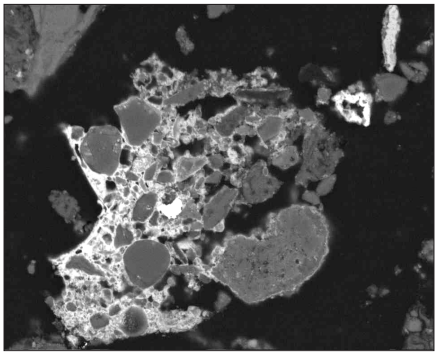
ENVIRONMENTAL APPLICATIONS

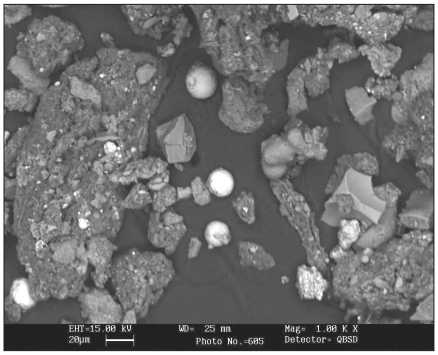
HEAVY METALS IN SOILS

In tailings, soil, waste rock and slag samples, the deportment of contaminant heavy metal minerals can be critical to the evaluation of long-term environmental stability or selection of the correct process for remediation. High Definition Mineralogy can differentiate between metallic, oxide, carbonate, sulphide or sulphate forms of arsenic, mercury, cadmium, lead and other metallic phases using element energy dispersive X-ray spectrometers (EDX) (see modal % tables below).

Complementary to the trace mineral analysis, High Definition Mineralogy can provide the mineralogical composition of a sample and a calculated bulk composition. Below, the bulk composition of a slag is listed by volume and weight % distribution (left). The QEMSCAN™ calculated sample composition is compared with independent XRF analyses (right).



Pb-oxide cementing soil particles



Metallic nickel prills in soil

Mineral	Volume %	Weight %
Pyroxene	45.5	45.9
Olivine	34.6	36.2
Gangue	8.2	7.6
Mg-Al-Si Slag	5.4	4.8
Fe-Al-Si Slag	4.2	3.5
Ca-Al Slag	1.9	1.6
Chromite	0.2	0.3
Ni-Fe Alloy	0.1	0.1

Element	QEMSCAN %	XRF %
Si	22.0	22.6
Mg	15.7	16.0
Fe	14.5	15.1
Al	1.7	1.7
Ca	0.6	0.6
Cr	0.1	
XX	45.45	

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