Alluvial gold is wide-spread and locally abundant in the central Ochil Hills, but the bedrock sources have not been identified. The microchemical signature of 1246 alluvial gold grains collected from 24 different localities has been established by combining quantitative analyses of the alloy composition of the component grains with qualitative data defining the opaque mineral inclusion assemblage. Variations in the microchemical signature of gold from different localities and consideration of the individual sedimentary environments has shown that the alluvial gold is derived from locally mineralised bedrock rather than a single source subsequently transported by glacial action. Three distinct types of gold were identified in the study area, one of which contains two subtypes. Type 1a is wide-spread, locally abundant and contains 5–15% Ag, together with Hg (typically 0·2–0·5% with a maximum of 8%). The inclusion assemblage is dominated by base metal sulphides with minor contributions from sulpharsenides and tellurides. Type 1b is distinguished by an elevated Cu (> 0·1%–10%) content, and is Ag-poor with respect to Type 1a. The inclusion assemblage consists entirely of sulphides, principally copper sulphide (either digenite or chalcocite). The inclusion suites of Type 1a and Type 1b gold are both consistent with the mineralogy of low-sulphidation epithermal gold mineralisation. Type 2 gold is confined to Borland Glen where it has formed a relatively rich alluvial deposit ('Discovery Bench'), with a clearly defined upstream cut-off point. It is distinguished by the relatively narrow (5–9%) Ag content, negligible Hg content, and an inclusion suite dominated by various bismuth tellurides and wittichenite, (Cu3BiS3). Comparison of the inclusion suite with the mineralogy of other epithermal systems suggests that this mineralisation was emplaced at higher temperatures than Type 1 gold. Type 3 gold is very minor, contains Pd to 6·4% and is silver-poor.