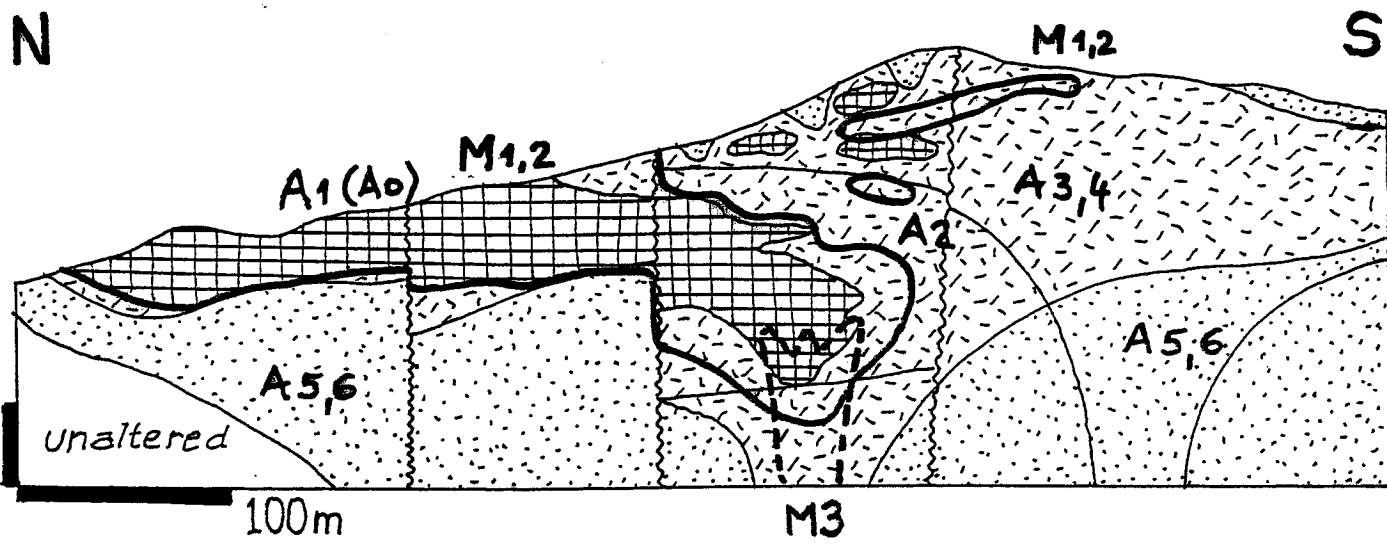


**2494.2 PIERINA (Huaraz) acid sulfate Au-Ag 2: ores**



Pierina cross-section; Laznicka (2000) after Volkert et al. (1999)

**LT 2494.2 LEGEND**

Unit No	Unit Description
M1	Mi-Pl dispersed (invisible) gold in Fe oxides, quartz, relict pyrite in hypogene oxidized, previously quartz-alunite altered (acid sulfate alteration) porous residual vuggy silica after rhyodacite pyroclastics >> andesite
M2	14.7 Ma; relicts of earlier mineralization stage preserved as kernels in M1: vuggy silica with alunite, native sulfur, pyrite, enargite, covellite, younger barite; variable but mainly low Au content
M3	Sulfides in presumed fluid feeder structure in the footwall: veins and mineralized fractures with pyrite, enargite, sfalerite in fractured silicified tuff
<b>Alteration assemblages (determined by PIMA in the field; not megascopically recognizable)</b>	
A0	Late steam alteration effects superimposed on earlier alterations
A1	Residual vuggy silica (principal host to Au), recrystallized from original host by magmatic steam, followed by alunite removal during hypogene leaching and silicification
A2	Quartz-alunite (dickite, pyrophyllite)
A3	Dickite (alunite, kaolinite, pyrophyllite, silica)
A4	Pyrophyllite (dickite, kaolinite, silica, sericite)
A5	Kaolinite, smectite, sericite, pyrite
A6	Propylitic + clays (chlorite, kaolinite, smectite)

**LT 2494.2 SAMPLE DESCRIPTION**

Unit No	Sample Description	Sample No
M1	"Standard ore" (~ 4 g/t Au) in brecciated vuggy silica with moderate hypogene Fe hydroxides in matrix and along fractures	1
	Silica added during hypogene oxidation stage superimposed on M1	2,3
M2	Relict kernels of the earlier high sulfidation stage (gray with yellow sulfur spots) surrounded by oxidized quartz + Fe oxides produced by hypogene leaching. The kernels have erratic gold contents (but there is some Cu in covellite), but the oxidized material constitutes the "standard" ore (around 4 g/t Au)	4-11
	--late quartz, barite, acanthite fracture veinlet	12
M2	Low-grade to sub-grade fringe of the Pierina orebodies, Au dispersed in quartz-alunite altered pyroclastics	16+20