

Land and Natural Resources of West Amwell

By Fred Bowers, Ph.D



Goat Hill from the north



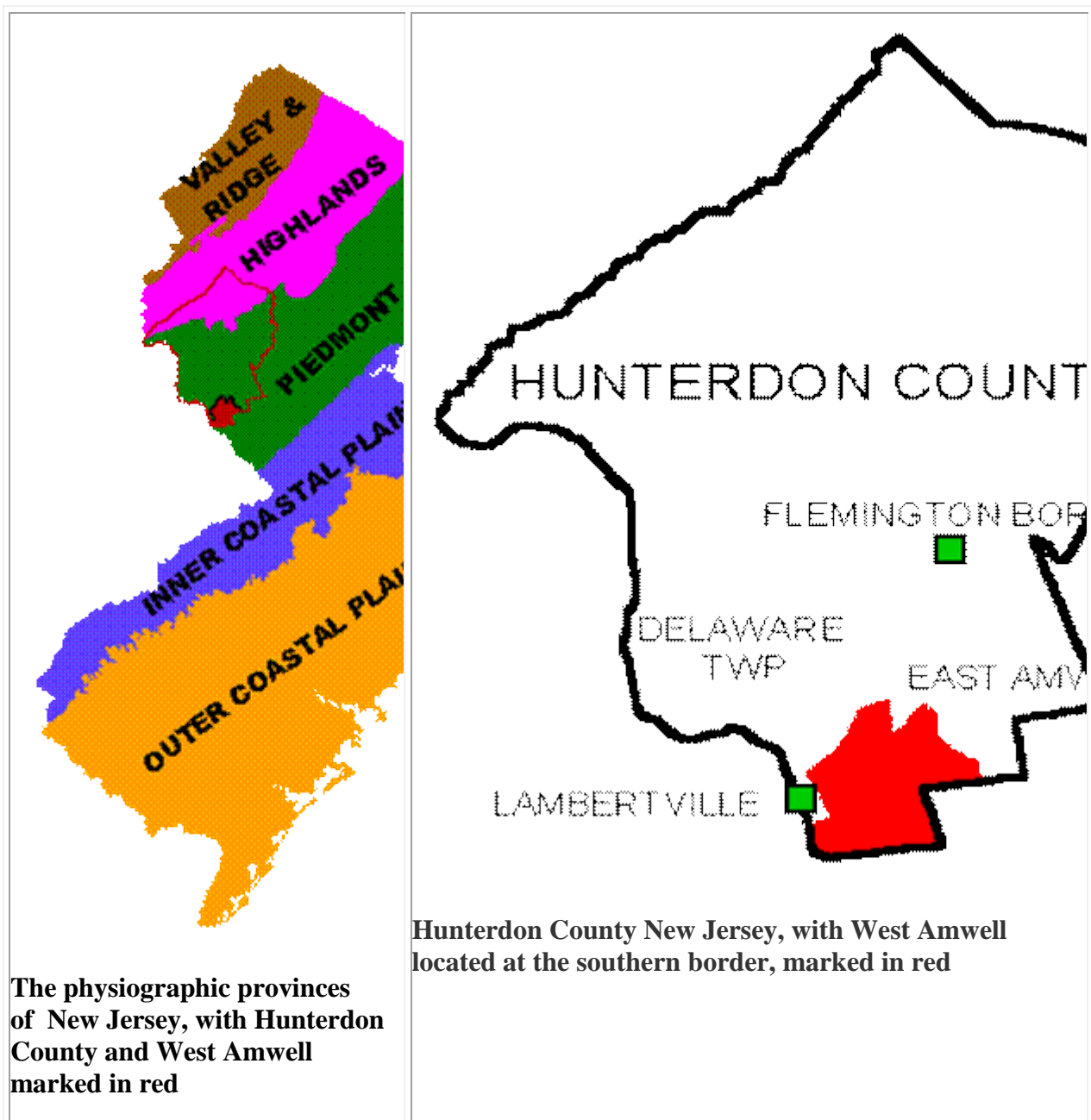
Diabase Boulders are common.



Shale and Argillite outcrops appear like this.

General Description of the Area

West Amwell Township is in Hunterdon County, New Jersey, USA. It is a 22 square mile rural township with just over 2200 people, located near Lambertville, New Jersey. It is one of the more scenic parts of the New Jersey Piedmont. It is identified in red on the maps below. West Amwell is characterized by most people as a "rocky land." One of the oldest villages in the township is called Rocktown. If you visit or look around the township, you cannot avoid seeing rocks and outcrops like those pictured above.

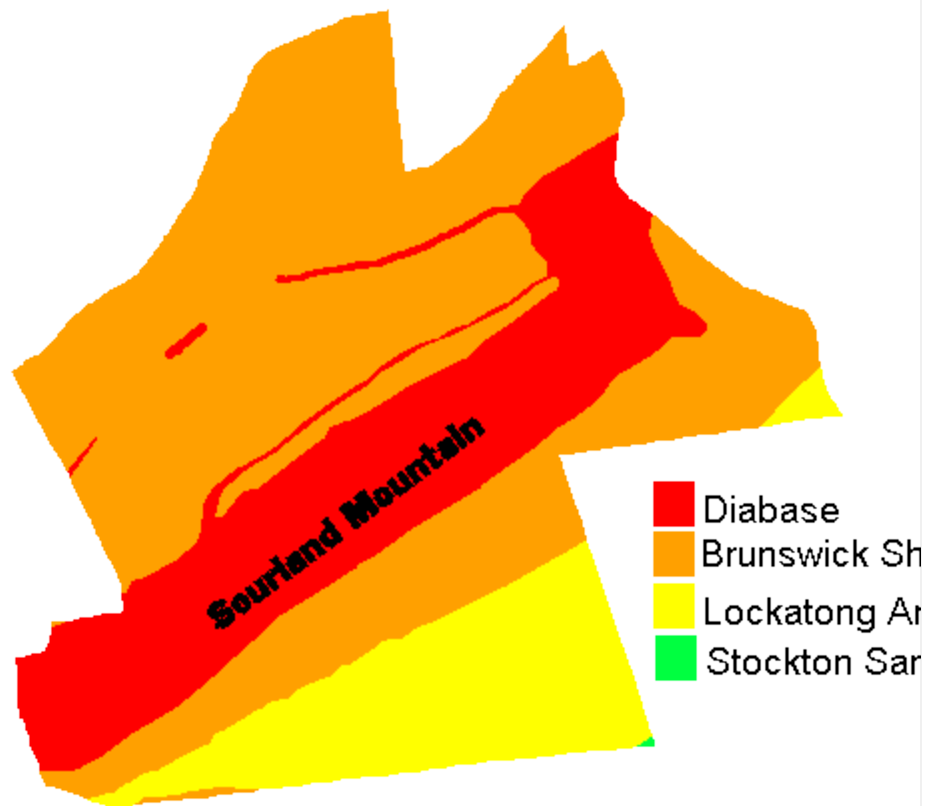


Rocks

The backbone of West Amwell Township's land is the Sourland Mountain; a typical Piedmont ridge formed by a very hard igneous rock called *diabase* or "Trap Rock." The Sourland Mountain ends at the Delaware River below Goat Hill which you see in the picture above, looking south from the Lambertville toll bridge. To the south and north of the diabase, shale and argillite occurs, and these rocks form the lower lands we know of as Pleasant Valley and the shale ridges and valleys you see from around Mt. Airy.

In order to appreciate the rocks and the influence they have on the look of the land, it is useful to have a short review of rocks. Recall that there are igneous, sedimentary, and metamorphic rocks. Igneous rocks are formed from molten magma that emerges from the Earth's mantle. Sedimentary rocks are formed from the small particles transported by erosion of the existing rock. Metamorphic rocks are formed when igneous or sedimentary rocks are subjected to forces such as heat and pressure.

Most of the rocks of the West Amwell were formed during the Jurassic and Triassic period of the Mesozoic era between 200 - 180 million years ago. During this time, the molten igneous rock (diabase) squeezed up through cracks in the sedimentary shale and argillite. Where the igneous rock contacted them, the shale and argillite are baked and are harder than the sedimentary rock lying a few hundred feet away from the contact. Probably before the igneous rock emerged, earthquakes or other earth movements such as faulting caused the rock layers to tilt or dip. Look around at the rocks exposures (outcrops) and you will see that the rocks (reddish argillite in this case) are tilted like in the picture above. When this baking occurred, it caused the red shale to become a metamorphic rock and it looks more like the Lockatong Argillite. The Lockatong Argillite found in West Amwell is a sedimentary clay stone that is typically purple or reddish blue, and it looks a lot like the Brunswick shale. It is found in the area between Rock Road and the bottom of Pleasant Valley. It is easy to mistake it either for the shale or the metamorphic shale. The Stockton sandstone is very similar in West Amwell to the Brunswick Shale, and it only occurs in a small area near Harborton on the south eastern corner of the township. The youngest rock type is the sandy river terrace material called "bank run" that can be found along the Delaware River. It was originally deposited about 10,000 years ago, and is replenished whenever the river overflows.

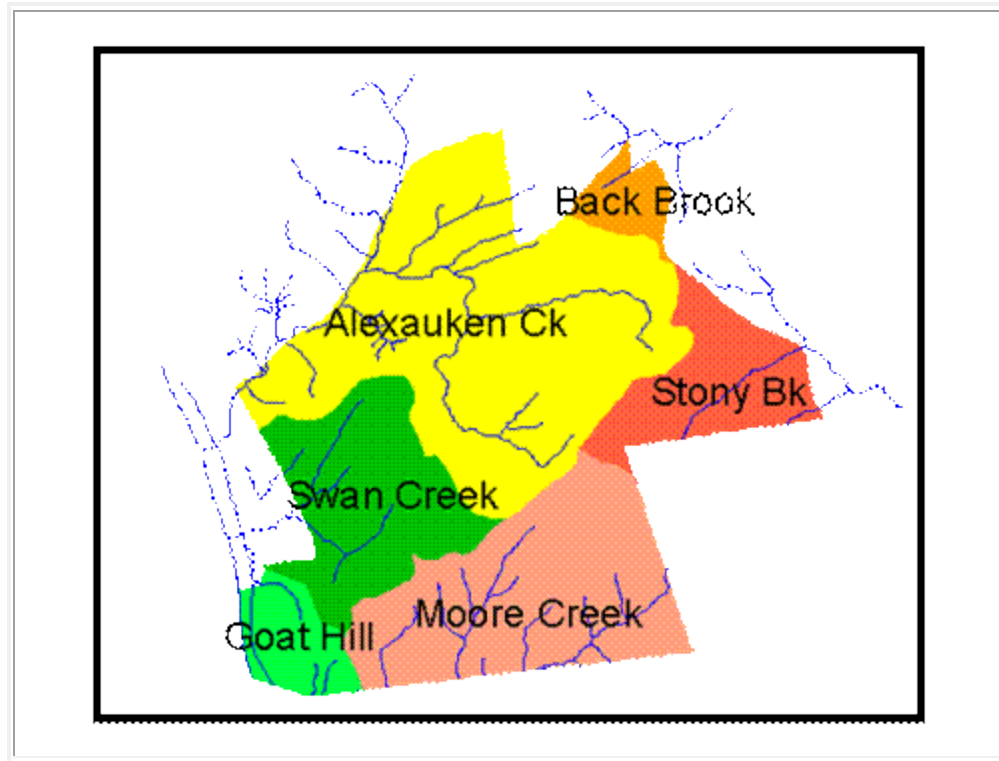


Physiography

The highest points in West Amwell township are over 450 feet and the lowest point is about 60 feet above sea level. There are very steep slopes as well as some almost flat areas. The look of the land (physiography) can be described as rolling hills, with ridges and valleys extending in the same direction as the trend of the bedrock. Thus, the valleys and ridges run northeast to southwest, as do most of the streams. Most of the streams are tributaries of the Delaware River, which is the western boundary of West Amwell. The township is an extension of the Sourland Plateau that starts at Hillsborough in Somerset County and continues southeast to West Amwell. At the lower east corner of the township, the Stony Brook Valley receives some of West Amwell's drainage from the area between Linvale and Rt. 518. The area along the south side of the township is the Moore's Creek basin which flows through Hopewell Township and Pleasant Valley and then to the Delaware River. The area on the south and west side is an area of significant relief, and has some short but steep unnamed tributaries that flow down over Goat Hill to the river. These small intermittent streams can be seen under the bridges and culverts where they pass under the highway along the stretch of Rt. 29 between Belle Mountain and the Wing Dam on the Delaware. The area north of the steep Goat Hill intermittent streams is Swan Creek, and it begins up in the flat area at the top of the Sourland Mountain. This flat area is also

the source of water for Lambertville. Finally, the entire north part of the township is the Alexauken Creek. It begins on the back side of the Sourland Mountain and as far up as the area near Mt. Airy and Rocktown and drains a wide area near the northern border of the Township where it contacts Delaware Township.

Most of the streams generally follow the Southeast trend of the rock formations, and are tributaries of the Delaware River. A small area on the east part of the township flows into Stony Brook and is part of the Raritan-Millstone River drainage system, and another small area in the north east flows into the South Branch of the Raritan River system.



The township is an old land form and except for erosion and climate and vegetation changes, has probably looked similar to today for millions of years. The area was never glaciated and only the fluvial (stream) deposits are of a young age. Look at the map below and you can see where the different rocks occur, and if you want to visit and observe the rocks, click on the road map to see where the roads intersect the rock formations.

Soils

Surface deposits and soils are varied. The diabase in most areas is covered by large rounded or angular boulders, weathered from the bedrock, some of which are 15 feet in diameter. As

one moves further from the ridges, fewer, small, very round boulders are found, mostly in the stream beds. Most of the soils are silt loam, or silty clay loams, and they are typically shallow to bedrock or have a perched water table. Therefore, the soils are often difficult to work with, and deep well drained soils are not common. Nonetheless, they make good soils for pasture and subsequently the area was always a good dairy area. Today, homes have taken over most of the land, and the homeowners work hard to overcome the rockiness. With some effort, the owners are rewarded with a very diverse vegetation consisting of hardwood trees, turf grass, and prolific flower and vegetable gardens.

Climate

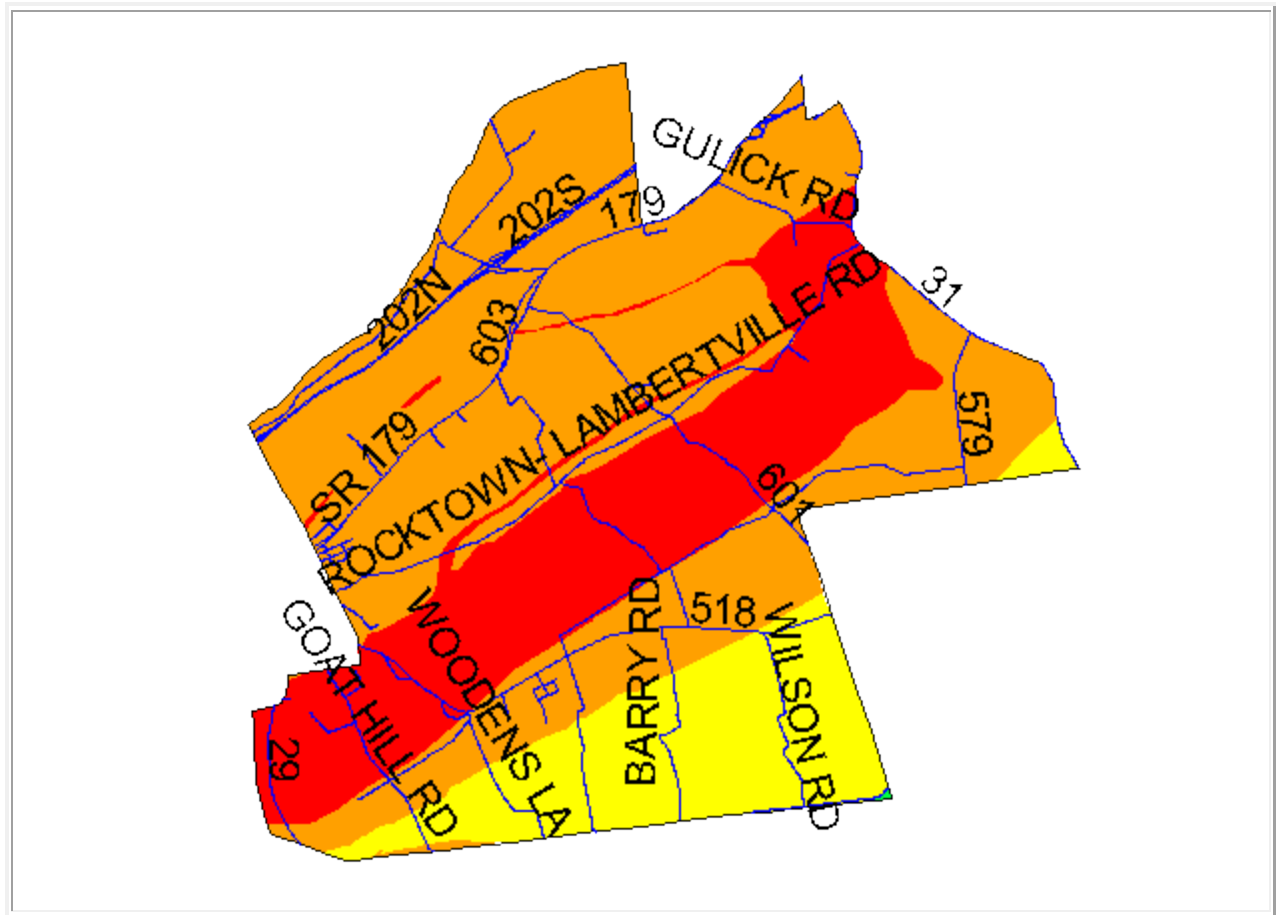
The climate of West Amwell is a moist continental type with prevailing westerly winds. Summers are warm to hot with occasional droughty periods. Otherwise, about 45 inches of precipitation is distributed evenly at 3-4 inches per month all year. Winters are cold with at least one month of snow cover on the average.

Plants and Animal Life

The Biota (assemblage of living organisms) is varied. The Eastern deciduous tree species inhabit the woodlands and help support numerous wild animals and insects. Hickory, oaks, poplar, and Beech inhabit the well drained areas. Maple and ash are found between those species and the Sycamores and Pin Oak usually inhabit the streams or wet areas. These trees provide many leaves and nuts, which are food for insects and animals, which help to provide a fertile humus layer all through the forested areas. West Amwell's lands contain many types of native vegetation. Man has cleared about one half of the area and has caused some erosion. However, much of the cleared area is now grassland and in a stable condition.

Without listing them all here, it is fair to say that West Amwell has a rich resource in its wildlife. Deer, squirrels, chipmunks, foxes, weasels, skunks, rabbits, woodchuck, coyotes, songbirds of all sorts, wild turkeys, hawks, and even bears have been sighted!

Additional Information Resources



Township Road Map with Geology

State Map with Geology

SEDIMENTARY ROCKS

CENOZOIC

- Holocene: sand
- Tertiary: sand, silt, clay

MESOZOIC

- Cretaceous: sand, silt, clay
- Jurassic: siltstone, shale, sandstone
- Triassic: siltstone, shale, sandstone

PALEOZOIC

- Devonian: conglomerate, sandstone, shale, limestone
- Silurian: conglomerate, sandstone, shale, limestone
- Ordovician: shale, limestone
- Cambrian: limestone, sandstone

IGNEOUS AND METAMORPHIC ROCKS

MESOZOIC

- Jurassic: basalt
- Jurassic: diabase

PRECAMBRIAN

- marble
- gneiss, granite

