered matrix. Possible nepheline; bright orange, amorphous, very coarse grained. Shear zone @ 178, sub-horizontal to core axis.															
179.25	198.25	1a	Nepheline Aegirine syenite Weakly altered, both medium to coarse grained of relatively fresh looking, yet altered, aegirine. Also minor coarse grained hematite-replaced aegirine (commonly specular). Strongly albitized throughout, locally slightly vuggy, with magnetite and pyrite infilling vugs. Minor kspar partially/completely replaced by orange/red nepheline; very coarse grained and amorphous. Generally kspar is coarse grained and albitized. Non magnetic. EOH															

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L08-127	**Drilled By:**	Peak Drilling	**Objective:**	**Downhole Survey Tests**
Zone:	Lake Zone	**Started:**	2008-10-08		
Easting_GPS:	417,235	**Finished:**	2008-13-08	**Summary:**	
Northing_GPS:	688,670	**Core Size:**	NQ2		
Elev_GPS:	-999	**Surveyed?:**	☐		
East_Plot:	417,235.00	**Logged By:**	Angela Martin		
North_Plot:	688,670.00	**Length (m):**	201.30		
Elev_Plot:	-999.00	**Note: Collar Coords in NAD83 / Zone 12**			

Hole No. L08-127

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	2.50	9	Overburden.													
2.50	23.00	3d	Altered Syenite Dark pink kspar-rich syenite up to 3.5m. Predominantly dark; moderate to strong chlorite/biotite alteration throughout. Altered porphyritic syenite up to 10m, with buff kspar phenocrystic laths ~3-5cm, partially resorbed. Locally weakly magnetic. After 10m; texture partially obscured by intense albitization (cleavelandite). Overall dark brown/grey, with porphyritic textures visible in places. Narrow bands of MRZ (~5cm wide) with abundant fine grained ribbony tan zircon. Strongly mineralized: 1.6 Nd, 2.9 La, 0.9 Pr, 0.3 Nb, 5.5 Ce.												
23.00	84.70	2	MRZ/3d Predominantly dark brown, texture obscured by strong chlorite/biotite alteration. Albitized throughout, except for narrow horizons. Upper boundary sharp; defined by darker colour, decrease in cleavelandite and remnant felsic minerals. Becoming increasingly albitized downhole, interlayered with darker, more mafic sections. Due to alteration, syenitic textures preserved in places; matrix composed of												

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			grey cleavelandite with hematized coarse grained pyroxene (square cross section). Mafics often pseudomorphed by tan zircon. Local hematized bands 10-20cm. Strongly magnetic throughout. Patchy tan zircon mineralization; wide sections with abundant medium to coarse grained pseudomorphs. Common fine grained interstitial and narrow (~3cm) bands of fine grained ribbony zircon. Common whitish, repeating bands (5-10cm) and lenses of cleavelandite throughout.													
84.70	144.60	3c	Heterogeneous Altered Syenite Texture highly variable over short intervals. Strong biotite/chlorite alteration throughout. Increasingly felsic downhole. Narrow MRZ sections (10-100cm) and bands (5-10cm) ~ 70 degrees to core axis. Kspar is generally light pink, rounded and resorbed and varies in size. Repeated 10-40cm altered aegirine cumulate. Common 10-15cm sections with clusters of coarse grained chloritized aegirine in white albitized matrix. Narrow hematized/chloritized bands (5-10cm) throughout. Sporadic coarse grained tan zircon pseudomorphs. Fault guage @ 93.0: thin layers of purplish kspar, calcite and massive pyrite ~ 60 degrees to core axis. Lower boundary arbitrary due to degree of alteration.													
144.60	182.50	1deh	Layered cumulate 144.6-155: Cumulate: Coarse to medium grained, illitized/chloritized aegirine pseudomorphs in albitic matrix. Local minor sericitization of aegerine. Strongly altered: mafics coalescing into illitic lenses and bands. Narrow white bands of cleavelandite. 155-158: Pegmatitic syenite; highly altered; rounded pink kspar, megacrystic to pematitic with chloritic lenses. 158-160: dark red (hematized), higly altered with little visible texture. Vague, medium grained (kspar) foyaitic texture becoming fine grained (kspar) to 160. 160-182.5: Cumulate interlayered with pegmatitic sections (20cm to 2m) and banded													

Hole No.		L08-127																		
Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %				
			sections (50-150cm). Banded sections: red/green, aphanitic with minor fine grained aligned kspar laths. Sharp contact between bands. Aegirine becoming lighter green (illitized), matrix increasingly albitized downhole. Short hematized, lujravitic section 182-182.5, enclosing 10cm cumulate section.																	
182.50	184.60	1c	Aegirine foyaite Foyaitic, coarse grained kspar laths, with hematite/chlorite replaced aegirine prisms in hematized matrix. Minor amorphous, green phenocrysts (another generation of aegirine?). Kspars randomly oriented.																	
184.60	201.30	1a	Altered Aegirine Syenite Aegirine syenite becoming progressively altered downhole; strongly hematized. Mafics chloritized. Weak fabric @ 184.8-185.25 and near bottom; coarse grained kspar laths "flow" around both red and green phenocrysts. Kspar laths oriented perpendicular to core axis. Red phenocrysts: 1-3cm, rimmed with hematite with chloritized core. Suggesting hematite is replacing green aegirine pseudomorphs. Phenocrysts commonly lath shaped. 187.55-188.05 and 189.65-190.0: pegmatitic intervals																	

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L08-128	**Drilled By:**	Peak Drilling	**Objective:**	**Downhole Survey Tests**
Zone:	Lake Zone	**Started:**	2008-13-08		
Easting_GPS:	417,224	**Finished:**	2008-16-08	**Summary:**	
Northing_GPS:	6,885,960	**Core Size:**	NQ2		
Elev_GPS:	-999	**Surveyed?:**	☐		
East_Plot:	417,224.00	**Logged By:**	Angela Martin		
North_Plot:	6,885,960.00	**Length (m):**	213.50		
Elev_Plot:	-999.00	**Note: Collar Coords in NAD83 / Zone 12**			

Hole No. **L08-128**

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	8.00	9	Overburden. 20' casing.													
8.00	52.10	4b	Albitized Syenite Overall pale pink, intensely to strongly albitized throughout. Texture obscured by albitization, except in short sections. Predominantly very coarse grained to coarse grained, rounded and resorbed Kspar, white with orange core. Matrix composed of white cleavelandite. Minor coarse grained, irregualr chloritized mafics throughout. Commonly vuggy in more intensely albitized sections, along with coarse purple intersertal fluorite. Chloritized mafics are bright green and semi translucent (ex: 46.2-48.0) 29.7-30.0: very coarse, euhedral aegirine pseudomorphs (partially albitized) in matrix of white cleavelandite. Porous.													
52.10	64.00	3a	Altered Porphyritic Syenite Megacrystic kspar, rounded and resorbed, in places with dense coarse to medium grained highly felsic groundmass consisting of coarse white, angular kspar, pink albitized kspar and partially albitized coarse grained mafics. Mafics often partially pseudomorphed by very fine grained zircon. Weakly mineralized. Upper and lower boundaries defined by increase and decrease of mafics, respectively.													

Hole No.		L08-128																			
Depth (m)				Samp_id	From	To	Length	TREO	HREO	Y	Ce	Nd	Dy	Nb	Ta	P2O5					
From	To	Lithocode	Description		(m)	(m)	(m)	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%					
64.00	72.70	4a	Albitized Syenite As previous, except kspar megacrysts are fresher and more angular.																		
72.70	110.50	3a	Altered Porphyritic Syenite 72.7-77.0: white/pale pink megacrystic to coarse grained kspar fragments in dark pink cleavelandite matrix, with minor coarse grained remnant mafics. 77-80: same as previous interval, but with dark red (nepheline?) partially replacing relict coarse grained aegirine. Mafics range from medium to very coarse prisms, often in clusters. 83-96: becoming increasingly felsic and strongly albitized. Nepheline (?) appears at 93.2 and is abundant down section, enveloping kspar phenocrysts and coarse grained fluorite. Minor fine grained tan zircon pseudomorphs. 96-108.8: upper boundary abruptly gradational and defined by increase in mafic content; dark, relativcly unaltered. Possibly a 'mafic layer'? Coarse to megacrystic kspar, amorphous with medium grained orange/pink nepheline? aggregates (or skeletal crystal). Moderately albitized. Minor medium grained intersertal fluorite and fine tan zircon pseudomorphs and interstitial. Lower boundary arbitrary; becoming increasingly albitized.																		
110.50	147.95	4a	Albitized Syenite Increasingly albitized downhole. Locally vuggy. Strongly to intensely albitized; both kspar phenocrysts and matrix. Syenitic texture preserved in most places. Mafics are medium to coarse grained. Sometimes partially replaced by purple fluorite. Intensely albitized from 123.-149; composed almost completely of white cleavelandite. Abundant purple fluorite possibly replacing mafics, enveloped by pink, granular albite. Very vuggy. Minor coarse grained pseudomorphs composed of fine grained tan zircon, angular crystal outline. 130-131.2: band of purple fluorite with narrow chloritic horizons.																		

Hole No.		L08-128																			
Depth (m)				Samp_id	From	To	Length	TREO	HREO	Y	Ce	Nd	Dy	Nb	Ta	P2O5
From	To	Lithocode	Description		(m)	(m)	(m)	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%
147.95	151.00	1h	Pegmatitic Syenite Fractured, often poikilitic, albitized kspar megacrysts (medium grained mafic prisms) with abundant pegmatitic to very coarse chloritized/illitized aegirine. Very coarse grained purple fluorite replacing mafics. Locally vuggy.													
151.00	199.40	1c	Foyaite Fine to very coarse foyaitic sections, strongly hematized. Short green illitic sections: @ 152.5 (25cm), @163 (35cm), @154.6 (40cm). Relatively altered; coarse mafics hematized/illitized, coalesced into irregular blebs. 183-199.4: pristine green aegirine with angular coarse grained amorphous red blebs, possibly altered nepheline. After 191: abundant bright red, megacrystic, amorphous nepheline? with white very coarse grained poikilitc kspar.													
199.40	213.50	1h	Pegmatitic Syenite Same as previous, but aegirine less altered; pristine and bright green. 209.7 down: coarse grained aggregates of aegirine, both green and replaced by specular hematite. Common megacyrstic aegirine, partially replaced by dark purple fluorite.													

Not exact collar coord.

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L08-130	**Drilled By:**	Peak Drilling	**Objective:**	**Downhole Survey Tests**
Zone:	Lake Zone	**Started:**	2008-08-19		
Easting_GPS:	416,525	**Finished:**	2008-08-24	**Summary:**	
Northing_GPS:	6,886,365	**Core Size:**	NQ2		
Elev_GPS:	-999	**Surveyed?:**	☐		
East_Plot:	416,525.00	**Logged By:**	Angela Martin		
North_Plot:	6,886,365.00	**Length (m):**	198.25		
Elev_Plot:	-999.00	**Note: Collar Coords in NAD83 / Zone 12**			

Hole No. L08-130

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	8.80	9	27' casing, overburden.													
8.80	59.35	4a	Albitized Syenite Predominantly medium to coarse grained. Subhedral to euhedral aegirine is commonly replaced by hematite, magnetite and chlorite. Kspar is coarse to pegmatitic, commonly ablitized. Matrix is composed mainly of white/grey cleavelandite. Syenitic textures well preserved. Sporadic, medium grained silver zircon partially overgrowing mafics, usually in clusters. Mineralized: 1.2 Nb, 0.1 Ce, 0.1 Ta. Becoming finer grained downhole from 10cm band of massive purple fluorite at 57.95.													
59.35	153.60	1ac	Altered Nepheline Aegirine Foyaite Upper boundary defined by foyaitic texture, abruptly gradational. Bands of massive purple fluorite ~ 10cm wide @ ~60m, abruptly grading into weakly altered, coarse grained foyaite. Mafics replaced with chlorite, hematite, magnetite and sometimes fluorite. Minor and sporadic medium grained pseudomorphs composed of fine grained tan zircon. Matrix strongly hematized or ablitized throughout. 90.9-91.3: amorphous, megacrystic, deep orange mineral (nepheline? or hematite													

Hole No.		L08-130																			
Depth (m)				Samp_id	From	To	Length	TREO	HREO	Y	Ce	Nd	Dy	Nb	Ta	P2O5					
From	To	Lithocode	Description		(m)	(m)	(m)	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%					
			stained Kspar?) with intersertal fluorite. Often partially replacing or pseudomorphing kspar. Multiple short aegirine-rich sections 10-75 cm wide. Aegirine is predominantly medium grained, densely packed, prismatic and pristine green (yet altered). 130.95-131: aegirine-rich (as described above) with megacrystic and coarse grained kspar. Kspar is partially pseudomorphed by very fine grained tan zircon? and minor fluorite. Mineralized: 1.08 Ce, 0.3 Pr, 0.5 Nd, 0.6 Nb. These pseudomorphs become quite abundant from 177 down. Kspar megacrysts are commonly poililitic, with medium grained, black and dark red aegirine needles. Some replaced by specular hematite. @133.8-134.2: pegmatitic; kspar albitized, rounded and resorbed. Pegmatitic aegirine is replaced by chlorite, hematite and partially pseudomorphed by silver zircon. Vuggy after 134, mafics sercitized with bright red hematite blebs. Minor fluorite and albite replacement.																			
153.60	198.25	1a	Nepheline Aegirine Syenite Medium to coarse grained, prismatic, green, pristine yet altered aegirine with minor white and/or pink Fd, anhedral, medium to coarse grained. Matrix predominantly white (primary?) albite (crystalline, translucent). Darker pink/brown interval from 153.6-160.4 and 163-168.4 due to abundant dark pink kspar and dark green aegirine. Minor, coarse grained amorphous, orange/red nepheline throughout. Strongly albitized 189.8-192.15: predominantly white cleavelandite with minor medium grained aegerine needles and aggregates of buff, medium grained feldspar (?). Becoming very coarse grained after 194; both kspar and pristine green aegirine. EOH																			

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L09-152	**Drilled By:**	Foraco Drilling	**Objective:**	Define Basal Zone
Zone:	Lake Zone	**Started:**	2009-03-22	**Summary:**	Packer hole
Easting_GPS:	417,133	**Finished:**	2009-03-26		
Northing_GPS:	6,886,271	**Core Size:**	NQ		
Elev_GPS:	242	**Surveyed?:**	☑		
East_Plot:	417,133.77	**Logged By:**	JC Pedersen		
North_Plot:	6,886,268.78	**Length (m):**	193.85		
Elev_Plot:	241.05	**Note: Collar Coords in NAD83 / Zone 12**			

Downhole Survey Tests

Depth	Dip	Azimuth	Type
0	-90	0	Collar
193.85	-90	0	Acid

Hole No. L09-152

Page 1 of 5

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	4.20	9	Overburden; Organics, sand, boulders (greywacke).													
4.20	28.00	4a	Albitized Syenite/Feldspathite; Light pink with partially preserved porphyritic to sub-pegmatitic textures. Strongly albitized, with pervasive interstitial alteration and replacement, consisting of chlorite, clay, and calcite, with sporadic bastnaesite, trace zircon and pyrite. Occasional finely porous intervals. Local intervals with increased interstitial mafics (3cd).	591562	4.20	5.85	1.65	**1.18**	**0.12**	480	4300	2020	101	669	67	0.10
				591563	5.85	8.00	2.15	**0.75**	**0.06**	215	2790	1310	57	947	65	0.07
				591564	8.00	10.00	2.00	**0.77**	**0.07**	278	2830	1310	61	581	51	0.05
				591565	10.00	12.00	2.00	**0.77**	**0.07**	239	2850	1350	55	494	43	0.06
				591566	12.00	14.00	2.00	**0.87**	**0.07**	250	3250	1515	58	953	53	0.03
				591567	14.00	16.00	2.00	**0.98**	**0.06**	161	3760	1760	52	844	54	0.08
				591568	16.00	17.00	1.00	**1.27**	**0.10**	351	4740	2280	85	1320	73	0.03
				591569	17.00	19.00	2.00	**0.84**	**0.06**	154	3160	1565	47	709	40	0.12
				591570	19.00	21.00	2.00	**0.72**	**0.04**	92	2790	1245	33	612	26	0.08
				591571	21.00	23.00	2.00	**0.44**	**0.03**	103	1660	801	28	321	21	0.03
				591572	23.00	25.00	2.00	**0.54**	**0.04**	124	2060	925	33	644	39	0.03
				591573	25.00	27.00	2.00	**0.52**	**0.03**	94	2010	858	28	446	24	0.04
				591574	27.00	28.00	1.00	**1.00**	**0.06**	159	3880	1650	57	1195	72	0.01
28.00	52.00	3c; 2	Heterogeneous Syenite/MRZ; Dark green-grey, heterogeneous textures and assemblages, all with mafic metasomatic overprint. Precursor assemblages include	591576	28.00	30.00	2.00	**2.54**	**0.15**	386	9810	4310	131	1955	149	0.08

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			medium grained syenite, porphyritic syenite, and syenite pegmatite with variable primary mafic minerals now completely replaced. Alteration minerals include abundant fine to patchy chlorite, hematite, magnetite, bastnaesite, zircon, and trace fluorite and pyrite. Zircon varies from fine disseminated chalky grains to irregular tan to bronze coloured masses and coarse skeins up to 5 cm in size. Local intense zircon-REE enrichment in numerous intervals at 32.0; 28.4-39.0; 44.0-44.5; 50.7-50.9. Intermittently strongly magnetic, particularly in zircon-enriched sections.	591577	30.00	32.00	2.00	**2.13**	**0.11**	271	8180	3550	97	1955	146	0.07
				591578	32.00	34.00	2.00	**1.19**	**0.07**	176	4580	2030	60	1045	64	0.08
				591579	34.00	36.00	2.00	**1.32**	**0.08**	218	5080	2370	66	1285	67	0.07
				591581	36.00	38.30	2.30	**1.27**	**0.11**	354	4760	2190	96	1210	85	0.13
				591582	38.30	39.00	0.70	**2.65**	**0.20**	443	9880	4720	226	3420	179	0.73
				591583	39.00	41.00	2.00	**0.42**	**0.03**	77	1590	674	27	400	26	0.01
				591584	41.00	43.00	2.00	**0.68**	**0.05**	146	2530	1175	46	678	45	0.11
				591585	43.00	45.00	2.00	**2.60**	**0.21**	656	9530	4680	168	3670	228	0.10
				591586	45.00	47.00	2.00	**1.76**	**0.11**	256	6630	3100	90	2560	146	0.12
				591587	47.00	49.00	2.00	**1.70**	**0.10**	231	6430	2990	92	1655	103	0.16
				591588	49.00	51.00	2.00	**2.01**	**0.16**	450	7340	3650	125	3670	224	0.20
				591589	51.00	52.00	1.00	**3.39**	**0.45**	1770	11650	5840	448	5540	319	0.10
52.00	88.50	5ab; 4b	Feldspathite/Albitized Syenite; Light pink, medium to coarse grained intensely albitized and altered. Various degrees of albitization with resultant partially preserved relict textures. Predominant texture/lithology is light pink albitized syenite with coarse red-brown aegirine (?) pseudomorphs imparting distinct coarse brown spotted texture, commonly in association with finely miarolitic groundmass. Minor interlayered altered mafic syenite and fine grained pseudo-foyaitic intervals. Uniqe interval from 65.2-67.5 with massive aphanitic fluorite and fluorite-clay-sericite replacement.	591590	52.00	54.00	2.00	**1.62**	**0.16**	518	5680	2970	134	3820	223	0.21
				591591	54.00	56.00	2.00	**1.10**	**0.11**	398	4080	1760	122	1440	99	0.13
				591592	56.00	59.00	3.00	**0.54**	**0.05**	166	2030	888	40	1135	62	0.02
				591593	59.00	60.50	1.50	**0.12**	**0.05**	226	295	129	39	1205	95	0.01
				591594	60.50	62.00	1.50	**0.30**	**0.05**	184	1065	454	45	1420	88	0.04
				591595	62.00	64.00	2.00	**0.98**	**0.08**	206	3720	1635	86	2630	168	0.17
				591596	64.00	65.20	1.20	**0.66**	**0.09**	403	2380	949	85	3530	237	0.07
				591597	65.20	67.50	2.30	**0.15**	**0.02**	65	564	215	13	200	9	0.02
				591598	67.50	69.00	1.50	**0.14**	**0.03**	122	425	230	28	238	13	0.02
				591599	69.00	71.00	2.00	**0.18**	**0.04**	214	552	254	48	277	17	0.03
				591601	71.00	73.00	2.00	**0.18**	**0.03**	139	646	277	33	227	13	0.02
				591602	73.00	75.00	2.00	**0.43**	**0.02**	59	1725	714	23	623	30	0.02
				591603	75.00	77.00	2.00	**0.66**	**0.03**	59	2630	1200	24	472	18	0.04
				591604	77.00	79.00	2.00	**0.42**	**0.02**	61	1675	668	24	873	30	0.03
				591605	79.00	81.00	2.00	**0.40**	**0.02**	54	1580	631	20	377	17	0.02
				591606	81.00	83.00	2.00	**1.05**	**0.04**	100	4220	1580	37	498	21	0.01

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
				591607	83.00	85.00	2.00	**0.57**	**0.02**	48	2360	849	18	795	22	0.01
				591608	85.00	87.00	2.00	**0.40**	**0.02**	70	1605	619	20	729	26	0.01
				591609	87.00	88.50	1.50	**0.52**	**0.02**	61	2110	823	22	554	20	0.01
88.50	105.50	3d	Altered/Albitized syenite; Dark grey, medium to coarse grained, fairly homogeneous with strong earlier albitizing event producing weakly developed coarse net-textture. Likely originally an aegirine syenite. Pervasive hematization, strongly magnetic. Common interstitial medium grained chalky mineralmay be pseudomorph, and now comprised of calcite (at least in part). Generally only trace zircon and REE mineralization.	591610	88.50	91.00	2.50	**0.53**	**0.04**	147	2110	806	42	1605	61	0.05
				591611	91.00	93.00	2.00	**0.83**	**0.07**	270	3190	1185	80	2240	117	0.10
				591612	93.00	95.00	2.00	**0.35**	**0.03**	99	1320	551	34	464	19	0.01
				591613	95.00	97.00	2.00	**0.54**	**0.05**	163	2090	811	52	909	44	0.03
				591614	97.00	99.00	2.00	**0.51**	**0.05**	187	1885	758	55	902	59	0.09
				591615	99.00	101.00	2.00	**0.24**	**0.01**	39	909	354	17	534	21	0.10
				591616	101.00	103.00	2.00	**0.45**	**0.03**	67	1675	708	39	752	16	0.11
				591617	103.00	105.50	2.50	**0.61**	**0.05**	132	2280	1005	62	1875	87	0.18
105.50	112.00	5b	Feldspathite; Light pink and vuggy, as previous.	591618	105.50	107.00	1.50	**2.05**	**0.19**	654	7670	3450	184	3830	256	0.54
				591619	107.00	109.00	2.00	**1.10**	**0.09**	309	4220	1795	83	1730	144	0.11
				591621	109.00	111.00	2.00	**0.19**	**0.04**	171	671	263	36	771	73	0.01
				591622	111.00	112.00	1.00	**0.51**	**0.03**	115	2090	770	28	523	54	0.01
112.00	128.10	3d	Altered/Albitized Syenite As previous, farily heterogeneous, highly albitic to 120.9. After 120.9, increasing mafics, but only trace zircon and REE's. Basal Zone commences with abrupt appearance of zircon. Section is weakly to moderately magnetic.	591623	112.00	114.00	2.00	**0.32**	**0.11**	508	910	341	108	1970	178	0.01
				591624	114.00	116.00	2.00	**0.57**	**0.06**	209	2180	858	62	1960	147	0.16
				591626	116.00	118.00	2.00	**0.53**	**0.07**	265	1980	786	66	935	69	0.09
				591627	118.00	120.90	2.90	**0.40**	**0.06**	270	1400	558	61	1305	102	0.04
				591628	120.90	123.00	2.10	**0.12**	**0.02**	82	443	164	17	1085	55	0.03
				591629	123.00	125.00	2.00	**0.08**	**0.02**	78	273	102	16	1260	36	0.01
				591630	125.00	127.00	2.00	**0.11**	**0.02**	84	401	160	19	749	51	0.06
				591631	127.00	128.10	1.10	**0.06**	**0.01**	26	202	81	7	312	5	0.03
128.10	152.95	2b/1c	MRZ (Basal Zone)/Foyaitic Syenite; Abrupt appearance of zircon and REE's, with progressively developed foyaitic textures. Strongly magnetic. Heterogeneous textures, from finely foyaitic to coarse foyaitic, and porphyritic to sub-pegmaititic syenite, all with heterogeneous alteration overprint. Ubiquitous tan zircon, as fine disseminated grains, skeins, irregular masses with chlorite/biotite, coarse	591632	128.10	130.00	1.90	**1.42**	**0.24**	1030	4870	2140	234	2000	168	0.06
				591633	130.00	131.00	1.00	**1.83**	**0.50**	2330	5440	2450	462	2490	268	0.02
				591634	131.00	133.00	2.00	**1.45**	**0.28**	1240	4810	2090	270	2330	254	0.05
				591635	133.00	134.00	1.00	**0.93**	**0.19**	882	3080	1310	191	1230	121	0.16

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			pseudomorphs after unknow mineral, and local narrow cumulate assemblages. Broad patches of hematite alteration. 130-131 Strong zircon replacement, possible cumulate. 131-133 Fine grained layered foyaite with common disseminated bands of fine grained zircon. 133-134 Coarser grained, decreasing zircon. 134-135.5 Strong chloritic and hematitic alteration, coarse patches of very fine zircon, with 15cm aggregate of zircon-hematite-chlorite with Niton reading of 2%Sm/2.9%Nd/4.7%Ce/2.7%La/.62Gd/.12Eu/1.8%Nb/.3%Ta. 135.5-137 Feldspathic, foyaitic with minor zircon. 137-139 Altered porphyritic syenite, may be weakly banded, with patchy zircon replacement. 139-141.4 As above. 141.4-143.7 Very strong alteration and zircon-REE enrichment. Coarse zircon pseudomorphs in aegirine (nepheline) syenite precursor. Strongly magnetic, hematitic, Niton spot reading with 1.3%y/.22Ta. 143.7-145.1 Coarse foyaite, likely nepheline foyaite with significant interstitial hematite. Local fine patches of zircon-REE enrichment. 145.1-147 Coarse grained, strongly mineralized with localized coarse cumulate textures. 147-149 As above, less cumulate. 149-150.6 As above, becoming more leucocratic. 150.6-152.95 Mafics decreasing, more feldspathic, medium grained, decreasing zircon mineralziation.	591636	134.00	135.50	1.50	**2.62**	**0.20**	491	9570	4680	145	3550	347	0.04
				591637	135.50	137.00	1.50	**0.16**	**0.02**	85	560	268	24	333	13	0.01
				591638	137.00	139.00	2.00	**1.16**	**0.13**	391	4110	1975	115	2140	215	0.03
				591639	139.00	141.40	2.40	**1.97**	**0.41**	1570	6100	3080	492	3070	341	0.15
				591640	141.40	143.70	2.30	**4.41**	**1.27**	5540	12100	6370	1175	6350	689	0.12
				591641	143.70	145.10	1.40	**2.71**	**0.64**	2840	7980	4480	673	2010	266	0.24
				591642	145.10	147.00	1.90	**2.66**	**0.75**	3170	7390	3800	834	3990	504	0.07
				591643	147.00	149.00	2.00	**2.75**	**0.82**	3690	7430	3860	811	3430	446	0.13
				591644	149.00	150.60	1.60	**3.20**	**0.92**	3870	8780	4530	935	4860	672	0.13
				591645	150.60	152.95	2.35	**1.40**	**0.33**	1410	4190	2070	365	2990	406	0.26
152.95	193.85	1ac	Aegirine Syenite/Foyaitic Syenite; Transitional to aegirine syenite. Heterogeneous textures and assemblages. Little or no zircon. Mafics chloritized, also altered to illite, sericite, hematite, and magnetite. Magnetite decreasing after 173. Local interstitial and patchy fluorite, particularly 173-178. Aegirine increasing downhole, locally with characteristic green colour. Well developed intermittent coarse graained aegirine nepheline foyaite. 154.3 Hydrothermal breccia directly below pegmatitic interval.	591646	152.95	155.00	2.05	**0.36**	**0.05**	208	1315	531	44	1085	142	0.10
				591647	155.00	157.00	2.00	**0.41**	**0.06**	263	1485	554	52	1060	122	0.16
				591648	157.00	159.00	2.00	**0.26**	**0.03**	121	956	410	25	637	54	0.03
				591649	159.00	160.90	1.90	**0.23**	**0.03**	136	838	359	25	363	27	0.03
				591651	160.90	163.00	2.10	**0.24**	**0.02**	66	903	411	20	874	25	0.01
				591652	163.00	165.40	2.40	**1.07**	**0.05**	171	4250	1600	46	707	51	0.09
				591653	165.40	166.85	1.45	**0.08**	**0.02**	85	260	114	18	467	20	0.05
				591654	166.85	169.00	2.15	**0.08**	**0.01**	27	299	133	8	210	7	0.02
				591655	169.00	171.00	2.00	**0.07**	**0.01**	53	241	111	13	318	16	0.01
				591656	171.00	173.00	2.00	**0.24**	**0.03**	132	823	394	33	490	44	0.18
				591657	173.00	175.00	2.00	**0.19**	**0.03**	100	622	306	37	389	45	0.01

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
				591658	175.00	177.00	2.00	**0.20**	**0.02**	52	737	344	22	231	13	0.01
				591659	177.00	179.00	2.00	**0.15**	**0.02**	53	545	257	16	188	13	0.01
				591661	179.00	181.00	2.00	**0.07**	**0.01**	28	273	122	7	265	19	0.01
				591662	181.00	183.00	2.00	**0.11**	**0.01**	58	386	178	14	227	11	0.01
				591663	183.00	185.00	2.00	**0.19**	**0.02**	84	664	334	25	410	24	0.01
				591664	185.00	187.00	2.00	**0.51**	**0.05**	131	1900	916	50	288	22	0.02
				591665	187.00	189.00	2.00	**0.13**	**0.01**	48	457	208	16	216	12	0.01
				591666	189.00	191.00	2.00	**0.10**	**0.02**	102	319	150	22	246	15	0.01
				591667	191.00	193.85	2.85	**0.23**	**0.07**	293	643	327	74	386	51	0.06

AVALON VENTURES LTD. / THOR LAKE PROJECT

Diamond Drill Log

Hole_id:	L09-151	**Drilled By:**	Foraco Drilling	**Objective:**	Define Basal Zone
Zone:	Lake Zone	**Started:**	2009-03-18	**Summary:**	Packer hole
Easting_GPS:	417,423	**Finished:**	2009-03-21		
Northing_GPS:	6,886,298	**Core Size:**	NQ		
Elev_GPS:	241	**Surveyed?:**	☑		
East_Plot:	417,423.03	**Logged By:**	JC Pedersen		
North_Plot:	6,886,295.40	**Length (m):**	215.19		
Elev_Plot:	240.55	**Note: Collar Coords in NAD83 / Zone 12**			

Downhole Survey Tests

Depth	Dip	Azimuth	Type
0	-90	0	Collar
215.19	-90	0	Acid

Hole No. L09-151

Depth (m) From	Depth (m) To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
0.00	6.70	9	Overburden; organics, clay, boulders.													
6.70	37.40	5b	Feldspathite; Pink, homogeneous, very porous and vuggy. Almost completely albitized, with fine-medium grained cleavelandite. Minor local partially preserved white Kspar phenocrysts. Very common irregular to ovoid calcite pods to 6cm. Locally to 20% , commonly miarolitic with fine sulphide crystals including chalcopyrite, pyrite, and galena (</=1%). Calcite also commonly intersertal to cleavelandite plates: CO2, CaCO3 and NaO coeval. Vugs and cavities commonly with well developed cleavelandite, and locally quartz. Random sulphide crystal overgrowths. Section is very high level and late stage. Negligible fracture fill or vein development.	591449	6.70	9.00	2.30	**0.15**	**0.01**	12	598	249	5	428	4	0.03
				591451	9.00	11.00	2.00	**0.10**	**0.00**	12	418	163	4	630	7	0.03
				591452	11.00	13.00	2.00	**0.12**	**0.01**	25	460	176	8	651	8	0.03
				591453	13.00	15.00	2.00	**0.09**	**0.00**	9	345	139	3	257	3	0.02
				591454	15.00	17.00	2.00	**0.09**	**0.00**	9	366	153	3	143	2	0.01
				591455	17.00	19.00	2.00	**0.17**	**0.01**	13	676	297	6	187	2	0.03
				591456	19.00	21.00	2.00	**0.25**	**0.01**	18	951	390	9	203	2	0.01
				591457	21.00	23.00	2.00	**0.37**	**0.01**	23	1455	623	11	287	4	0.04
				591458	23.00	25.00	2.00	**0.29**	**0.01**	18	1175	458	8	264	4	0.03
				591459	25.00	27.00	2.00	**0.30**	**0.01**	20	1185	447	9	154	2	0.02
				591461	27.00	29.00	2.00	**0.31**	**0.01**	22	1215	504	10	139	2	0.02
				591462	29.00	31.00	2.00	**1.20**	**0.04**	59	4780	2000	30	321	4	0.05
				591463	31.00	33.00	2.00	**0.45**	**0.02**	30	1775	783	16	151	5	0.03
				591464	33.00	35.00	2.00	**0.54**	**0.02**	38	2100	942	19	121	2	0.03
				591465	35.00	37.40	2.40	**0.29**	**0.01**	19	1115	545	8	122	2	0.01

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
37.40	51.20	5a	Abrupt change from vuggy section. Strongly megacrystic, with decreasing albite. Strong intersertal clay alteration, in patches to 10cm, olive-green, softe and waxy, often with late fluorite. Relict medium grained syenite textures after 148. Trace REE's (Niton) average 0.15% Ce.	591466	37.40	39.00	1.60	**0.58**	**0.02**	32	2300	1055	13	227	3	0.01
				591467	39.00	41.00	2.00	**0.29**	**0.01**	21	1095	541	8	401	6	0.01
				591468	41.00	43.00	2.00	**0.12**	**0.01**	22	456	200	7	1010	20	0.02
				591469	43.00	45.00	2.00	**0.34**	**0.01**	27	1315	640	11	558	13	0.02
				591470	45.00	47.00	2.00	**0.43**	**0.02**	56	1695	671	21	321	10	0.02
				591471	47.00	49.00	2.00	**0.72**	**0.03**	71	2730	1270	29	614	27	0.02
				591472	49.00	51.20	2.20	**0.95**	**0.05**	103	3690	1535	38	450	18	0.02
51.20	55.60	3cd	Altered Syenite; Abruptly gradational with increasing mafic/chloritic content. Heterogeneous textures and assemblages, but precursor generally coarsely porphyritic to sub-pegmatitic syenite. Mafic sections magnetic. Local finely disseminated bastnaesite in chloritic interstices and aggregates. Trace fine grained chalky zircon.	591473	51.20	53.00	1.80	**1.08**	**0.06**	146	4060	1850	59	1125	52	0.05
				591474	53.00	55.60	2.60	**1.21**	**0.06**	152	4650	2040	60	922	42	0.04
55.60	67.90	2,3d	MRZ/Altered Chlorite Syenite; Much more mafic alteration and replacement. Common medium grained grey cleavelandite replacement, appears earlier than mafic replacement. Common sub-perpendicular skein-like fractures and replacement stringers. Fine grained zircon dissemniated throughout, generally dispersed and non-aggregated. Localpegmatitic interval at 64.5-65.4 which is less mafic. Moderately to strongly magnetic, ubiquitous subordinate hematite.	591476	55.60	57.00	1.40	**1.45**	**0.10**	274	5440	2500	96	1095	68	0.21
				591477	57.00	59.00	2.00	**1.03**	**0.05**	99	3990	1695	40	990	60	0.03
				591478	59.00	61.00	2.00	**2.33**	**0.11**	214	9020	3730	89	1315	95	0.12
				591479	61.00	63.00	2.00	**1.77**	**0.14**	425	6490	3180	130	1960	127	0.19
				591480	63.00	64.50	1.50	**2.00**	**0.11**	212	7650	3450	88	1585	123	0.18
				591481	64.50	65.40	0.90	**1.34**	**0.07**	184	5130	2260	52	525	37	0.02
				591482	65.40	67.90	2.50	**1.45**	**0.09**	232	5480	2570	74	936	80	0.18
67.90	82.70	4a	Albitized Syenite; Abruptly pinker, albitized and preserved syenitc textures. Locally pegmatitic. Interstitial mafics completely chloritized/illitized. Common interstitial calcite. Ubiquitous minor disseminated zircon grains, trace bastnaesite. Erratic intervals with increasing interstitial mafics.	591483	67.90	70.00	2.10	**0.64**	**0.04**	99	2400	1175	33	202	15	0.04
				591484	70.00	72.00	2.00	**0.65**	**0.04**	97	2430	1150	38	239	17	0.04
				591485	72.00	74.00	2.00	**0.89**	**0.06**	172	3300	1550	61	410	31	0.09
				591486	74.00	76.00	2.00	**0.85**	**0.06**	158	3150	1490	49	632	36	0.04
				591487	76.00	78.00	2.00	**0.87**	**0.07**	188	3190	1560	63	519	44	0.08
				591488	78.00	80.00	2.00	**0.62**	**0.04**	80	2340	1135	34	87	5	0.01
				591489	80.00	82.70	2.70	**0.78**	**0.05**	98	2900	1430	46	412	23	0.02
82.70	98.30	3d	Altered Syenite; Gradational from previous with decrease in albite and increase in mafics, and decrease in grain size. Section precursor fairly homogeneous. Medim to caorse grained, with increase in interstitial mafics and mific replacement, mainly	591490	82.70	84.00	1.30	**0.55**	**0.04**	94	2040	1020	35	133	11	0.05
				591491	84.00	86.00	2.00	**0.66**	**0.09**	367	2200	1140	91	487	53	0.10

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
			chloritic, biotite (?), and very minor magnetite. Common fine white interstitial calcite, trace pyrite. Precursor porphyritic syenite. Minor ubiquitous fine chalky zircon graains. Section hs moderately elevated REE mineralization, average </= 1% (Niton).	591492	86.00	88.00	2.00	**1.27**	**0.09**	197	4720	2350	83	701	62	0.11
				591493	88.00	90.00	2.00	**1.03**	**0.07**	178	3760	1930	64	1020	82	0.07
				591494	90.00	92.00	2.00	**0.87**	**0.06**	153	3210	1610	56	953	74	0.07
				591495	92.00	94.00	2.00	**1.10**	**0.09**	263	4020	2080	68	970	79	0.12
				591496	94.00	96.00	2.00	**1.01**	**0.07**	183	3700	1950	64	640	60	0.13
				591497	96.00	98.30	2.30	**0.87**	**0.11**	418	2990	1540	104	647	65	0.11
98.30	112.15	3d,2	Increasing mafics with increase in tan coloured zircon, possibly minor fine grained interstitial bastnaesite. Section continuous from previous, but becoming more heterogenous, with minor local pegmatitic feldspar. Local intervals with salmon red feldspar may in part be altered nepheline. Moderately to strongly magnetic. Fine grained reddish foyaitic intervals after 108, with similar moderate REE-mineralization (.3Nd/.5Ce/.1Y).	591498	98.30	100.00	1.70	**2.41**	**0.21**	593	8670	4540	160	3110	197	0.38
				591499	100.00	102.00	2.00	**1.36**	**0.16**	547	4720	2420	144	2640	162	0.20
				591502	102.00	104.00	2.00	**1.14**	**0.11**	348	4040	2060	99	1210	120	0.16
				591503	104.00	106.00	2.00	**1.11**	**0.11**	335	3940	2000	93	1060	115	0.20
				591504	106.00	108.00	2.00	**1.18**	**0.11**	322	4220	2150	87	1500	135	0.11
				591505	108.00	110.00	2.00	**1.56**	**0.35**	1540	4730	2420	374	2560	202	0.07
				591506	110.00	112.15	2.15	**2.77**	**0.58**	2520	8540	4460	580	3640	309	0.14
112.15	120.25	3e	Altered Foyaitic Syenite Abrupt transition from previous, suggesting layer/horizon boundary. Coarse grained, light pink, heterogeneous textures. Ubiquitous fine chalky zircon dusting. Increasing mafic alteration toward bottom of section.	591507	112.15	114.00	1.85	**0.72**	**0.13**	504	2310	1180	132	827	86	0.03
				591508	114.00	116.00	2.00	**0.91**	**0.12**	405	3050	1515	112	1235	94	0.10
				591509	116.00	118.00	2.00	**0.77**	**0.09**	323	2590	1370	82	1030	83	0.06
				591510	118.00	120.25	2.25	**1.55**	**0.14**	405	5610	2710	135	1690	156	0.34
120.25	125.40	2	MRZ; Abrupt transtion from previous. Coarse porphyritic syenite precursor. Very dark green-tan colour imparted by abundant fine grained chlorite-biotit with associated fine grained tan-coloured skeins of zircon. REE values surprisingly low for this section, suggesting REE's may not be confined to zircon. Possible brittle (healed) fault offsets at 125.4 with sub-vertical contact between finer grained MRZ and coarser albitized altered syenite. Note that fine zircon overgrowths occur in MRZ but do not carry over to albitized section along sharp fault(?) stoped block(?) boundary.	591511	120.25	122.30	2.05	**2.52**	**0.25**	852	8840	4590	223	4230	380	0.26
				591512	122.30	124.00	1.70	**1.82**	**0.47**	2150	5270	2700	481	2340	251	0.10
				591513	124.00	125.40	1.40	**2.79**	**0.63**	2770	8480	4320	621	3880	408	0.16
125.40	131.40	3c	Heterogeneous Altered Albitized Syenite/MRZ Coarse grained, heterogeneous textures, with subvertical shears/offsets to 128, commonly finely anastomosing. Appear healed and suggest late stage co-eval internal displacement/movement. Highly albitized with common zones of medium grained grey-white cleavelandite masses, often with interstitial mafic replacement.	591514	125.40	127.00	1.60	**0.22**	**0.02**	82	790	378	23	285	31	0.02
				591515	127.00	129.00	2.00	**1.24**	**0.12**	316	4450	2180	124	1765	152	0.30
				591516	129.00	131.40	2.40	**1.12**	**0.11**	308	3990	1900	123	2330	176	0.40

Depth (m) From	To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
131.40	167.00	3ec;2b	Altered Foyaitic/Heterogeneous Syenite/ MRZ; Predominantly altered foyaitic syenite with non-foyaitic porphyritic syenite intervals. Ubiquitous interstitial chloritic alteration and disseminated fine overgrowing tan zircon. Common local accumulation of zircon. Moderately to strongly magnetic. Minor intermittent finer pink-red foyaitic intervals. Very local random disseminated pyrite. Possible salmon-red altered nepheline throughout. 155-167 Basal Zone enrichment. No obvious boundaries, interpreted mainly from local accumulation of zircon and moderate Niton readings.	591517	131.40	133.00	1.60	**0.39**	**0.06**	233	1300	630	63	447	49	0.07
				591518	133.00	135.00	2.00	**0.82**	**0.18**	772	2550	1240	201	1000	111	0.19
				591519	135.00	137.00	2.00	**1.03**	**0.11**	346	3620	1765	98	1625	144	0.28
				591520	137.00	139.00	2.00	**1.42**	**0.15**	460	5000	2430	144	2230	206	0.46
				591521	139.00	141.00	2.00	**1.04**	**0.15**	522	3510	1740	141	1690	178	0.01
				591522	141.00	143.00	2.00	**1.77**	**0.50**	2220	4990	2500	526	2680	315	0.07
				591523	143.00	145.00	2.00	**1.03**	**0.19**	726	3280	1665	187	1785	221	0.06
				591524	145.00	147.00	2.00	**0.57**	**0.09**	358	1870	950	100	974	102	0.12
				591526	147.00	149.00	2.00	**0.51**	**0.07**	249	1740	897	72	880	87	0.20
				591527	149.00	151.00	2.00	**1.19**	**0.13**	434	4210	2050	145	1510	147	0.44
				591528	151.00	153.00	2.00	**1.15**	**0.17**	604	3810	1910	174	3070	279	0.20
				591529	153.00	155.00	2.00	**1.13**	**0.16**	593	3750	1900	171	2390	249	0.14
				591530	155.00	157.00	2.00	**1.15**	**0.25**	979	3440	1785	303	2220	270	0.08
				591531	157.00	159.00	2.00	**1.56**	**0.31**	1180	4900	2460	319	2720	331	0.10
				591532	159.00	161.00	2.00	**2.50**	**0.55**	2020	7580	3860	661	4210	589	0.12
				591533	161.00	163.00	2.00	**1.88**	**0.60**	2640	4910	2600	639	3140	407	0.08
				591534	163.00	165.00	2.00	**2.01**	**0.57**	2290	5480	2930	725	4330	582	0.21
				591535	165.00	167.00	2.00	**1.23**	**0.22**	733	3890	1980	272	2610	343	0.04
167.00	189.50	3cd	Altered Porphyritic Syenite; Somewhat heterogeneous, with abrupt decrease in disseminated zircon. Local fine disseminated grains. reserved porphyritic to local sub-pegmatitic textures with albitic overprint. Local primary silvery zircon. occasional grains or aggregates of pyrite, <1%. Interstitial mafics completely altered. Local altered salmon-red nepheline. Moderately to strongly magnetic. Increasingly pegmatitic downhole, grading to more peralkaline aegirine-bearing syenite. 183-189 Subvertical fracturing, filled with carbonate and chlorite.	591536	167.00	169.00	2.00	**1.59**	**0.37**	1410	4700	2400	474	3650	463	0.28
				591537	169.00	171.00	2.00	**1.41**	**0.26**	905	4510	2240	289	2830	403	0.29
				591538	171.00	173.00	2.00	**1.14**	**0.31**	1390	3250	1600	345	2460	365	0.38
				591539	173.00	175.00	2.00	**0.29**	**0.04**	162	1005	478	36	921	117	0.04
				591541	175.00	177.00	2.00	**0.28**	**0.03**	88	1040	482	23	674	57	0.03
				591542	177.00	179.00	2.00	**0.19**	**0.02**	52	691	313	15	397	23	0.01
				591543	179.00	181.00	2.00	**0.19**	**0.02**	51	696	323	17	359	22	0.03
				591544	181.00	183.00	2.00	**0.14**	**0.01**	44	490	237	14	226	13	0.04
				591545	183.00	185.00	2.00	**0.11**	**0.03**	114	337	158	25	429	28	0.05
				591546	185.00	187.00	2.00	**0.08**	**0.01**	55	281	133	12	163	9	0.01

Depth (m) From	Depth (m) To	Lithocode	Description	Samp_id	From (m)	To (m)	Length (m)	TREO %	HREO %	Y ppm	Ce ppm	Nd ppm	Dy ppm	Nb ppm	Ta ppm	P2O5 %
				591547	187.00	189.50	2.50	**0.15**	**0.02**	72	541	253	18	230	11	0.02
189.50	215.19	1a	Altered Aegirine Syenite; Gradational and subjective boundary with previous, with appearance of locally abundant medium to coarse grained altered and replaced aegirine. Section heterogeneous and coarse grained to sub-pegmaititic. Strong interstitial hematization. Mafic minerals commonly altered to olive-green clay. Local patchy fluorite, generally associated with clay alteration. Erratically moderately to strongly magnetic	591548	189.50	191.00	1.50	**0.33**	**0.03**	94	1190	554	33	370	26	0.03
				591549	191.00	193.00	2.00	**0.08**	**0.01**	50	264	124	15	225	15	0.03
				591551	193.00	195.00	2.00	**0.10**	**0.02**	65	330	162	19	346	29	0.01
				591552	195.00	197.00	2.00	**0.13**	**0.02**	63	427	211	20	186	14	0.01
				591553	197.00	199.00	2.00	**0.18**	**0.02**	76	654	304	21	570	48	0.01
				591554	199.00	201.00	2.00	**0.09**	**0.01**	34	320	149	11	149	8	0.11
				591555	201.00	203.00	2.00	**0.14**	**0.01**	42	510	256	14	135	5	0.02
				591556	203.00	205.00	2.00	**0.17**	**0.02**	67	607	257	20	679	35	0.01
				591557	205.00	207.00	2.00	**0.32**	**0.03**	102	1175	535	31	812	65	0.09
				591558	207.00	209.00	2.00	**0.11**	**0.01**	38	367	188	12	191	13	0.01
				591559	209.00	211.00	2.00	**0.15**	**0.02**	50	535	274	18	213	12	0.01
				591560	211.00	213.00	2.00	**0.04**	**0.01**	43	124	61	12	282	13	0.02
				591561	213.00	215.19	2.19	**0.07**	**0.01**	49	215	114	13	399	25	0.02

APPENDIX C

Tables

Table 1: Monitoring Well Location Summary

Well	Date of Well Completion	UTM NAD83		Ground Elevation (m asl)	Screen Interval (m)
		Northing	Easting		
L08-123	1-Aug-08	6,886,674.93	417,404.22	238.46	open corehole
L08-124	4-Aug-08	6,886,571.71	417,400.08	241.59	open corehole
MW08-127	13-Aug-08	6,886,671.67	417,235.41	238.04	6.9 - 16.4
MW08-128	16-Aug-08	6,885,963.61	417,228.73	240.28	8.0 - 10.3
MW08-130	24-Aug-08	6,886,370.61	416,518.77	246.04	7.6 - 13.7
MW09-151	21-Mar-09	6,886,295.40	417,423.03	240.55	81.2 - 95.2
MW09-152	26-Mar-09	6,886,268.78	417,133.77	241.05	84.7 - 99.7

Notes:
masl - meters above sea level

Table 2: Monitoring Well Summary

MWID	Date	UTM NAD83		Elevation (masl)	Screened Length (m)	Sitck up (m)	EOH (mb TOC)	DTI (mb TOC)	Ice Elevation (masl)	DTW (mb TOC)	Groundwater Elevation (masl)
		Northing	Easting								
L08-123	10-Aug-08	6,886,674.93	417,404.22	238.46	open corehole	0.50	207.00	n.m	--	0.997	237.46
	7-Oct-08							n.m	--	0.822	237.64
	23-Mar-09							2.925	235.54	n.m	--
	2-Oct-09							3.785	234.68	0.703	237.76
	27-May-10							1.590	236.87	0.985	237.47
	11-Jun-10							5.535	232.93	2.612	235.85
	3-Sep-10							9.937	228.52	1.033	237.43
	14-Oct-10							10.730	227.73	1.010	237.45
L08-124	9-Aug-08	6,886,571.71	417,400.08	241.59	open corehole	0.12	198.00	n.m	--	1.553	240.04
	23-Sep-08							n.m	--	2.370	239.22
	7-Oct-08							n.m	--	2.114	239.48
	23-Mar-09							3.320	238.27[1]	n.m	--
	2-Oct-09							n.m	--	1.930	239.66
	27-May-10							n.m	--	2.870	238.72
	11-Jun-10							n.m	--	2.612	238.98
	3-Sep-10							22.844	218.75	2.332	239.26
	14-Oct-10							n.m	--	2.670	238.92
MW08-127	13-Aug-08	6,886,671.67	417,235.41	238.04	6.9 - 16.4	0.50	17.37	n.m	--	0.942	237.10
	20-Sep-08							n.m	--	0.996	237.04
	7-Oct-08							n.m	--	0.910	237.13
	23-Mar-09							0.990	237.05	n.m	--
	23-Jun-09							4.180	233.86	1.100	236.94
	2-Oct-09							n.m	--	0.943	237.10
	27-May-10							2.660	235.38	0.990	237.05
	11-Jun-10							4.273	233.77	1.075	236.97
	3-Sep-10							12.489	225.55	1.074	236.97
	14-Oct-10							13.160	224.88	1.150	236.89
MW08-128	23-Sep-08	6,885,963.61	417,228.73	240.28	8.0 - 10.3	0.54	10.81	n.m	--	1.435	238.85
	7-Oct-08							n.m	--	0.921	239.36
	23-Mar-09							0.920	239.36	n.m	--
	23-Jun-09							1.520	238.76	1.360	238.92
	2-Oct-09							n.m	--	0.800	239.48
	27-May-10							n.m	--	1.040	239.24
	11-Jun-10							n.m	--	0.510	239.77
	3-Sep-10							n.m	--	1.024	239.26
	14-Oct-10							10.440	229.84	1.270	239.01
MW08-130	23-Sep-08	6,886,370.61	416,518.77	246.04	7.6 - 13.7	0.09	8.16	n.m	--	1.175	244.87
	7-Oct-08							n.m	--	0.679	245.36
	23-Mar-09							1.180	244.86	n.m	--
	23-Jun-09							1.220	244.82	n.m	--
	2-Oct-09							3.333	242.71	1.525	244.52
	27-May-10							n.m	--	4.290	241.75
	11-Jun-10							3.960	242.08	3.555	242.49
	3-Sep-10							3.960	242.08	3.114	242.93
	14-Oct-10							4.350	241.69	3.280	242.76
MW09-151	22-Mar-09	6,886,295.40	417,423.03	240.55	81.2 - 95.2	0.65	96.21	n.m	--	1.880	238.67
	23-Jun-09							2.450	238.10	2.260	238.29
	2-Oct-09							n.m	--	0.916	239.63
	27-May-10							n.m	--	1.520	239.03
	11-Jun-10							2.180	238.37	1.534	239.02
	3-Sep-10							2.684	237.87	1.515	239.04
	14-Oct-10							n.m	--	1.520	239.03
MW09-152	26-Mar-09	6,886,268.78	417,133.77	241.05	84.7 - 99.7	0.40	99.66	n.m	--	1.538	239.51
	23-Jun-09							2.470	238.58	n.m	--
	2-Oct-09							4.474	236.57	3.718	237.33
	27-May-10							0.250	240.80	n.m	--
	11-Jun-10							2.575	238.48	0.250	240.80
	3-Sep-10							5.448	235.60	0.490	241.00
	14-Oct-10							4.530	236.52	0.670	240.38

Notes:
masl - meters above sea level
EOH - end of hole
mb TOC - meters below top of casing
DTI - depth to ice
DTW - depth to water

Table 3: Summary of Hydraulic Properties from Packer Tests

Well	Interval Tested				Hydraulic Conductivity*		
	From	To	Midpoint	Length of Interval	Min	Max	Average
	m bgs			m	m/s		
MW09-152	20.01	23.29	21.65	3.28	1.26E-06	2.02E-06	1.66E-06
	59.37	62.65	61.01	3.28	2.13E-07	4.48E-07	3.84E-07
	69.21	208.61	138.91	139.40	3.45E-08	5.36E-08	4.10E-08
	102.01	208.61	155.31	106.60	1.86E-08	5.30E-08	2.90E-08
	134.48	208.61	171.54	74.13	2.96E-08	5.43E-08	3.82E-08

Notes:
mbgs - meters below ground surface
m/s - meters per second
* - method from Theim

Table 4: Recovery Test Summary

Monitoring Well	Screened Interval (m)	Screen Length (m)	Hydraulic Conductivity (m/s)	Calculation Method
L08-123	open corehole	207.0	6.06 x 10-8	Cooper et al.
			8.35 x 10-8	Hvorslev
L08-124	open corehole	198.0	5.17 x 10 -7	Cooper et al.
			6.88 x 10-7	Hvorslev
MW08-127	6.9 - 16.4	9.5	1.03 x 10-5	Bouwer & Rice
			7.56 x 10-7	Cooper et al.
			1.56 x 10-5	Hvorslev
MW08-128	8.0 - 10.3	2.3	2.30 x 10 -5	Bouwer & Rice
			3.08 x 10 -5	Hvorslev
			2.72 x 10-6	Cooper et al.
MW08-130	7.6 - 13.7	6.1	8.09 x 10-6	Bouwer & Rice
			1.04 x 10-5	Hvorslev
			1.55 x 10-6	Cooper et al.

Notes:
Bouwer and Rice – Bouwer and Rice (1976), Bouwer (1989)
Cooper – Cooper, et al (1969)

TABLE 5: PHYSICAL PARAMETERS GROUND WATER GENERAL CHEMISTRY

Parameter	Units	D.L.	Sample Stations																				
			L08-124		MW08-127				MW08-128								MW08-130			MW08-152				
			8-Oct-08	8-Oct-09	20-Sep-08	9-Oct-08	8-Oct-09	14-Oct-10	20-Sep-08	8-Oct-08	8-Oct-09	11-Jun-10	3-Sep-10	Dup 3-Sep-10	14-Oct-10	Dup 14-Oct-10	21-Sep-08	7-Oct-08	14-Oct-10	26-Jun-09	Dup 26-Jun-09	8-Oct-09	Dup 08-Oct-09	14-Oct-10
Physicals																							
Hardness (as $CaCO_3$)	mg/L	0.7	469	365	142	72.6	74.5	239.0	261	166	147	253	303	302	301	300	282	304	--	71.4	71.3	95.9	96.5	47.3
Conductivity	uS/cm	2	738	460	878	405	404	414	482	382	367	419	498	502	505	514	557	558	788	717	721	592	587	230
pH	pH	0.01	8.25	8.10	8.15	8.16	6.86	8.10	7.59	7.9	7.41	7.49	8.00	8.00	7.82	7.87	8.1	8.21	7.72	8.52	8.56	8.17	8.24	8.10
Total Dissolved Solids	mg/L	10	422	274	487	291	240	231	335	258	230	333	312	302	299	294	331	335	546	446	464	388	399	135
Total Suspended Solids	mg/L	3	110	28.8	33	213	56.8	692	49.5	29.20	17.8	10.9	38.8	34.3	90.2	40.2	14.5	3.2	7.7	110	116	23.3	35.8	244.0
Turbidity	NTU	0.1	171	70.6	13	1150	42.7	323	79.3	42.2	20.0	13.6	19.8	18.1	41.8	28.5	4.05	2.69	6.05	35.1	34.1	22.6	19.8	41.7
Anions																								
Alkalinity, Total (as $CaCO_3$)	mg/L	2	442	265	287	144	121	232	251	202	173	262	275	276	279	282	266	276	290	287	282	278	289	107
Bromide (Br)	mg/L	0.05	<0.050	<0.050	0.358	<0.25	<0.050	<0.050	<0.25	<0.25	<0.050	<0.50	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	0.188	0.193	<0.050	<0.050	<0.050
Chloride (Cl^-)	mg/L	0.5	1.55	0.84	108	43.2	36.9	1.11	3.6	3.5	11.4	<5.0	1.96	1.50	2.24	2.31	3.48	3.68	66.8	61.8	62	20.8	21.0	7.49
Fluoride (F^-)	mg/L	0.02	2.41	2.19	2.54	1.37	0.720	0.631	1.29	397	1.16	0.92	1.32	1.39	1.46	1.47	1.05	1.04	0.85	4.37	4.38	2.76	2.79	0.937
Sulfate (SO_4)	mg/L	0.5	24.5	7.80	1	4	25.1	1.76	4.8	7.7	6.88	<5.0	8.08	8.30	7.75	8.13	14.9	14.4	18.7	12.6	12.6	8.40	7.08	3.18
Nutrients																								
Nitrate as N	mg/L	0.005	0.475	0.125	<0.0050	<0.025	0.0063	<0.0050	<0.025	<0.025	<0.0050	<0.050	0.0138	<0.0050	<0.0050	<0.0050	5.07	5.5	0.323	4.37	4.38	<0.0050	<0.0050	<0.0050
Nitrite as N	mg/L	0.001	0.0254	<0.0010	<0.0010	0.0079	<0.0010	<0.0010	0.0137	0.0078	<0.0010	<0.050	<0.0010	<0.0010	<0.0010	<0.0010	0.227	0.237	<0.010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.05	0.47	0.481	0.477	2.19	0.508	1.12	1.88	1.79	1.14	1.79	0.91	0.92	1.11	1.09	0.813	0.872	0.51	0.705	0.681	0.716	0.769	1.11
Ortho Phosphate as P	mg/L	0.001	<0.0010	<0.0010	<0.0010	0.0087	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	0.012	0.0018	0.0015	0.0010	0.0017	<0.0010	<0.0010	0.0031	-	-	<0.0010	<0.0010	0.0010
Total Phosphate as P	mg/L	0.20	<0.020	0.019	0.024	0.066	0.060	0.270	0.030	0.163	0.041	0.027	0.034	0.447	0.058	0.043	0.0062	0.0044	0.046	-	-	0.0078	0.0148	0.123
Organics																								
Total Organic Carbon (TOC)	mg/L	0.5	7.78	11.9	10.4	28.7	11.8	13.7	30.9	25.5	14.9	30.6	17.4	15.2	14.1	14.5	16	15.8	102	9.32	8.78	19.7	18.5	9.57

TABLE 6: TOTAL METALS **GROUND WATER TOTAL METALS**

Total Metals	Units	D.L.	CCME FAL	BC CSR AW	Sample Stations													
					L08-124	MW08-127			MW08-128							MW08-130		MW08-152
					8-Oct-08	20-Sep-08	9-Oct-08	14-Oct-10	20-Sep-08	8-Oct-08	11-Jul-10	3-Sep-10	Dup 3-Sep-10	14-Oct-10	Dup 14-Oct-10	21-Sep-08	7-Oct-08	14-Oct-10
Aluminum (Al)	mg/L	0.005*	**0.1[6]**	-	**1.14**	**0.566**	**37.0**	**11.7**	**0.552**	**0.302**	**0.149**	**0.220**	**0.193**	**0.844**	**0.281**	**0.811**	**0.178**	**2.17**
Antimony (Sb)	mg/L	0.0005*	-	0.20	<0.00050	<0.0010	<0.0025	0.00013	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00050	<0.00050	0.00129
Arsenic (As)	mg/L	0.0005*	0.005	0.05	0.00067	0.0017	0.0067	0.00229	**0.0231**	**0.00512**	0.00478	**0.00829**	**0.00794**	**0.00614**	**0.00649**	0.00102	0.00054	0.00131
Barium (Ba)	mg/L	0.02	-	10	0.160	0.044	0.473	0.278	0.179	0.156	0.208	0.194	0.191	0.196	0.193	0.440	0.407	0.0953
Beryllium (Be)	mg/L	0.001*	-	0.053	<0.0010	<0.0020	<0.0050	0.00064	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050
Boron (B)	mg/L	0.1	-	50	<0.10	0.67	0.33	0.026	<0.10	<0.10	<0.10	0.027	0.020	0.021	0.018	0.018	<0.10	<0.10	0.189
Cadmium (Cd)	mg/L	0.000017*	0.000017	0.00001 - 0.00006[7]	**0.000254**	**0.000316**	**0.000287**	**0.000088**	**0.000430**	**0.000282**	**0.000038**	**0.000212**	**0.000198**	**0.000179**	**0.000193**	**0.000156**	**0.000060**	**0.000291**
Calcium (Ca)	mg/L	0.1	-	-	30.9	24.3	17.6	45.2	49.1	29.1	44.8	53.7	53.1	50.6	52.0	48.3	50.5	15.3
Chromium (Cr)	mg/L	0.001*	-	-	0.0104	<0.0020	0.0489	0.0124	0.0013	0.0010	0.00151	0.00109	0.00090	0.00184	0.00108	0.0071	<0.0010	0.0101
Cobalt (Co)	mg/L	0.003*	-	0.04	0.00439	<0.00060	0.0143	0.00417	0.00146	0.00138	0.00021	0.00022	0.00020	0.00035	0.00021	0.00316	0.00349	0.00110
Copper (Cu)	mg/L	0.001*	0.002-0.004[9]	0.002 - 0.009[8]	**0.0256**	**0.0276**	**0.0804**	**0.0995**	0.0033	0.0029	0.00063	0.00104	<0.00090	0.00183	0.00094	**0.0402**	**0.0272**	**0.115**
Iron (Fe)	mg/L	0.03	0.3	-	**32.1**	**0.837**	**37.4**	**23.9**	**8.89**	**14.5**	**16.2**	**9.04**	**9.45**	**12.6**	**9.77**	**2.69**	**0.303**	**4.92**
Lead (Pb)	mg/L	0.0005*	0.001 - 0.007[11]	0.004 - 0.016[10]	0.00069	<0.0010	**0.0146**	**0.00790**	0.00253	0.00103	0.000266	0.000305	0.000268	0.00129	0.000519	0.00360	<0.00050	0.00286
Lithium (Li)	mg/L	0.005	-	-	0.0208	0.051	0.075	0.0204	0.0161	0.0147	0.0069	0.0077	0.0079	0.0073	0.0083	0.0154	0.0126	0.0224
Magnesium (Mg)	mg/L	0.1	-	-	94.1	19.8	17.2	37.8	33.6	22.1	31.4	39.0	38.3	37.1	38.3	39.1	43.0	5.35
Manganese (Mn)	mg/L	0.0003*	-	-	0.188	0.190	0.619	1.08	0.490	0.552	0.508	0.404	0.400	0.387	0.365	0.123	0.100	0.141
Mercury (Hg)	mg/L	0.00002	-	0.001	<0.000020	<0.000020	<0.00010	0.000049	<0.000020	<0.000020	<0.000010	<0.000010	<0.000010	0.000013	<0.000010	<0.000020	<0.000020	0.000014
Molybdenum (Mo)	mg/L	0.001*	0.073	10	0.0215	0.0286	0.0359	0.00440	0.0241	0.0177	0.00862	0.0164	0.0163	0.0152	0.0161	0.0559	0.0456	0.126
Nickel (Ni)	mg/L	0.001*	0.025 - 0.15[13]	0.025 - 0.15[13]	0.0075	0.0020	0.0396	0.0131	0.0035	0.0036	0.00073	0.00073	0.00058	0.00148	0.00080	0.0108	0.0115	0.00516
Potassium (K)	mg/L	2	-	-	3.9	5.9	10.5	8.0	7.8	4.1	3.9	3.5	3.5	4.0	4.0	3.9	3.1	2.9
Selenium (Se)	mg/L	0.001*	0.001	0.01	<0.0010	<0.0020	<0.0050	**0.0046**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	**0.0011**	<0.0010	**0.0012**
Silver (Ag)	mg/L	0.00002*	0.0001	0.0005 - 0.015[14]	**0.00470**	**0.000396**	**0.00229**	**0.0191**	**0.000332**	**0.000171**	0.000064	0.000059	0.000050	0.000096	0.000053	**0.00351**	**0.00377**	**0.00132**
Sodium (Na)	mg/L	2	-	-	10.6	131	74.5	7.4	11.8	22.3	5.0	4.3	4.2	4.5	4.8	16.6	13.8	36.6
Thallium (Tl)	mg/L	0.002*	0.0008	0.003	<0.00020	<0.00040	<0.0010	0.00020	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010
Tin (Sn)	mg/L	0.0005*	-	-	0.00196	<0.0010	<0.0025	0.00107	<0.00050	0.00176	0.00013	0.00012	0.00012	0.00012	0.00013	0.00053	0.00106	0.00180
Titanium (Ti)	mg/L	0.01	-	1	0.018	<0.010	0.696	0.242	0.010	0.010	<0.010	<0.010	<0.010	0.017	<0.010	0.016	<0.010	0.048
Uranium (U)	mg/L	0.0002*	-	0.30	0.0197	0.0132	0.0035	0.0103	0.0266	0.00382	0.00494	0.0115	0.0113	0.00981	0.0116	0.00273	0.00235	0.00350
Vanadium (V)	mg/L	0.001*	-		0.0013	<0.0020	0.0642	0.0145	0.0021	0.0012	0.0026	0.0013	0.0013	0.0019	0.0012	<0.0010	<0.0010	0.0031
Zinc (Zn)	mg/L	0.005	0.03	0.075 - 2.4[15]	0.0188	0.0091	**0.0987**	**0.0412**	0.0140	0.0139	<0.0010	<0.0030	<0.0020	0.0101	0.0062	0.0118	0.0052	**0.132**
Chromium (VI)	mg/L	0.001			--	<0.001	--	--	<0.001	--	--	--	--	--	--	<0.001	--	--