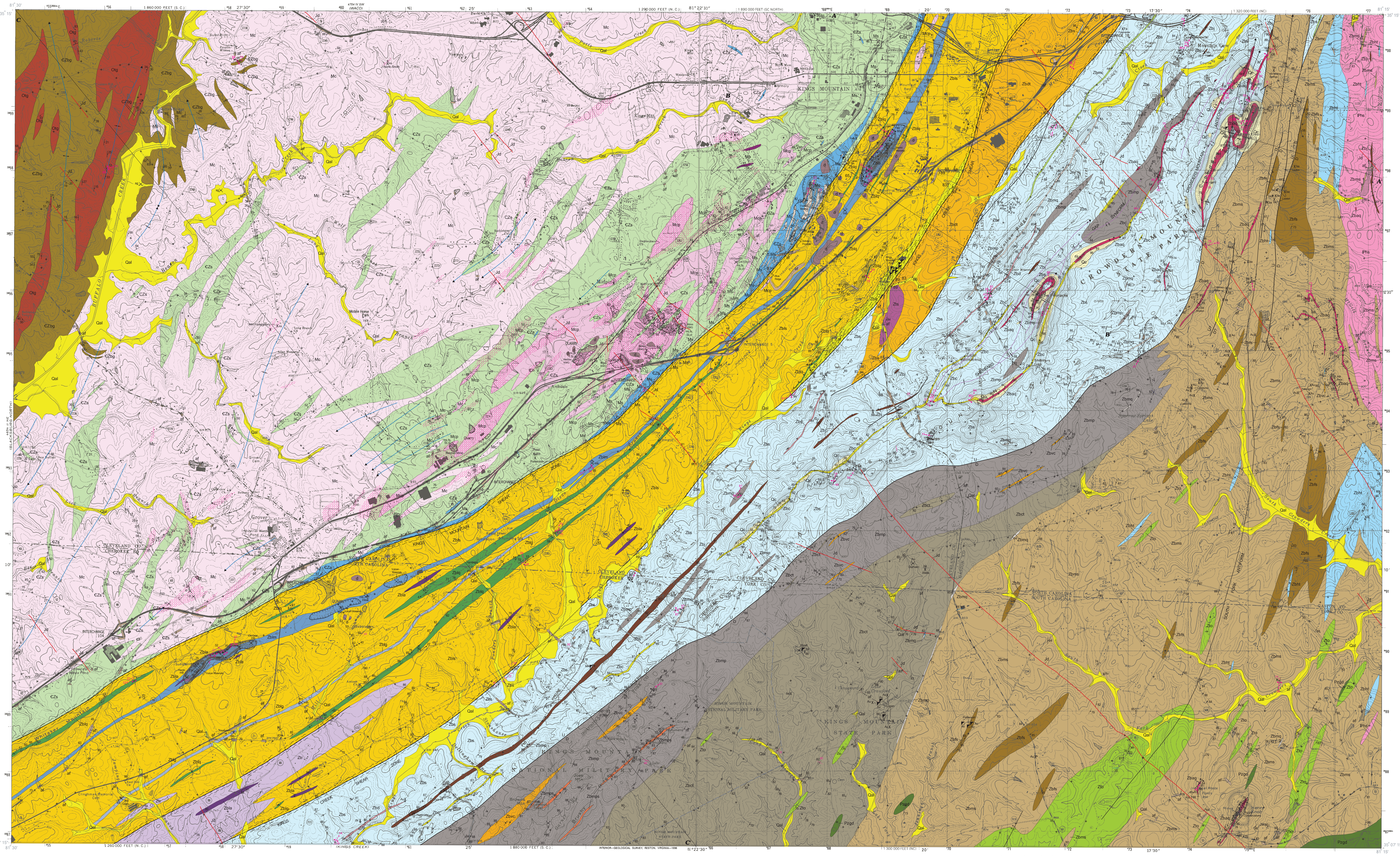
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
NATIONAL PARK SERVICE

OPEN FILE REPORT 2006-1238

Explanatory text and description of map units accompanies map



Base from U.S. Geological Survey, 1971
Lambert conformical conic projection.
10,000 - foot grid ticks based on North Carolina and South Carolina coordinate systems.
North zone 1000 meter Universal Transverse Mercator grid ticks, Zone 17,
1927 North American Datum.

APPROXIMATE MEAN DECLINATION, 1971

SCALE 1:24 000

1 MILE

1 KILOMETER

COUNTOUR INTERVAL 20 FEET

DATUM IS MEAN SEA LEVEL

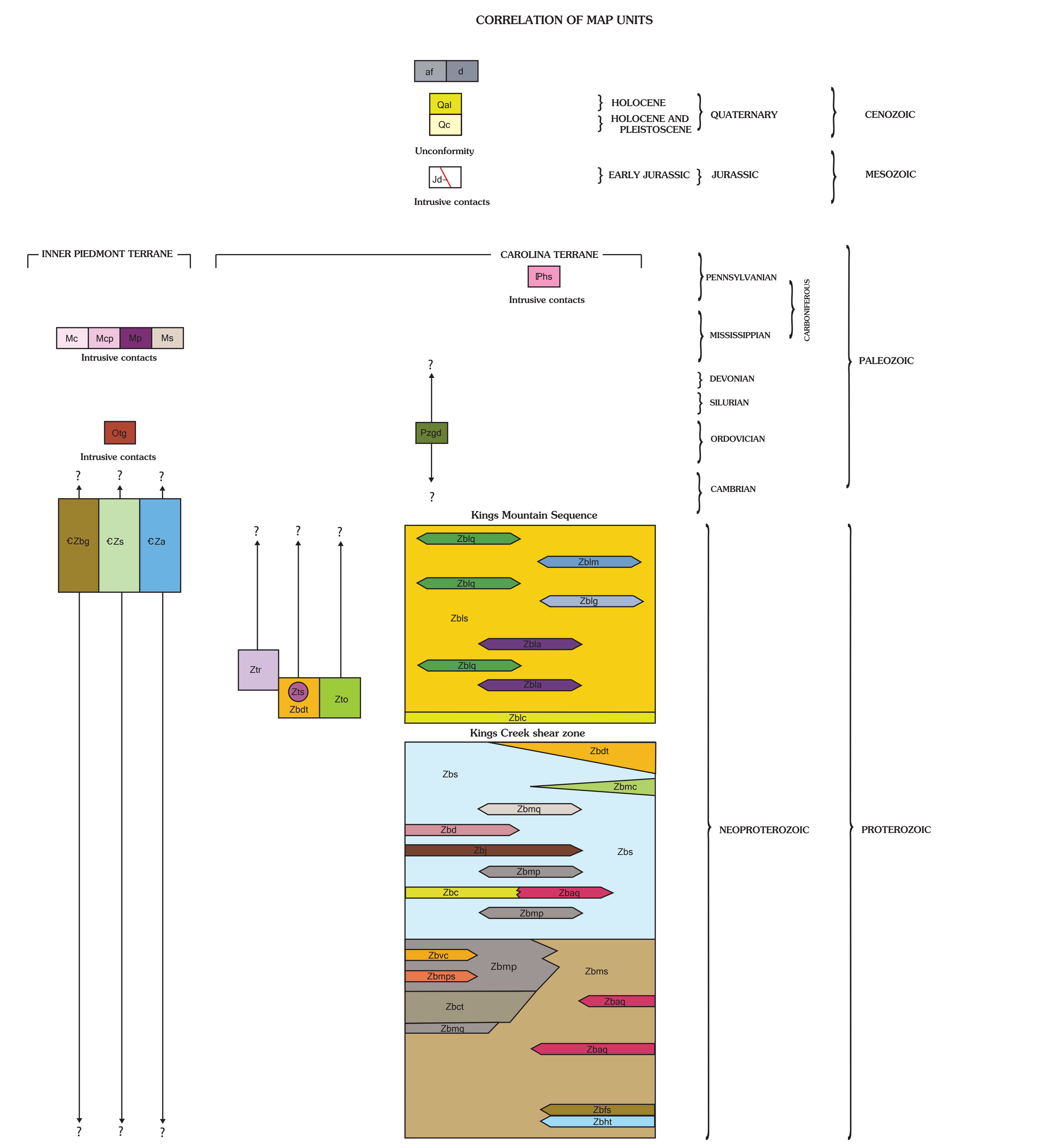
7.5 - MINUTE QUADRANGLE LOCATIONS

1	2	3	4
5	GROVER	KINGS MTN	6
7	8	9	10

1 SHELBY
2 WACO
3 BESSEMER CITY
4 GASTONIA NORTH
5 BLACKSBURG NORTH
6 GASTONIA SOUTH
7 BLACKSBURG SOUTH
8 KINGS CREEK
9 FILBERT
10 CLOVER

Geology mapped by J.Wright Horton, Jr. 1975-81 and 2001;
Assisted by S. B. Harper, 1976; Cartography by Boris J. Barrios,
E. Allen Crider, Danielle Denenny, and James Triplett

CORRELATION OF MAP UNITS



LIST OF MAP UNITS

[see accompanying Description of Map Units]

af — Artificial fill
d — Mine dump

SURFICIAL DEPOSITS

Qal — Alluvium (Holocene)
Qc — Colluvium (Holocene and Pleistocene)

INTRUSIVE ROCKS

Jd — Olivine diabase (Early Jurassic)
IPhs — High Schoals Granite (Pennsylvanian)
Ms — Spodumene pegmatite (Mississippian)
Mp — Granite pegmatite (Mississippian)

Cherryville Granite (Mississipian)
Mcp — Coarse-grained granite and pegmatite
Mc — Muscovite-biotite granite

Otg — Toluca Granite (Ordovician?)
Pzgd — Metadiorite and metagabbro (Paleozoic?)
Zts — Silicified metatrondhjemite (Neoproterozoic)
Ztr — Metatrondhjemite and amphibole gneiss (Neoproterozoic)
Zto — Metatonalite (Neoproterozoic)

INNER PIEDMONT LAYERED METAMORPHIC ROCKS

€Za — Amphibolite (Cambrian or Neoproterozoic)
€Zs — Muscovite schist (Cambrian or Neoproterozoic)
€Zbg — Muscovite-biotite gneiss (Cambrian or Neoproterozoic)

KINGS MOUNTAIN SEQUENCE OF CAROLINA TERRANE

Blacksburg Formation (Neoproterozoic)
Zblc — Chlorite phyllonite
Zbls — Phyllitic metasiltstone
Zblm — Marble member at Dixon Branch (informal name)
Zblg — Gaffney Marble Member
Zblq — Laminated micaceous quartzite
Zbla — Hornblende gneiss and amphibolite

Battleground Formation (Neoproterozoic)
Zbdt — Metadacite and metatrondhjemite
Zbs — Quartz-sericite phyllite and schist
Zbmc — Crowders Creek Metaconglomerate Member
Zbmq — Micaceous quartzite
Zbd — Draytonville Metaconglomerate Member
Zbj — Jumping Branch Manganiferous Member
Zbc — Dixon Gap Metaconglomerate Member
Zbaq — Aluminous quartzite
Zbmp — Mottled phyllitic metatuff
Zbvc — Volcanic metaconglomerate
Zbmps — Siliceous metatuff
Zbct — Plagioclase-crystal metatuff
Zbms — Biotite-muscovite schist
Zbfs — Felsic schist and gneiss (metafelsite)
Zbht — Metavolcanic hornblende gneiss

EXPLANATION OF MAP SYMBOLS

Contact— Approximately located; dotted where concealed. Distribution and concentration of structural symbols indicates degree of reliability

FAULTS

Fault -- Sense of displacement not known

U / D — **High-angle fault** -- Dashed where inferred; dotted where concealed; U, upthrown side; D, downthrown side

FOLDS

[Showing axial trace, direction of dip of limbs and plunge direction, where known or inferred]

F_1 antform
F_1 synform
F_1 overturned antiform
F_1 overturned synform
F_2 antiform
F_2 synform
F_2 overturned antiform
F_3 antiform
F_3 synform

PLANAR FEATURES

[Where planar and (or) linear features are combined, intersection of symbols marks point of observation]

Strike and dip of bedding
40 — inclined-- Where dip angle is unspecified, symbol indicates general direction of dip
vertical

Strike and dip of schistosity
40 — inclined-- Where dip angle is unspecified, symbol indicates general direction of dip
vertical

Strike and dip of layer-parallel foliation
40 — inclined
vertical

40 — Strike and dip of mylonitic foliation, inclined

40 — Strike and dip of crenulation cleavage, inclined

Strike and dip of minor fault
40 — inclined
vertical

Strike and dip of quartz vein
40 — inclined
vertical

40 — Strike and dip of early minor fold axial surface, inclined -- Folds bedding or layering, but not main schistosity

40 — Strike and dip of later minor fold axial surface, inclined -- Folds main schistosity or foliation

LINEAR FEATURES

[Where planar and (or) linear features are combined, intersection of symbols marks point of observation]

Bearing and plunge of mineral elongation
Bearing and plunge of crenulation axis

Bearing and plunge of early minor fold axis -- Folds layering, but not main schistosity
Having s-shaped asymmetry (when viewed down the axis)
Having z-shaped asymmetry (when viewed don the axis)
Symmetric or having no clear asymmetry

Bearing and plunge of later minor fold axis -- Folds main schistosity or foliation
Having s-shaped asymmetry (when viewed down the axis)
Having z-shaped asymmetry (when viewed down the axis)
Symmetric or having no clear asymmetry

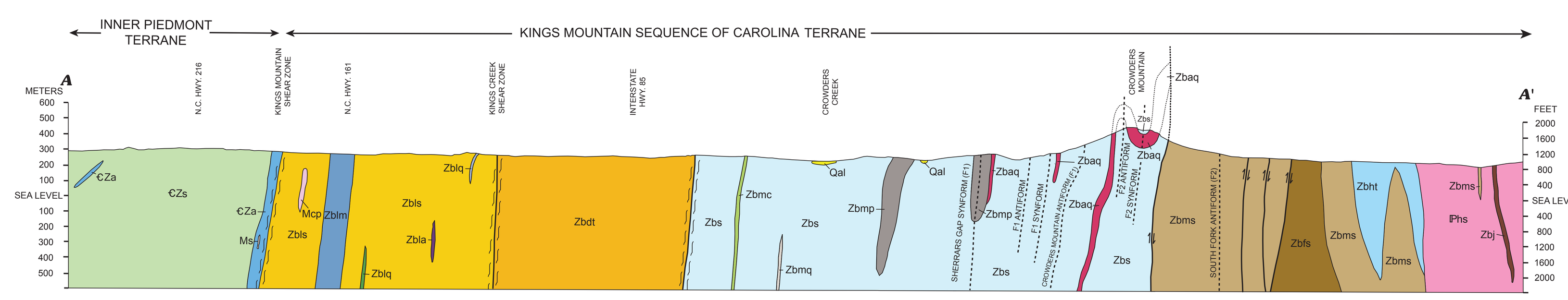
OTHER FEATURES

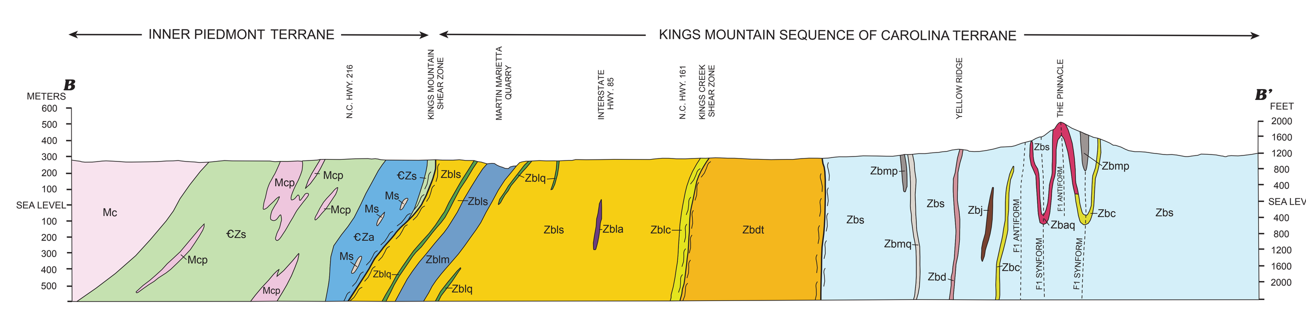
Ductile shear zone (overprint pattern)
Pegmatite swarm (overprint pattern)
Rock unit known from float

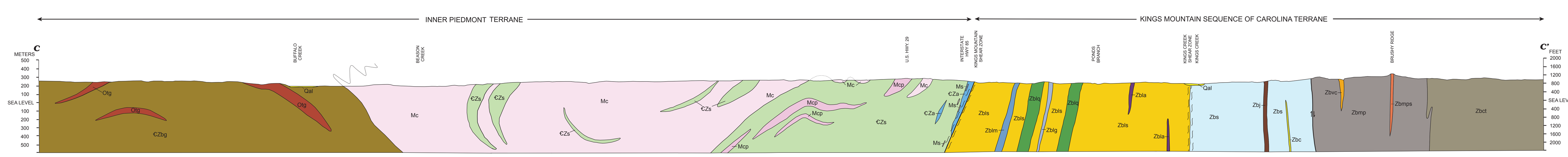
Mines, pits, and prospects (indicating name and commodity* where known)

Quarry -- Ticks point into workings
Open pit mine or quarry, ticks point into working
Sand, gravel, clay pit -- Abandoned
Open pit mine or quarry
Open pit mine or quarry -- Abandoned
Mine shaft -- Abandoned
Prospect (pit or occurrence)

*Commodity: Au, gold; Fe, iron; Li, lithium, Mn, manganese; Sn, tin; ba, barite; cl, clay; fl, flagstone; ky, kyanite; mb, marble; mi, mica; py, pyrite; sg, sand and gravel; sm, sillimanite







GEOLOGIC MAP OF THE KINGS MOUNTAIN AND GROVER QUADRANGLES, CLEVELAND AND GASTON COUNTIES, NORTH CAROLINA, AND CHEROKEE AND YORK COUNTIES, SOUTH CAROLINA

By

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2006

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