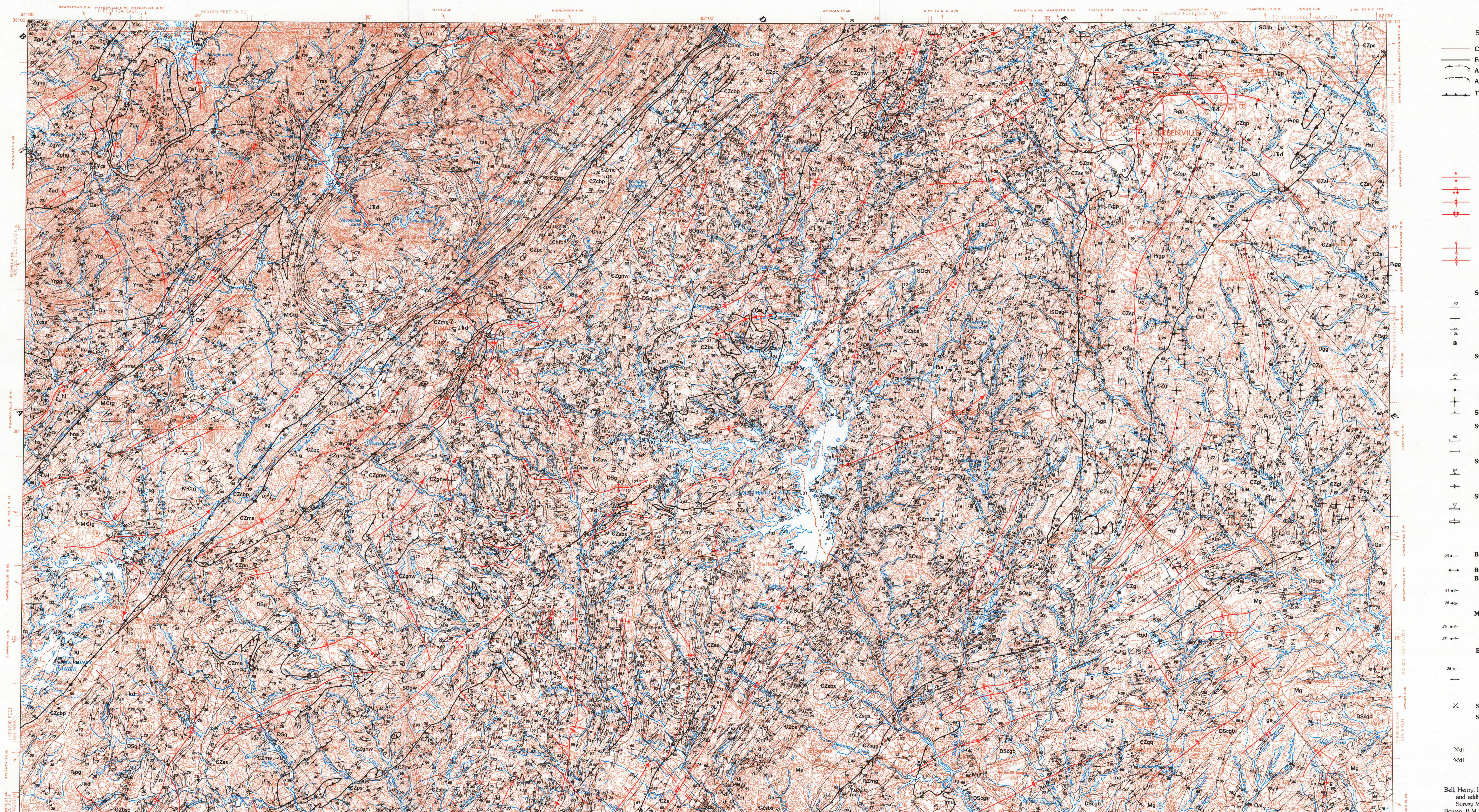
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I–2175 (SHEET 2 OF 2)
Explanatory pamphlet accompanies map



Base from U.S. Geological Survey 1954
Limited revision 1964

100,000-foot grids based on South Carolina coordinate system, north zone, Georgia coordinate system, west and east zones, and North Carolina coordinate system

SCALE 1:250 000

NATIONAL GEODETIC VERTICAL DATUM OF 1929

CONTOUR INTERVAL 100 FEET
WITH SUPPLEMENTARY CONTOURS AT 50 FOOT INTERVALS

Mapped in 1976-1986
Compiled in 1988
Manuscript approved for publication April 12, 1990

EXPLANATION OF MAP SYMBOLS

See geologic map (sheet 1) for description of map units

Contact—Approximately located, dotted where concealed

Fault

Approximate outline of dome

Approximate outline of basin

Thrust fault—Approximately located, dashed where inferred, dotted where concealed, queried where uncertain; sawteeth on upper plate. On overturned thrust faults, sawteeth in direction of dip, bar on side of tectonically higher plate. Direction of movement indicated by arrows in cross section

FOLDS

(Direction of plunge shown where known)

Trace of axial surface of second generation fold (folded foliation)—Folds typically isoclinal with variably dipping axial surfaces. Axial surfaces of first generation folds are not shown; possible locations may be inferred from pattern of map units

- Upright antiform
- Overturned antiform
- Upright synform
- Overturned synform

Trace of axial surface of third and later generation upright fold—Folds close to open and have moderately to steeply dipping axial surfaces

- Antiform
- Synform

PLANAR FEATURES

(May be combined with other planar or linear features)

Strike and dip of bedding

- 70 Inclined
- Vertical
- 20 Overturned
- Horizontal

Strike and dip of foliation and compositional layering not clearly seen as bedding

- 20 Inclined
- Vertical
- Horizontal

Strike and dip of foliation—May include flow foliation in intrusive rocks

Strike and dip of slaty cleavage, slip cleavage, or crenulation cleavage

- 50 Inclined
- Vertical

Strike and dip of mylonitic foliation or fluxion structure

- 84 Inclined
- Vertical

Strike and dip of axial surface of minor fold

- 16 Inclined
- Vertical

LINEAR FEATURES

(May be combined with planar features)

20 **Bearing and plunge of fold axis—**Bearing only shown where amount of plunge not determined

Bearing of horizontal fold axis

Bearing and plunge of fold axis showing asymmetry in down-plunge view

- 41 Dextral
- 26 Sinistral

Minor fold

- 25 Anticline
- 35 Syncline

Bearing and plunge of lineation (elongation or alignment of mineral grains or intersection of two planar features)

- 25 Inclined
- Horizontal

OTHER SYMBOLS

✕ **Sand and gravel pit**

Selected mine or quarry—Unlabeled, aggregate (mostly crushed rock); **ol**, olivine; **mi**, mica; **di**, dimension stone; **Cu**, copper; **mb**, marble; **Au**, gold; **Fe**, iron; **gp**, granite pegmatite. Numerous abandoned gold mines in Dahlonega area are not shown

- ⚒di Active
- ⚒di Inactive

REFERENCES

Bell, Henry, III, and Luce, R.W., 1983, Geologic map of the Ellicott Rock Wilderness and additions, South Carolina, North Carolina, and Georgia: U.S. Geological Survey Miscellaneous Field Studies Map MF–1287–B, scale 1:48,000.

Bowen, B.M., Jr., 1961, The structural geology of a portion of southeastern Dawson County, Georgia: Atlanta, Emory University, unpublished M.S. thesis, 45 p.

Bramlett, Kenneth, and Griffin, V.S., Jr., 1978, Geology of the Greer and Greenville-Spartanburg airport area, South Carolina: South Carolina Division of Geology, Geologic Notes, v. 22, no. 1, p. 32–39.

Brown, C.Q., and Cazeau, C.J., 1964, Geology of Clemson quadrangle, South Carolina: South Carolina Division of Geology Map Series MS–9, scale 1:24,000.

Bryan, J.G., and Griffin, V.S., Jr., 1981, Ultramafic bodies in the Piedmont of northwestern South Carolina: South Carolina Geology, v. 25, no. 2, p. 69–78.

Butler, J.R., 1972, Age of Paleozoic regional metamorphism in the Carolinas, Georgia, and Tennessee southern Appalachians: American Journal of Science, v. 272, no. 4, p. 319–333.

———1973, Paleozoic deformation and metamorphism in part of the Blue Ridge thrust sheet, North Carolina: American Journal Science, v. 273–A, p. 72–88.

Bynum, F.J., Jr., 1982, The geology of the south one-half of the Ware Shoals West quadrangle, S.C.: Athens, University of Georgia, unpublished M.S. thesis, 97 p.

Cazeau, C.J., 1963, Geology and structure of the Pendleton-La France area, northwestern South Carolina: South Carolina Division of Geology, Geologic Notes, v. 7, no. 3-4, p. 15–18.

———1966, Geology of the La France quadrangle, South Carolina: South Carolina Division of Geology Map Series MS–10, scale 1:24,000.

———1967, Geology and mineral resources of Oconee County, South Carolina: South Carolina Division of Geology Bulletin 34, 38 p., plate 1, scale 1:125,000.

Cazeau, C.J., and Brown, C.Q., 1963, Guide to the geology of Pickens and Oconee Counties, South Carolina—Carolina Geological Society Field Trip, October 26–27, 1963: South Carolina Division of Geology Geologic Notes, v. 7, no. 5, p. 31–40, figures 1 and 2, scale 1:250,000.

Chalcraft, R.G., and Lawrence, D.P., 1979, Preliminary geologic map of the Kirksey quadrangle: South Carolina Division of Geology Open-File Report 18, scale 1:24,000.

Chalcraft, R.G., Lawrence, D.P., and Taylor, C.A., Jr., 1978, The petrology of the Greenwood pluton, Greenwood County, South Carolina—A preliminary report, *in* Snoke, A.W., ed., Geological investigations of the eastern Piedmont, southern Appalachians, Carolina Geological Society Field Trip Guidebook, October 7–8, 1978: Columbia, South Carolina Geological Survey, p. 40–46.

Cook, F.A., Albaugh, D.S., Brown, L.D., Kaufman, Sidney, Oliver, J.E., and Hatcher, R.D., Jr., 1979, Thin-skinned tectonics in the crystalline southern Appalachians; COCORP seismic-reflection profiling of the Blue Ridge and Piedmont: Geology, v. 7, no. 12, p. 563–567.

Crickmay, G.W., 1952, Geology of the crystalline rocks of Georgia: Georgia Geological Survey Bulletin 58, 54 p.

Dallmeyer, R.D., 1975, Incremental $^{40}Ar/^{39}Ar$ ages of biotite and hornblende from retrograded basement gneisses of the southern Blue Ridge—Their bearing on the age of Paleozoic metamorphism: American Journal of Science, v. 275, no. 4, p. 444–460.

Dallmeyer, R.D., Courtney, P.S., and Wooten, R.M., 1978, Stratigraphy, structure, and metamorphism east of the Murphy syncline, Georgia-North Carolina: [Athens, University of Georgia], Georgia Geological Society Guidebook 17, 74 p.

Dallmeyer, R.D., and Hatcher, R.D., Jr., 1985, The Alto allochthon—Part 2, Geochronological constraints on tectonothermal evolution: Geological Society of America Abstracts with Programs, v. 17, no. 2, p. 86.

Dupuis, R.H., 1975, Stratigraphy, structure, and metamorphic history of the northern half of the Nottely Dam quadrangle, Georgia-North Carolina: Athens, University of Georgia, unpublished M.S. thesis, 150 p.

Eckert, J.O., Jr., and Mohr, D.W., 1985, Petrologic evidence for Paleozoic granulite facies metamorphism in the North Carolina Blue Ridge: Geological Society of America Abstracts with Programs, v. 17, no. 2, p. 90.

Ellwood, B.B., Whitney, J.A., Wenner, D.B., Mose, Douglas, and Amerigian, Craig, 1980, Age, paleomagnetism, and tectonic significance of the Elberton Granite, northeast Georgia Piedmont: Journal of Geophysical Research, part B, v. 85, no. 11, p. 6521–6533.

Ferguson, R.B., 1978, Savannah River Laboratory hydrogeochemical and stream sediment reconnaissance, preliminary raw data release, Greenville 1°X2° NTMS area, Georgia, North Carolina, and South Carolina, National Uranium Resource Evaluation Program [prepared for U.S. Department of Energy under contract AT (07-2)-1]: Aiken, S.C., E.I. DuPont de Nemours and Company, Savannah River Laboratory Report GJBX-47-78, 31 p., plate 1A, 1:250,000.

Fullagar, P.D., Butler, J.R., 1979, 325 to 265 m.y.-old granitic plutons in the Piedmont of the southeastern Appalachians: American Journal of Science, v. 279, no. 2, p. 161–185.

Fullagar, P.D., Hatcher, R.D., Jr., and Merschat, C.E., 1979, 1200 m.y.-old gneisses in the Blue Ridge province of North Carolina: Southeastern Geology, v. 20, no. 2, p. 69–77.

Furcron, A.S., and Teague, K.H., 1943, Mica-bearing pegmatites of Georgia: Georgia Geological Survey Bulletin 48, 192 p.

———1945, Sillimanite and massive kyanite in Georgia (a preliminary report): Georgia Geological Survey Bulletin 51, 76 p., plate 2, scale 1:125,000, plate 3, scale 1:160,000.

Galpin, S.L., 1915, A preliminary report on the feldspar and mica deposits of Georgia: Georgia Geological Survey Bulletin 30, 190 p.

Georgia Geologic Survey, 1976, Geologic map of Georgia: Atlanta, Georgia Geologic Survey, scale 1:500,000.

Gillon, K.A., 1982, Stratigraphic, structural, and metamorphic geology of portions of the Cowrock and Helen, Georgia, 7 1/2′ quadrangles: Athens, University of Georgia, unpublished M.S. thesis, 236 p., scale 1:24,000.

Goldsmith, Richard, Milton, D.J., and Horton, J.W., Jr., 1988, Geologic map of the Charlotte 1°X2° quadrangle, North Carolina and South Carolina: U.S. Geological Survey Miscellaneous Investigations Series Map I–1251–E, scale 1:250,000.

Grant, W.H., 1958, The geology of Hart County, Georgia: Georgia Geological Survey Bulletin 67, 75 p., scale 1:48,000.

Griffin, V.S., Jr., 1967, Geology of the Six Mile quadrangle, South Carolina: South Carolina Division of Geology Map Series MS–14, scale 1:24,000.

———1969, Migmatitic Inner Piedmont belt of northwestern South Carolina *in* A guide to the geology of northwestern South Carolina—Carolina Geological Society guidebook, 1969: South Carolina Division of Geology, Geologic Notes, v. 13, no. 4, p. 87–104.

———1971, The Inner Piedmont belt of the southern crystalline Appalachians: Geological Society of America Bulletin, v. 82, no. 7, p. 1885–1898.

———1972, Progress report on a geologic study in Abbeville and McCormick Counties, South Carolina: South Carolina Division of Geology, Geologic Notes, v. 16, no. 3, p. 59–78, scale 1:300,000.

———1973, Geology of the Old Pickens quadrangle [Pickens and Oconee Counties], South Carolina: South Carolina Division of Geology Map Series MS–18, 54 p., scale 1:24,000.

———1974a, Analysis of the Piedmont in northwest South Carolina: Geological Society of America Bulletin, v. 85, no. 7, p. 1123–1138, approximate scale 1:400,000.

———1974b, Geology of the Walhalla quadrangle, Oconee County, South Carolina: South Carolina Division of Geology Map Series MS–19, 53 p., scale 1:24,000.

———1974c, Progress report on a geologic study in Anderson County, South Carolina: South Carolina Division of Geology, Geologic Notes, v. 18, no. 1, p. 13–23, approximate scale 1:300,000.

———1975, Geology of the Seneca, Westminster, and portions of the Avalon and Oakway quadrangles, South Carolina: South Carolina Division of Geology Map Series MS–20, 42 p., scale 1:24,000.

———1977, Preliminary geologic map of the South Carolina Inner Piedmont belt: South Carolina Division of Geology, Geologic Notes, v. 21, no. 4, p. 198–204.

———1978, Geology of the Calhoun Creek, Calhoun Falls and portions of the Chennault and Verdery quadrangles, South Carolina: South Carolina Geological Survey Map Series MS–23, 47 p., scale 1:24,000.

———1979, Geology of the Abbeville East, Abbeville West, Latimer and Lowndesville quadrangles, South Carolina: South Carolina Geological Survey Map Series MS–24, 58 p., scale 1:24,000.

———1981, Geology of the Anderson South, Hartwell NE, La France and Saylors Crossroads (7.5-minute) quadrangles and the Anderson (15-minute) quadrangle, South Carolina: South Carolina Geological Survey Map Series MS–25, 28 p., scales 1:24,000 and 1:62,500.

Hadley, J.B., and Nelson, A.E., 1971, Geologic map of the Knoxville quadrangle, North Carolina, Tennessee, and South Carolina: U.S. Geological Survey Miscellaneous Investigations Map I–654, scale 1:250,000.

Harris, L.D., and Bayer, K.C., 1979, Sequential development of the Appalachian orogen above a master decollement—A hypothesis: Geology, v. 7, no. 12, p. 568–572.

Harris, L.D., Harris, A.G., de Witt, Wallace, Jr., and Bayer, K.C., 1981, Evaluation of southern eastern overthrust belt beneath the Blue Ridge-Piedmont thrust: American Association of Petroleum Geologists Bulletin, v. 65, no. 12, p. 2491–2505.

Hartley, M.E., III, 1973, Ultramafic and related rocks in the vicinity of Lake Chatuge: Georgia Geological Survey Bulletin 85, 61 p., plate 1, scale 1:24,000.

Hartley, M.E., III, and Penley, H.M., 1974, The Lake Chatuge sill outlining the Brasstown antiform: Georgia Geological Society Guidebook 13, 27 p.

Hatcher, R.D., Jr., 1969, Stratigraphy, petrology, and structure of the low rank belt and part of the Blue Ridge of northwesternmost South Carolina, *in* A guide to the geology of northwestern South Carolina—Carolina Geological Society guidebook, 1969: South Carolina Division of Geology, Geologic Notes, v. 13, no. 4, p. 105–141.

———1970, Stratigraphy of the Brevard zone and Poor Mountain area, northwestern South Carolina: Geological Society of America Bulletin, v. 81, no. 3, p. 933–939.

———1971a, Geology of Rabun and Habersham Counties, Georgia—A reconnaissance study: Georgia Geological Survey Bulletin 83, 48 p., plate 1, scale 1:80,000.

———1971b, Stratigraphic, petrologic, and structural evidence favoring a thrust solution to the Brevard problem: American Journal of Science, v. 270, no. 3, p. 177–202.

———1973, Basement versus cover rocks in the Blue Ridge of northeast Georgia, northwestern South Carolina, and adjacent North Carolina, *in* Symposium; Geology of the Blue Ridge-Ashland-Wedowee belt in the Piedmont: American Journal of Science, v. 273, no. 8, p. 671–685.

———1974, An introduction to the Blue Ridge tectonic history of northeast Georgia: [Atlanta, Georgia Geological Survey] Georgia Geological Society Guidebook 13-A, 59 p., scale 1:125,000.

———1976, Introduction to the geology of the eastern Blue Ridge of the Carolinas and nearby Georgia, *in* Carolina Geological Society Field Trip Guidebook, October 23–24, 1976: Columbia, South Carolina State Development Board, Division of Geology, 53 p., scale 1:200,000.

———1977, Macroscopic polyphase folding illustrated by the Toxaway dome, eastern Blue Ridge, South Carolina-North Carolina: Geological Society of America Bulletin, v. 88, no. 11, p. 1678–1688.

———1978a, Tectonics of the western Piedmont and Blue Ridge, southern Appalachians: Review and speculation: American Journal of Science, v. 278, no. 3, p. 276–304.

———1978b, The Alto allochthon: A major tectonic unit of the northeast Georgia Piedmont, *in* Short contributions to the geology of Georgia: Georgia Geologic Survey Bulletin 93, p. 83–86.

———1979, The Coweeta Group and Coweeta Syncline: Major features of the North Carolina-Georgia Blue Ridge: Southeastern Geology, v. 21, no. 1, p. 17–29.

Hatcher, R.D., Jr., and Acker, L.D., 1984, Geology of the Salem quadrangle, South Carolina: South Carolina Geological Survey Map Series MS–26, 23 p., scale 1:24,000.

Hatcher, R.D., Jr., and Griffin, V.S., Jr., 1969, Preliminary detailed geologic map of northwestern South Carolina, *in* Carolina Geological Society Guidebook, October 3–5, 1969: South Carolina Division of Geology, Geologic Notes, v. 13, no. 4, plate 1, scale 1:125,000.

Hess, J.R., 1979, Geochemistry of the Elberton Granite and the geology of the Elberton West quadrangle, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 193 p.

Higgins, M.W., and Atkins, R.L., 1981, The stratigraphy of the Piedmont southeast of the Brevard Zone in the Atlanta, Georgia, area, *in* Wigley, P.B., ed., Latest thinking on the stratigraphy of selected areas in Georgia: Georgia Geologic Survey Information Circular 54–A, p. 3–40.

Higgins, M.W., Atkins, R.L., Crawford, T.J., Crawford, R.F., III, Brooks, Rebekah, and Cook, R.B., 1988, The structure, stratigraphy, tectonostratigraphy, and evolution of the southernmost part of the Appalachian orogen: U.S. Geological Survey Professional Paper 1475, 172 p.

Higgins, M.W., Atkins, R.L., Crawford, T.J., Crawford, R.F., III, and Cook, R.B., 1984, A brief excursion through two thrust stacks that comprise most of the crystalline terrane of Georgia and Alabama: [Atlanta, Georgia State University] Georgia Geological Society Guidebook, 67 p.

———1985, The Macon melange, an ancient subduction complex in the southern Appalachians, Alabama-North Carolina: Geological Society of America Abstracts with Programs, v. 17, no. 7, p. 610.

Higgins, M.W., and Zietz, Isidore, 1975, Geologic interpretation of aeromagnetic and aeroradioactivity maps of northern Georgia: U.S. Geological Survey Miscellaneous Investigations Map I–783, scale 1:500,000.

Hopson, J.L., 1984, Geology of the Ayersville quadrangle, Georgia: Columbia, University of South Carolina, unpublished M.S. thesis, 151 p., plate 1, scale 1:24,000.

Hopson, J.L., Thompson, R.H., Hatcher, R.D., Jr., and Dallmeyer, R.D., 1985, The Alto allochthon: Part I, Results of structural and stratigraphic studies: Geological Society of America Abstracts with Programs, v. 17, no. 2, p. 96.

Hudson, W.C., 1946, Exploration of Georgia and South Carolina sillimanite deposits: U.S. Bureau of Mines Report of Investigations 3927, 44 p.

Iverson, W.P., and Smithson, S.B., 1982, Master decollement root zone beneath the southern Appalachians and crustal balance: Geology, v. 10, no. 5, p. 241–245.

Klett, W.Y., Jr., 1969, The geology of the Talmo area, Jackson and Hull Counties, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 66 p.

Koch, N.C., 1968, Ground-water resources of Greenville County, South Carolina: South Carolina Division of Geology Bulletin 38, 47 p., figure 3, scale 1:150,000.

Legato, L.M., 1986, The geology of the Heardmont quadrangle, Georgia-South Carolina: Athens, University of Georgia, unpublished M.S. thesis, 144 p.

Long, L.K., and Miller, C.F., 1983, Chemistry, genesis, and tectonic significance of the Lake Chatuge mafic-ultramafic complex, North Carolina-Georgia: Geological Society of America Abstracts with Programs, v. 15, no. 3, p. 143.

McClure, W.C., 1963, Geology of the Enoree area, South Carolina: Columbia, University of South Carolina, unpublished M.S. thesis, 39 p.

McConnell, K.I., and Costello, J.O., 1980, Guide to geology along a traverse through the Blue Ridge and Piedmont provinces of North Georgia, *in* Frey, R.W., ed., Excursions in southeastern geology, v. 1, Geological Society of America, 1980 Annual Meeting, Atlanta, Ga.: Falls Church, Va., American Geological Institute, p. 241–257.

McConnell, K.I., and Griffin, V.S., Jr., 1973, Petrology of the Anderson metagabbro: South Carolina Division of Geology, Geologic Notes, v. 17, no. 3, p. 68–82.

McSween, H.Y., Jr., 1970, Petrology of Charlotte and Kings Mountain belt rocks in northern Greenwood County, South Carolina: South Carolina Division of Geology, Geologic Notes, v. 14, no. 3, p. 57–84, scale 1:28,000.

Medlin, J.H., 1968a, Comparative petrology of two igneous complexes in the South Carolina Piedmont: University Park, The Pennsylvania State University, unpublished Ph.D. dissertation, 328 p.

———1968b, Geologic map of the Mt. Carmel pluton, McCormick County: South Carolina Division of Geology, Open-File Report 9, scale 1:24,000.

Murray, J.B., 1973, Geologic map of Forsyth and north Fulton Counties: Georgia Geologic Survey Regional Map RM–7, scale 1:63,360.

Nelson, A.E., 1982, Geologic map of the Tray Mountain Roadless Area, North Georgia: U.S. Geological Survey Miscellaneous Field Studies Map MF–1347–A, scale 1:30,000.

———1983a, Geologic map of the Blood Mountain Roadless Area, Union and Lumpkin Counties, Georgia: U.S. Geological Survey Miscellaneous Field Studies Map MF–1503–A, scale 1:30,000.

———1983b, Geologic map of the Chattahoochee Roadless Area, Towns, Union, and White Counties, Georgia: U.S. Geological Survey Miscellaneous Field Studies Map MF–1502–A, scale 1:30,000.

———1985, Major tectonic features and structural elements in the northwest part of the Greenville quadrangle, Georgia: U.S. Geological Survey Bulletin 1643, 22 p.

Nelson, A.E., and Gillon, K.A., 1986, Stratigraphic nomenclature in the Richard Russell and Helen thrust sheets, North Georgia, *in* Stratigraphic notes, 1984: U.S. Geological Survey Bulletin 1605–A, p. A59–A62.

Nelson, A.E., and Koeppen, R.P., 1986, Geologic map of the Overflow Roadless Area, Rabun County, Georgia, and Macon County, North Carolina: U.S. Geological Survey Miscellaneous Field Studies Map MF–1618–B, scale 1:48,000.

Nelson, A.E., and Zietz, Isidore, 1983, The Clingman lineament, other aeromagnetic features, and major lithotectonic units in part of the southern Appalachian Mountains: Southeastern Geology, v. 24, no. 3, p. 147–157.

Overstreet, W.C., and Bell, Henry, III, 1965, Geologic map of the crystalline rocks of South Carolina: U.S. Geological Survey Miscellaneous Investigations Map I–413, scale 1:250,000.

Parizek, E.J., 1953, A preliminary investigation of the geology of Clarke County, Georgia: Georgia Geological Survey Bulletin 60, p. 21–31, scale 1:250,000.

Peper, J.D., Lesure, F.G., Cox, L.J., and D'Agostino, J.P., 1991, Geology, geochemistry, and mineral resource assessment of the Southern Nantahala Wilderness and adjacent roadless areas, Rabun and Towns Counties, Georgia, and Clay and Macon Counties, North Carolina: U.S. Geological Survey Bulletin 1883, 30 p., scale 1:48,000.

Peper, J.D., and Moore, W.J., 1988, Geologic map of the Rabun Bald Roadless Area, Chattahoochee National Forest, Rabun County, Georgia: U.S. Geological Survey Miscellaneous Field Studies Map MF–1946–A, scale 1:48,000.

Potter, P.M., 1981, The geology of the Carlton quadrangle, Inner Piedmont, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 89 p.

Price, E.H., 1977, Stratigraphy, structure, and metamorphic history of the southern half of the Nottely Dam quadrangle, Georgia-North Carolina: Athens, University of Georgia, unpublished M.S. thesis, 200 p.

Pyle, E.J., 1986, Petrology and related geologic structures of the Toccoa, Georgia 1:24,000 quadrangle: Athens, University of Georgia, unpublished M.S. thesis, 99 p.

Roper, D.J., and Dunn, D.E., 1970, Geology of the Tamassee, Satolah and Cashiers quadrangles, Oconee County, South Carolina: South Carolina Division of Geology Map Series MS–16, 55 p., scale 1:24,000..

Ross, C.R., III, and Bickford, M.E., 1980, The U-Pb age of zircons from the Elberton Granite, Piedmont of Georgia, *in* Stormer, J.C., Jr., and Whitney, J.W., eds., Geological, geochemical, and geophysical studies of the Elberton batholith, eastern Georgia: [Atlanta, Georgia Geologic Survey] Georgia Geological Society Guidebook 19, p. 52–62.

Rozen, R.W., 1978, The geology of the Elberton East quadrangle, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 110 p.

Sargent, K.A., and Price, Van, Jr., 1982, Evaluation of uranium geochemical anomalies in the Greenville 1°X2° quadrangle (Avalon, Greer, Honea [Path], and northeast Greenville), National Uranium Resource Evaluation Program [prepared for U.S. Department of Energy under contract DE–AC09–76SR00001]: Aiken, S.C., E.I. du Pont de Nemours and Company, Savannah River Laboratory, Report GJBX–211–82, 54 p., figures A-3, B-2, C-2, D-2, and E-1.

Shellebarger, J.E., 1980, A preliminary report on the geology of the Coosa Bald and Jack's Gap quadrangles, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 209 p.

Streckeisen, A.L. (chairman), 1973, Plutonic rocks, classification and nomenclature recommended by the IUGS Subcommission on the Systematics of Igneous Rocks: Geotimes, v. 18, no. 10, Oct. 1973, p. 26–30.

Teague, K.M., and Furcron, A.S., *in* Georgia Department of Mines, Mining, and Geology, 1948, Geology and mineral resources of Rabun and Habersham Counties, Georgia: Atlanta, Georgia Department of Mines, Mining, and Geology, scale about 1:127,000.

Weisenfluh, G.A., 1977, An epizonal trondhjemite-quartz keratophyre complex near Calhoun Falls, South Carolina: Columbia, University of South Carolina, unpublished M.S. thesis, 45 p.

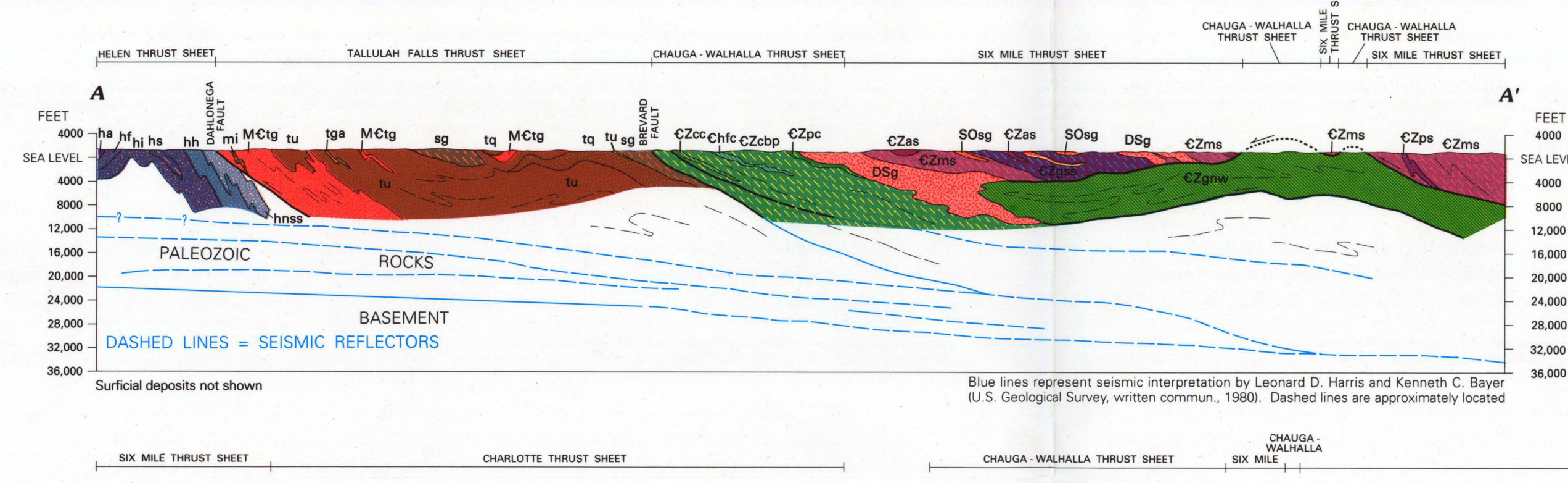
Weisenfluh, G.A., and Snoke, A.W., 1978, An epizonal trondhjemite-quartz keratophyre complex near Calhoun Falls, South Carolina: South Carolina Geological Survey, Geologic Notes, v. 22, no. 2, p. 48–73.

Wells, D.E., 1983, Geology and petrochemistry of the Rock Branch quadrangle, Elbert County, Georgia: Athens, University of Georgia, unpublished M.S. thesis, 163 p.

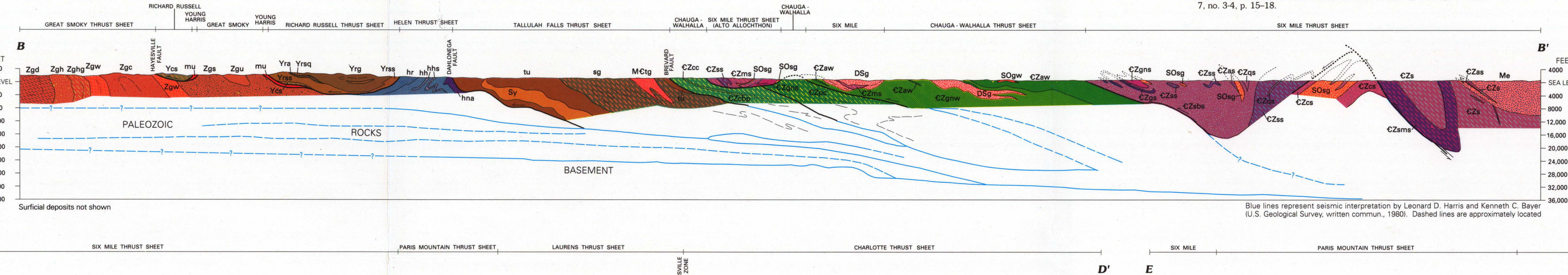
Wenner, D.B., and Spaulding, J.D., 1980, U-Th geochemistry of the Elberton pluton, *in* Stormer, J.C., Jr., and Whitney, J.A., eds., Geological, geochemical, and geophysical studies of the Elberton batholith, eastern Georgia: [Atlanta, Georgia Geologic Survey] Georgia Geological Society Guidebook 19, p. 44–50, figure 1.

Wooten, R.M., 1980, Geology of the southern half of the Hayesville quadrangle, North Carolina: Athens, University of Georgia, unpublished M.S. thesis, 254 p.

Yeates, W.S., McCallie, S.W., and King, F.P., 1896, A preliminary report on a part of the gold deposits of Georgia: Georgia Geological Survey Bulletin 4–A, 542 p.

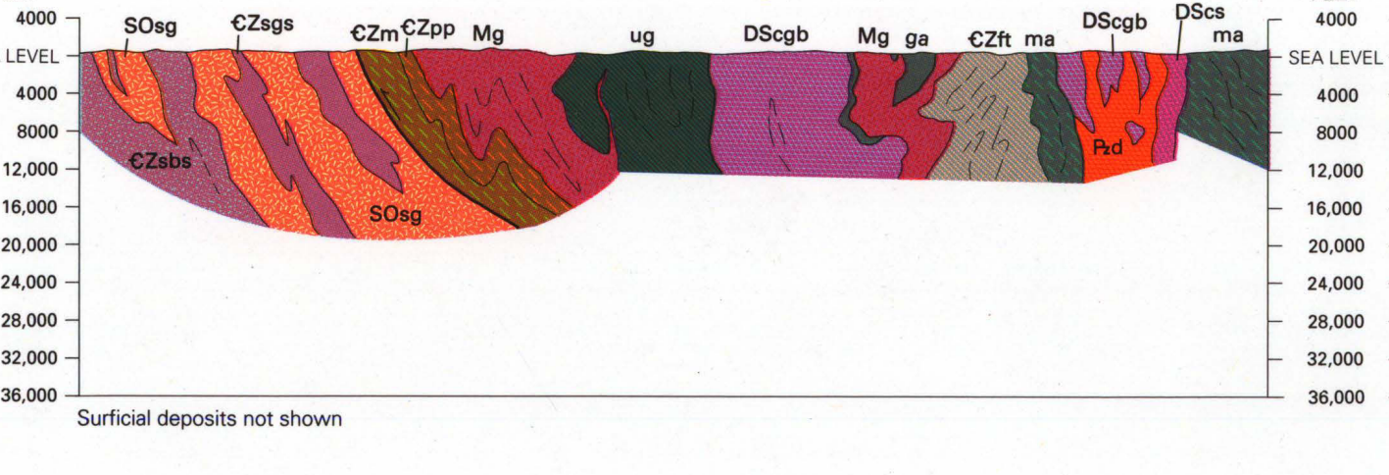

HELEN THRUST SHEET
TALLULAH FALLS THRUST SHEET
CHAUGA - WALHALLA THRUST SHEET
SIX MILE THRUST SHEET
A
A'
FEET
4000
SEA LEVEL
PALEOZOIC
ROCKS
BASEMENT
DASHED LINES = SEISMIC REFLECTORS

Surficial deposits not shown

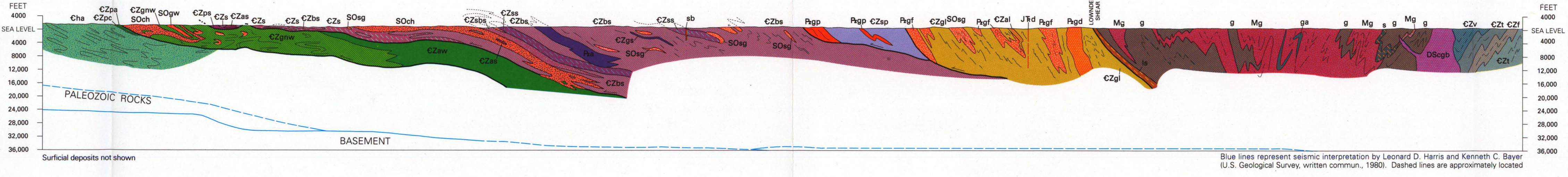


Blue lines represent seismic interpretation by Leonard D. Harris and Kenneth C. Bayer (U.S. Geological Survey, written commun., 1980). Dashed lines are approximately located

Surficial deposits not shown

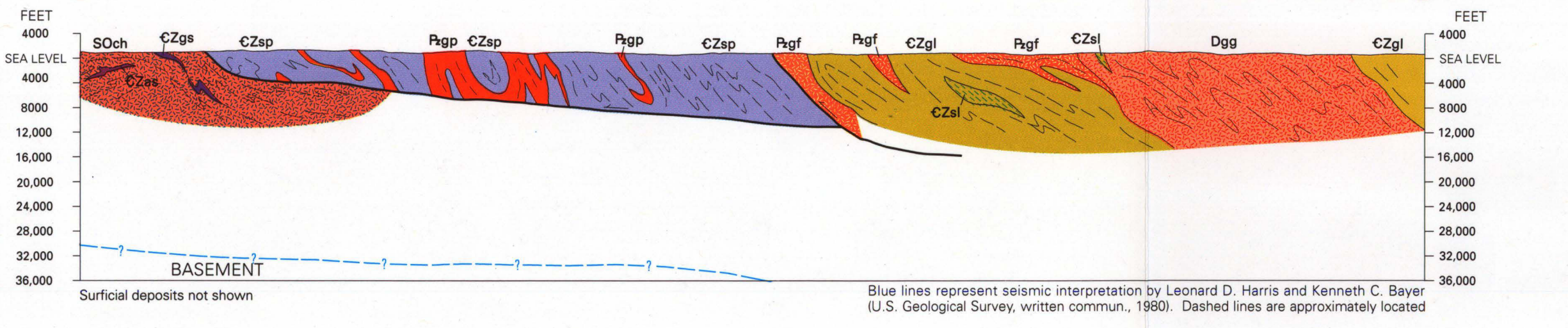


Surficial deposits not shown



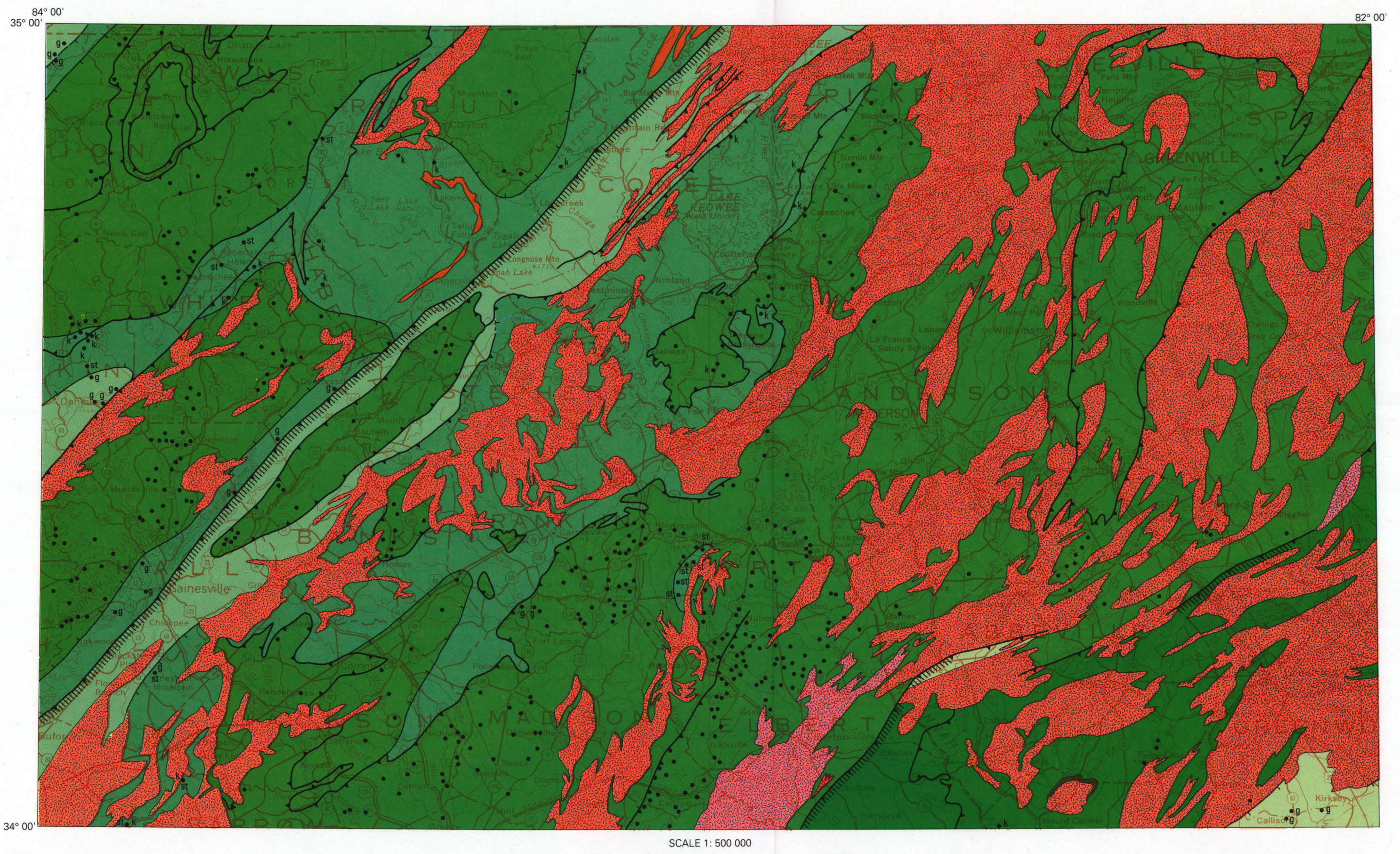
Blue lines represent seismic interpretation by Leonard D. Harris and Kenneth C. Bayer (U.S. Geological Survey, written commun., 1980). Dashed lines are approximately located

Surficial deposits not shown



Blue lines represent seismic interpretation by Leonard D. Harris and Kenneth C. Bayer (U.S. Geological Survey, written commun., 1980). Dashed lines are approximately located

Surficial deposits not shown



MAP OF THE GREENVILLE 1°X2° QUADRANGLE SHOWING PALEOZOIC REGIONAL METAMORPHISM

EXPLANATION

REGIONAL METAMORPHISM

Metamorphic zones

(Shown only where knowledge of pelitic assemblages is adequate)

- 🟩 **Garnet**
- 🟩 **Staurolite-kyanite**
- 🟩 **Sillimanite-muscovite**

Metamorphic facies

- 🟩 **Undivided greenschist and epidote amphibolite**
- 🟩 **Amphibolite**

CONTACT METAMORPHISM

- ■ **Hornfels**—Includes pyroxene hornfels, hornblende hornfels, sillimanite-muscovite-chloritoid hornfels, and cordierite(?) hornfels

Plutonic rocks

(Shown where extensive and where they obscure faults)

- ▨ **Late Paleozoic**—Postmetamorphic
- ▨ **Middle to early Paleozoic**—Premetamorphic, synmetamorphic, and late metamorphic
- 🟥 **Middle Proterozoic**—Premetamorphic; synorogenic in Grenville orogeny

MAP SYMBOLS

Contact

Thrust fault—Sawteeth on upper plate; dashed where inferred

Isograd—Dashed where inferred; hachures on higher temperature-pressure side

▨ **Zone of concentrated diaphthoresis**

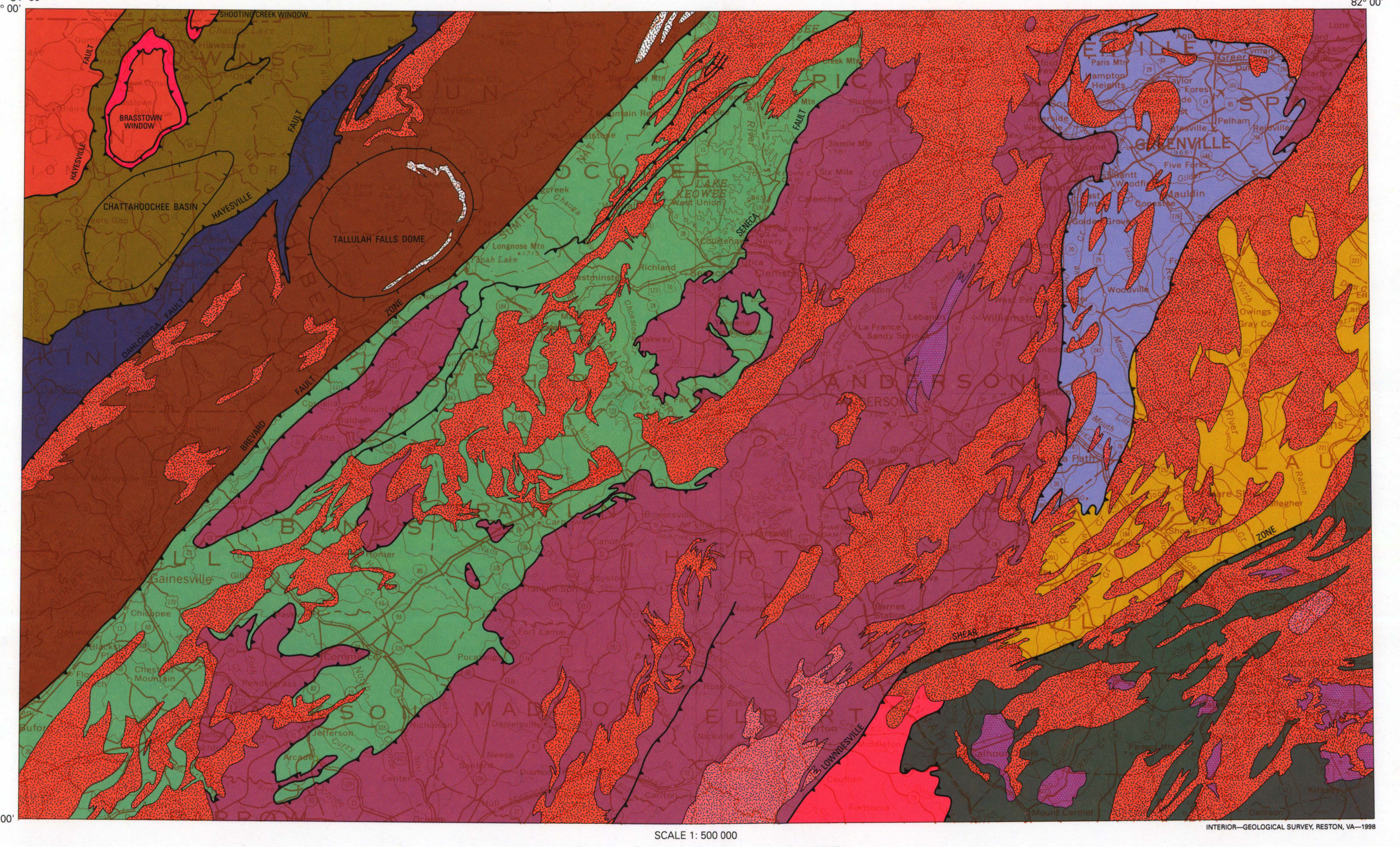
Metamorphic mineral localities identified in outcrop or bedrock sample

- • Sillimanite[1]
- •g Other minerals—**k**, kyanite[2]; **st**, staurolite; **g**, garnet[3]. Queried where uncertain

[1] Sillimanite localities in the Inner Piedmont are shown only near the margins of the zone. Fibrolitic sillimanite occurs rarely in schist adjacent to pegmatite dikes in the staurolite-kyanite zone.

[2] A single occurrence of rocks assigned to the sillimanite zone at Earles Grove in Oconee County, S.C., is unusual. There, small amounts of coarse-grained kyanite-quartz rock are surrounded by garnetiferous sillimanite-mica schist of the Six Mile thrust sheet.

[3] Garnet localities are shown only in areas where staurolite, kyanite, and sillimanite appear to be absent.



INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1998

MAP OF THE GREENVILLE 1°X2° QUADRANGLE SHOWING DISTRIBUTION OF UNDIVIDED GRANITIC GNEISS AND IGNEOUS ROCKS

EXPLANATION

STACKING ORDER OF THRUST SHEETS

Blue Ridge thrust stack

- 🟫 **Tallulah Falls thrust sheet**
- 🟫 **Richard Russell thrust sheet**
- 🟥 **Young Harris thrust sheet**
- 🟪 **Helen thrust sheet**
- 🟥 **Great Smoky thrust sheet**

Inner Piedmont thrust stack

- 🟨 **Laurens thrust sheet**
- 🟪 **Paris Mountain thrust sheet**
- 🟪 **Six Mile thrust sheet**
- 🟩 **Chauga-Walhalla thrust sheet**

Southeast of Lowndesville shear zone

- ■ **Charlotte thrust sheet**
- 🟥 **Mafic-ultramafic thrust sheet**

Other units

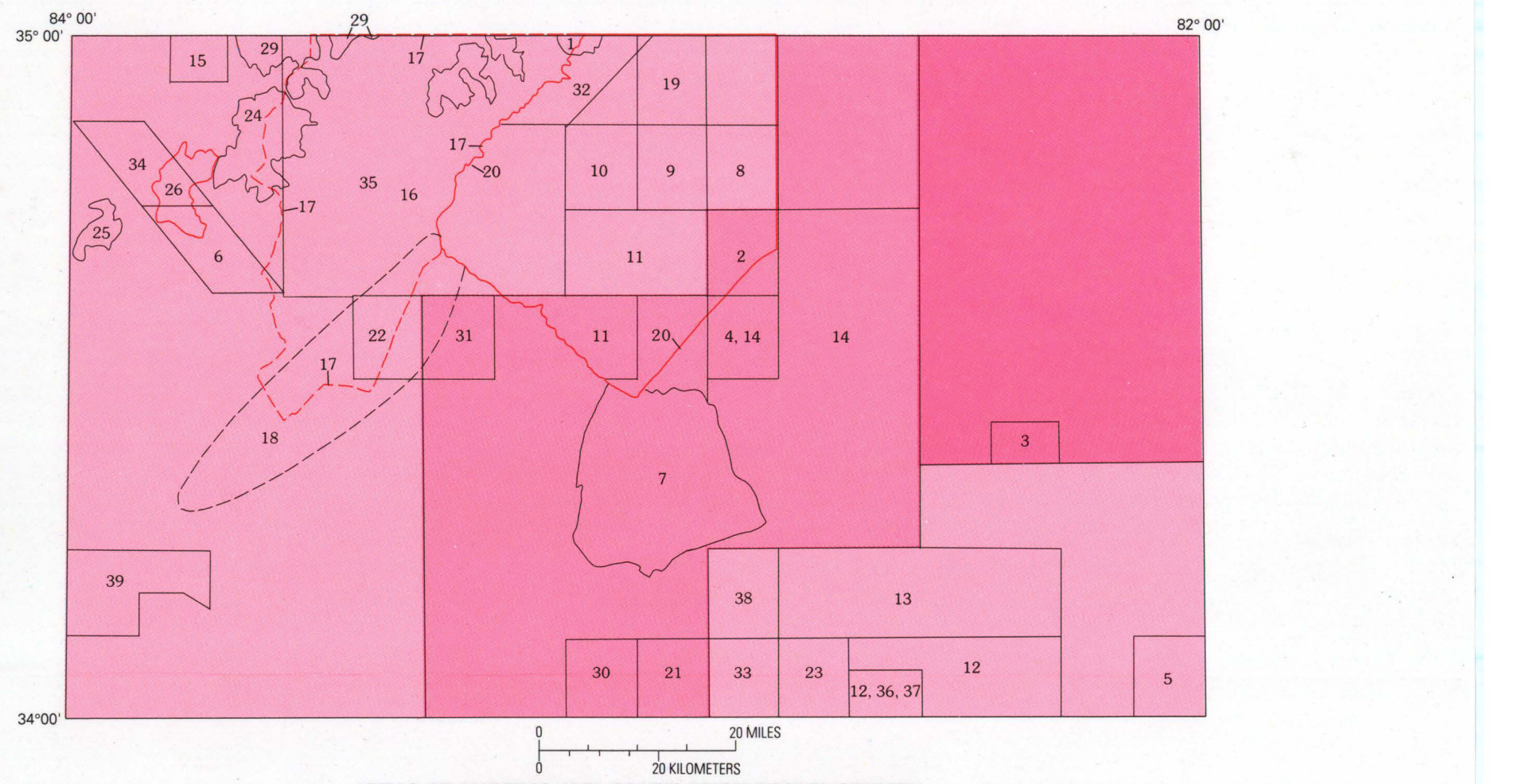
- ▨ **Undivided granite or granite gneiss**
- ▨ **Postmetamorphic granite**
- ▨ **Gabbro, metagabbro, and related rocks**
- ▨ **Gneiss of Grenville basement**

MAP SYMBOLS

Contact

Thrust fault—Sawteeth on upper plate; dashed where inferred

Generalized dip of foliation



AREAS OF MAPPING AND COMPILATION RESPONSIBILITY

- 🟥 Nelson
- 🟥 Horton
- 🟥 Clarke

SOURCES OF GEOLOGIC DATA

1. Bell and Luce, 1983
2. Brown and Cazeau, 1964
3. Bynum, 1982
4. Cazeau, 1966
5. Chalcraft and Lawrence, 1979
6. Gillon, 1982
7. Grant, 1958
8. Griffin, 1967
9. Griffin, 1973
10. Griffin, 1974b
11. Griffin, 1975
12. Griffin, 1978
13. Griffin, 1979
14. Griffin, 1981
15. Hartley, 1973
16. R.D. Hatcher, Jr., unpub. data, 1987
17. Hatcher, 1971a
18. Hatcher, 1978b
19. Hatcher and Acker, 1984
20. Hatcher and Griffin, 1969
21. Hess, 1979
22. Hopson, 1984
23. Legato, 1986
24. Nelson, 1982
25. Nelson, 1983b
26. Nelson, 1983a
27. Nelson and Koeppen, 1986
28. Peper and Moore, 1988
29. Peper and others, 1991
30. Potter, 1981
31. Pyle, 1986
32. Roper and Dunn, 1970
33. Rozen, 1978
34. Shellebarger, 1980
35. Teague and Furcron, 1948
36. Weisenfluh, 1977
37. Weisenfluh and Snoke, 1978
38. Wells, 1983
39. R.H. Wooten, unpub. data, 1981

GEOLOGIC MAP OF THE GREENVILLE 1°×2° QUADRANGLE, SOUTH CAROLINA, GEORGIA, AND NORTH CAROLINA

By

Arthur E. Nelson, J. Wright Horton, Jr., and James W. Clarke
1998