



## Susquehanna River Basin Character Statement

The Susquehanna River begins its journey to the ocean at Otsego Lake near Cooperstown, New York. The river meanders southward through Pennsylvania until it joins the tidal waters of the Chesapeake Bay at Havre De Grace, Maryland, and then moves on to the Atlantic Ocean. Flowing a distance of 444 miles, it is a river as rich in history as it is in natural resources and beauty.

The Susquehanna is one of the largest rivers on the eastern coast of the United States. Considered Pennsylvania's river, the Susquehanna drains 46 percent of the state. More than three-quarters of the entire river basin (20,960 square miles) is located in Pennsylvania. The remainder of the basin is located in the states of New York (6,275 square miles) and Maryland (275 square miles).

The basin is home to approximately 3.8 million people who use its water resources for drinking, as well as agricultural and industrial purposes. Every minute, a total of 19 million gallons of freshwater flows from the Susquehanna into the Chesapeake Bay; supplying the bay with half of its freshwater.

### Geology

Flowing across three physiographic provinces, the river begins in the Appalachian Plateau Province, which is characterized by rugged hills of gently tilted sandstone, slate and shale. It then curves its way through the Ridge and Valley Province past forests and farmlands, small historic towns, major industries and transportation routes. In the Ridge and Valley Province, resistant sandstone produces long, narrow ridges separated by long valleys underlain by shales and limestones. The river then flows through the Piedmont Province, which is dominated by rolling lowlands and broad highlands and ridges, before it empties into the Chesapeake Bay and the Atlantic Ocean.

### History

The origin of the Susquehanna's name and its precise meaning are uncertain. The suffix *hanna* is Algonquin for "stream or river." During his 1608 exploration of the river, interpreters who spoke Algonquin accompanied Captain John Smith, which probably accounts for the suffix usage in the river's name. Smith referred to the natives he met on the river as *Sasquesahannocks* and *Sasquesahanougs*. The tribe eventually came to be known as Susquehannocks.

An eighteenth-century authority on American Indians and place names claimed that Susquehanna was a corruption of the Susquehannock word *Queischachgekhanne*, which means "the long reach river," a name then used to refer to the river's west branch. Others speculate that the word means "long crooked river." To the contrary, still others favor "the place of the straight river," based on a translation of the Delaware word *saskwihanang*.



In 1608, Captain John Smith, an explorer known for his voyages around the Chesapeake Bay, traveled and mapped some of the lower reaches of the Susquehanna River in Pennsylvania. In 1624, he published a report in London of his explorations in the Susquehanna basin. For many years, the report served as a guide to the region for those who left England in search of fortune along the banks of the Susquehanna. Following the arrival of William Penn in 1682 and the settling of border disputes with New York and Maryland, the settlement of Pennsylvania and the Susquehanna Basin by people from throughout Europe began in earnest and continued well into the early twentieth century.

Early explorers found the Susquehanna to be nonnavigable above the area of what is known today as Port Deposit, Maryland. The river was too rocky and shallow to provide water access to central Pennsylvania, as they had hoped. The lack of a reliable, year-round method for moving goods and people up and down the Susquehanna slowed the economic development of the river basin in Pennsylvania for many years to come.

On July 4, 1826, ground was broken for the Pennsylvania Canal, which was part of the Main Line of Public Works, the first public project to connect Philadelphia and Pittsburgh, using canals and railroads. The Pennsylvania Canal grew into a system of canals stretching throughout the Susquehanna basin and connecting to other river systems to the east and west. The canals were poorly designed and costly to build and maintain. They did not produce the promised revenue of commerce and almost bankrupted the state of Pennsylvania.

By the mid-1850's, the state was out of the canal business. Most of the canal system had been purchased by railroad interests, and the days of the canal boats in the Susquehanna Basin had come and gone. The steam locomotive and the rail had taken its place as an inexpensive and dependable means of transportation of goods and people throughout the basin.

## **Problems and Solutions**

The forests and farms of the Susquehanna Basin have long been a mainstay of the area's economy. Industries varying from food processing facilities to nuclear power plants are located within the basin and take advantage of ample supplies of water. The natural beauty of the river and surrounding mountains are the foundation of a growing tourism industry.

As the population within the basin continues to grow, the various land uses begin to take their toll on the river in the form of pollution. The water quality issues of the Susquehanna River and its tributaries fall into three broad categories: excess nutrients, sediment and toxins. Excess nutrients (nitrogen and phosphorus) cause an excessive growth of algae leading to decreased dissolved oxygen. They are derived from improperly or over-fertilized cropland, lawns and golf courses, as well as sewage from treatment plants or improperly functioning septic systems that find their way into the streams. Sediment from various sources of erosion cause excess turbidity which is harmful to aquatic life. Excess sediment can also clog stream channels and harm aquatic habitat. Toxins (heavy metals such as cadmium, chromium, copper, nickel and zinc), enter the river system from sewage treatment plants and urban stormwater runoff from city streets and pesticides. One common source of toxins found in Pennsylvania's water is acid mine



drainage. The West Branch and Wyoming Valley were severely polluted by acid mine drainage until the 1970's when legislation forced coal companies to comply with the federal Clean Stream Act.

The emphasis for water quality improvement in the basin has been on eliminating point sources of pollution, such as sewage and industrial discharge. Although point source pollution is still an area of concern, much has been done to bring this problem under control. Regulations and federal and state monies made available to improve municipal sewage and industrial waste treatment have helped to improve water quality throughout the basin.

Currently, nonpoint source pollution such as stormwater runoff, mine drainage, agricultural runoff and runoff from construction sites, is receiving increased emphasis in pollution control efforts. Through education, financial and technical assistance and regulations, these problems are beginning to be addressed. Although there is still much to be done, progress is being made towards a cleaner, healthier river.

On March 28, 1979 at 4:00 A.M., a minor malfunction occurred in the system which feeds water to the steam generators at the Three Mile Island (TMI) Unit 2 Nuclear Generating Station near Harrisburg. The accident itself progressed to the point where over 90% of the reactor core was damaged. This event led eventually to the most serious commercial nuclear accident in U.S. history. The accident and subsequent analysis of it changed the way nuclear power is used and regulated both here and abroad.

The Susquehanna River Basin has undergone many changes since it was first explored by Captain John Smith in 1608. Changes are continuing to occur. The resources that drew early settlers to the basin are the same resources that give the basin its beauty and richness today. The challenge is to ensure that these resources will be available for future generations.