# CHAPTER 2. STATE BACKGROUND INFORMATION

**Population**

The Commonwealth of Virginia covers 39,471 square miles and ranks 37th among the states in size. This area is divided into six Department of Environmental Quality (DEQ) regional offices, with one satellite office. According to the most recent census (2020), the population of the commonwealth was estimated to be 8,631,393, or 2.6 percent of the total United States population. It has grown approximately 7 percent between 2010 and 2020, ranking 12th nationally, and continues to grow. Approximately 88 percent of all Virginians live in three metropolitan areas: Northern Virginia, Norfolk‑Virginia Beach‑Newport News, Richmond‑Petersburg. Approximately 12 percent of the population lives in rural areas.

**Geography**

Virginia is over 400 miles in length along its southern boundary, reaching from the Atlantic Ocean in the east, crossing the eastern continental divide into the Mississippi Basin to the west. Along the way, Virginia crosses five physiographic provinces. The southwestern edge of the state touches upon the margin of the Cumberland Plateau, which is characterized by rugged terrain with formations of sandstone and shale. Virginia's coal mining industry is concentrated in this area. The Valley and Ridge province encompasses the long, parallel ridges of the Appalachian Mountain chain in western Virginia. Erosion-resistant quartzites and sandstones form the ridgetops, while streams have carved valleys into the softer limestones and shales. The narrow Blue Ridge Mountain province is made up of hard greenstone, quartzites, and granites, igneous and metamorphic rocks that originated as ancient lava flows. These mountains are among the oldest on earth. East of the Blue Ridge Mountains lies the rolling Piedmont of central Virginia. A complex layer of igneous and metamorphic rocks underlies this area. The Triassic Basins, ancient down‑faulted basins filled with sedimentary rocks and igneous intrusions are major sub‑units of this province. A distinctive fall line, marked by waterfalls and rapids across the major rivers, divides the Piedmont from the Coastal Plain. Virginia's flat Tidewater area consists of deep, unconsolidated deposits of sand, gravel, fossil shells, and clay. The basement formation of granite, exposed at the fall line, is buried under 2,900 feet of sediment at the Atlantic Coast.

**Water Resources**

A summary of Virginia's water resources is provided in Table 2-1. Virginia has an estimated 100,923 miles of streams and rivers divided into nine major river basins. This estimate represents mileage determined by the United States Geological Survey National Hydrography Dataset (NHD). Annual rainfall averages almost 43 inches. Total combined mean flow rate of all freshwater streams in the state is estimated at about 25 billion gallons per day. The 248 publicly owned lakes in the commonwealth have a combined area of 117,158 acres. Of these lakes, 123 are considered “significant lakes” for monitoring purposes, totaling approximately 113,545 acres. Many hundreds of other smaller, privately owned lakes, reservoirs and ponds, some of significant size, dot the landscape.

Other important water features of Virginia include approximately 236,900 acres of tidal and coastal wetlands, 808,000 acres of freshwater wetlands, 120 miles of Atlantic Ocean coastline, and approximately 2,308 square miles of Chesapeake Bay estuarine waters. Virginia's highly indented shoreline, including the Chesapeake Bay and its sub‑estuaries, is conservatively estimated to be 3,315 miles long.

| Table 2-1 Virginia Water Resources Atlas |
| --- |
| State Population (2006 census) – 7,642,884  (2010 census) – 8,001,024  (2020 census) – 8,631,393  State Surface Area – 42,775 square miles  Major River Basins  Potomac/Shenandoah Tennessee/Big Sandy  James Chesapeake Bay/Atlantic/Small Coastal  York Rappahannock  Roanoke/Yadkin New  Chowan/Dismal Swamp  Total Non-Tidal River/Stream Miles – 100,949  Miles of Border River (Potomac) – 180  Publicly-Owned Significant Lakes and Reservoirs – 123  Significant Lake/Reservoir Acres – 117,756  Total Acres of Palustrine Wetlands – 1,075,443  Total Acres of Riverine Wetlands – 380  Total Acres of Lacustrine Wetlands – 193  Total Acres of Estuarine Wetlands – 190,996  Total Acres of Isolated Wetlands – ≈ 250,000  Estuary Square Miles (excluding small coastal areas) – 2,842  Atlantic Ocean Coastal Miles – 120  Total Coastal Shoreline Miles Including Chesapeake Bay and Tidal  Tributaries to a Width of 110 Feet – 3,315  Statewide Average Annual Rainfall – 44 inches  Average Freshwater  Discharge of All Rivers – Approximately 25 billion gallons per day |

**Land Use**

Virginia's landscape is dominated by forests, which cover approximately sixty percent of the state’s total area (Table 2-2). However, according to the Virginia Department of Forestry’s *State of the Forest, 2018*, an average of more than 16,000 acres of forestland has been converted to non-forest uses annually, a trend that is projected to continue. Water quality is greatly impacted by land use. Specifically, high quality waters are most commonly associated with forested areas. Forested ecosystems act as natural filters, absorbing nutrients and other pollutants that would otherwise be washed into nearby waterbodies. Water quality can be protected in developed areas by creating vegetated buffer zones and maintaining sewer infrastructure.

| Table 2-2 Virginia Statewide Land Use Summary | | |
| --- | --- | --- |
| Privately Owned Forests | 20,312 mi2 | 80% |
| Publicly Owned Forests  Forest Product Firms | 4,657 mi2  286 mi2 | 18%  2% |
| **Total Forested Land1** | **25,319 mi2** | **59%** |
|  |  |  |
| Harvested Cropland | 4,083 mi2 | 34% |
| Other | 8,101 mi2 | 66% |
|  |  |  |
| **Total Agricultural Land2** | **12,184** **mi2** | **28%** |
|  |  |  |
| **Other (Including Urban)** | **2,261 mi2** | **6%** |
|  |  |  |
| Total Land Area | 39,764 mi2 | 93% |
|  |  |  |
| **Inland Waters** | **3,011 mi2** | **7**% |
|  |  |  |
| **Total Area** | **42,775 mi2** | **100%** |

1 Source: [2018 State of the Forest, Virginia Department of Forestry](https://www.dof.virginia.gov/infopubs/_sof/SOF-2018_pub.pdf)

2 Source: [2017 Census of Agriculture, US Department of Agriculture](https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Virginia/vav1.pdf)