

Appendix 1. State Geologic Maps Bibliography

The citations presented here are for the paper versions of the State geologic maps with a U.S. Geological Survey (USGS) National Geologic Map Database (NGMDB) URL link provided for convenience. The sources for all data in the State Geologic Map Compilation (SGMC) are the original USGS Preliminary Integrated Geologic Map Databases (PIGMD) unless otherwise noted. Please see the PIGMD citation provided for more detailed geologic map source information.

Alabama (AL)—Scale 1:250,000

Osbourne, W.E., Szabo, M.W., Neathery, T.L., and Copeland, C.W., Jr., 1988, Geologic map of Alabama—Northeast sheet: Geological Survey of Alabama Special Map 220, scale 1:250,000.

Szabo, M.W., and Copeland, C.W., Jr., 1988, Geologic map of Alabama—Southeast sheet: Geological Survey of Alabama Special Map 220, scale 1:250,000.

Szabo, M.W., and Copeland, C.W., Jr., 1988, Geologic map of Alabama—Southwest sheet: Geological Survey of Alabama Special Map 220, scale 1:250,000.

Szabo, M.W., Osbourne, W.E., and Copeland, C.W., Jr., 1988, Geologic map of Alabama—Northwest sheet: Geological Survey of Alabama Special Map 220, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_55859.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#AL>.

Arizona (AZ)—scale 1:1,000,000

Richard, S.M., Reynolds, S.J., Spencer, J.E., and Pearthree, P.A., 2000, Geologic map of Arizona: Arizona Geological Survey Map 35, 1 sheet, scale 1:1,000,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_34746.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1305/#AZ>.

Arkansas (AR)—scale 1:500,000

Haley, B.R., assisted by Glick, E.E., Bush, W.V., Clardy, B.F., Stone, C.G., Woodward, M.B., and Zachry, D.L., 1993, Geologic map of Arkansas, U.S. Geological Survey Special Geologic Map, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16308.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#AR>.

California (CA)—scale 1:750,000

The PIGMD spatial data (geology, structure, and points) have been replaced with the newer updated version from the California Geologic Survey; however, the SGMC table attributions have been retained from the PIGMD.

Jennings, C.W., with modifications by Gutierrez, C., Bryant, W., Saucedo, G., and Wills, C., 2010, Geologic map of California, Version 2.0 (California Geological Survey 150th Anniversary Edition), Department of Conservation, California Geological Survey: California Geologic Data Map Series, GDM No. 2, scale 1:750,000, accessed July 2017 at ftp://ftp.consrv.ca.gov/pub/dmg/rgmp/Published_GIS_Data/GDM_002_GMC_750k_v2/GDM_002_GMC_750k_v2_GIS.zip.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_96750.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1305/#CA>.

Colorado (CO)—scale 1:500,000

Tweto, Ogden, 1979, Geologic map of Colorado: U.S. Geological Survey, scale 1:500,000.

NGMD—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_68589.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#CO>.

Connecticut (CT)—scale 1:50,000

Rodgers, J., 1985, Bedrock geological map of Connecticut: Connecticut Geological and Natural History Survey, Connecticut Natural Resources Atlas Series, 2 sheets, scale 1:125,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_54245.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#CT>.

Delaware (DE)—scale 1:297,500

Spoljaric, N., and Jordan, R.R., 1966, Generalized geologic map of Delaware: Delaware Geological Survey Special Publication 4, scale 1:297,500.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_86696.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1325/#DE>.

Florida (FL)—scale 1:750,000

Scott, T. M., Campbell, K. M., Rupert, F. R., Arthur, J. D., Missimer, T. M., Lloyd, J. M., Yon, J. W., and Duncan, J. G., 2001, Geologic map of the State of Florida: Florida Department of Environmental Protection, Florida Geological Survey Map Series 146, scale 1:750,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_54101.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#FL>.

Georgia (GA)—scale 1:500,000

Lawton, D.E., Moye, F.J., Murray, J.B., O'Connor, B.J., Penley, H.M., Sandrock, G.S., Marsalis, W.E., Friddell, M.S., Hetrick, J.H., Huddleston, P.F., Hunter, R.E., Mann, W.R., Martin, B.F., Pickering, S.M., Schneeberger, F.J., and Wilson, J.D., 1976, Geologic map of Georgia: Georgia Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16532.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#GA>.

Idaho (ID)—scale 1:750,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Lewis, R.S., Link, P.K., Stanford, L.R., and Long, S.P., Geologic map of Idaho, 2012, Idaho Geological Survey Geologic Map 9 (M-9); scale 1:750,000, accessed September 2012 at http://www.idahogeology.org/Products/reverselook.asp?switch=title&value=Geologic_Map_of_Idaho.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_97750.htm.

Illinois (IL)—scale 1:500,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Kolata, D.R., comp., 2005, Bedrock geology of Illinois: Champaign, Ill., Illinois State Geological Survey Illinois Map Series 14, scale 1:500,000, accessed January 2012 at <https://clearinghouse.isgs.illinois.edu/data/geology/bedrock-geology-2005>.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_87181.htm.

Indiana (IN)—scale 1:500,000

Gray, H.H., Ault, C.H., and Keller, S.J., 1987, Bedrock geologic map of Indiana: Indiana Geological Survey Miscellaneous Map 48, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16538.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2004/1355/#IN>.

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Iowa (IA)—scale 1:500,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Witzke, B.J., Anderson, R.R., and Pope, J.P., 2010, Bedrock geologic map of Iowa: Iowa Geological Survey Open-File Map OFM-2010-01, Scale 1:500,000, accessed November 2011 at ftp://ftp.igsb.uiowa.edu/gis_library/IA_state/Geologic/Bedrock/Bedrock_Geologic_Map.zip.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_96753.htm.

Kansas (KS)—scale 1:500,000

Ross, J.A., 1991, Geology map of Kansas: Kansas Geological Survey Map M-23, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16542.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#KS>.

Kentucky (KY)—scale 1:500,000

Noger, M.C., 1988, Geologic map of Kentucky: U.S. Geological Survey in cooperation with the Kentucky Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16355.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1324/#KY>.

Louisiana (LA)—scale 1:500,000

Snead, J.I., and McCulloh, R.P., 1984, Geologic map of Louisiana: Louisiana Geological Survey Geologic Map 5, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_39755.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#LA>.

Maine (ME)—scale 1:500,000

Osberg, P.H., Hussey, A.M., II, and Boone, G.M., 1985, Bedrock geologic map of Maine: Maine Geological Survey Geologic Map Series BGMM, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16547.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#ME>.

Maryland (MD)—scale 1:250,000

Cleaves, E.T., Edwards, Jonathan, Jr., and Glaser, J.D., 1968, Geologic map of Maryland: Maryland Geological Survey, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16548.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1325/#MD>.

Massachusetts (MA)—scale 1:250,000

Zen, E-An, Goldsmith, G.R., Ratcliffe, N.L., Robinson, Peter, and Stanley, R.S., 1983, Bedrock geologic map of Massachusetts: U.S. Geological Survey Monograph series, 3 sheets, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16357.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#MA>.

Michigan (MI)—scale 1:500,000

Milstein, R.L. comp., 1987, Bedrock geology of southern Michigan: Michigan Department of Natural Resources Geological Publication BG-01, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_71887.htm.

Reed, R.C., and Daniels, Jennifer, comps., 1987, Bedrock geology of northern Michigan: Michigan Department of Natural Resources, Geological Survey Division, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_71888.htm.

Sims, P.K., 1992, Geologic map of Precambrian rocks, southern Lake Superior region, Wisconsin and northern Michigan: U.S. Geological Survey Miscellaneous Investigations Map I-2185, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_10177.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2004/1355/#MI>.

Minnesota (MN)—scale 1:500,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Jirsa, M.A., Boerboom, T.J., Chandler, V.W., Mossler, J.H., Runkel, A.C., and Setterholm, D.R., 2011, S-21 geologic map of Minnesota—Bedrock geology: Minnesota Geological Survey, scale 1:500,000, accessed March 2012 at <http://conservancy.umn.edu/handle/11299/101466>.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_96821.htm.

Mississippi (MS)—scale 1:500,000

Moore, W.H., and Bicker, A.R., Jr., comps., 1969, Geologic map of Mississippi: Mississippi Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16555.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#MS>.

Missouri (MO)—scale 1:500,000

Middendorf, M.A., 2003, Geologic map of Missouri—Sesquicentennial Edition: Missouri Department of Natural Resources, Division of Geology and Land Survey, Missouri State Geologic Maps SGM-2003, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_81881.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#MO>.

Montana (MT)—scale 1:500,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Vuke, S.M., Porter, K.W., Lonn, J.D., and Lopez, D.A., 2007, Geologic map of Montana—Compact disc: Montana Bureau of Mines and Geology Geologic Map 62-C, 73 p., 2 sheets, scale 1:500,000, accessed Summer 2012 at http://www.mbm.mtech.edu/mbmgcat/public/ListCitation.asp?pub_id=30080&. This map was digitized in 2012 as a result of a contract between USGS and the Montana Bureau of Mines and Geology.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_81651.htm.

Nebraska (NE)—scale 1:1,000,000

Burchett, R.R., 1986, Geologic bedrock map of Nebraska: Nebraska Geological Survey, Conservation and Survey Division, University of Nebraska-Lincoln, scale 1:1,000,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_39227.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#NE>.

Nevada (NV)—scale 1:250,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Crafford, A.E.J., 2007, Geologic map of Nevada: U.S. Geological Survey Data Series 249, 1 CD-ROM, 46 p., 1 plate, scale 1:250,000, accessed November 2013 at <https://pubs.usgs.gov/ds/2007/249/>.

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NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_81584.htm.

New Hampshire (NH)—scale 1:250,000

Lyons, J.B., Bothner, W.A., Moench, R.H., and Thompson, J.B., Jr., 1997, Bedrock geologic map of New Hampshire: U.S. Geological Survey Special Map, 2 sheets, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_37338.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#NH>.

Note that the new geologic map of Vermont by Ratcliff and others (2011) overlaps with portions of New York and New Hampshire and the newer Vermont data for structure and geology are used in these areas.

New Jersey (NJ)—scale 1:100,000

Drake, A.A., Jr., Volkert, R.A., Monteverde, D.H., Herman, G.C., Houghton, H.F., Parker, R.A., and Dalton, R.F., 1996, Bedrock geologic map of northern New Jersey: U.S. Geological Survey Miscellaneous Investigations Series Map I-2540-A, 2 sheets, scale 1:100,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_13025.htm.

Owens, J.P., Sugarman, P.J., Sohl, N.F., Parker, R.A., Houghton, H.F., Volkert, R.A., Drake, A.A., Jr., and Orndorff, R.C., 1998, Bedrock geologic map of central and southern New Jersey: U.S. Geological Survey Miscellaneous Investigations Series Map I-2540-B, 4 sheets, scale 1:100,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_19458.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#NJ>.

New Mexico (NM)—scale 1:500,000

Green, G.N., and Jones, G.E., 1997, Digital geologic map of New Mexico in Arc/Info export format: U.S. Geological Survey Open-File Report OF-97-52, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_22974.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#NM>.

New Mexico Bureau of Geology and Mineral Resources, 2003, Geologic map of New Mexico: New Mexico Bureau of Geology and Mineral Resources, scale 1:500,000, accessed August 2011 at <https://geoinfo.nmt.edu/publications/maps/geologic/state/home.cfm>.

The PIGMD data was updated with the 2003 map in the SGMC by John Horton in 2012 (heads up digitizing).

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_59219.htm.

New York (NY)—scale 1:250,000

Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970, Geologic map of New York State, consisting of 5 sheets—Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson: New York State Museum and Science Service Map and Chart Series 15, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_98670.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1325/#NY>.

Note that the new geologic map of Vermont by Ratcliff and others (2011) overlaps with portions of New York and New Hampshire and the newer Vermont data for structure and geology are used in these areas.

North Carolina (NC)—scale 1:250,000

Rhodes, T.S., and Conrad, S.G., 1985, Geologic map of North Carolina: North Carolina Department of Natural Resources and Community Development, Division of Land Resources, and the North Carolina Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_55091.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#NC>.

North Dakota (ND)—scale 1:670,000

North Dakota Geological Survey, 2001, NDHUB.GeologyBedrock, Geologic bedrock map of North Dakota, digital version of Bluemle, John P., 1983, Geologic and topographic bedrock map of North Dakota: North Dakota Geological Survey Miscellaneous Map 25, scale 1:670,000, accessed September 2014 at <https://gishubdata.nd.gov/dataset/bedrock-geology>.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16522.htm.

In the SGMC, the Bluemle (1983) bedrock map replaces the surficial map by Clayton and others (1980) that was used in the PIGMD. However, the linear structural features were retained from the PIGMD.

Structural features only—Clayton, Lee, Moran, S.R., Bluemle, J.P., and Carlson, C.G., 1980, Geology map of North Dakota: North Dakota Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16520.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#ND>.

Ohio (OH)—scale 1:500,000

Slucher, E.R., Swinford, E.M., Larsen, G.E., Schumacher, G.A., Shrake, D.L., Rice, C.L., Caudill, M.R., and Rea, R.G., comps., and Powers, D.M., cartographic comp., 2006, Bedrock geologic map of Ohio: Ohio Geological Survey Map BG-1, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_82513.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1324/#OH>.

Oklahoma (OK)—scale 1:250,000

Heran, W.D., Green, G.N., and Stoesser, D.B., comps., 2003, A digital geologic map database for the State of Oklahoma: U.S. Geological Survey Open-File Report 03-247, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_55294.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#OK>.

Oregon (OR)—scale 1:500,000

Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U.S. Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16259.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1305/#OR>.

Pennsylvania (PA)—scale 1:250,000

Berg, T.M., Edmunds, W.E., Geyer, A.R., Glover, A.D., Hoskins, D.M., MacLachlan, D.B., Root, S.I., Sevon, W.D., and Socolow, A.A., 1980, Geologic map of Pennsylvania (2d ed.): Pennsylvania Geological Survey Map 1, 3 sheets, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_34341.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1325/#PA>.

Rhode Island (RI)—scale 1:100,000

Hermes, O.D., Gromet, L.P., Murray, D.P., Hamidzada, N.A., Skehan, J.W., and Mosher, S., 1994, Bedrock geologic map of Rhode Island: Rhode Island Geological Survey Rhode Island Map Series No. 1, scale 1:100,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_19719.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2006/1272/#RI>.

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South Carolina (SC)—scale 1:500,000

No official State geologic paper map exists other than a very generalized 1:1,000,000 geologic map; see reference below for sources used in this compilation.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1323/#SC>.

South Dakota (SD)—scale 1:500,000

Western half of state—Martin, J.E., Sawyer, J.F., Fahrenbach, M.D., Tomhave, D.W., and Schulz, L.D., 2004, Geologic map of South Dakota: South Dakota Geological Survey G-10, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_72317.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#SD>.

Eastern half of state—Tomhave, D.W., and Schulz, L.D., 2004, Bedrock geologic map showing configuration of the bedrock surface in South Dakota east of the Missouri River: South Dakota Geological Survey G-09, scale 1:500,000, accessed May 2012 at http://www.sdgs.usd.edu/pubs/other/esdbedrock_20040630.zip.

The Tomhave and Schulz (2004) map is used in the SGMC and replaces the Martin and others (2004) map used in the PIGMD for the Eastern half of the state (east of the Missouri River).

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_96370.htm.

Tennessee (TN)—scale 1:250,000

Hardeman, W.D., Miller, R.A., and Swingle, G.D., 1966, Geologic map of Tennessee: Tennessee Division of Geology, 4 sheets, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_91768.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1324/#TN>.

Texas (TX)—scale 1:500,000

Barnes, V.E., Hartmann, Barbara, and Scranton, D.F., 1992, Geologic map of Texas: University of Texas at Austin, Bureau of Economic Geology, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_68390.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#TX>.

Utah (UT)—scale 1:500,000

Hintze, L.F., Willis, G.C., Laes, D.Y.M., Sprinkel, D.A., and Brown, K.D., 2000, Digital geologic map of Utah: Utah Geological Survey Map 179DM, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_67350.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1305/#UT>.

Vermont (VT)—scale 1:100,000

This is a new geologic map addition to the SGMC that replaces what was used in the PIGMD.

Ratcliffe, N.M., Stanley, R.S., Gale, M.H., Thompson, P.J., and Walsh, G.J., 2011, Bedrock geologic map of Vermont: U.S. Geological Survey Scientific Investigations Series Map 3184, 3 sheets, scale 1:100,000, accessed May 2012 at <http://dec.vermont.gov/geological-survey/publication-gis/VTrock>.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_96860.htm.

Virginia (VA)—scale 1:500,000

Virginia Division of Mineral Resources, 1993, Geologic map of Virginia: Virginia Division of Mineral Resources, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_34878.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1325/#VA>.

Washington (WA)—scale 1:500,000

Hunting, M.T., Bennett, W.A.G., Livingston, V.E., Jr., and Moen, W.S., 1961, Geologic map of Washington: Washington Division of Mines and Geology, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_30777.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1305/#WA>.

West Virginia (WV)—scale 1:250,000

Cardwell, D.H., Erwin, R.B., and Woodward, H.P., 1968, Geologic map of West Virginia: West Virginia Geological and Economic Survey Map 1, scale 1:250,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_13205.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1324/#WV>.

Wisconsin (WI)—scale 1:500,000–1:1,000,000

Mudrey, M.G., Jr., Brown, B.A., and Greenberg, J.K., 1982, Bedrock geologic map of Wisconsin: Wisconsin Geological and Natural History Survey State Map 18, scale 1:1,000,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_49339.htm.

Sims, P.K., 1992, Geologic map of Precambrian rocks, southern Lake Superior region, Wisconsin and northern Michigan: U.S. Geological Survey Miscellaneous Investigations Series Map I-2185, scale: 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_10177.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2004/1355/#WI>.

Wyoming (WY)—scale 1:500,000

Love, J.D., and Christiansen, A.C., 1985, Geologic map of Wyoming: U.S. Geological Survey, scale 1:500,000.

NGMDB—Available at https://ngmdb.usgs.gov/Prodesc/proddesc_16366.htm.

PIGMD—Available at <https://pubs.usgs.gov/of/2005/1351/#WY>.