

DESCRIPTORS OF MAP UNITS
ALLUVIUM - Gravel, sand, silt and clay, unconsolidated, poorly sorted to well-sorted, 0.5 feet thick. Deposited in broader valleys of a few of the larger streams. Not mapped.
COLLUVIUM (BLOCK FIELDS) - Coarse angular rock debris of local origin deposited on steeper slopes. Not mapped.
PEGMATITE - White to mottled white and pink, coarse-grained, unfoliated. Composed of plagioclase feldspar, potassic feldspar (generally pinkish gray), quartz, biotite, and rarely muscovite (except in southern corner of map, where it contains). Pegmatite bodies are irregular to tabular and range from 1 inch to 25 feet in thickness. (Too small to show at map scale; location and trend of larger bodies indicated by Y.)
TRONDIEMITE - Light gray to yellowish-gray, fine- to medium-grained, unfoliated, thin dikes and sills. Composed of 56-66% plagioclase (subhedral to euhedral), 22-29% quartz, 6-7% biotite, 0.5% muscovite, (rarely pyroxene) and chlorite, apatite, zircon, and magnetite. Characterized by absence of potassic feldspar. Observed thickness 2 inches to 10 feet; individual bodies too discontinuous and small to show at map scale (see Fig. 2). Trondjemite is confined to southeast portion of quadrangle, where it crops out abundantly on slopes of Lookout Mountain and Old Mountain.
DUNIT - Dark green to yellowish-green, massive, unaltered to highly altered. Contains olivine and minor disseminated chromite; altered rock contains various amounts of serpentine minerals, talc, and anthophyllite. Weathers to nickeliferous sapropite and dark-red soil with residual chlorite fragments.
PEGMATITE - Light brownish-gray to grayish-red-purple, coarse-grained, massive. Composed of 82% muscovite, 18% plagioclase, 0.5% quartz, 2% sericite, 1% magnetite, and trace amounts of rutile and epidote. Locally these pegmatites contain coarse-grained magnetite masses 1.2 inches in diameter. These other minerals are not shown at map scale (see Fig. 2). Trondjemite is confined to southeast portion of quadrangle, where it crops out abundantly on slopes of Lookout Mountain and Old Mountain.
BAKERSVILLE METAGABBRO AND METADABASE - Relatively unaltered rock is greenish-brown to dark brown, massive, fine- to coarse-grained, spiculate. Composed of plagioclase feldspar, monoclinc pyroxene, hornblende, biotite, ilmenite and magnetite, quartz, clinopyroxene, zircon, garnet, potassic feldspar, apatite, and zircon (see table 1).
Where completely altered the Bakersville Metagabbro and Metadabase is represented by amphibolite, dark-green to black, fine- to coarse-grained, massive to well-foliated. Composed of hornblende, monoclinc pyroxene, plagioclase feldspar, biotite, quartz, apatite, epidote, clinopyroxene, ilmenite and magnetite, and zircon. These amphibolites are not readily distinguished from amphibolites of other units.
All the Bakersville Metagabbro and Metadabase bodies have been metamorphosed; however, many bodies still retain primary igneous textures and minerals, whereas others show various stages of alteration to complete amphibolization. Where continuous outcrops exist, a progression from slightly altered metagabbro and metadabase in the center of a body, to amphibolite at its edges, is observed. Wick and Pridemore (1968) attributed this sequential alteration to water-deficient conditions during metamorphism, whereas Bryant and Reed (1970) attribute it to complete metamorphism. More massive outcrops of all phases of metagabbro weather spheroidally.
The hypersthene Metagabbro and Metadolite Gabbro are further petrographic refinements of the Bakersville Metagabbro.
BAKERSVILLE HYPERSTHENE METAGABBRO - Medium- to dark-greenish-black, massive to poorly foliated. Foliation is more obvious away from center of bodies. Contains plagioclase feldspar, hypersthene, monoclinc pyroxene (apatite), biotite, hornblende, ilmenite and magnetite, olivine (T), garnet, talc, anthophyllite, and zircon (see table 1). Metamorphic clouding visible in both light and dark colors. Mineral composition and grain size locally variable. Metamorphic alteration to amphibolite becomes more extensive toward the outer boundaries of the bodies.
BAKERSVILLE METADOLITE GABBRO - Dark green to black, massive to well-foliated. Foliation better developed away from center of gabbro bodies. Composed of plagioclase feldspar, monoclinc pyroxene (apatite), ilmenite and magnetite, hornblende, olivine, zircon, potassic feldspar, garnet and minor talc, anthophyllite, and apatite (see table 1). Metamorphic clouding visible in some light and dark colors. Mineral composition and grain size locally variable. Metamorphic alteration to amphibolite becomes more extensive toward the outer boundaries of the bodies.
UNIT 3
Aluminous Metasedimentary Group
Characterized by presence of numerous microfossils, which is visible throughout the entire group.
BIOTITE GNEISS - Light- to dark gray, poorly foliated to well-foliated. Contains plagioclase feldspar, quartz, biotite, and minor muscovite, garnet, and potassic feldspar. Ranges from metapelitic to metachertaceous in composition. Interlayered with amphibolite, quartzite, and calc-silicate rock that may contain allanite. Several flat blocks and one outcrop of protomylonite (North Carolina coordinates 745,300N, 961,200E) also were observed. The protomylonite is composed of 50% plagioclase, 25% quartz, 18% potassic feldspar, 7% biotite, and minor garnet, epidote, clinopyroxene, and zircon.
CALC-SILICATE ROCK - White to very light gray, massive to poorly foliated. Composed chiefly of plagioclase feldspar, potassic feldspar, quartz, epidote, and apatite. Also contains biotite, muscovite, and zircon. The dark-green to yellowish-brown, which gives the slightly weathered rock a very distinctive spotted appearance.
MUSCOVITE-BIOTITE GNEISS - Medium- to dark gray, poorly foliated to well-foliated. Contains plagioclase feldspar, quartz, biotite, muscovite, potassic feldspar, garnet, and zircon. Interlayered with biotite gneiss, metapelitic rocks, amphibolite, and at least one outcrop of mylonite (North Carolina coordinates 751,900N, 961,700E).
UNIT 2
Biotite-Hornblende Migmatite
BIOTITE-HORNLENDE MIGMATITE - Light brownish-gray to light pinkish-gray, massive to well-foliated to medium-foliated. Composed of plagioclase feldspar (oligoclase and andesine), potassic feldspar, quartz, hornblende, biotite, epidote, clinopyroxene, apatite, zircon, magnetite, and ilmenite. Consists mostly of interlayered and interbedded biotite-hornblende gneiss and granitic gneiss. Magnetite ion is more prevalent near larger bodies of metagabbro. The biotite-hornblende gneiss layers may represent the metachertaceous metagabbro; the granitic gneiss layers may represent the hypersthene gneiss in composition from quartz diorite; most of the layers approximate quartz monzonite.
This widespread unit contains many additional interlayered lithologies. Locally, each of the following rock types is mapped within the biotite-hornblende migmatite as separate units: amphibolite, biotite-hornblende gneiss, epidote-veined granitic gneiss, calc-silicate rock, magnetite granitic gneiss, magnetite-biotite gneiss, biotite gneiss, amphibolite and calc-silicate rock, biotite gneiss, hypersthene biotite-hornblende gneiss, and hypersthene granitic gneiss.
UNIT 1
Biotite Granitic Gneiss
BIOTITE GRANITE GNEISS - Light-pinkish gray to very light gray, massive to well-foliated, of variable composition from granitic to gabbroic. Modal analyses of a typical quartz monzonite layer contain 28% plagioclase feldspar (oligoclase), 27% potassic feldspar, 27% quartz, and 13% biotite; with accessory apatite, clinopyroxene, magnetite, garnet, and zircon. Interlayered at all scales and occurring locally as mappable units within Unit 1 are: amphibolite, epidote-veined granitic gneiss, hornblende-biotite gneiss, magnetite granitic gneiss, mylonite gneiss, augen granitic gneiss, hornblende-biotite gneiss, hornblende-magnetite gneiss, calc-silicate rock, and hypersthene biotite-hornblende gneiss. These units correspond to a small portion of the Cranberry Granitic Gneiss (1904).
AMPHIBOLITE - Dark-green to black, massive to well-foliated. Composed of 54-59% hornblende, locally they contain hornblende, 20-26% muscovite, hornblende, 2-9% quartz, 2-5% biotite, 0-4% clinopyroxene, and minor apatite, zircon, magnetite, and zircon. Talc also occurs in very minor amounts in the amphibolite in two of the extremely hornblende-rich amphibolites (Localities 32 and 33). Amphibolite within Unit 1 (biotite granitic gneiss) are of established origin. They may be metamorphosed igneous rocks of basaltic composition or metamorphosed calcareous sediments.
EPIDOTE-VEINED GRANITE GNEISS - Mottled pink and white, massive to poorly foliated. Composed mainly of plagioclase feldspar, quartz, potassic feldspar, garnet, biotite, and hornblende, sericite, biotite, epidote, chlorite, hornblende, zircon, and apatite. The epidote and chlorite occur as thin fracture fillings. Interlayered with biotite-hornblende gneiss, amphibolite, and biotite granitic gneiss.
HORNLENDE-BIOTITE MIGMATITE - Light gray to moderate pink, migmatitic to well-foliated. Composed of plagioclase feldspar, quartz, potassic feldspar, quartz, and magnetite. Interlayered with biotite granitic gneiss and amphibolite. Mapped in only one small area (North Carolina coordinates 773,000N, 940,500E), approximately 1,000 feet southeast of Bailey Gap.
QUARTZ MONZONITE - Light gray to moderate pink, massive to poorly foliated, spiculate texture. Quartz monzonite composition—30-37% plagioclase feldspar, 30-35% potassic feldspar, 24-25% quartz, 3-6% biotite, 1-2% hornblende, and minor muscovite, garnet, magnetite, and zircon. The well-developed augen, which make up approximately 10% of the rock, are pink grains of monzonite, each of which commonly has a central grain of magnetite in its center. Well-developed porphyroblastic texture makes this one of the more easily traceable units in the quadrangle. Interlayered with biotite granitic gneiss.
NYLONITE (FLASER) GNEISS - Light- to medium gray, well-foliated. Composed of plagioclase feldspar, quartz, biotite, potassic feldspar, garnet, muscovite, clinopyroxene, and magnetite. Fluxion structures visible in thin section. Poorly developed augenitic masses of feldspar and quartz and quartz are present. Interlayered with biotite granitic gneiss, granitic gneiss, and amphibolite.
AUGEN GRANITE GNEISS - Light- to medium pinkish gray, poorly foliated to massive. Quartz monzonite composition—30-37% plagioclase feldspar, 30-35% potassic feldspar, 24-25% quartz, 3-6% biotite, 1-2% hornblende, and minor muscovite, garnet, magnetite, and zircon. The well-developed augen, which make up approximately 10% of the rock, are pink grains of monzonite, each of which commonly has a central grain of magnetite in its center. Well-developed porphyroblastic texture makes this one of the more easily traceable units in the quadrangle. Interlayered with biotite granitic gneiss.
HORNLENDE-BIOTITE GARNET GNEISS - Medium- to dark gray, poorly foliated to well-foliated. Composed mainly of plagioclase feldspar, quartz, potassic feldspar, garnet, biotite, and hornblende. Mapped in only one small area (North Carolina coordinates 773,000N, 940,500E), approximately 1,000 feet southeast of Bailey Gap.
HORNLENDE-MAGNETITE GNEISS - Light gray to moderate pink, massive to poorly foliated. Contains plagioclase feldspar, quartz, potassic feldspar, garnet, biotite, and hornblende. Interlayered with biotite granitic gneiss and amphibolite. Mapped in only one small area (North Carolina coordinates 772,000N, 938,500E), approximately 4,500 feet southwest of Dairley Gap.
CALC-SILICATE ROCK - White to very light gray, massive to poorly foliated. Composed chiefly of plagioclase feldspar, potassic feldspar, quartz, epidote, and apatite. Locally contains lenses and spots of massive diorite and concentrations of magnetite. The dark-green to yellowish-brown, which gives the slightly weathered rock a very distinctive spotted appearance. Locally more resistant than the surrounding rocks. Interlayered with biotite granitic gneiss and amphibolite.
HYPERSTHENE PLAGIOCLASE ROCK - Light brown to moderate pink, massive to poorly foliated. Dioritic composition—67-70% plagioclase feldspar (andesine), 9-12% hypersthene, 2-6% quartz, 1-2% biotite, 0.5% magnetite, and biotite. Surrounds the hypersthene biotite gneiss. Alteration rims of hornblende and biotite surround the hypersthene gneiss. The mineral grains in the rock type exhibit unique colors—perthite-plagioclase, splintered blue quartz, dark green diorite, and greenish-brown hypersthene.
MINERAL RESOURCES
Table 1 - Modal analyses of metagabbro bodies (in percent)
Table 2 - Mining and sampling localities and mineral occurrences
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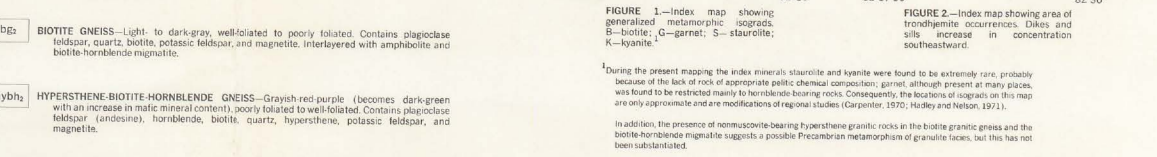
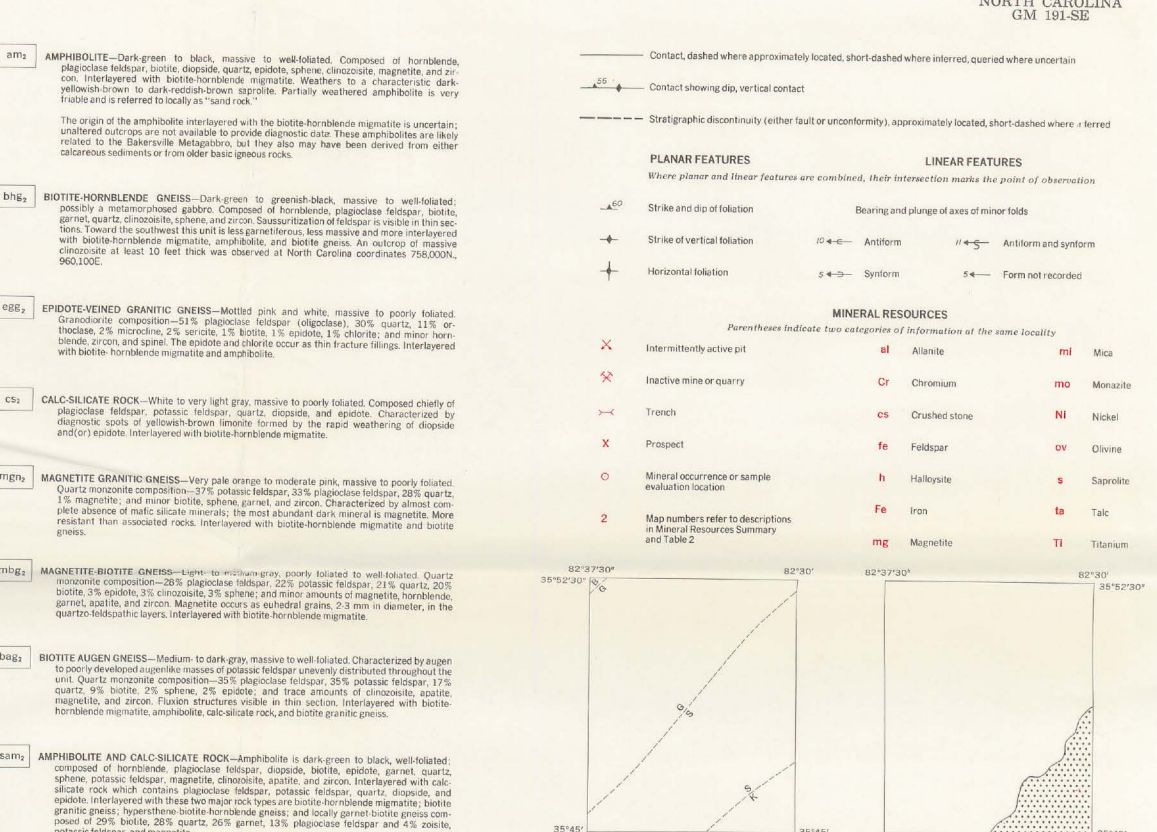


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