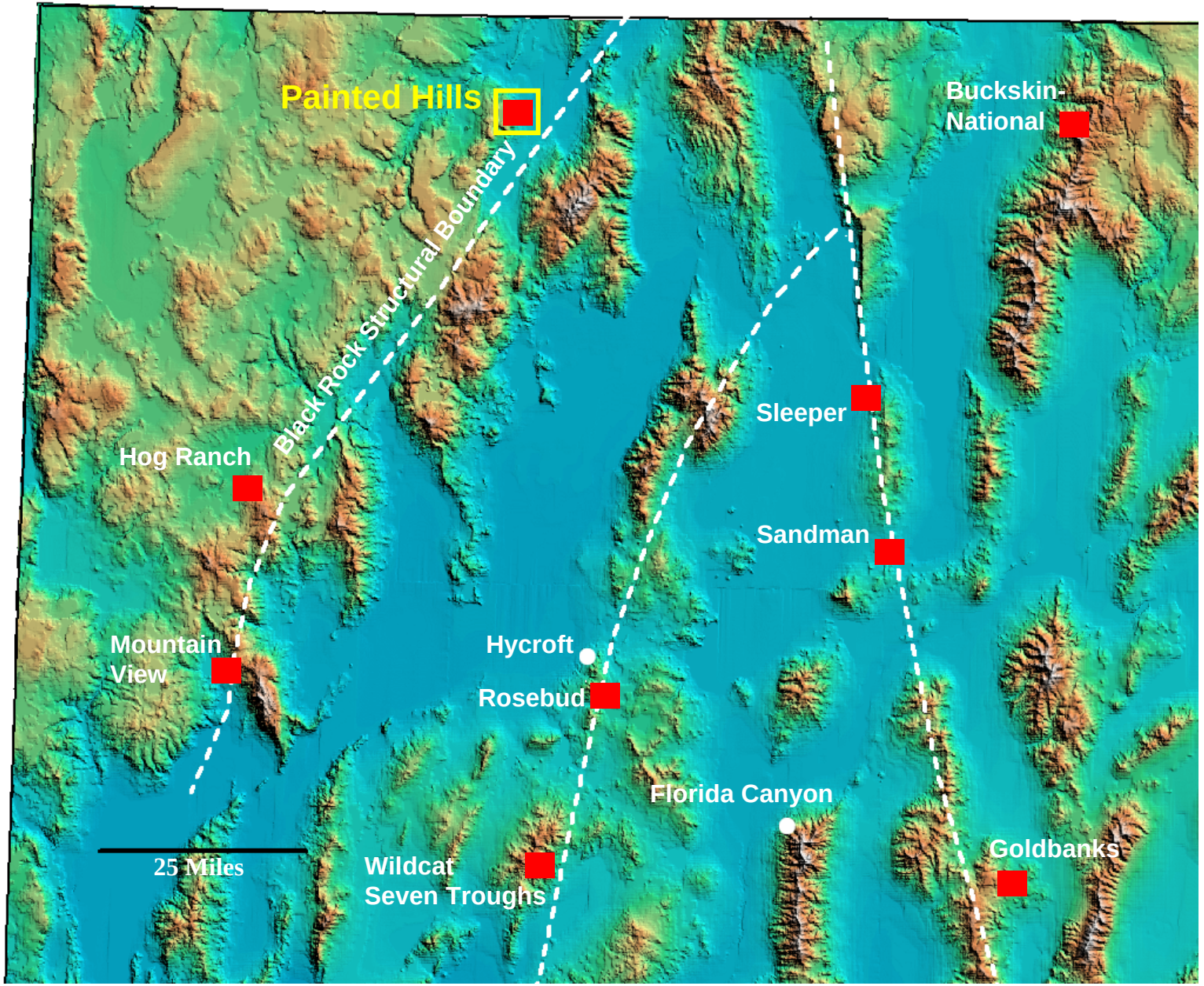
Discovery of Gold Beneath a Barren Opaline Cap at Painted Hills, NW Nevada, and the Association of Gold with Molybdenum in a Low-Sulfidation Epithermal System

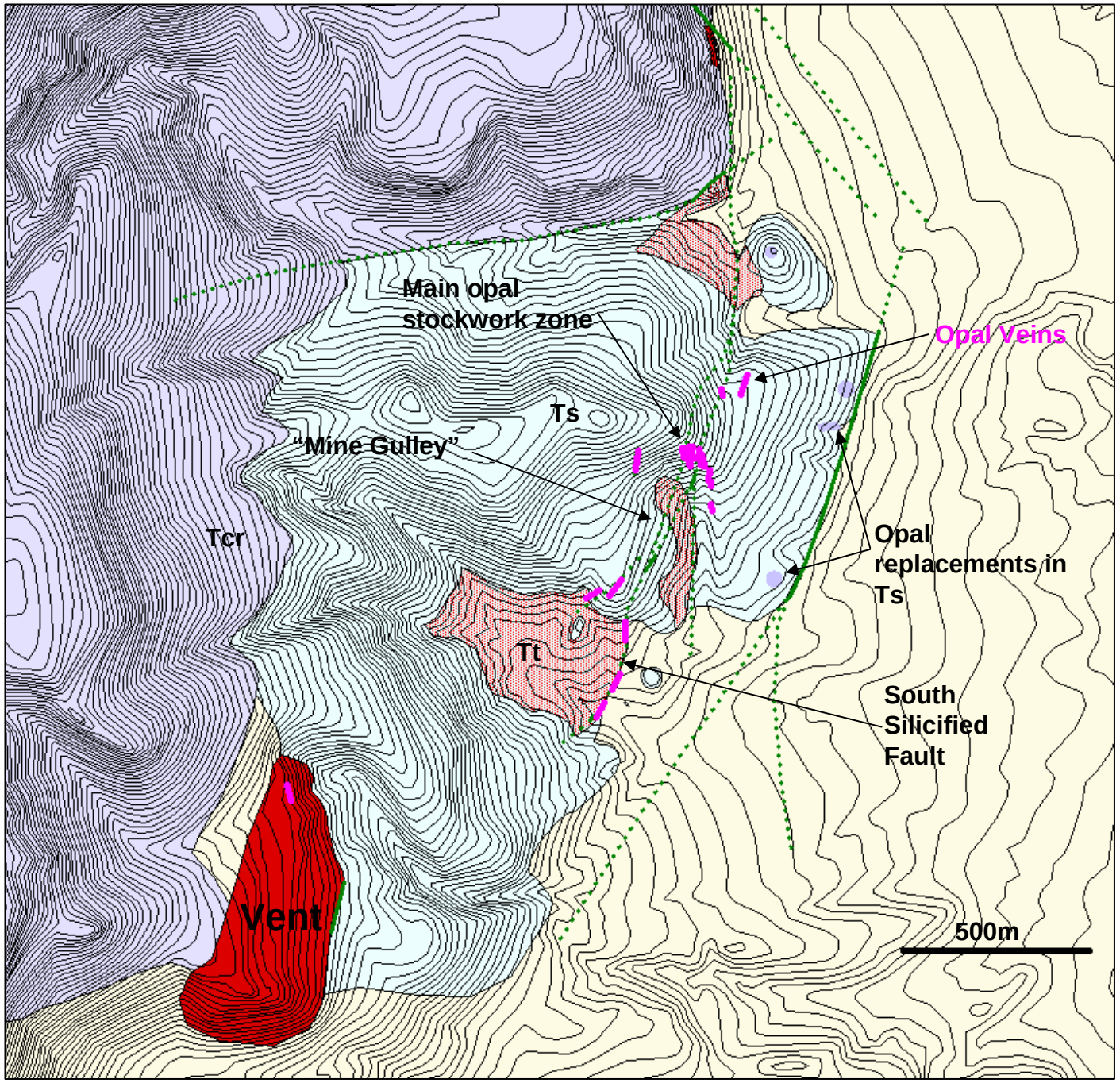
Jacob Margolis
True Grit Resources Ltd.

"Don't be model driven"!
E.S. Cheney

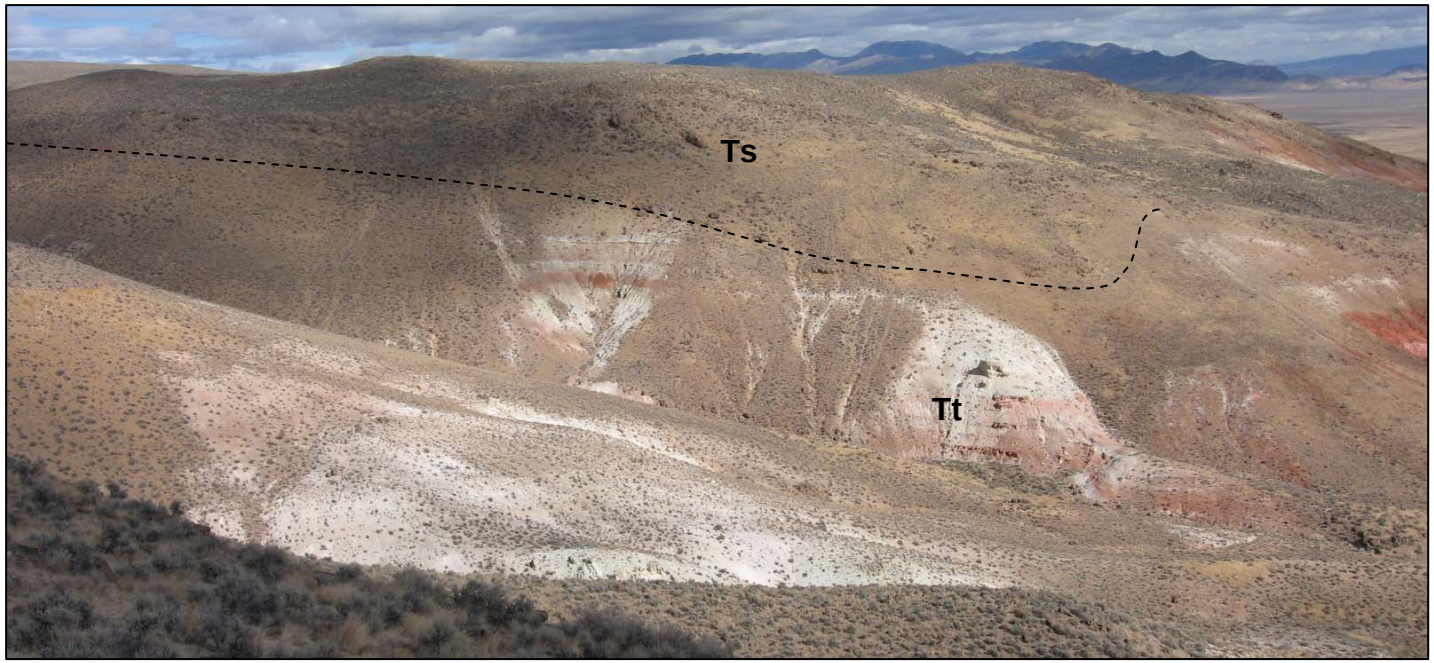
Eric, 1986

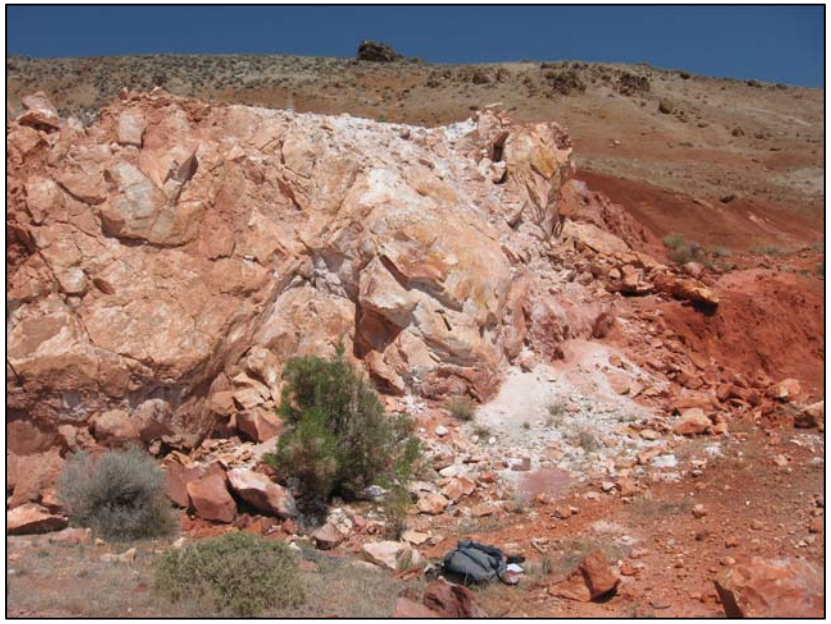
Middle Miocene, Low-Sulfidation, Epithermal Au-Ag




Main opal
stockwork zone
Opal Veins
Ts
"Mine Gulley"
Tcr
Opal
replacements in
Ts
Tt
South
Silicified
Fault
Vent
500m

Argillized Felsic Volcaniclastic Sequence

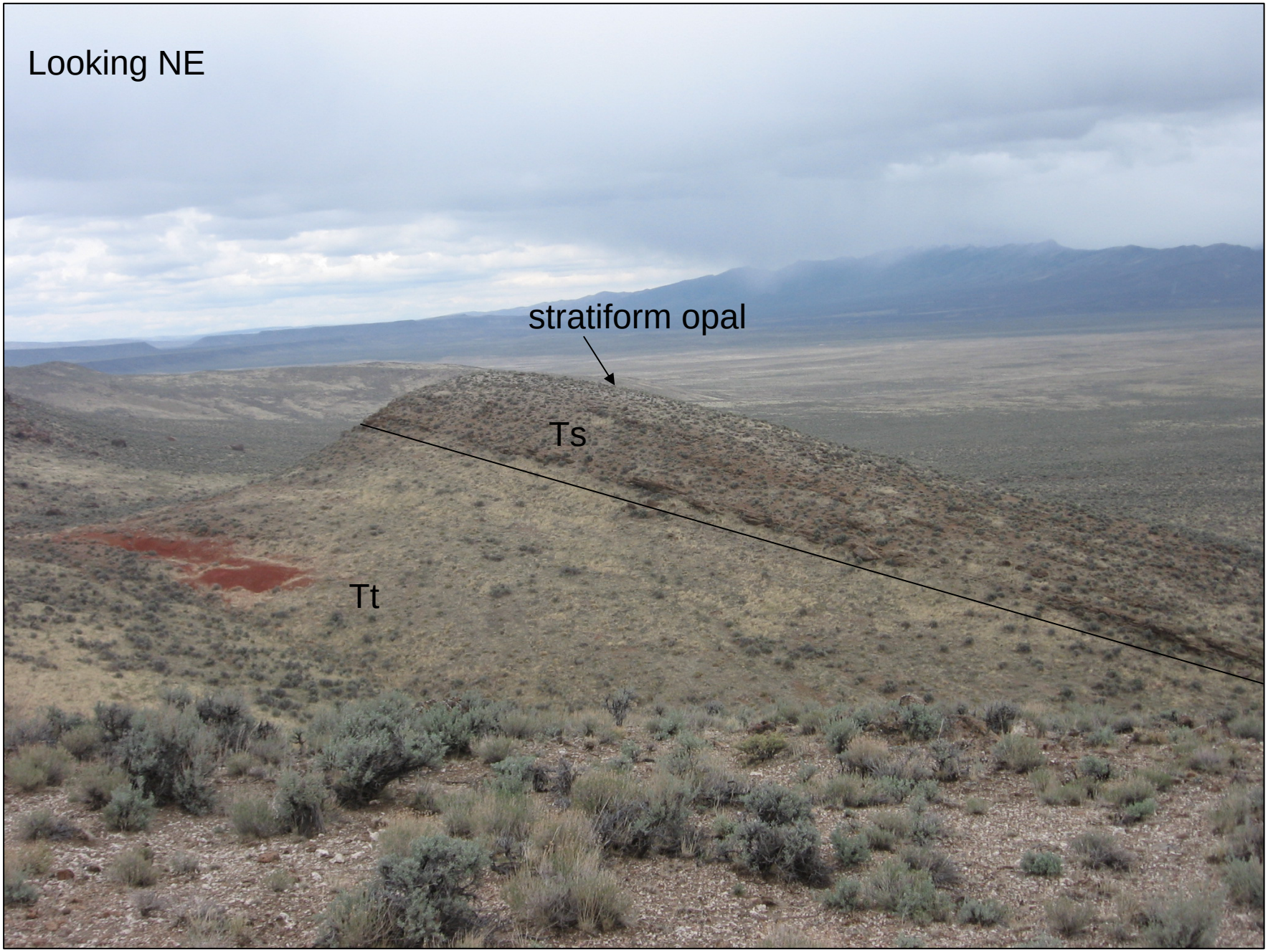




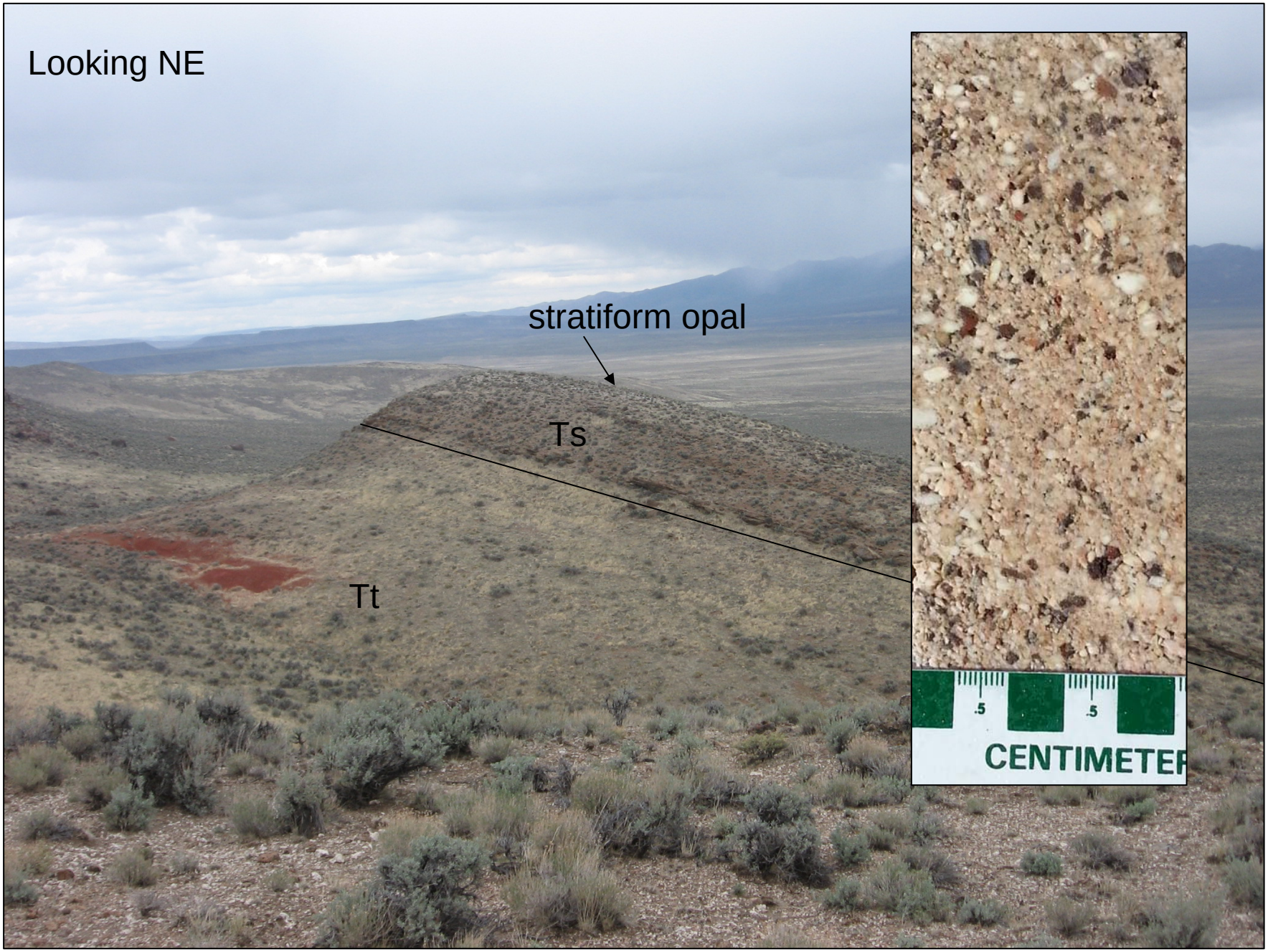
3 ppm Hg
24 ppm Sb
13 ppm As
no Au or Mo

Felsic Volcaniclastic Sequence

Upper Sandstone



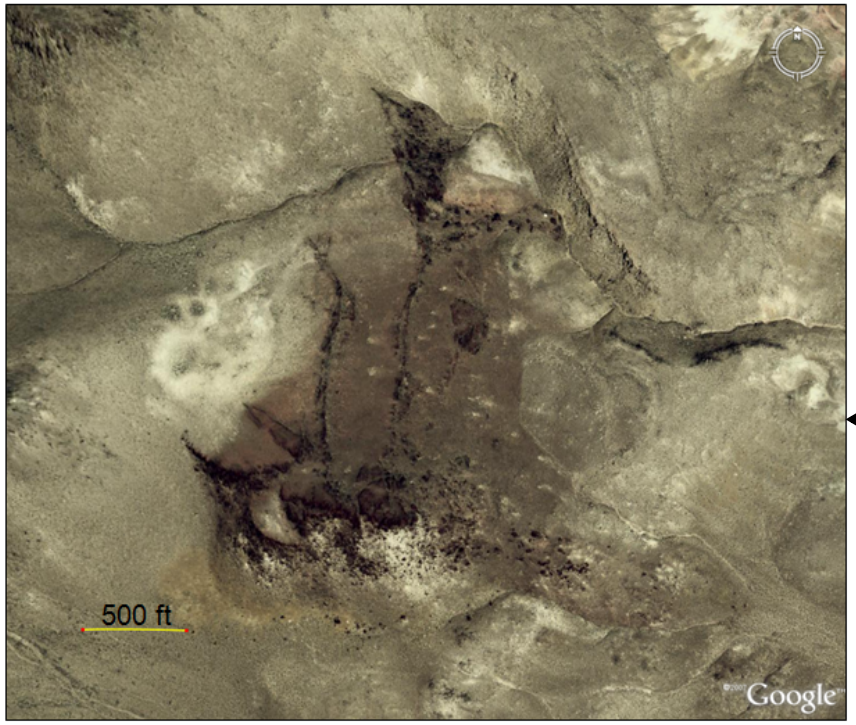
Upper Sandstone

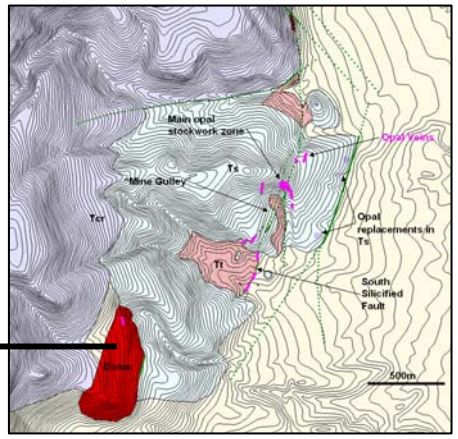


Felsic Pyroclastic Vent

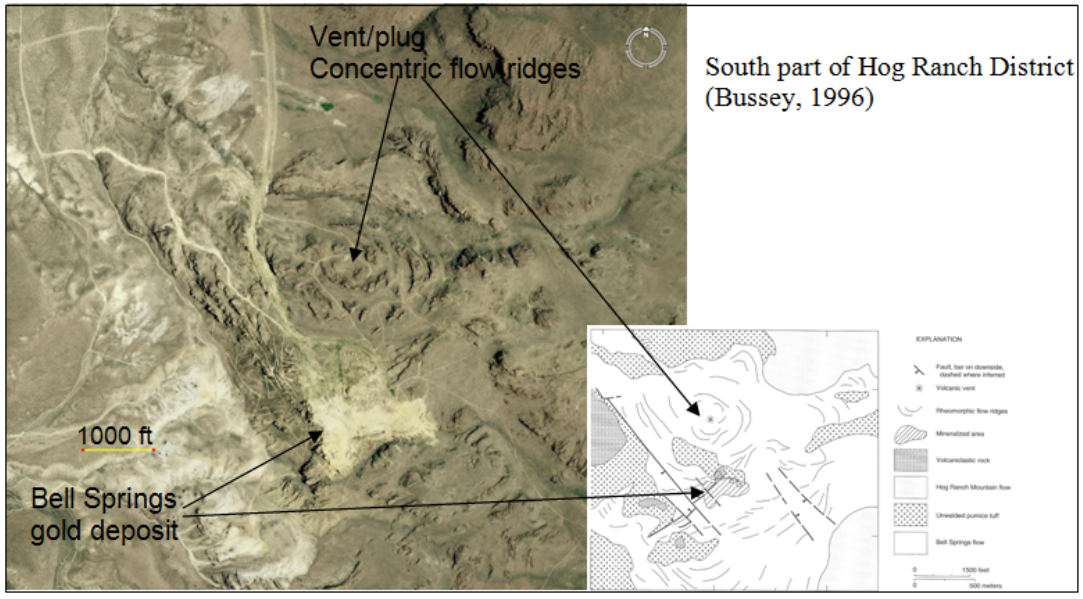
24 ppm As
102 ppm Sb
14.5 ppm Hg
no Au, Mo

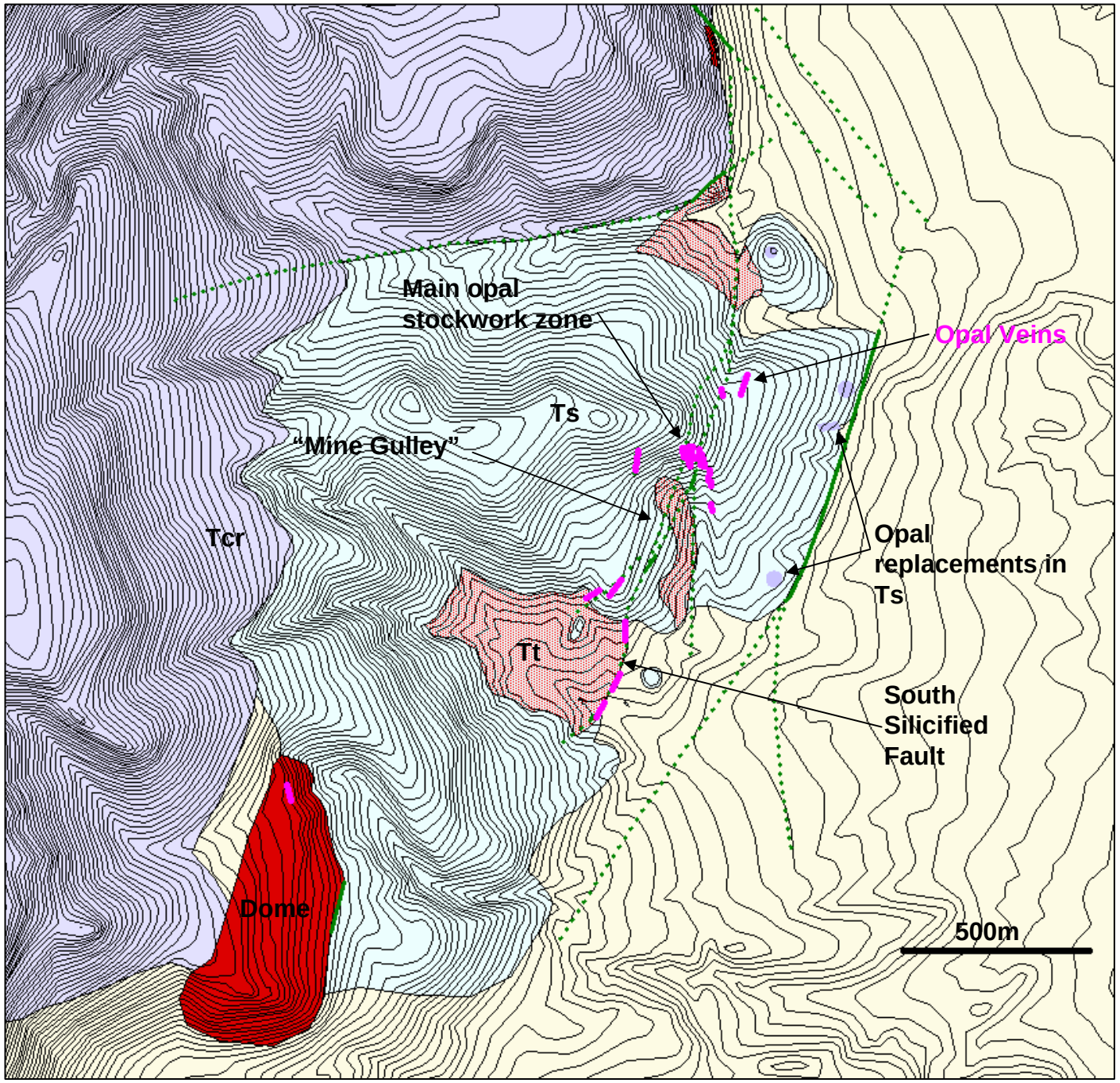
Felsic Pyroclastic Vent





14 Ma
Whole-rock K-Ar (Hulen, 1979)

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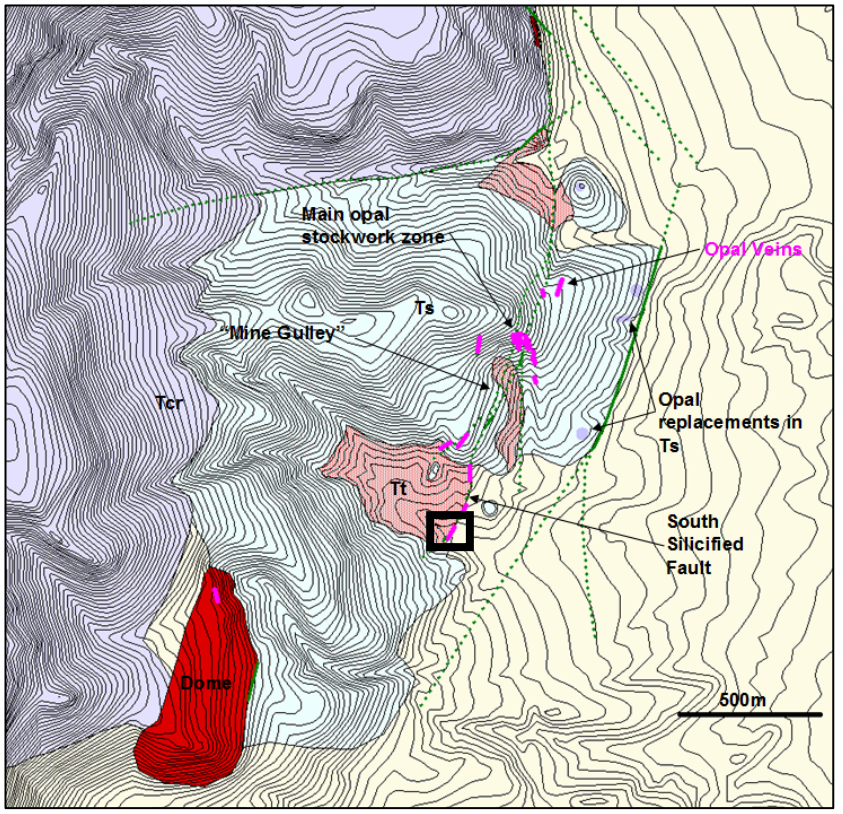
Opal Veins

South Silicified Fault

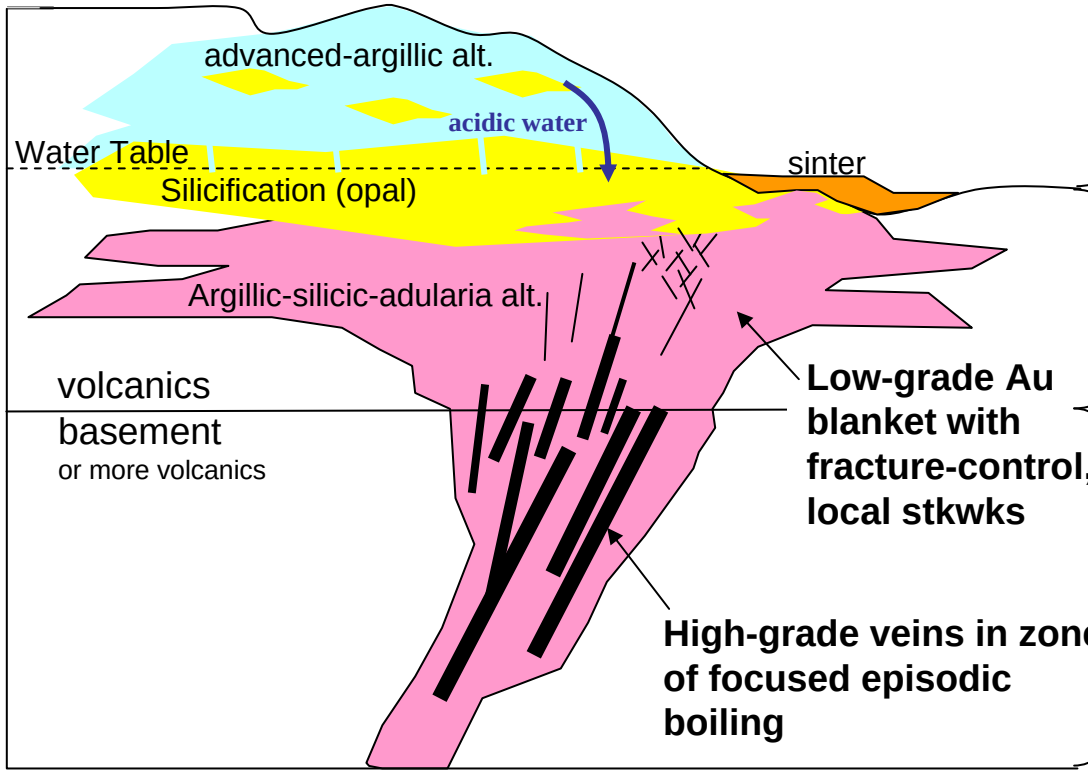


Rock-chips
Maximum Values

ppb ppm:

Rock Type	Au	As	Sb	Hg	Mo
Opal replacement zones in Ts	-	-	-	-	-
Opal veins	-	87	37	5	-
Hematitic argillized Tt	-	33	70	33	11
Silicified flow dome	-	114	190	81	-
North dike at range front	-	108	31	-	18
South silicified fault	-	103	90	>100	-
Pyritic chalcedonic silica float from mine gulley	0.107	76	59	>100	156
Values considered anomalous	0.015	25	15	0.75	15

Low-Sulfidation
Geologic Exploration Model



Zone 1

- Steam-heated zone
- Hg, S^o, no or trace Au
- opaline silica grading down to chalcedony
- sinter at water table

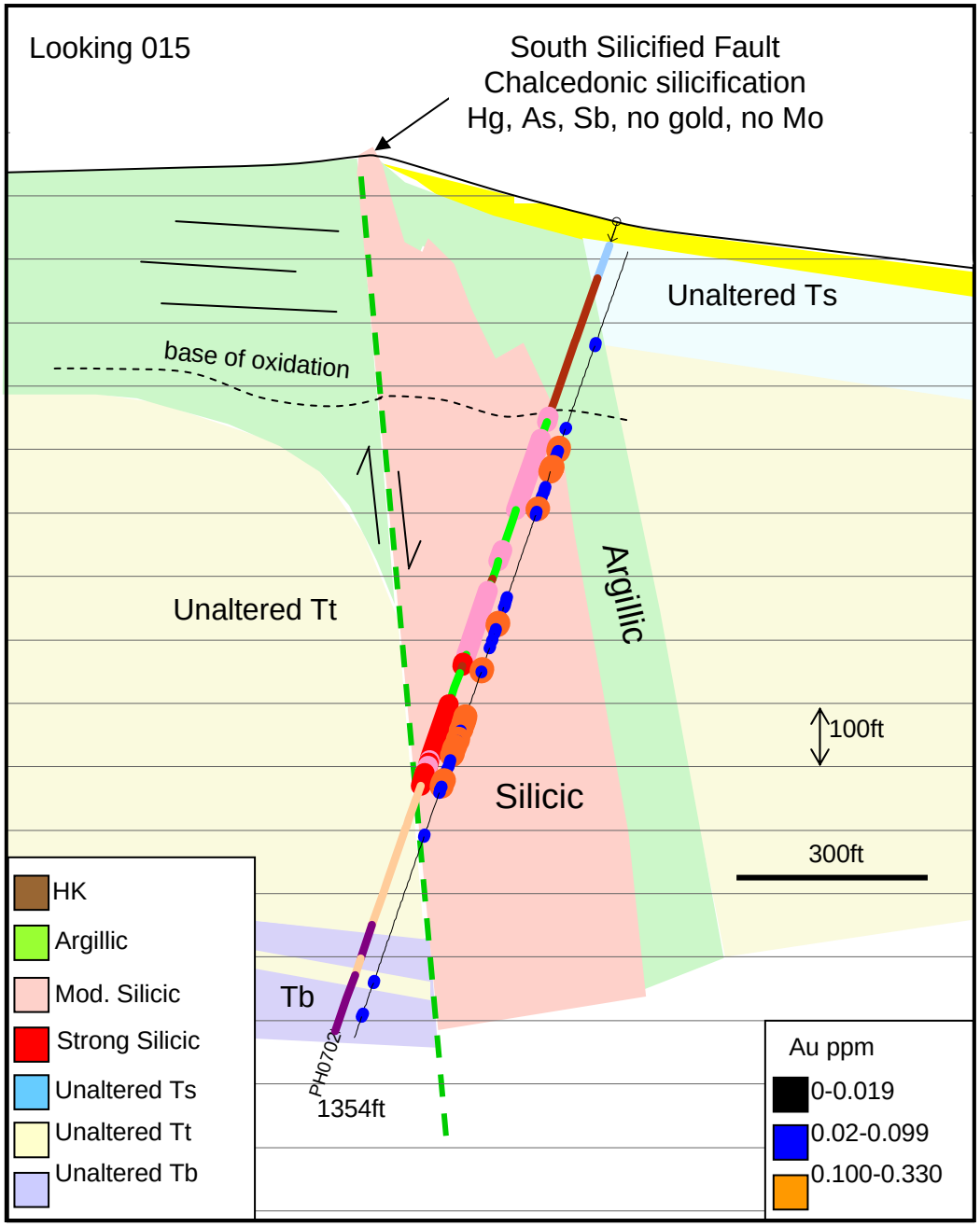
Zone 2

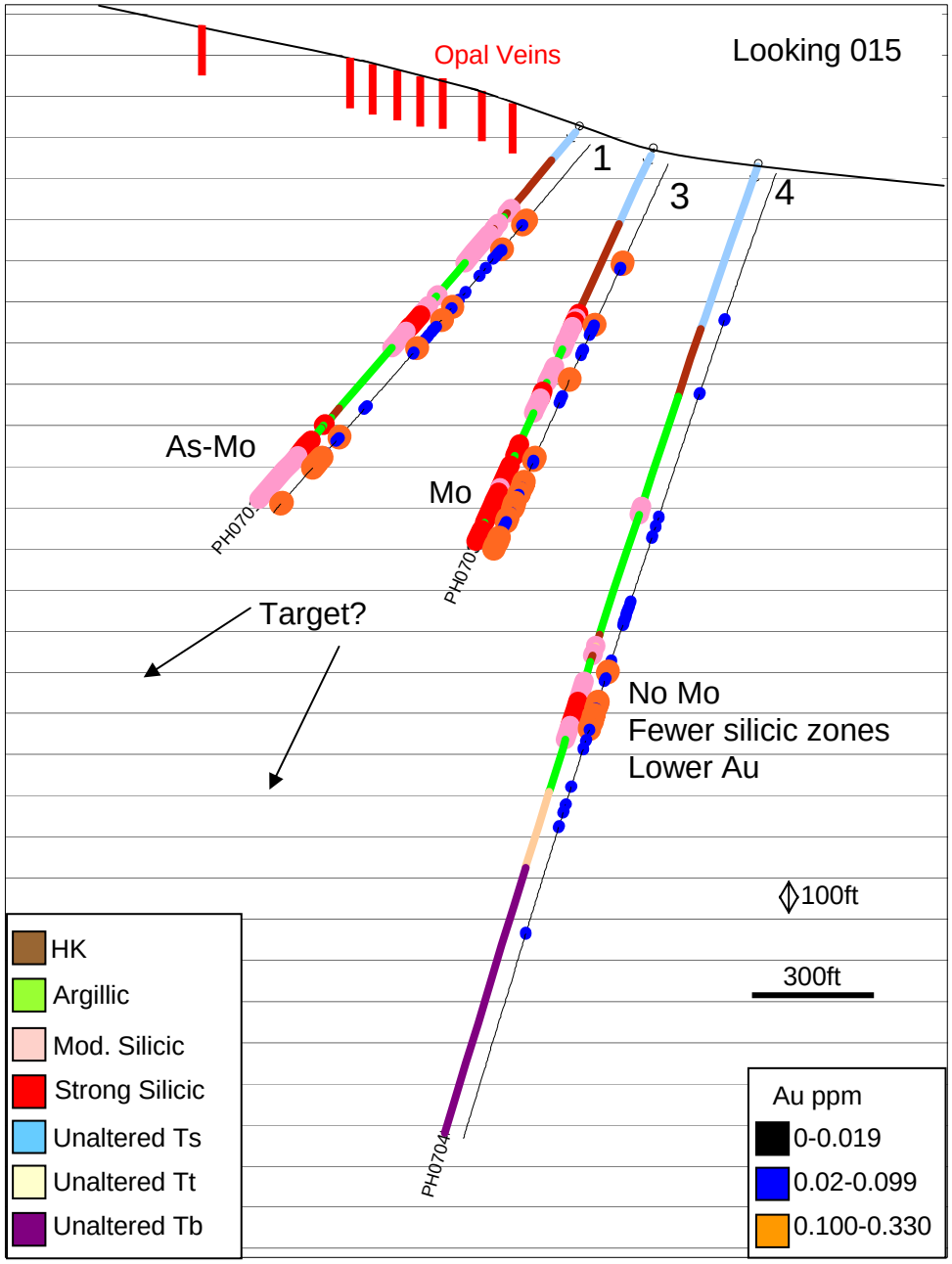
- **Stratiform low-grade Au replacement system**
- Permeabilty/aquifer control
- Tuffs, volcaniclastics

Zone 3

- **High-grade veins**
- Focused along basement contact or in competent volcanic units
- quartz-adularia-calcite
- AgSe, low Pb-Zn
- boiling

modified from Hedenquist et al. (2000)


Looking 015
South Silicified Fault
Chalcedonic silicification
Hg, As, Sb, no gold, no Mo
Unaltered Ts
base of oxidation
Argillic
Unaltered Tt
100ft
Silicic
300ft
Tb
PH0702
1354ft
HK
Argillic
Mod. Silicic
Strong Silicic
Unaltered Ts
Unaltered Tt
Unaltered Tb
Au ppm
0-0.019
0.02-0.099
0.100-0.330


Opal Veins
Looking 015
1
3
4
As-Mo
Mo
PH0703
PH0704
Target?
No Mo
Fewer silicic zones
Lower Au
100ft
300ft
HK
Argillic
Mod. Silicic
Strong Silicic
Unaltered Ts
Unaltered Tt
Unaltered Tb
Au ppm
0-0.019
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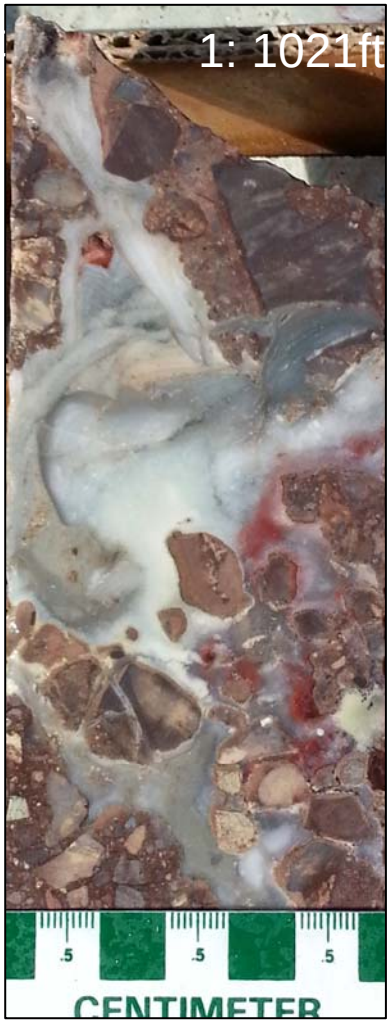
Silicification and Veins



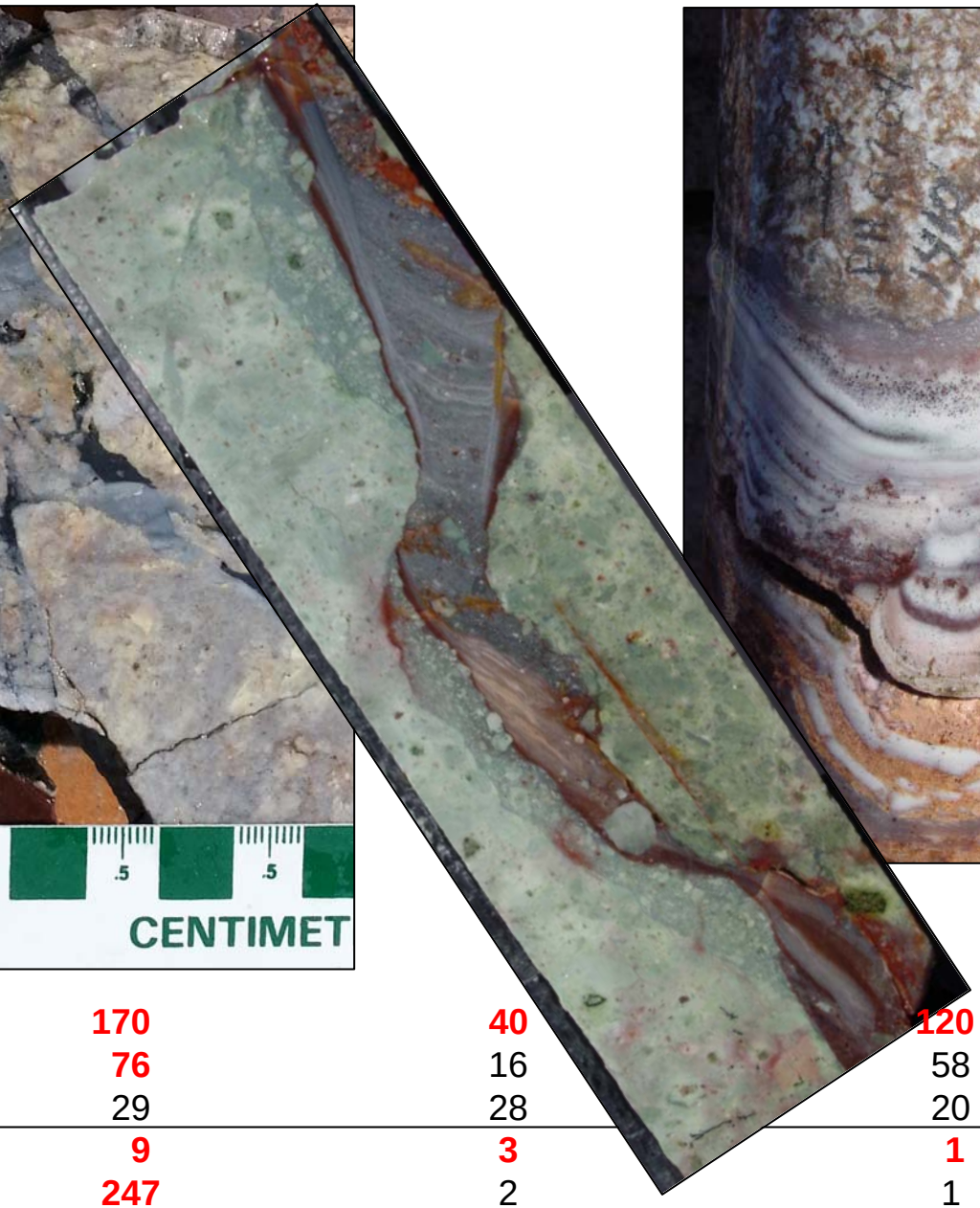
ppb	Au	**180**	**240**	**190**	**140**
ppm	As	33	25	24	46
ppm	Sb	20	26	24	21
ppm	Hg	**17**	**13**	**3**	**2**
ppm	Mo	26	**70**	31	**63**

Silicification and Veins

no bladed cc, sug qz

ppb	Au	**240**	**170**	**40**	**120**
ppm	As	25	**76**	16	58
ppm	Sb	26	29	28	20
ppm	Hg	**13**	**9**	**3**	**1**
ppm	Mo	**70**	**247**	2	1

Silicification and Veins



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Gold Correlations (R values)

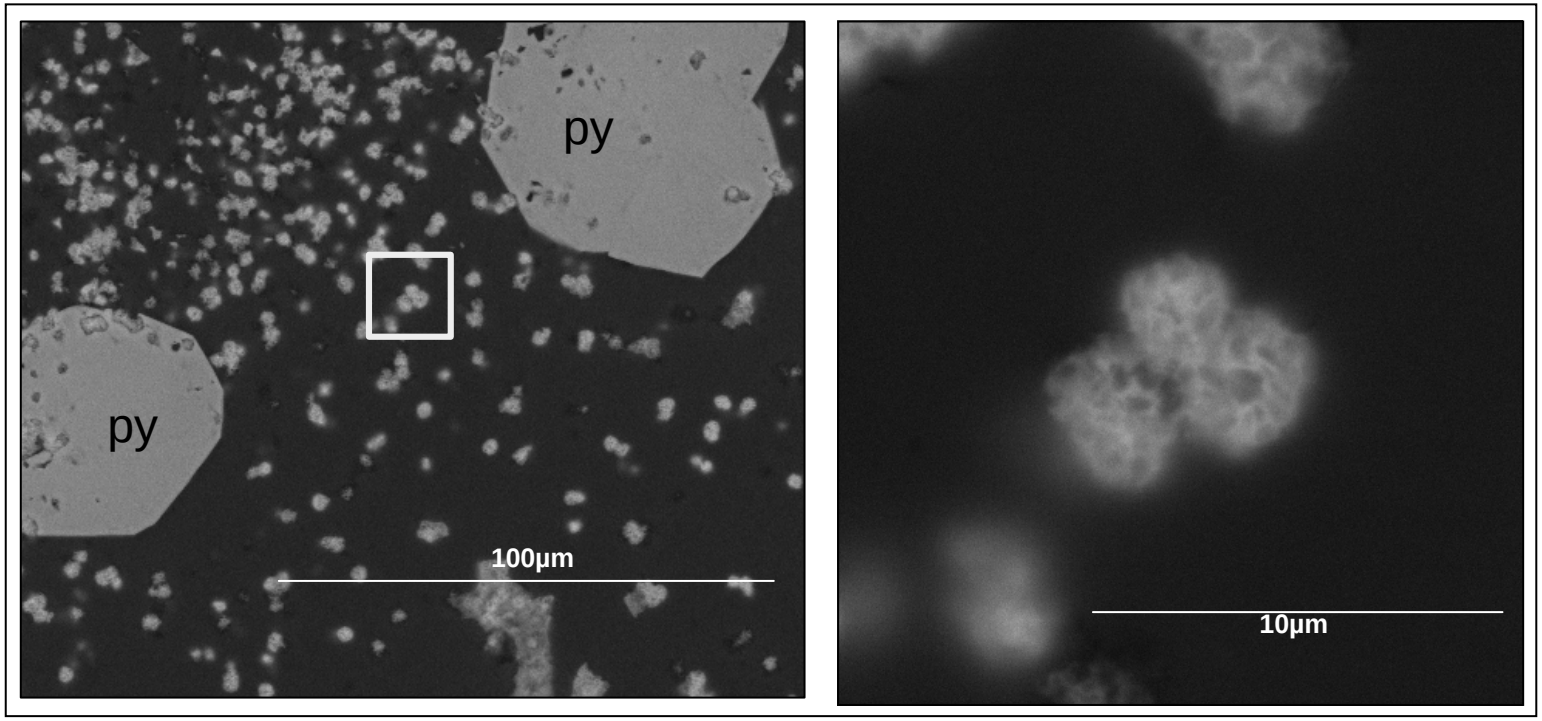
	PH0701	*PH0702*	*PH0703*	*PH0704*
Ag	**0.25**	0.05	0.06	0.02
As	0.04	0.02	0.06	0.00
Sb	**0.15**	**0.34**	**0.46**	-0.01
Cu	-0.15	-0.20	-0.25	-0.19
Pb	0.15	-0.07	-0.17	0.00
Zn	-0.21	-0.35	-0.34	-0.19
Hg	**0.36**	**0.43**	**0.69**	-0.03
K	-0.04	0.06	0.09	**0.30**
Mo	**0.51**	**0.42**	**0.46**	0.10
S	**0.62**	**0.55**	**0.54**	**0.60**
Se	0.14	0.17	**0.28**	**0.27**
Sn	-0.10	-0.35	-0.40	-0.02
Te	-0.05	-0.17	-0.16	-0.13
Tl	**0.27**	**0.31**	**0.22**	0.12
U	0.11	-0.15	0.06	**0.20**
W	-0.03	-0.03	-0.07	-0.03

Molybdenum-Rich Veins

	ppm			
Au	As	Sb	Hg	Mo
.130	109	27	3.3	566
.160	60	25	2.9	539
.200	94	23	2.9	664
1.51	290	116	20	1.65%

Vein separate: and 72 ppm Tl

Jordisite



Conclusions

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3. **System remains under-explored**
   - **Boiling level deeper or lateral to the area tested**
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4. **Au-Mo association**
   - **Au:Mo correlation**
   - **Possible metal source from felsic magmatism**