Underlying the southern Appalachian gold field, the rocks are dominantly schist, slates, and gneisses formed by metamorphism of sedimentary rock; altered volcanic tuffs and flows; and intrusives. The sediments and volcanic material, now represented as metamorphic rock, accumulated to great thicknesses during periods of crustal subsidence in the Precambrian and early Paleozoic Eras. Later the region underwent periods of mountain building due to shifting of the earth's crust to the northwest. Heat produced during these events, recrystallized the sedimentary and igneous rocks to form metamorphic rock, and stresses folded the rocks. Folds were produced perpendicularly to the stress from the southeast resulting in the many northeast trending mountains throughout the region. Near the end of deformation, shear zones and faults, trending northeast and nearly vertical, were formed along with northwest trending tension faults. Near the end of the Paleozoic Era gold ore-bearing solutions were introduced.

In the southern Appalachian gold fields, gold occurs in veins or ore zones; the veins made up of quartz carrying various amounts of free gold and gold contained in copper and iron sulfide minerals, and ore zones being primarily mineralized layers of schist.[5] These deposits were created at depth during periods of hydrothermal activity associated with volcanic and metamorphic events.
Solutions carrying metal sulfides, and gold, segregated from the earth's crust and mobilized during metamorphism and volcanism, circulated along fault and shear zones altering or replacing the rock along the way. An ore-bearing solution in contact with several different rock types may replace one extensively while barely affecting others. This, in combination

with variations in the source and volume of the ore-bearing solution and the channel (narrow fault zone or wide shear zone) through which it passes, determines the location and the extent of a gold deposit.

Further concentration of gold takes place where the ore lode is exposed to weathering at the surface, since gold occurs normally as the native metal which is practically inert. Weathering of the lode by natural chemical action and abrasion separates the gold from the matrix material, and because of it's very high density, particles eroded into streams tend to settle to the bottom while the lighter materials are washed away. These particles of gold concentrate with gravel in potholes and crevices along rapidly flowing streams or where there is a sudden change in flow velocity creating deposits called placers. A profitably mined placer deposit may represent gold from many small veins unprofitable to mine individually.

GENERAL GEOLOGY OF MECKLENBURG COUNTY

The Rudisill lode and most of Mecklenburg County are within the Charlotte Belt, a 20 to 30 mile wide northeast-southwest trending geologic province, underlain predominantly by coarse-grain, intrusive (composed largely of quartz and potash feldspar) through intermediate diorite to gabbro (composed largely of calcic plagioclase and iron-magnesium minerals) (figure 3). The area immediately underlying the city of Charlotte is predominantly granite and diorite.[6] Mineral deposits associated with these intrusive rocks have been explored in 118 different mines and prospects in Mecklenburg County alone. Figure 4 presents the locations of 57 of the larger deposits of gold worked in the county.[7]