

# VIRGINIA ACTS OF ASSEMBLY - 2025 SESSION

## CHAPTER 109

*An Act to amend and reenact §§ 1-600 through 1-603, 1-605, 1-606, 1-608, and 45.2-542 of the Code of Virginia, relating to Virginia coordinate systems; federal updates.*

[S 1173]

Approved March 19, 2025

**Be it enacted by the General Assembly of Virginia:**

**1. That §§ 1-600 through 1-603, 1-605, 1-606, 1-608, and 45.2-542 of the Code of Virginia are amended and reenacted as follows:**

**§ 1-600. Virginia coordinate systems designated.**

The systems of plane coordinates that have been established by the National Ocean Service/National Geodetic Survey or its successors for defining and stating the positions or locations of points on the surface of the earth within the Commonwealth are to be known and designated as the "Virginia Coordinate System of 1927," ~~and~~ the "Virginia Coordinate System of 1983," ~~and the "Virginia Coordinate System of 2022."~~

**§ 1-601. North and South Zones.**

For the purpose of the use of the Virginia Coordinate System of 1927 ~~and~~, the Virginia Coordinate System of 1983, ~~and the Virginia Coordinate System of 2022~~, the Commonwealth is divided into a "North Zone" and a "South Zone."

The area now included in the following counties and cities shall constitute the North Zone: Arlington, Augusta, Bath, Caroline, Clarke, Culpeper, Fairfax, Fauquier, Frederick, Greene, Highland, King George, Loudoun, Madison, Orange, Page, Prince William, Rappahannock, Rockingham, Shenandoah, Spotsylvania, Stafford, Warren, and Westmoreland Counties and the Cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Harrisonburg, Manassas, Manassas Park, Staunton, Waynesboro, and Winchester.

The area now included in the following counties and cities shall constitute the South Zone: Accomack, Albemarle, Alleghany, Amelia, Amherst, Appomattox, Bedford, Bland, Botetourt, Brunswick, Buchanan, Buckingham, Campbell, Carroll, Charles City, Charlotte, Chesterfield, Craig, Cumberland, Dickenson, Dinwiddie, Essex, Floyd, Fluvanna, Franklin, Giles, Gloucester, Goochland, Grayson, Greenville, Halifax, Hanover, Henrico, Henry, Isle of Wight, James City, King and Queen, King William, Lancaster, Lee, Louisa, Lunenburg, Mathews, Mecklenburg, Middlesex, Montgomery, Nelson, New Kent, Northampton, Northumberland, Nottoway, Patrick, Pittsylvania, Powhatan, Prince Edward, Prince George, Pulaski, Richmond, Roanoke, Rockbridge, Russell, Scott, Smyth, Southampton, Surry, Sussex, Tazewell, Washington, Wise, Wythe, and York Counties and the Cities of Bristol, Buena Vista, Charlottesville, Chesapeake, Colonial Heights, Covington, Danville, Emporia, Franklin, Galax, Hampton, Hopewell, Lexington, Lynchburg, Martinsville, Newport News, Norfolk, Norton, Petersburg, Poquoson, Portsmouth, Radford, Richmond, Roanoke, Salem, Suffolk, Virginia Beach, and Williamsburg.

**§ 1-602. Designation of systems in land description.**

A. As established for use in the North Zone, the Virginia Coordinate System of 1927 ~~or~~, the Virginia Coordinate System of 1983, ~~or the Virginia Coordinate System of 2022~~ shall be named, and in any land description in which it is used, it shall be designated the "Virginia Coordinate System of 1927, North Zone," ~~or "Virginia Coordinate System of 1983, North Zone," or "Virginia Coordinate System of 2022, North Zone."~~

B. As established for use in the South Zone, the Virginia Coordinate System of 1927 ~~or~~, the Virginia Coordinate System of 1983, ~~or the Virginia Coordinate System of 2022~~ shall be named, and in any land description in which it is used, it shall be designated the "Virginia Coordinate System of 1927, South Zone," ~~or "Virginia Coordinate System of 1983, South Zone," or "Virginia Coordinate System of 2022, South Zone."~~

**§ 1-603. Plane coordinates used in systems.**

The plane coordinates of a point on the earth's surface, to be used in expressing the position or location of such point in the appropriate zone of these systems, shall be expressed in ~~U.S. survey~~ international feet and decimals of a foot. One of these distances, to be known as the "x-coordinate," shall give the position in an east-and-west direction; the other, to be known as the "y-coordinate," shall give the position in a north-and-south direction. These coordinates shall be made to depend upon and conform to the coordinate values for the monumented points of the North American Horizontal Geodetic Control Network as published by the National Ocean Service/National Geodetic Survey, or its successors, and whose plane coordinates have been computed on the systems defined in this chapter. Any such station may be used for establishing a survey connection to either Virginia coordinate system.

When converting coordinates in the Virginia Coordinate System of 1983 ~~or the Virginia Coordinate System of 2022~~ from meters and decimals of a meter to feet and decimals of a foot, the ~~U.S. survey~~ International foot conversion factor (one foot equals ~~1200/3937~~ 0.3048 meters) shall be used. ~~This requirement does not preclude the continued use of the International foot conversion factor (one foot equals~~

0.3048 meters) in those counties and cities where this factor was in use prior to July 1, 1992. The plat or plan shall contain a statement of the conversion factor used and the coordinate values of a minimum of two project points in feet.

**§ 1-605. Definition of systems by National Ocean Service/National Geodetic Survey; adopted.**

A. For purposes of more precisely defining the Virginia Coordinate System of 1927, the following definition by the National Ocean Service/National Geodetic Survey is adopted:

The Virginia Coordinate System of 1927, North Zone, is a Lambert conformal projection of the Clarke spheroid of 1896, having standard parallels at north latitudes 38° 02' and 39° 12', along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 78° 30' west of Greenwich with the parallel 37° 40' north latitude, such origin being given the coordinates:  $x = 2,000,000'$ ; and  $y = 0'$ .

The Virginia Coordinate System of 1927, South Zone, is a Lambert conformal projection of the Clarke spheroid of 1896, having standard parallels at north latitudes 36° 46' and 37° 58', along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 78° 30' west of Greenwich with the parallel 36° 20' north latitude, such origin being given the coordinates:  $x = 2,000,000'$ ; and  $y = 0'$ .

B. For purposes of more precisely defining the Virginia Coordinate System of 1983, the following definition by the National Ocean Service/National Geodetic Survey is adopted:

The Virginia Coordinate System of 1983, North Zone, is a Lambert conformal conic projection based on the North American Datum of 1983, having standard parallels at north latitudes 38° 02' and 39° 12', along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 78° 30' west of Greenwich and the parallel 37° 40' north latitude, such origin being given the coordinates:  $x = 3,500,000$  meters and  $y = 2,000,000$  meters.

The Virginia Coordinate System of 1983, South Zone, is a Lambert conformal conic projection based on the North American Datum of 1983, having standard parallels at north latitudes 36° 46' and 37° 58', along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 78° 30' west of Greenwich and the parallel 36° 20' north latitude, such origin being given the coordinates:  $x = 3,500,000$  meters and  $y = 1,000,000$  meters.

C. For purposes of more precisely defining the Virginia Coordinate System of 2022, the following definition by the National Ocean Service/National Geodetic Survey is adopted:

*The Virginia Coordinate System of 2022, North Zone, is a Lambert conformal conic, one parallel projection based on the North American Terrestrial Reference Frame of 2022, having one standard parallel at north latitude 38° 36', along which parallel the scale shall be exact. The origin of coordinates is at the intersection of the meridian 78° 15' west of Greenwich and the parallel 38° 36' north latitude, such origin being given the coordinates:  $x = 457,200$  meters and  $y = 190,500$  meters.*

*The Virginia Coordinate System of 2022, South Zone, is a Lambert conformal conic, one parallel projection based on the North American Terrestrial Reference Frame of 2022, having one standard parallel at north latitude 37° 21', along which parallel the scale shall be 0.999990. The origin of coordinates is at the intersection of the meridian 79° 30' west of Greenwich and the parallel 37° 21' north latitude, such origin being given the coordinates:  $x = 685,800$  meters and  $y = 190,500$  meters.*

**§ 1-606. Position of systems.**

The position of the Virginia coordinate systems shall be as marked on the ground by triangulation or traverse stations established in conformity with the standards of accuracy and specifications for first-order and second-order geodetic surveying as prepared and published by the Federal Geodetic Control Subcommittee of the Federal Geographic Data Committee of the U.S. Department of Commerce. The geodetic position of stations defining the position of the Virginia Coordinate System of 1927 shall have been rigidly adjusted on the North American Datum of 1927, and the plane coordinates shall have been computed on the Virginia Coordinate System of 1927. The geodetic position of stations defining the position of the Virginia Coordinate System of 1983 shall have been rigidly adjusted on the North American Datum of 1983, and the plane coordinates shall have been computed on the Virginia Coordinate System of 1983. *The geodetic position of stations defining the position of the Virginia Coordinate System of 2022 shall have been rigidly adjusted on the North American Terrestrial Reference Frame of 2022, and the plane coordinates shall have been computed on the Virginia Coordinate System of 2022.* Any such station may be used for establishing a survey connection with the Virginia coordinate systems.

**§ 1-608. Limitation on use of name of systems.**

The use of the terms "Virginia Coordinate System of 1927," ~~or~~ "Virginia Coordinate System of 1983," or "Virginia Coordinate System of 2022" on any map, report of survey, or other document shall be limited to coordinates based on the Virginia coordinate systems as defined in this chapter.

**§ 45.2-542. Maps of mines required to be made; contents; extension and preservation; use by Department; release; posting of map.**

A. Prior to commencing mining activity, the operator of a coal mine or his agent shall make or cause to be made, unless already made and filed, an accurate map of such mine. Such map shall be submitted to the Chief prior to producing coal at the mine. All maps shall be presented on the Virginia Coordinate System of ~~1983~~ 2022, South Zone, unless otherwise approved by the Chief. At intervals not to exceed 12 months and when a

coal mine is abandoned, the operator shall submit to the Chief copies of an up-to-date map of the entire mine in an electronic format approved by the Chief. The operator shall also submit to the Chief revisions that show directional changes whenever mine projections deviate more than 600 feet from the approved mine map. Only maps in an electronic format shall be accepted unless otherwise approved by the Chief. If there are no changes in the information required to be submitted pursuant to this section at the time an updated map is due, the operator may submit a notice that there are no changes to the map in lieu of submitting an updated map to the Department.

B. Underground coal mine maps shall show:

1. The active workings;
2. All pillared, worked out, and abandoned areas, except as provided in this section;
3. Entries and air courses with the quantity of airflow, direction of airflow indicated by arrows, and ventilation controls;
4. Contour lines of all elevations;
5. Dip of the coalbed;
6. Escapeways;
7. The locations that are known or should be known of (i) adjacent mine workings within 1,000 feet, (ii) mines above or below, and (iii) water pools above;
8. Either producing or abandoned oil and gas wells located within 500 feet of such mine and in any underground area of such mine; and
9. Other information the Chief requires.

Such map shall identify those areas of the mine that have been pillared, worked out, or abandoned that are inaccessible or that cannot be entered safely.

C. Additional information required to be shown on underground coal mine maps includes:

1. The mine name, company name, mine index number, and name of the person responsible for information on the map;
2. The scale and orientation of the map and symbols used on the map;
3. The property or boundary lines of the mine;
4. All known drill holes that penetrate the coalbed being mined;
5. All shaft, slope, drift, and tunnel openings and auger and strip mined areas of the coalbed being mined;
6. The location of all surface mine ventilation fans. The location may be designated on the mine map by symbols;
7. The location of railroad tracks and public highways leading to the mine and mine buildings of a permanent nature with identifying names shown;
8. The location and description of a least two permanent base line points coordinated with the underground and surface mine traverses and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys;
9. The location and elevation of any body of water dammed or held back in any portion of the mine; however, such bodies of water may be shown on overlays or tracings attached to the mine maps used to show contour lines as provided under subdivision 12;
10. The elevations of tops and bottoms of shafts and slopes and the floor at the entrance to drift and tunnel openings;
11. The elevation of the floor at intervals of not more than 200 feet in (i) at least one entry of each working section and main and cross entries; (ii) the last line of open crosscuts of each working section, and main and cross entries before such sections and main and cross entries that are abandoned; and (iii) rooms advancing toward or adjacent to property or boundary lines or adjacent mines; and
12. Contour lines passing through whole number elevations of the coalbed being mined. The spacing of such lines shall not exceed 10-foot elevation levels, except that a broader spacing of contour lines may be approved by the Chief for steeply pitching coalbeds. Contour lines may be placed on overlays or tracings attached to mine maps.

D. Underground coal mine maps submitted to the Chief shall be on a scale of not less than 100 or more than 500 feet to the inch. Mapping of the underground mine works shall be completed by a closed loop survey method of traversing or other equally accurate methods of traversing. All closed loop surveys shall meet a minimum accuracy standard of one part in 5,000. Elevations shall be tied to either the United States Geological Survey or the National Geodetic Survey bench mark system. A registered engineer or licensed land surveyor shall certify that the map of the mine workings is accurate.

E. Underground coal mine maps shall be kept up to date by temporary notations and revised and supplemented at intervals not to exceed six months based on a survey made and certified by a registered engineer or licensed land surveyor who has exercised complete direction and control over the work to which it is affixed. Temporary notations shall include:

1. The location of each working face of each working place;
2. Pillars mined or other such second mining;
3. Permanent ventilation controls constructed or removed, such as seals, overcasts, undercasts, regulators,

and permanent stoppings, and the direction of air currents indicated; and

4. Escapeways designated by means of symbols.

F. At underground coal mines, an accurate map of the mine showing clearly all avenues of ingress and egress in case of fire shall be posted in a place accessible to all miners.

G. Surface coal mine maps shall show:

1. The name and address of the mine;

2. The property or boundary lines of the active areas of the mine;

3. Contour lines passing through whole number elevations of the coalbed being mined. The spacing of such lines shall not exceed 25-foot elevation levels, except that a broader spacing of contour lines may be approved by the Chief for steeply pitching coalbeds. The Chief may approve alternate means of delineating seam elevations where multiple seams are being mined. Contour lines may be placed on overlays or tracings attached to mine maps;

4. The general elevation of each coalbed being mined and the general elevation of the surface;

5. Each producing or abandoned gas or oil well or gas transmission line located on the mine property;

6. The location and elevation of any body of water dammed or held back in any portion of the mine; however, such body of water may be shown on overlays or tracings attached to the mine maps;

7. Every prospect drill hole that penetrates a coalbed being mined on the mine property;

8. Every auger or surface-mined area of a coalbed being mined on the mine property together with the line of maximum depth of holes drilled during auger mining operations;

9. All worked out and abandoned areas;

10. The location of railroad tracks and public highways leading to the mine and mine buildings of a permanent nature with identifying names shown;

11. Underground coal mine workings underlying and within 1,000 feet of any active area of the mine;

12. The location and description of at least two permanent baseline points and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys;

13. The scale of the map; and

14. Other information required by the Chief.

H. Surface coal mine maps shall be kept up to date by temporary notations and revised and supplemented at intervals not to exceed six months based on a survey made and certified by a registered engineer or licensed land surveyor who has exercised complete direction and control over the work to which it is affixed. Temporary notations shall include:

1. The location of each working pit;

2. Auger or highwall miner workings; and

3. Other information that might affect the safety of miners, including updates of gas well or gas line locations.

I. Each surface survey shall originate from at least two permanent survey monuments on the mine property located with a minimum accuracy standard of one part in 10,000. The monuments shall be clearly referenced on the mine map. Elevations shall be tied to either the United States Geological Survey or the National Geodetic Survey bench mark system.

J. The original map, or a true copy thereof, shall be left by the operator at the active mine, open at all reasonable times for the examination and use of the mine inspector.

K. Such maps may be used by the Department for the evaluation of the coal resources of the Commonwealth.

L. The map shall be filed and preserved among the records of the Department and copies of such maps shall be made available at a reasonable cost.

M. Any person who has conducted mining operations or prepared mine maps and who has a map or surveying data of any worked out or abandoned underground coal mine shall on request make such map or data available to the Department to copy or reproduce.

**2. That the provisions of this act shall become effective upon the official release by the National Oceanic and Atmospheric Administration's National Geodetic Survey of the State Plane Coordinate System of 2022. Old Dominion University, in its capacity as the authorized state agency for Virginia coordinate systems pursuant to Chapter 6 (§ 1-600 et seq.) of Title 1 of the Code of Virginia, as amended by this act, shall certify in writing to the Virginia Code Commission when such contingency has been met.**