Hanhimaa

Alternative Names: Kellolaki, Kiimalaki, Kiimakuusikko
Occurence type: prospect

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	NA	NA	NA	NA
silver	3	NA	NA	NA	NA

Easting EUREF: 420250
Northing EUREF: 7543375
Easting YKJ: 3420390
Northing YKJ: 7546526

Discovery year: 2003
Province: Kittilä (Au, Cu)
District: Hanhimaa (Au, Ag)
Comments: Discovery by Outokumpu
References: 6, 7, 8, 10, 23, 26, 30

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)

Dimension

Expression: NA
Form: NA
Shape: NA
Length (m): 8000
Width (m): 150
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA
Dimension comments: Several targets (Kellolaki, Kiimalaki, Välikiima, Kiimakuusikko, Jaukkara, Rottamalaki,) in a 8 km long zone and the 100-200 metre wide domain of strongly sheared and hydrothermally altered rocks.

Holder history

Current holder: Agnico Eagle Finland Oy
Years: 2017
Holding type: Exploration permit
Comments: Dragon Mining Ltd has transfered 100 % interest in the tenements of The Hanhimaa Gold Project to Agnico Eagle at 30.03.2017

Previous holders:

Company	Years	Holding type	Comments
Dragon Mining Oy	2012	Exploration permit	Join venture with Agnico Eagle Mines Ltd since 2/2013

Polar Mining Oy	2003-2011	Claim (old law)	NA

EXPLORATION ACTIVITY

Agnico Eagle Finland Oy

Years	Activity type	Geologist	Exploration result	Ref
2015-2015	detailed geophysics	NA	NA	4
	Titan 24 geophysical survey; three profiles that intersect the Hanhimaa Shear Zone.			

2013-2014	core drilling	NA	NA	9
	(Joint venture with Dragon Mining); 41 drill holes over several targets, total 10477 m			

Polar Mining Oy

Years	Activity type	Geologist	Exploration result	Ref
2006-2009	core drilling	Markku Kilpelä	NA	1, 2, 3, 5, 6, 7, 8, 14, 15, 16, 18, 20, 24
	Nov 2006-Jan 2007 at the Kellolaki lode(s): five diamond-drill holes, total 593 m.			
	Intersections			
	HoleID	KTÄ/HAM-28		
	From-To	143,7-146,1		
	Length	2,4m		
	gold	2,23ppm		
	silver	34,62ppm		
	Comments	*Kiimalaki target*		
	HoleID	KTÄ/HAM-31		
	From-To	56-63,5		
	Length	7,5m		
	gold	5,88ppm		
	silver	11,78ppm		
	Comments	*Kiimalaki target*		
	HoleID	KTÄ/HAM-49		
	From-To	14-17,5		
	Length	3,5m		
	gold	3,94ppm		
	silver	5,26ppm		
	Comments	*Kiimakuusikko target*		
	HoleID	M35-1		
	From-To	1-5		
	Length	4m		
	gold	9,33ppm		
	Comments	*Hole id:Trench M35-1, intercept from a light percussion drill hole, Kiimalaki target*		
	HoleID	M35-24		
	From-To	0-5		
	Length	5m		
	gold	4,48ppm		
	Comments	*Hole id:Trench M35-24, intercept from a light percussion drill hole, Kiimalaki target*		
	HoleID	M35-25		
	From-To	0-5		
	Length	5m		
	gold	10ppm		
	Comments	*Hole id:Trench M35-25, intercept from a light percussion drill hole, Kiimalaki target*		

	HoleID	M35-26
	From-To	0-5
	Length	5m
	gold	5,34ppm
	Comments	*Hole id:Trench M35-26, intercept from a light percussion drill hole, Kiimalaki target*
	HoleID	M35-35
	From-To	0-5
	Length	5m
	gold	4,64ppm
	Comments	*Hole id:Trench M35-35, intercept from a light percussion drill hole, Kiimalaki target*
	HoleID	NA
	From-To	NA
	Length	11,7m
	gold	4,48ppm
	HoleID	NA
	From-To	NA
	Length	3m
	gold	3,2ppm
	HoleID	NA
	From-To	NA
	Length	2m
	gold	3,9ppm
	HoleID	NA
	From-To	NA
	Length	5m
	gold	4,1ppm
	HoleID	NA
	From-To	NA
	Length	4m
	gold	4,58ppm

2004-2007	regional geophysics	Markku Kilpelä	NA	5, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27

2004-2009	regional geochemistry	Markku Kilpelä	NA	5, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27

2004-2009	detailed geology	Markku Kilpelä	NA	5, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27

2004-2009	percussion drilling	Markku Kilpelä	NA	5, 14, 16, 20
	236 shallow percussion-drilling holes.			

2004-2007	core drilling	Markku Kilpelä	NA	10, 12, 14, 16, 20, 23, 24
	Total drilling by May 2006 about 2000 m. Nov 2006-Jan 2007 at the Kellolaki lode(s): five diamond-drill holes, total 593 m.			
	Intersections			
	HoleID	KTA/HAM-23		
	From-To	93-101		
	Length	8m		
	gold	1,95ppm		
	Comments	*Kellolaki target*		
	HoleID	KTA/HAM-25		
	From-To	114,8-123,4		
	Length	8,6m		
	gold	1,51ppm		
	Comments	*Kellolaki target*		

2004-2009	excavation	Markku Kilpelä	NA	5, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27

Outokumpu Oy

Years	Activity type	Geologist	Exploration result	Ref
2003-2003	core drilling	NA	NA	10, 11
	Core drilling (reconnaissance drilling): 8 eight diamond-drill holes, total 633 m.			
	Intersections			
	HoleID	KTÄ/HAM-4		
	From-To	21-31,6		
	Length	10,6m		
	gold	4,86ppm		
	Comments	*Kiimalaki target*		
	HoleID	KTÄ/HAM-6		
	From-To	40-45		
	Length	5m		
	gold	5,96ppm		
	Comments	*Kiimalaki target*		

1980-1981	percussion drilling	NA	NA	10, 19

1980-1981	excavation	NA	NA	10, 19

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1979-1979	regional geophysics	NA	key geological features	
	Low-altitude magnetic, aeromagnetic and radiometric survey			

1973-1977	regional geochemistry	NA	NA	
	Regional geochemical till survey			

Figures

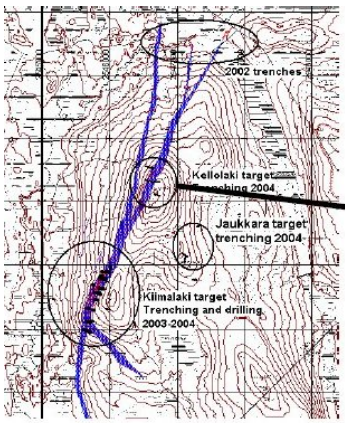
Percussion drilling at Hanhimaa:

Light percission drilling at Hanhimaa in 2007.
Figure from: www.dragon-mining.com.au/imagegallery.asp?PageID=172

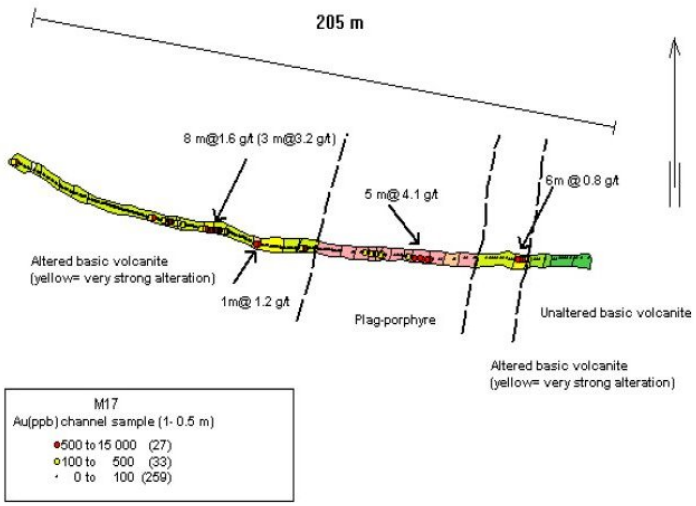
Diamond drilling at Hanhimaa:

Diamond drilling at Hanhimaa in November 2007.
Figure from: www.dragon-mining.com.au/imagegallery.asp?PageID=172

Trench:



Kellolaki
Exploration trench and location map
Haga (2005)



Trench:

Exploration trench at Kellolaki in 18 May 2006. Photo Pasi Eilu 18 May 2006.

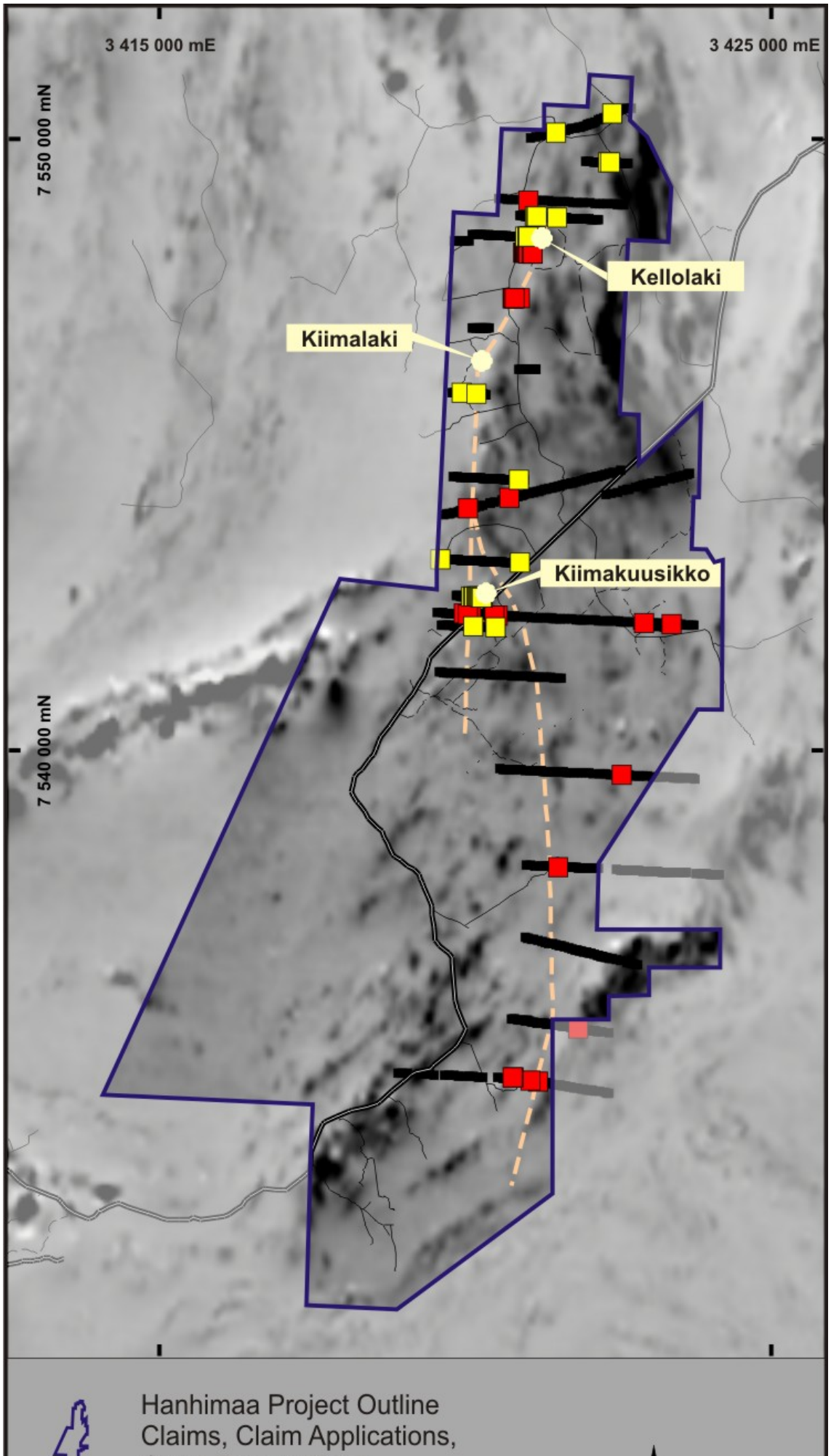
Trench:

Exploration trench at Kellolaki in 18 May 2006. Photo Pasi Eilu 18 May 2006.

Trench:

Exploration trench at Kellolaki in 18 May 2006. Photo Pasi Eilu 18 May 2006.

Targets of Hanhimaa (image from Dragon Mining):


3 415 000 mE
3 425 000 mE
7 550 000 mN
7 540 000 mN
Kellolaki
Kiimalaki
Kiimakuusikko
Hanhimaa Project Outline
Claims, Claim Applications,

GEOLOGY

Host rock: Intermediate hypabyssal rock, Mg-tholeiitic basalt

Intermediate hypabyssal rock (Host rock)

Rock type: Host rock
Proportion: minor

Alteration:	Distribution:	Degree:	Relation to mineralization:
albitic alteration			
silicification			
sericitic alteration			
carbonate alteration			

Mg-tholeiitic basalt (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 10, 18, 24, 25, 27, 28, 29
Comments: The Au occurrence is in a mafic hyaloclastite(?) unit, or in the contact zone between Mg and Fe tholeiites. At least three lodes or lode sets: Kellolaki, Kiimalaki, Kiimakuusikko which are located in the major N-trending Hanhimaa Shear Zone (HSZ) which is parallel, and apparently similar, to the Suurikuusikko Shear Zone 15 km to the east of the HSZ.

Ore minerals:

Mineral	Proportion	Mineral texture
Arsenopyrite	minor	
Chalcopyrite	minor	
Galena	minor	
	at Kiimakuusikko target	
Gold	present	
Monazite	present	
Pyrite	major	
Sphalerite	minor	
	at Kiimakuusikko target	
Stibnite	minor	
	at Kiimakuusikko target	

Other minerals:

Mineral	Proportion	Mineral texture
Pyrrhotite	major	
	usually in the distal zone	

Textures
Fragmentary

Alteration:	Distribution:	Degree:	Relation to mineralization:
carbonate alteration	NA	NA	NA
sericitic alteration	NA	NA	NA
albitic alteration	NA	NA	NA
silicification	NA	NA	NA
epidote alteration			

Metamorphic description:

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		
Comments: Metamorphic peak during D2, thrusting during D3 was at least partly post-peak, late metamorphic.					

Figures

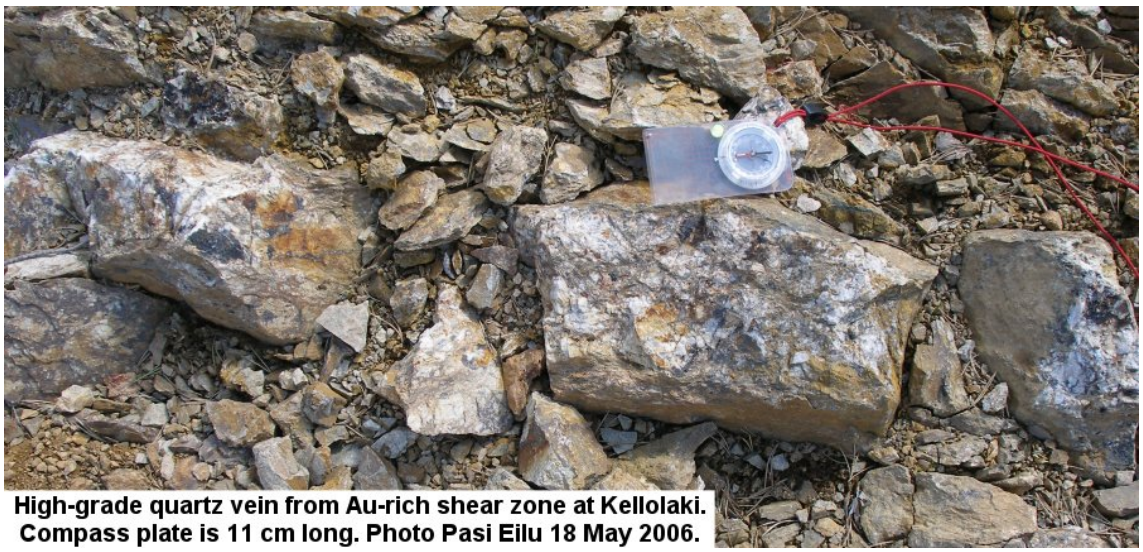
Structure:

Main mineralised shear zone, Kellolaki.
Compass plate is 11 cm long. Photo Pasi Eilu 18 May 2006.

Structure:

Intensely altered, weakly mineralised, subsidiary mineralised shear zone, Kellolaki. Scale is 8 cm long. Photo Pasi Eilu 18 May 2006.

Vein:

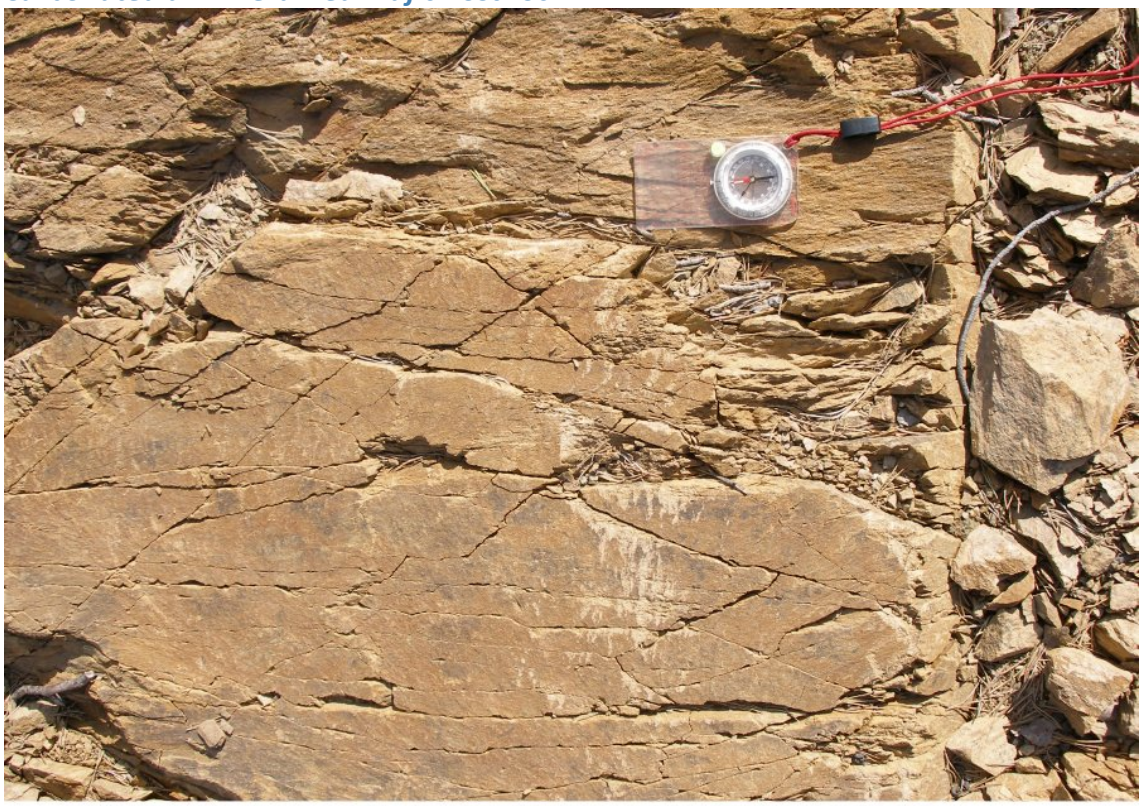


High-grade quartz vein from Au-rich shear zone at Kellolaki. Compass plate is 11 cm long. Photo Pasi Eilu 18 May 2006.

Vein:

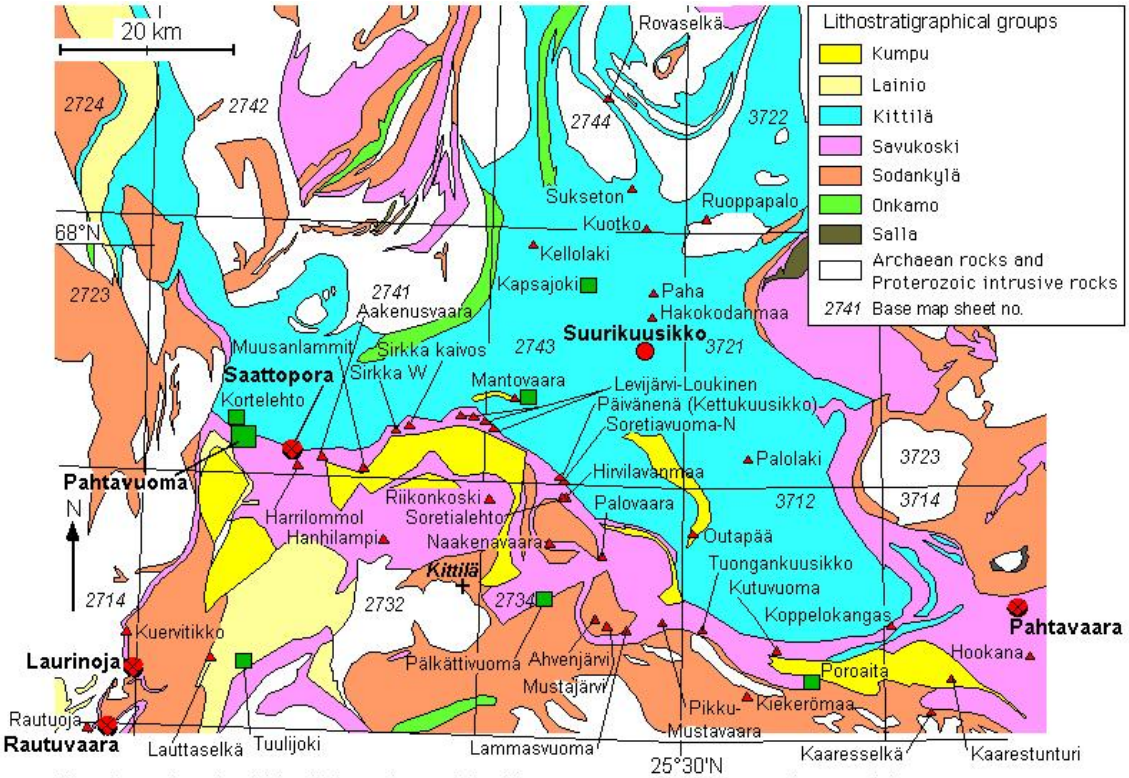
High-grade quartz vein from Au-rich shear zone at Kellolaki.
Compass plate is 11 cm long. Photo Pasi Eilu 18 May 2006.

Carbonated unmineralized mafic host rock:



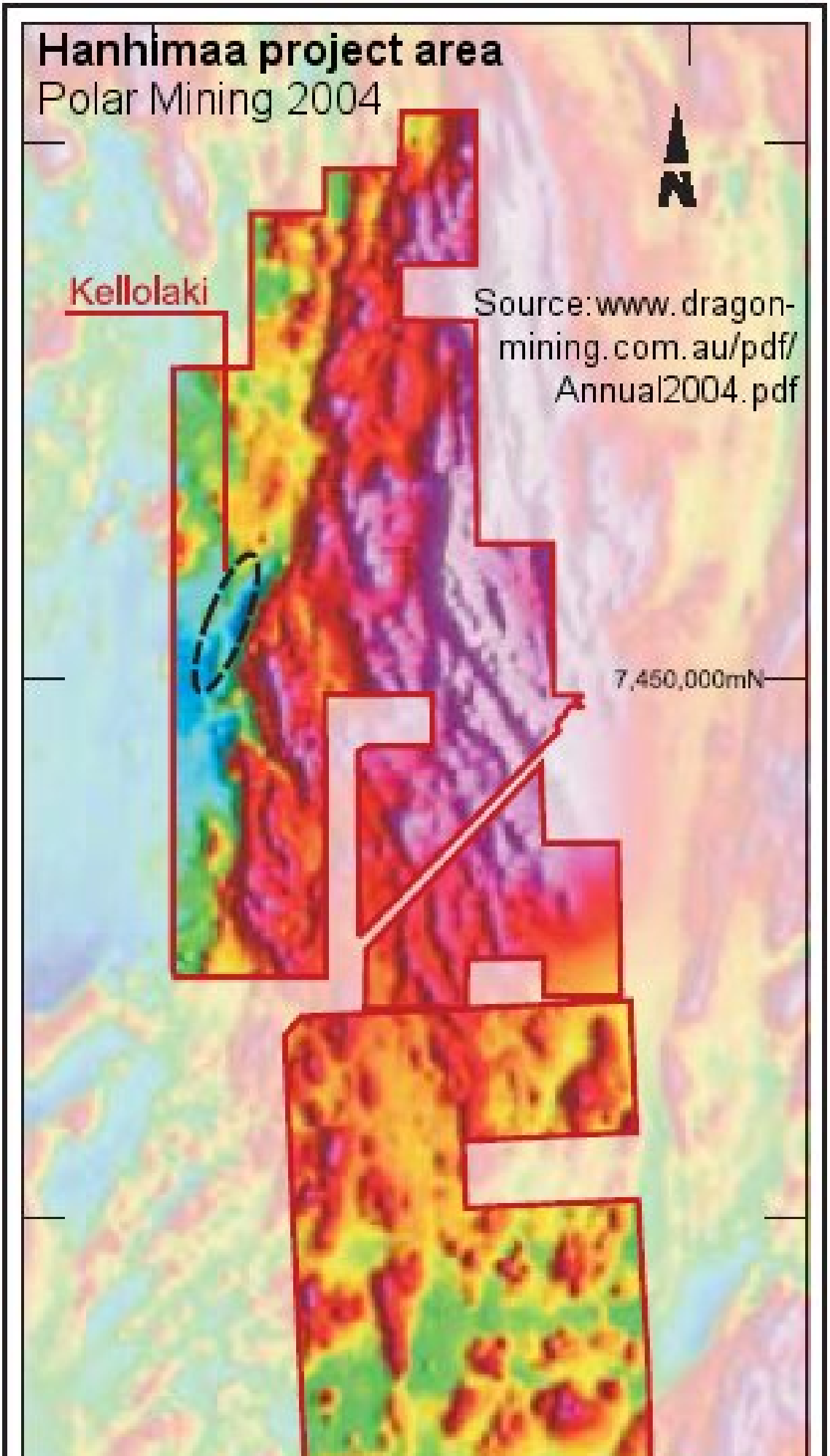
Distal carbonation, unmineralised, mafic fragmentary host rock, Kellolaki.
Compass plate is 11 cm long. Photo Pasi Eilu 18 May 2006.

Regional geology:

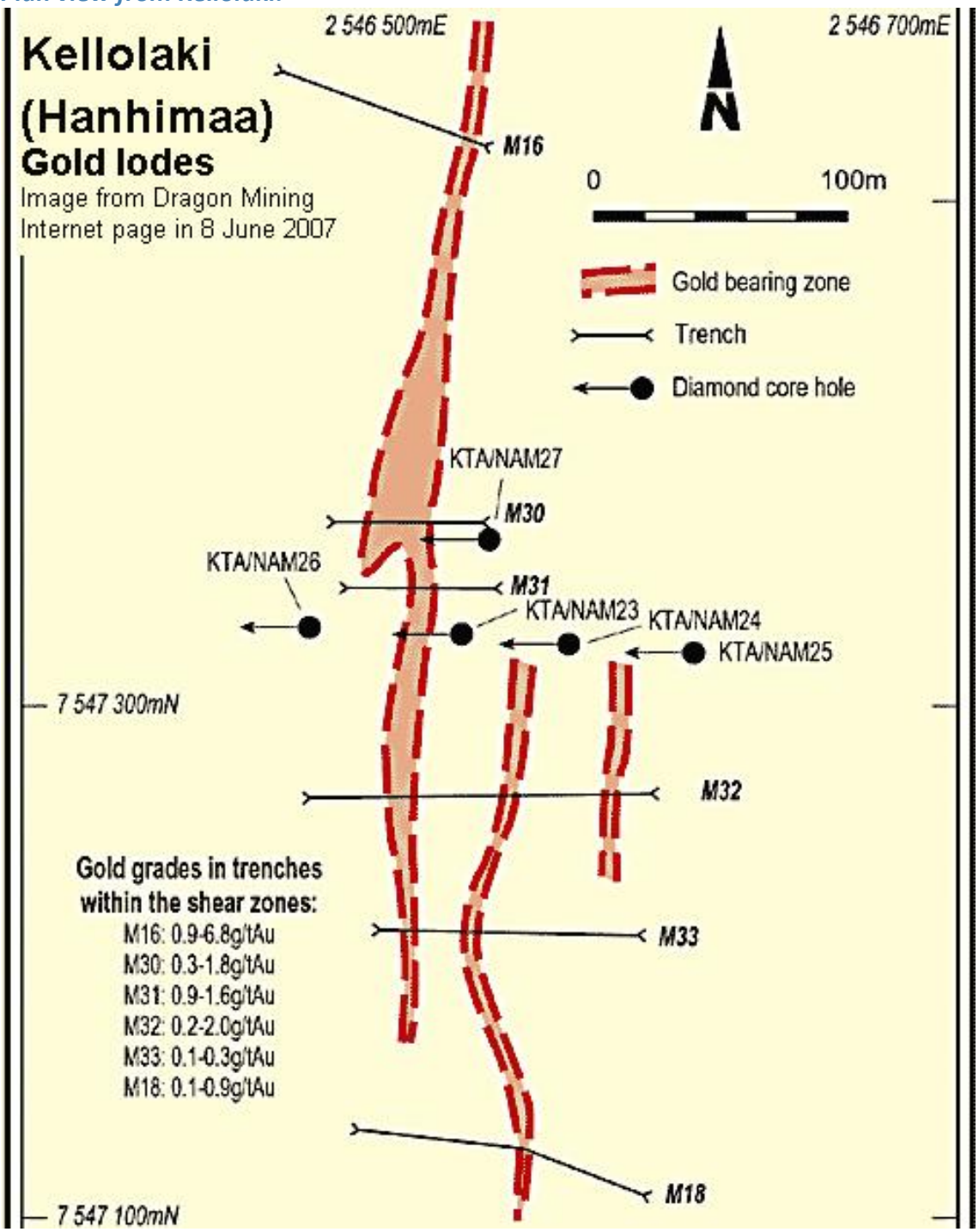


Zinc (green) and gold (red) deposits and significant prospects in the central parts of the Central Lapland greenstone belt. Lithostratigraphy from Lehtonen et al. (1998). Edited by P. Eilu (2007)

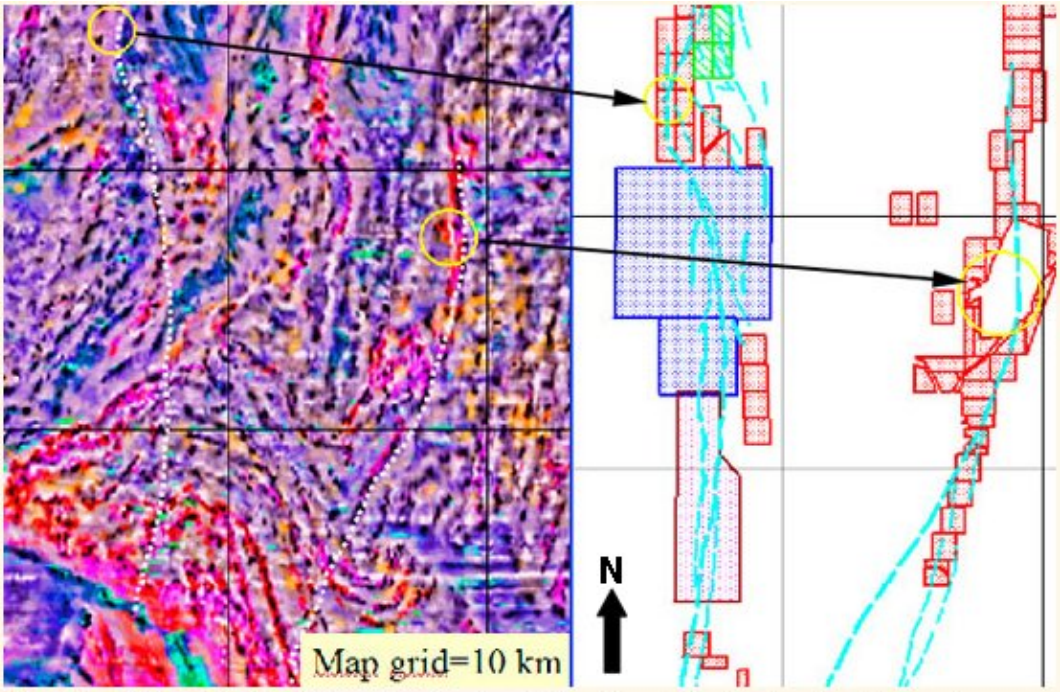
Primary anomaly:


Hanhimaa project area
Polar Mining 2004
N
Kellolaki
Source:www.dragon-mining.com.au/pdf/Annual2004.pdf
7,450,000mN

Plan view from Kellolaki:

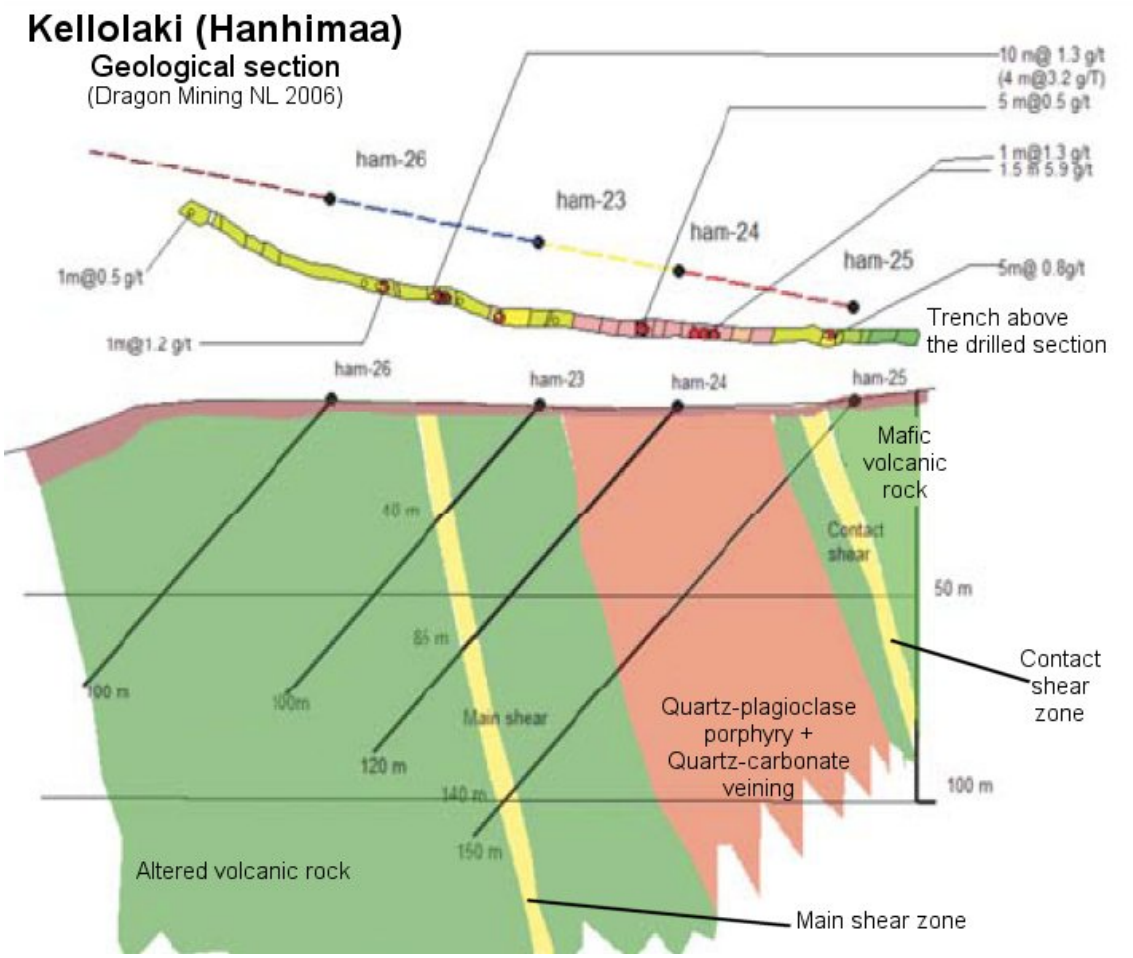


Primary anomaly:

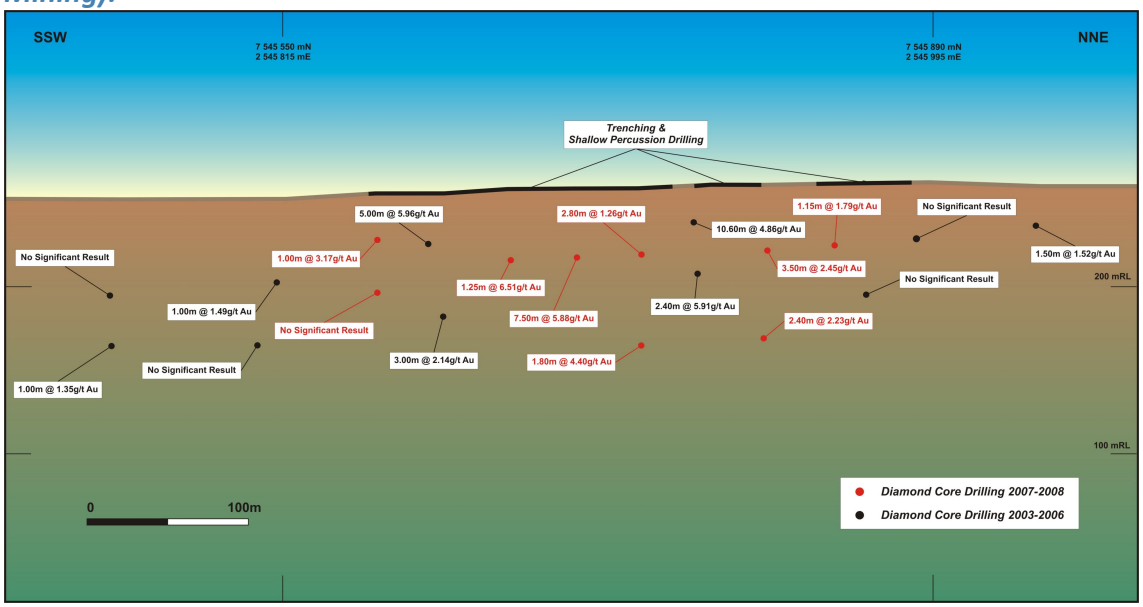


Roughly N-S trending **Hanhimaa** (western) and **Suurikuusikko** (eastern) auriferous shear zones in Central Lapland greenstone belt. Exploration tenements for both zones shown in the drawing on left. Encircled: Kellolaki on right, Suurikuusikko on left.
Background map:processed magnetic + electromagnetic. From Goode (2004).

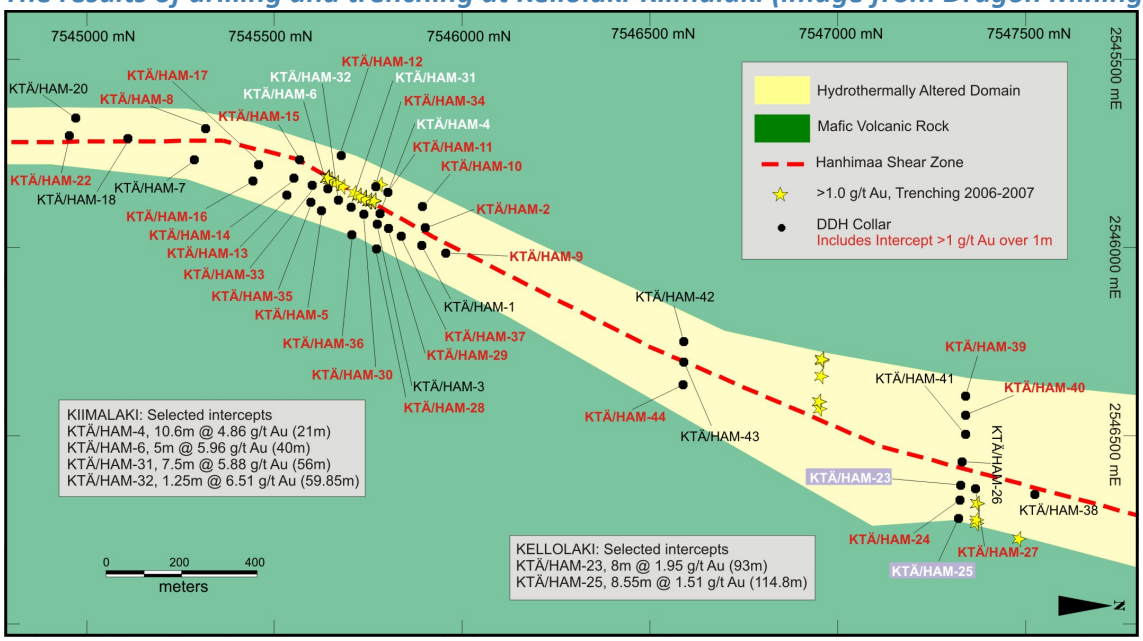
A cross section from Kellolaki:



A longitudinal section through the mineralization of Kiimalaki (image from Dragon Mining):



The results of drilling and trenching at Kellolaki-Kiimalaki (image from Dragon Mining):



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