



COMMONWEALTH OF VIRGINIA
VIRGINIA DEPARTMENT OF ENERGY

1100 Bank Street (8th Floor), Richmond, VA 23219
Office: (804) 692-3200 | TDD: (800) 828-1120

FOR IMMEDIATE RELEASE

August 14, 2024

Tarah Kesterson

(276) 356-3405

tarah.kesterson@energy.virginia.gov

Media Alert: Low-level fixed-wing, helicopter flights to image geology over parts of Virginia, West Virginia, North Carolina, South Carolina

USGS Low-level Fixed Wing and Helicopter Surveying Begin Late August

RESTON, Va. — Low-level airplane and helicopter flights are planned over broad regions of North Carolina, South Carolina, Virginia, and West Virginia to image geology using airborne geophysical technology. The airborne survey will be conducted from August of 2024 for approximately one year, weather and wildfire restrictions permitting.

The survey is being coordinated by the U.S. Geological Survey with the goal of providing images that expand the fundamental knowledge of geology across the region. The survey area was chosen due to its both known and suspected mineral occurrences.

The survey will help map rocks and minerals at the surface across vast regions that may have limited outcrop due to vegetation and unconsolidated rock cover. It will also help map subsurface geology, where some rocks can be located hundred to thousands of meters (more than 3280 feet) below the surface based on their magnetic signature. Such mapping can improve the understanding of the geologic framework within which the potential mineral resource may occur.

Flights will cover areas within the following counties:

North Carolina:

Alamance, Alexander, Anson, Beaufort, Bertie, Bladen, Brunswick, Burke, Cabarrus, Caldwell, Carteret, Caswell, Catawba, Chatham, Cleveland, Columbus, Craven, Cumberland, Davidson, Davie, Duplin, Durham, Edgecombe, Franklin, Forsyth, Gaston, Granville, Greene, Guilford, Halifax, Harnett, Hoke, Iredell, Johnston, Jones, Lee, Lenoir, Lincoln, Martin, McDowell, Mecklenburg, Montgomery, Moore, Nash, New Hanover, Onslow, Orange, Pender, Person, Pitt,

Richmond

1100 Bank St., 8th Floor
Richmond, VA 23219
(804) 692-3200

Big Stone Gap

3405 Mountain Empire Rd.
Big Stone Gap, VA 24219
(276) 523-8100

Charlottesville

900 Natural Resources Dr.
Charlottesville, VA 22903
(434) 951-6340

Polk, Randolph, Richmond, Robeson, Rockingham, Rowan, Rutherford, Sampson, Scotland, Stanly, Stokes, Surry, Union, Vance, Wake, Warren, Wayne, Wilkes, Wilson, and Yadkin.

South Carolina: Cherokee, Chester, Chesterfield, Clarendon, Darlington, Dillon, Fairfield, Florence, Georgetown, Horry, Kershaw, Lancaster, Lee, Marion, Marlboro, Spartanburg, Sumter, Union, Williamsburg, York.

Virginia: Albemarle, Alleghany, Amelia, Amherst, Appomattox, Augusta, Bath, Bedford, Botetourt, Brunswick, Buena Vista, Buckingham, Campbell, Charlotte, Charlottesville, Covington, Craig, Cumberland, Danville, Fluvanna, Franklin, Goochland, Greene, Halifax, Harrisonburg, Henry, Highland, Lexington, Louisa, Lunenburg, Lynchburg, Madison, Martinsville, Mecklenburg, Nelson, Nottoway, Orange, Patrick, Pittsylvania, Powhatan, Prince Edward, Roanoke, Roanoke City, Rockbridge, Rockingham, Salem, Staunton, and Waynesboro.

West Virginia: Grant, Greenbrier, Hardy, Monroe, Pendleton, Pocahontas, and Randolph. The new geophysical data will be processed to develop high-resolution three-dimensional representations of bedrock composition and structure to depths more than 3,280 feet (1 kilometer) below the surface.

The 3D models and maps are important for improving our understanding of critical mineral and geothermal resource potential, water resources, groundwater pathways near legacy mining areas, parameters for infrastructure and land use planning, and potential risks of naturally occurring radon.

The flights will be based out of several airports within the survey areas. The flights could shift to other parts of the survey area as necessitated by adverse flying conditions.

Instruments on the airplane will measure variations in the Earth's magnetic field and natural, low-level radiation created by different rock types beneath vegetation and up to several miles below the surface. This information will help researchers develop geologic maps in three dimensions. Applications include evaluating natural resources such as critical minerals and water, preparing for natural hazards such as earthquakes and radon, and characterizing legacy mining areas.

The USGS is contracting with [Dewberry](#) and [Sander Geophysics Ltd. \(SGL\)](#) to collect data.

The aircraft will fly along pre-planned flight paths relatively low to the ground at about 300 feet (100 meters) above the surface. The ground clearance will be increased to 1,000 feet (300+ meters) over populated areas and will comply with Federal Aviation Administration (FAA) regulations.

The aircraft will be equipped with an elongated "boom" that extends either in front of or behind the main cabin that houses sensors. These scientific instruments are completely passive with no emissions that pose a risk to humans, animals, or plant life. No photography or video data will be collected. The data collected will be made freely available to the public once complete. The aircraft will be flown by experienced pilots who are specially trained and approved for low-level flying. These pilots work with the FAA to ensure flights are safe and in accordance with U.S. law. The surveys will be conducted during daylight hours only.

The survey fits into a broader effort by the [USGS Earth Mapping Resources Initiative](#), the North Carolina Geological Survey, the South Carolina Department of Natural Resources, The Virginia Department of Energy, and the West Virginia Geological and Economic Survey. Funding by the [Bipartisan Infrastructure Law](#) has facilitated coverage of such a large area.



To read more about this project and others, visit our [newsroom](#).

More information about the USGS Earth Mapping Resource Initiative (Earth MRI) can be found [here](#). To learn more about how the USGS is investing the resources from the Bipartisan Infrastructure Law, visit our [website](#). To learn more about USGS mineral-resource and commodity information, please visit our [website](#).

