Poestenkill Natural Resources Inventory
2019

Prepared by the Poestenkill Conservation Advisory Council

Final Report

December 2019

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Poestenkill Natural Resources Inventory

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1. INTRODUCTION (MAP 1 AND MAP 2)

The Town of Poestenkill (Town or Poestenkill) is situated near the center of Rensselaer County in eastern New York State (**Map 1**). The Town has an area of about 21,059 acres and is about 9 miles long (east-west) and about 4 miles in width (north-south). The western escarpment of the Rensselaer Plateau divides the Town on a north-south axis just east of the hamlet of Poestenkill. The elevation changes from about 400 feet in western Poestenkill to the highest elevation of 1891 feet on Perigo Hill on the Rensselaer Plateau in southeastern Poestenkill. The presence of the higher Rensselaer Plateau in eastern two-thirds Poestenkill and the lower valley floor in western one-third of Poestenkill are important determining factors in its natural resources.

The Aerial View Maps (**Maps 2 and 2A**) give a bird's-eye view of the Town. **Map 2** shows 1-meter resolution 2017 aerial imagery taken during the growing season from the USDA National Agriculture Imagery Program (NAIP). **Map 2A** shows 1-ft resolution 2017 aerial imagery taken in natural color by the NYS Digital Orthoimagery Program. The aerial imagery in **Map 2A** was taken in early spring prior to the leaf out of deciduous trees, resulting in a more detailed view of vegetation types, land uses, and development. In both maps, the images are orthorectified, which combines the image characteristics of an aerial photograph with the georeferenced qualities of a map. They can serve as a reference for comparison with features shown on other maps in the Natural Resources Inventory.

1.1 PURPOSE

The Town of Poestenkill Natural Resources Inventory (NRI) is a compilation of existing information about a wide array of natural resources and features, climate conditions, outdoor recreation assets, zoning, and land use. The natural resources of Poestenkill include its geology, soils, water, vegetation and wildlife. The NRI is comprised of a series of 22 maps as well as an accompanying report with narrative descriptions and supporting data tables.

The NRI will be a reference document for use by Town agencies, landowners, and others seeking information about the specific nature of Poestenkill's resources and landscapes. It will provide the Town Board, the Zoning Board of Appeals, the Planning Board, the Conservation Advisory Council (CAC) and others with information relevant to comprehensive planning, policy-making, and determining the effects that land use decisions may have on important resources of the Town. In addition, it can be used by landowners in making decisions about the most desirable use of their land or simply as a source of information that can help them better appreciate the land they own and its relationship to the Town as a whole. It will also be available to potential developers or prospective residents in assessing the resources the Town has to offer.

1.2 METHODS

The NRI was developed by members of the Poestenkill CAC at no cost to the Town through a partnership with Rensselaer Land Trust (RLT) and Cornell University Department of Natural Resources with funding from the Environmental Protection Fund through the New York State Department of Environmental Conservation (DEC) Hudson River Estuary Program. This partnership was the result of the Town's application to participate in a Cornell/Hudson River Estuary Program NRI Technical Assistance Program in 2018. RLT and Cornell staff provided

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Insert Map 1 – Base Map

Insert Map 2 – Aerial View (leaves on)

technical assistance for the NRI project and facilitated GIS mapping provided by Rick Lederer-Barnes of Upstate GIS. RLT also facilitated the incorporation of local ecological data provided by Dr. David Hunt.

Maps were produced using ESRI ArcGIS (GIS) software and each map includes a list of data sources at the bottom. Note that information on the maps comes from different sources, produced at different times, at different scales, and for different purposes. Most of the GIS data were collected or developed from remote sensing data (i.e., aerial photographs, satellite imagery) or derived from paper maps. For these reasons, GIS data often contain inaccuracies present in the original data, plus any errors from converting it. Therefore, maps created in GIS are approximate and best used for planning purposes. They should not be substituted for onsite surveys. Any resource shown on a map should be verified for legal purposes, including environmental review. Information provided by the maps can be enhanced by local knowledge, and the NRI should be updated over time as new data become available.

The NRI report was written by CAC members starting from a 1998 *Natural Resources Report* for the Town written by CAC member Jim de Waal Malefyt. The text incorporates *Natural Areas and Wildlife in Your Community: A Habitat Summary Prepared for the Town of Poestenkill* by Ingrid Haeckel (delivered in April 2019), as well as information from *The Rensselaer Plateau Regional Conservation Plan* (2013), the *Rensselaer County Land Conservation Plan* (2018), and local ecological data provided by Dr. David Hunt.

The draft NRI maps were made available via the town website and in hard copy at town hall for public comment from mid-June through July 2019. The CAC held a community meeting at town hall on June 19, 2019 to share progress on the project and seek assistance with reviewing the draft maps. About ten community members attended as well as the Poestenkill Town Supervisor, the Deputy Supervisor, and members of the Planning Board and Zoning Board. After a presentation and question and answer period, the draft maps were made available on tables around the room. The final draft report was posted to the town website in December 2019.

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2. TOPOGRAPHY AND PHYSIOGRAPHY

2.1 TOPOGRAPHY (MAP 3)

Topographic contours shown on **Map 3** are a subset of two-ft contours created by the NYS GIS Program Office (NYSGPO) based on the following high-resolution LiDAR collections: Columbia/Rensselaer 2015, FEMA Hudson Hoosic 2012, and NYSGPO Rensselaer Hoosic River 2010. Although the data set is for two-foot contours, only the 20-foot contours are shown on the map for clarity.

Topography in Poestenkill is greatly influence by the geological formation called the Rensselaer Plateau situated over the eastern two-thirds of the Town. The elevation on the Plateau is not flat, but varies roughly between 900 and 1900 feet elevation. The highest elevations are in the southeastern section of the Town on the Plateau in the vicinity of Perigo Hill at 1,891 ft. elevation. The western escarpment of the Rensselaer Plateau to the north and south of the hamlet of Poestenkill drops significantly in elevation from roughly 1,200 ft. to 800 ft. and provides for regionally scenic resources. The higher elevations have distinctive climate, vegetation, and wildlife compared to the lower elevations in the western sections of Poestenkill. For example, American sycamore trees are found along streams in the western part of Town, but rarely on the Plateau. Conversely, Adirondack-type trees, like balsam fir and red spruce, can be found in the cooler microclimates of the Plateau.

There are flatter areas in the western section of Poestenkill with lower elevations around 400 ft. These areas are more populous and are generally better suited for agriculture and residential neighborhoods than locations on the Plateau.

2.2 STEEP SLOPES (MAP 4)

Slope is defined as the vertical change in elevation over a given horizontal distance. For example, a 10% slope is one that rises 10 feet over a horizontal distance of 100 feet. The Steep Slope map (**Map 4**) is derived from 10-meter resolution digital elevation models from the U.S. Geological Survey and should only be considered an approximate depiction of steeply sloped areas in the Town.

The steepest slopes in the Town of Poestenkill are situated along the western escarpment of the Rensselaer Plateau to the northeast and southeast of the hamlet of Poestenkill. Slopes here can exceed 25 percent. Because of the varied topography on the Plateau, slopes can vary from less than 10 percent to over 25 percent and can limit residential development. Most of the steep slopes of the Plateau's western escarpment are covered with deciduous trees and provide a regionally scenic resource, especially with autumn colors.

2.3 PHYSIOGRAPHIC AREAS

Physiography refers to the physical characteristics of an area's geography and landscape, such as landform, bedrock and surficial geology, topography, elevation, soils, and hydrology. An area like Rensselaer County or the Town of Poestenkill can be divided into different physiographic areas or regions based on collective physical characteristics; e.g., mountains vs. lowlands.

Insert Map 3 - Topography

Insert Map 4 – Steep Slopes

Different sets of physical characteristics are also reflected by different sets of natural ecological communities and by different sets of plants and animals.

Dr. David Hunt, in his work for the Rensselaer Plateau Regional Conservation Plan (RPA 2014), the Rensselaer County Conservation plan (RLT 2018), and this Poestenkill Natural Resources Inventory, has delineated distinct physiographic areas at increasing levels of geographic scale (Levels 1 to 5) for Rensselaer County and for the Town of Poestenkill. (Appendix I of this report is Dr. Hunt's full report.) Level 1 and, to some degree, Level 2 physiographic areas of Rensselaer County represent mountains, plateaus, foothills, and valleys with unique combinations of elevation and bedrock geology (e.g., graywacke) and with unique floristic zones. These Level 1 to Level 2 physiographic areas are often used as context for biodiversity conservation decisions, with the goal of conserving smaller-scale ecological features, such as natural communities and aquatic systems, in each of these physiographic areas.

Level 3 to Level 5 physiographic areas of the county represent more local landforms with more local combinations of geology, topography, soils, hydrology, and floristics; examples of local physiographic areas are escarpment slopes, small clusters of hills, local stream valleys, lowland plains, upland flats, gorges, and lake clusters. These local levels of physiographic areas may be helpful in developing a neighborhood/community identity and a deeper sense of place. Different parts of the Town of Poestenkill may "feel" different to town residents or visitors and physiographic distinctions can be used to describe these different "feels."

The Town of Poestenkill includes parts of two Level 1 physiographic areas: 1) the Rensselaer Plateau, covering the eastern two-thirds of the Town (the Town includes about 12% of the total Plateau area), and 2) the lower-elevation Taconic Foothills covering the western one-third of the Town. *See map on page 20.*

The Rensselaer Plateau is divided at Level 2 into the Central Rensselaer Plateau, the higher-elevation "flat" part of the Plateau, and the Rensselaer Plateau Escarpment, the area alongside the Central Plateau with steep slopes and hollows leading from the Taconic Foothills up to the Central Plateau. The Central Plateau can be further divided into two zones based on dominant tree species: a Spruce-Fir Core zone and a Hemlock-Beech Matrix zone. *See map on page 21.*

At the finest level, Level 5, Dr. Hunt identified the following 19 local physiographic areas within or partly within the Town of Poestenkill:

Taconic Foothills

Poesten Kill Plain	Wide lowland flats surrounding the Poesten Kill and Newfoundland Creek
West Poestenkill Hills	Broad area of densely clustered, low to moderate-sized rolling hills with scattered kettlehole basins containing lakes and peatlands

Wynants Kill Flats	Wide lowland flats surrounding the Wynants Kill, with scattered relatively low and small hills
Wynants Kill Lowlands	Mixture of undulating low to moderate-sized rolling hills and moderately-small basins associated with the Wynants Kill Valley
Southeast Brunswick Hills	West- to south-facing slopes of low foothills east of the lower Quacken Kill
Rensselaer Plateau Escarpment Lowslope	Gently-sloping, west-facing, shelves on lower slopes at the base of the escarpment just west of the Plateau

Rensselaer Plateau
Escarpment

Rensselaer Plateau Escarpment Mainslope	The wide, long, steep forested west-facing midslopes of the Western Plateau Escarpment
Snake Hill	Long, forested north-south ridge at the crest of the Western Plateau Escarpment and prominently elevated from the Poesten Kill valley on its north side
Snake Hill Lowslope	Forested west-facing lower slope of the Western Plateau Escarpment
Barberville Gorge	Steep-sided gorge/hollow cut into the Western Plateau Escarpment along the Poesten Kill, including and downstream of Barberville Falls

Rensselaer Plateau
Central Plateau – Hemlock-Beech Matrix

North Poestenkill Highlands	Undulating, steeply-sloping, north-south ridges on the Rensselaer Plateau with moderate topographic relief
Southeast Poestenkill Highlands	Undulating, steeply-sloping, north-south ridges on the Rensselaer Plateau with moderate topographic relief.
Barberville Flats	Gently-sloping mid-elevation flats and wide valley along the Poesten Kill above Barberville Falls

Upper Poesten Kill Valley	West-facing, gently-sloping, shallow valley of the Poesten Kill from Pine Ridge downstream to about Powers Road, bordered by low hills
Southwest Grafton Lakes	High-elevation mixture of kettlehole basins with lakes and peatlands plus surrounding low hills within lowland flats

<u>Rensselaer Plateau</u>
   <u>Central Plateau</u> – <u>Spruce-Fir Core</u>

Poesten Kill Headwaters	Extensive high-elevation moist to wet flats at the center of the Rensselaer Plateau with very low topographic relief and with peatlands
Northeast Poestenkill Highlands	Gently-sloping, south- and west-facing, high-elevation area near the center of the Rensselaer Plateau with relatively low topographic relief
Southeast Grafton Lakes	High-elevation mixture of kettlehole basins with lakes and peatlands plus surrounding low hills near the center of the Rensselaer Plateau with low topographic relief
West Berlin Highlands	Gently to moderately sloping, southwest- to southeast-facing higher slopes near the center of the Rensselaer Plateau with much local topographic relief associated with glacially-eroded ridges

Physiographic Areas (Levels 1-3)
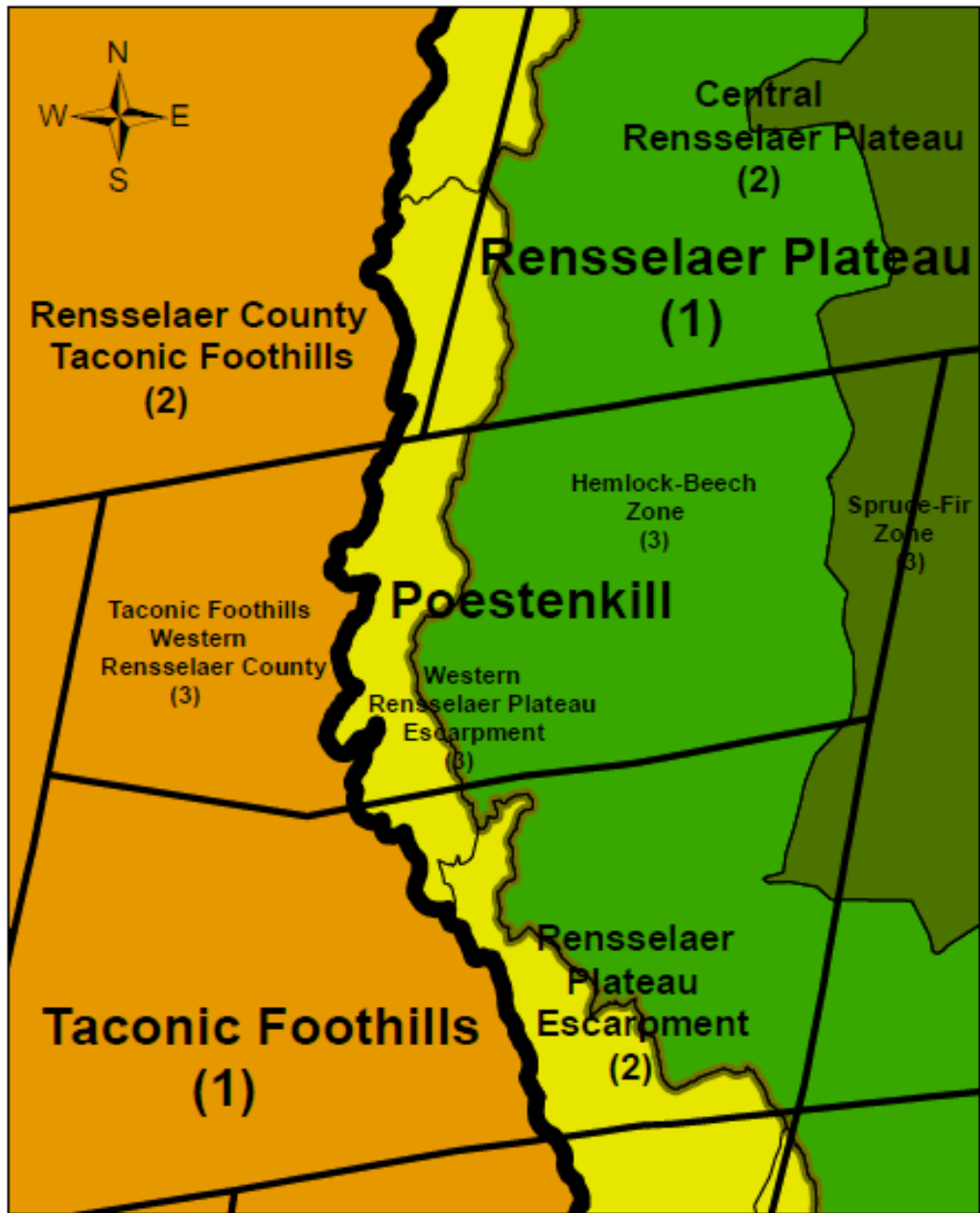
Physiographic Areas (Levels 4-5)
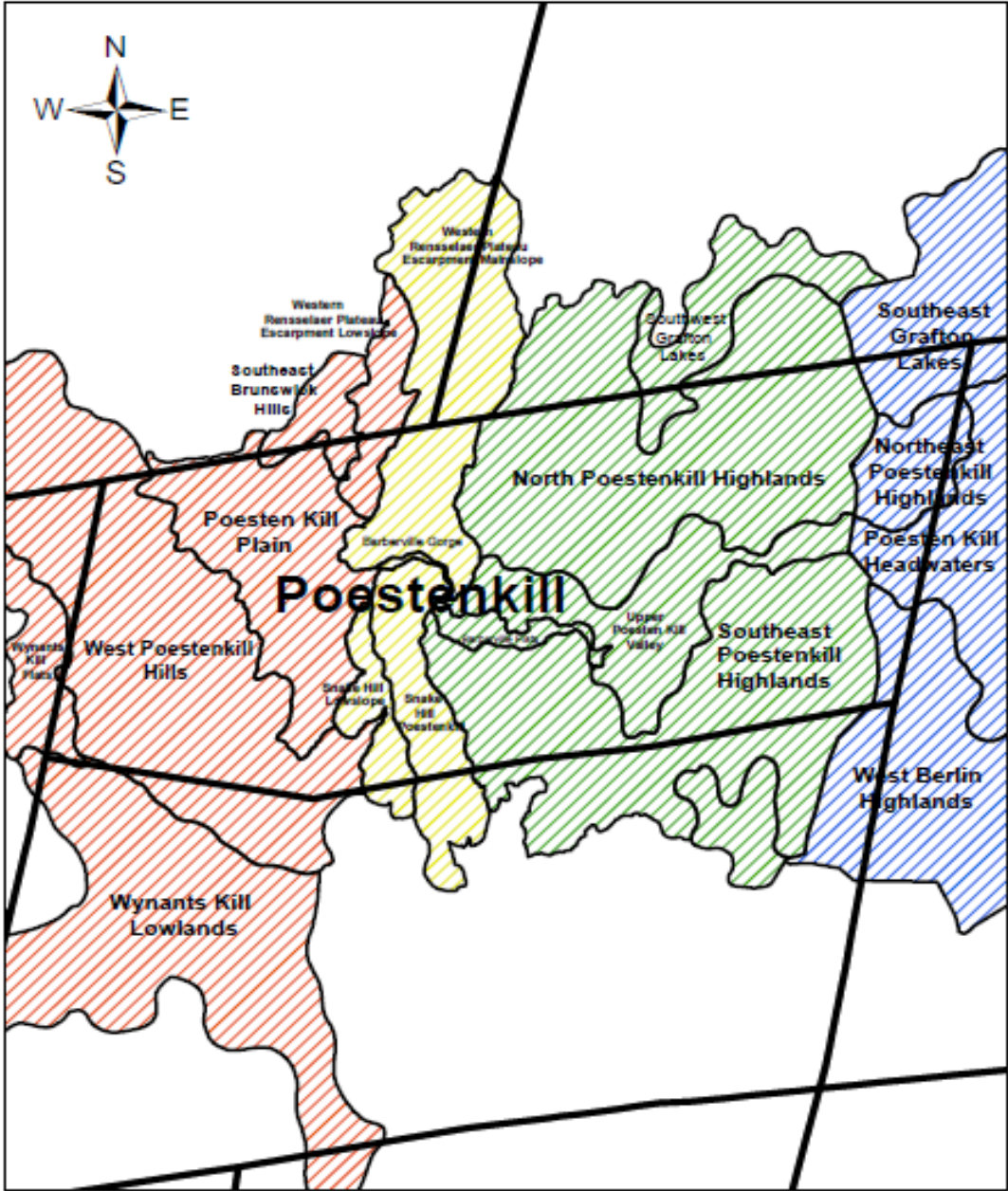
Physiographic Regions

- Taconic Foothills (Level 1)
- Rensselaer Plateau: Spruce-Fir Core (Level 3)
- Rensselaer Plateau: Hemlock-Beech Matrix (Level 3)
- Rensselaer Plateau: Plateau Escarpment (Level 2)

3. GEOLOGY

3.1 BEDROCK GEOLOGY (MAP 5)

Map 5 displays general bedrock geology mapped by the New York State Museum at a 1:250,000 scale. The Town of Poestenkill is located in an area called the New England Uplands which were largely shaped during the Cenozoic Era 65 million years ago (Broughton, 1981). Poestenkill is underlain by Cambrian bedrock (Ruedemann, 1930), which was formed about 600 million years ago during the Paleozoic Era (Broughton, 1981). In the western one-third of Poestenkill this Cambrian bedrock is a mixture of Schodack shale and limestone and Troy shale sometimes called the Taconic Slate Belt. The remainder of this section of town is underlain by Nassau beds of green and red shale and greenish quartzite. The flaky breakdown of the Nassau Formation can be seen in Nassau outcrops along the roads near the Algonquin Middle School.

In eastern Poestenkill, the Nassau Formation is covered by Devonian bedrock called Rensselaer Grit or Rensselaer Graywacke, which is very resistant to erosion. This sandstone is some of the strongest rock in eastern United States. It is at least 500 feet thick, and at its base is the Rensselaer Thrust, a major fault that moved crustal masses westward during the formation of the Taconic Mountains, about 440 million years ago (LaFleur and Randall, 1995). The Rensselaer Grit is 500 or more feet thick and rises in elevation to form the Rensselaer Plateau (Topography **Map 3**). This Rensselaer Grit and intercalated red and green shales produce infertile and often acid soils full of boulders. The Rensselaer Plateau is about 20 miles long (north-south) and 9 miles wide (west-east) and has a rolling surface with relief of about 500 feet. The highest promontory of the Plateau, at 1,891 feet above sea level, is Perigo Hill in southeastern Poestenkill. Snake Hill forms the western edge of the Devonian bedrock of the Rensselaer Plateau in Poestenkill. The western escarpment of the plateau lies east of Route 351 and extends north into the Town of Brunswick (Steep Slopes **Map 4**). The Poesten Kill flows off the plateau at Barberville Falls and forms a gorge 100 feet deep and 500 to 1,000 feet wide. This spectacular falls is 90 feet high and is an excellent place to see the Rensselaer Graywacke rock layers. Above the falls are beds of Nassau slate and limestone.

3.2 SURFACE GEOLOGY AND GLACIAL DEPOSITS (MAP 6)

Map 6 displays general surficial geology mapped by the New York State Museum at a 1:250,000 scale, in addition to detailed glacial features for western Poestenkill digitized from "The Glacial Geology of the Troy, N. Y. Quadrangle" by Robert LaFleur (1965). During the last ice age, some 23,000 to 13,500 years ago, glacial material or overburden was deposited over this bedrock as the ice sheet receded to the north. Western Poestenkill occurs along the northern edge of the Albia-Burden Lake complex which it about 2 miles wide and extends 9 miles from Burden Lake north and west to Poestenkill and Albia (LaFleur, 1965). Pleistocene deposits of glacial till and ice-contact deposits of kames and eskers are well developed throughout this continuous gravelly moraine. The greatest concentration of eskers in the Troy area lies in western Poestenkill from Moules Lake south towards Reichards Lake (Racquet) in the Town of Sand Lake (Several are now missing due to large mining operations in the western portion of the town). Over 50 eskers have been mapped in this area. Eskers are long, narrow ridges formed from deposits of a meltwater stream which flowed beneath the ice sheet. These and other glacial deposits in outwash terraces, drumlins and kames are important sources of commercial sand, gravel and stone.

Glacial till or hardpan is generally unstratified, compact sediment with a silt-rich matrix in which pebble to boulder size stones are suspended.   Till was deposited beneath the actively moving glacial ice, and generally moved less than 5 miles from its bedrock source. It is generally reddish in color in western Poestenkill, reflecting the Nassau Shale bedrock and yellowish brown in eastern Poestenkill, reflecting the Rensselaer grit. Till is usually more than 10 feet thick and is found beneath smooth slopes and under large streamlined hills called drumlins. Most of eastern Poestenkill on the Rensselaer Plateau is covered by glacial till. In some areas it is called "thin till" where it is less than 10 feet thick and includes sizable areas of rock outcrop such as in the vicinity of Snake Hill. Glacial deposits for the entire Town are shown on a large map provided with the LaFleur and Randall (1995) report.

Postglacial deposits in Poestenkill are alluvium, swamp and bog sediments. The Poesten Kill has eroded some of the glacial deposits and has deposited modern alluvium (gravel, sand and silt) in level areas of its floodplain, mostly to the west of the Poestenkill hamlet. Muck, peat and marl are postglacial deposits found in poorly drained basins such as wetlands along Newfoundland Creek.

Insert Map 5 – Bedrock Geology

Insert Map 6 – Surficial Geology

4. SOIL TYPES

4.1 SOILS (MAP 7)

Map 7 displays soil units obtained from the USDA Natural Resource Conservation Service (NRCS) based on soil mapping from the "Soil Survey of Rensselaer County, New York." The soils of Poestenkill have been forming since the last glacial period, some 23,000 to 13,500 years ago. The soils have a great influence on the natural vegetation and upon areas used for agriculture and residential development. The soils are described in the "Soil Survey of Rensselaer County, New York" and are mapped on aerial sheets 14, 15, 18, and 19 (Work, 1988). The soil data may also be viewed and queried using the NRCS Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm).

Most of the soils in Poestenkill were formed in deep to shallow glacial till derived from shale, slate, sandstone, or phyllite. The Buckland-Glover soils dominate the eastern half of Poestenkill. The Bernardston-Albrights-Pittstown soils form the transition from the Rensselaer Plateau to the gentle sloping to hilly Bernardston-Pittstown-Nassau soils in western Poestenkill. The Hoosic-Chenango soils that formed in glacial outwash deposits are located between routes 150 and 66 in southwestern Poestenkill.

The **Buckland-Glover series** of soils of the Rensselaer Plateau are dominantly gently sloping to very steep, moderately well drained to somewhat excessively drained, medium textured soils, some of which are deep and have a fragipan and some of which are shallow over sandstone bedrock. The soils were formed in glacial till derived mostly from sandstone. Bedrock is 10 to 60 inches below the surface. The landscape is hills and ridges separated by broad undulating and rolling till plains. There are numerous stones and boulders on the surface and slope is mainly 8 to 25 percent. The soils are mostly covered with forests. The dense fragipan and seasonal wetness in the Buckland soils and shallowness of the Glover soils seriously limit community development.

The sloping or moderately steep Buckland soils are found on convex hilltops, knolls, ridges, and long hillsides, while the Glover soils are located on the top of ridges, knolls and upper parts of hillsides where the bedrock is just 10 to 20 inches below the surface. The soils in this area are not well suited for farming, as numerous stones and boulders interfere with equipment use. In addition, seasonal wetness in the Buckland soils and the shallowness of Glover soils seriously limit development. Minor soils in this map unit include Brayton, Loxley, Beseman, and Hoosic soils.

The **Bernardston-Albrights-Pittstown series** of soils are dominantly gently sloping to steep, moderate to well drained, medium textured, deep soils that have a fragipan at a depth of 15 to 30 inches. The slope is mainly 3 to 25 percent. These soils lie east of Route 351 and west of the escarpment of the Rensselaer Plateau. Most of the soil units are or have been farmed in the past. Some such as Albrights silt loam are prime farmland soils. Others soil units exhibit seasonal wetness, slow permeability and numerous stones and boulders which seriously limit community development. Despite these limitations, residential development has taken place due to the superior scenic views of the local area and distant views of the Helderberg Plateau and Catskill Mountains.

The gently sloping to steep Bernardston soils are found on hillsides, ridges, and rolling areas between large hills. The gently sloping to steep Albrights soils are on hilltops, hillsides, and ridges, while the gently sloping to moderately steep Pittstown soils are found on hilltops, lower parts of hillsides, and rolling or undulating areas between hills. Many of the soils in this unit are currently used for farming or have been farmed in the past. Other soils exhibit seasonal wetness, slow permeability, and in some places numerous stones and boulders that limit development. Minor soils in this map unit include Scriba, Alden, and Nassau soils.

The **Bernardston-Pittstown-Nassau** soils in western Poestenkill are dominantly gentle sloping to hilly, moderately well to excessively drained, medium textured soils, some of which are shallow over shale bedrock. These soils are formed in shaley glacial till and slopes are mainly 3 to 25 percent. This group contains some soil units such as Hamlin silt loam and Teel silt loam which are prime farmland soils. It also contains poorly drained, Carlisle muck which supports several large wetland communities.

The gently sloping to hilly Bernardston-Pittstown-Nassau soils are located in western Poestenkill, in an area roughly bounded by NY Route 351 on the east and NY Route 66 on the west. These soils were formed in shaley glacial till. The topography in this area is complex because of the underlying folded shale and slate bedrock; the landscape is a series of ridges, knolls, and low hills. The Bernardston and Pittstown soils have a seasonally high water table, which can impact development. The Nassau soils also limit development due to their shallowness; bedrock is exposed in places, particularly on crests of ridges and on the top of knolls and hills. Of minor extent in this map unit are Scriba, Alden, Manlius, Raynham, Hoosic, Teel, and Carlisle soils.

The **Hoosic-Chenango soils** dominate the southwestern portion of the Town. The Hoosic-Chenango soils are dominantly nearly level to hilly, excessively to well drained, medium to moderately coarse textured, deep soils on the outwash plains and valleys east of the Wynants Kill. These soils were formed in glacial outwash that has a high content of gravel and sand. The slopes are generally 3 to 25 percent. The landscape is a series of terraces, benches, knolls, ridges and small flat areas. Much of the area has been farmed in the past, but is now idle, forested or residential. The rate of water movement is rapid and the soils tend to be droughty in summer.

The nearly level to steep Hoosic soils are on terraces, outwash plains, and low hills and ridges that have complex slopes. These soils tend to be droughty in summer. The nearly level or sloping Chenango soils are on terraces, alluvial fans, and outwash plains. Many areas of this unit are suitable for community development and farming, but pollution of ground water by septic tank effluent can be a hazard because water moves rapidly through the soil. Overall, however, the Hoosic-Chenango soils are the most developable in the town of Poestenkill. Minor soils in this map unit in Poestenkill include Castile, Fredon, Raynham, Palms and Carlisle soils

One of the more important characteristics of soils from the standpoint of site development is the drainage class. Soils **Map 7** shows the soils of Poestenkill based on drainage class. The drainage classes range from the driest soils, excessively well drained, to somewhat excessively well drained, to well drained, through moderately well drained, to somewhat poorly drained, to poorly drained, to the wettest soils, very poorly drained.

Insert Map 7 - Soils

4.2 WETLAND SOILS

Soils in **Map 7** are classified according to drainage class, which indicates the possible presence of wetlands, and is a particularly important factor to consider in the evaluation of proposed development. Somewhat poorly drained soils are good indicators of possible wetland areas and poorly drained and very poorly drained soils are indicators of probable wetland areas, corresponding to hydric soils in Poestenkill.[1] They are also shown on Map 12 (Wetlands **Map 12**). Poestenkill is generally well-drained. The areas of poor drainage (in yellow and orange on the map) are generally associated with wetlands and watercourses. Soil drainage class also relates to the suitability of soils for infiltration-based stormwater practices like green infrastructure and wastewater management such as septic systems.

Hydric soils which support hydrophytes, that is, wetland vegetation, may be regulated by the state or federal government as wetlands. The following is a list of hydric soils found in Postenkill:

AnA Alden silt loam, 0 to 3 percent slopes
BrA Brayton very stony silt loam, nearly level
CaA Catden Muck, 0 to 2 percent slopes
FlA   Fluvaquents-Udifluvents complex, 0 to 3 percent slopes
FrA   Fredon silt loam, 0 to 4 percent slopes
LmA Limerick silt loam, 0 to 3 percent slopes
LoA Loxley and Beseman mucks, 0 to 1 percent slopes
MdA Madalin silt loam, 0 to 3 percent slopes
NaA Natchaug muck, 0 to 2 percent slopes
RaA Raynham silt loam, 0 to 5 percent slopes
Sa   Saprists and Aquents, ponded

The hydric Catden muck soils can be found in the western one-half of Poestenkill. The flooded wetland south of Vosburg Pond which can be seen north of Route 66 is underlain by Catden muck as is the New Foundland wetland west of the airport. The Brayton soils are the common hydric soils found in the depressions on the Rensselaer Plateau in eastern Poestenkill and frequently support a conifer cover (hemlock and spruce).

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[1] Kiviat, E. and G. Stevens. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor.* New York State Department of Environmental Conservation, 2001.

5. CLIMATE

Climate has a great influence on both our natural systems and ourselves. For example, precipitation provides the water upon which natural systems depend and also shapes the human landscape through erosion. Additionally, temperature greatly influences the growth of vegetation and provides seasonal variation. Poestenkill, NY is located in what is known as the Temperate Zone, and lies within two distinct climatic regions. The eastern section on the Rensselaer Plateau lies in Region III, an area of cold snowy winters and cool wet summers. The lower elevations of the western section of Postenkill lie in Region VI, known as the Hudson Transition Region, which is warmer and drier (Thompson, 1966)

The differences in these two sections of Poestenkill were once easily comparable using weather data of two nearby weather stations of differing elevation: Troy (Region VI) at elevation 20 feet and Grafton (Region III) at 1562 feet. The western section of Poestenkill is more similar to Troy, while the eastern section on the plateau is more similar to Grafton. As of 1996, the mean annual temperature at Troy was 48.4 (F), while Grafton was slightly cooler at 44.9 (F) (Garwood, 1996). However, the climate has warmed significantly since 1996. In comparison, the mean annual temperature in Troy for 1981-2010 was 49.2 (F), and in Grafton it was 45.4 (F). Mean total annual precipitation in 1996 was 36.99 inches at Troy and 45.81 inches at Grafton, with 45.9 inches of snowfall in Troy compared to 83.2 inches at Grafton. For 1981-2010, mean annual snowfall in Troy decreased to 36.8 inches. The Grafton weather station closed in 2010 and long-term averages are no longer available for all measurements at that site to allow present-day comparison.

Snowfall generally occurs between November and April with the most snow falling in January. Differences in snowfall are the most visible climatic differences seen between the two climatic zones of Poestenkill. Frequently, during the winter, one can be driving in the lower elevations of western Poestenkill and suddenly encounter snow while climbing in elevation towards the hamlets of Ives Corner and East Poestenkill. Commuters coming off the plateau will often experience snowfall at higher elevations that dissipates to rain as they descend in elevation. The Pineridge Cross-Country Ski facility is located in eastern Poestenkill because of the higher amounts of snow the area receives.

Table 1A. Weather data for Troy (T) and Grafton (G), Rensselaer County, New York (Garwood, 1996).

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr.
Mean	T	21.8	24.0	34.3	47.2	58.9	67.8	73.1	71.1	62.5	50.9	40.7	28.6	48.4
Temp (f)	G	19.5	21.7	31.4	43.9	55.6	63.5	68.2	66.3	58.5	48.1	37.1	25.3	44.9
Total Precip. (in)	T	1.99	1.91	2.75	3.23	3.61	3.79	3.96	3.86	3.18	3.07	3.77	2.47	36.99
	G	2.62	2.39	3.26	3.89	4.48	4.86	4.35	4.70	4.10	3.89	4.11	3.16	45.81
Total Snow (in)	T	11.8	10.7	7.8	1.7	0.0	0.0	0.0	0.0	0.0	0.1	3.4	10.4	45.9
	G	19.8	16.6	14.0	6.0	0.7	0.0	0.0	0.0	0.0	0.9	7.8	17.4	83.2
Days snow > 1 in.	T	22	18	9	1	0	0	0	0	0	0	2	12	64
	G	26	25	19	4	0	0	0	0	0	0	6	19	99

Much of the rainfall and snowfall during the cooler months does not evaporate and contributes to a water surplus. The mean annual water surplus averages about 12 to 16 inches in Poestenkill (Thompson, 1966: 73). Most of this water surplus drains into our aquifers or becomes runoff water in our wetlands, ponds and streams.

The cooler temperatures experienced on the plateau account for a shorter growing season for gardens. The frost-free period here may be 100 to 150 days, while the lower elevations experience 150 to 200 frost-free days (Thompson, 1966).

Averages for Troy in the following National Climate Data Center (NOAA) table for the period 1981-2010 update the above information analogous to the western section of Poestenkill.

Table 1B. Climate Averages for Troy, 1981-2010 (NOAA)

Month	Precipitation (Inches)	Minimum Temp (°F)	Average Temp (°F)	Maximum Temp (°F)
January	2.58	14.4	23.2	31.9
February	2.19	16.6	26.0	35.5
March	2.94	25.0	34.8	44.6
April	3.30	37.4	48.1	58.8
May	3.77	47.7	59.1	70.6
June	4.28	57.8	68.3	78.9
July	4.30	62.8	73.3	83.8
August	4.12	60.7	71.5	82.2
September	3.52	52.4	63.4	74.4
October	4.01	40.7	51.2	61.7
November	3.17	32.4	41.0	49.6
December	2.64	22.1	29.7	37.3

5.1 CLIMATE PROJECTIONS

Trends recorded at the Troy and Grafton weather stations show steady and rapid changes in Rensselaer County's climate that reflect global trends. It is vital for local decision-makers to understand these trends and the related climate hazards facing the region and to plan for future conditions. Natural resources can offer climate change protection because plants and trees purify

water and air, store carbon, cool the air and can even grow back stronger after a storm. This section presents general climate information prepared for Hudson Valley communities by the NYSDEC Hudson River Estuary Climate Program.[2] *Responding to Climate Change in New York State* (the ClimAID Report), written in 2011 and updated in 2014, provides the most accurate and up to date climate projections for New York State.[3] ClimAID translated Intergovernmental Panel on Climate Change (IPCC) scenarios into more robust regional-scale predictions incorporating local data inputs and expert knowledge. Poestenkill is located within the ClimAID climate region 5. ***Note that models are inherently uncertain and simply present a range of possible scenarios to assist people and communities plan for the future***. Future climate changes in Poestenkill could exceed or fall short of these projections.

Looking towards the future, there are two prominent climate trends that will affect Poestenkill and the region: increasing temperatures and shifting precipitation patterns. Communities along the Hudson River Estuary will also be affected by sea-level rise (SLR), not discussed here.

5.1.1 Temperature

New York has experienced particularly rapid changes to the regional climate in the last century. This trend is projected to continue through the 21st century. Global average temperature has been rising in unison with increasing input of insulating greenhouse gases driving changes to regional and local climate. Warming atmospheric temperature alters the water cycle leading to more extreme precipitation, short-term drought, and severe storms. Since 1970 Poestenkill has seen a 2°F increase in average annual temperature and a 5°F winter temperature increase. These increases are above both the national and global increase in annual temperature during the same period. Current projections see an additional increase of about 4-6°F in the coming decades and up to 11°F by 2100.

AIR TEMPERATURE PROJECTIONS FOR REGION 5

	Baseline 1971-2000	2020s	2050s	2080s	2100
Annual average air temperature	50˚F	52.3 - 53.2˚F	54.5 - 56.2˚F	55.6 - 59.7˚F	56.1 - 61.4˚F
Increase in annual average	-	2.3 - 3.2˚F	4.5 - 6.2˚F	5.6 - 9.7˚F	6.1 - 11.4˚F

Increasing annual temperatures will lead to more frequent, intense, and long-lasting heat waves during the summer, posing a serious threat to human health and increased electricity demand from air conditioning. By mid-century, Poestenkill could annually experience three to 10 days above 95 degrees, and five to seven heat waves that last one to two days longer than average. Increasing temperature not only affects human health and ecosystems but can impact the

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[2] Zemaitis, Libby. 2018. Working Toward Climate Resilience: General Climate Information Prepared for Hudson Valley Communities. NYSDEC Hudson River Estuary Program.

[3] Rosenzweig, C., W. Solecki, A. DeGaetano, M. O'Grady, S. Hassol, P. Grabhorn (editors). 2011. Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation. Synthesis Report. New York State Energy Research and Development Authority (NYSERDA), Albany, New York. www.nyserda.ny.gov/climaid

electrical needs of a community, putting strain on both budgets and the grid, while increasing challenges in agriculture and other industries.

HEAT WAVE PROJECTIONS FOR REGION 5

	Baseline 1971-2000	2020s	2050s	2080s	2100
# Days per year above 90°F	10	26 - 31	39 - 52	44 - 76	*
# Days per year above 95°F	1	2 - 4	3 - 10	6 - 25	*
# Heat waves per year	1	3 - 4	5 - 7	6 - 9	*
Average # days of each heat wave	4	5	5 - 6	5 - 7	*
# Days per year ≤ 32°F	155	127 - 136	104 - 119	84 - 109	*

*Projections not available at this time

5.1.2 Precipitation

Precipitation has become more variable and extreme in the Northeast, whereas total rainfall has changed only marginally. The amount of rain falling in heavy downpour events increased 71% from 1958 to 2012 in the Northeast.[4] Projections indicate total annual precipitation could increase as much as 12% by mid-century and 21% by 2100. Overall, New York State models project more dry periods intermixed with heavy rain and decreased snow cover in winter. However, precipitation projections are considered more uncertain since it is difficult to model. In addition to elevating flood risk, infrastructure such as roads and the town's wastewater system can become strained during heavy rains.

PRECIPITATION PROJECTIONS FOR REGION 5

	Baseline 1971-2000	2020s	2050s	2080s	2100
Total annual precipitation	51"	52" - 54.5"	53" - 57"	53.5" - 58.5"	53.5" to 61.5"
% Increase in annual precipitation	-	2 - 7%	4 - 12%	5 - 15%	5 - 21%
# Days with precipitation > 1"	10	14 - 15	14 - 16	15 - 17	*
# Days with precipitation > 2"	1	3 - 4	4	4 - 5	*

*Projections not available at this time

5.1.3 Resources for more information

NYS Climate Smart Communities https://climatesmart.ny.gov/

The Climate Program for the NYS DEC Hudson River Estuary Program: http://www.dec.ny.gov/lands/39786.html

Cornell WRI Resources for Resilience: https://wri.cals.cornell.edu/hudson-river-estuary/climate-change-hudson-river-estuary/resources-resilience/

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[4] *National Climate Assessment, 2014*

6. DRINKING WATER RESOURCES

6.1 AQUIFERS (MAP 8)

Precipitation which does not evaporate or run off into waterbodies becomes groundwater. Groundwater seeps through the soil into the overburden and underlying rock formations. This groundwater can be tapped by shallow dug wells or by drilled wells which penetrate into the overburden or into the rock formations. The term "aquifer" is often used to describe a body of rock or overburden which is permeable enough to conduct groundwater and to yield water in usable quantities to wells or springs. **Map 8** displays unconsolidated aquifers in the Town of Poestenkill that were mapped at a scale of 1:250,000 by the US Geological Survey in partnership with the DEC. The mapping is based on the New York State Museum maps of surficial and bedrock geology shown in previous sections of this report.

A study of Poestenkill's ground water from well logs and geology maps was undertaken by Spectra Environmental Group, Inc. in 1995 (LaFleur and Randall, 1995). They concluded "The Town appears to have adequate and, in many places, abundant groundwater for household, commercial and, if necessary, public supply." The LaFleur and Randall map is no longer available.

The amount and quality of groundwater varies throughout Poestenkill. Probably the largest most productive aquifer in the Town is the Poestenkill Aquifer which lies under the hamlet of Poestenkill and extends northwest on either side of the Poesten Kill in a flat valley. LaFleur and Randall (1995) call this the "Poestenkill Aquifer" and refer to it as "Unit A." It is primarily surficial gravel from 25 feet to over 40 feet thick. Wells in the Deer Creek development produce abundant water from this shallow gravel aquifer. This gravel also receives effluent from septic systems in some areas, which is a cause for concern. Along with septic effluent, several spills have polluted the aquifer in several portions of town, requiring the public water system found in the hamlet (Section 6.3). Areas in Unit A near the Poesten Kill and away from residential septic systems are a potential source for public water supplies in the future.

The level land and abundance of water may have been the chief reasons why this area of Poestenkill is so densely populated. Wells in the Deer Creek subdivision, for example, terminate in valley floor sand and gravel deposits at 20 to 30 feet and yield 10 to 60 gallons/minute. By contrast, wells less than one-quarter mile to the east have been drilled to 1,000 feet in hardpan and are dry or yield less than 1 gallon/minute. In general, wells on the Rensselaer Plateau produce less water and must be drilled a few hundred feet to yield adequate water supplies. There are some exceptions, particularly wells in the Ives Corners area on the Rensselaer Plateau which can produce very abundant water, 100 gallons/minute or more, from glacial gravel deposits.

The next most abundant hydrogeologic unit in Poestenkill is located in western Poestenkill to the west of Route 66 or on both sides of Route 351 to the south and north of the hamlet of Poestenkill. This "Unit B" is comprised of sand and gravel deposits in a complex of eskers, kames, and interspersed rolling and kettled outwash. High water levels are not maintained in coarse-grained deposits unless they are near streams or waterbodies.

Insert Map 8 - Aquifers

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Several smaller hydrogeologic units cover the remaining acreage in the Town. "Unit C" is the result of two glacial periods where a layer of stratified gravels and sands have a cover of till over and under them. About 32 wells in Town penetrate this layer in specific areas and a few of them produce very abundant water, some over 100 gallons/minute and some are artesian. One particular area with such wells is the flat area east of the hamlet of Ives Corners on the Rensselaer Plateau. "Unit D" is another hydrogeologic unit composed of postglacial stream deposited gravel beds.

Most of the acreage in the eastern two-thirds and a large area of western Poestenkill is covered by glacial till which LaFleur and Randall refer to as "Unit E." It provides "modest" water in large diameter wells. Dug wells up to 30 feet deep can provide adequate household water supplies, but groundwater can vary widely seasonally. Nearly all modern wells are drilled into the bedrock in this unit.

"Unit F" includes swamp and bog deposits with very high-standing groundwater, but with suspect water quality.

6.2 GROUNDWATER QUALITY

Groundwater quality depends on the residence time and rock-water reactions which take place along the water route to the subsurface. Surface precipitation may become enriched with leached mineral matter as it moves through various types of overburden and rock formations. High levels of iron and manganese are often found in the Town's groundwaters and require treatment to reduce discoloration of fixtures. Water hardness and sulfur is another bothersome attribute often encountered. Elevated levels of sodium (Na) and pH, and low levels of calcium (Ca) and chloride (Cl) have occurred in the Heather Ridge area (LaFleur and Randall, 1995). This has caused submersible pumps to become cemented with lime (calcium carbonate). Overall, based on a limited sample, LaFleur and Randall (1995) concluded Poestenkill groundwater to be of "good taste" and showed only nominal concentrations of the various ions. They did caution, however, that surficial aquifers served by shallow wells are susceptible to contamination by human and animal wastes and by road-applied salt.

6.3 POESTENKILL TOWN WATER DISTRICT (MAP 8)

The Town of Poestenkill receives municipal drinking water from the City of Troy, Department of Public Utilities which operates the Tomhannock Reservoir as its water source. The Town system receives its water through a main along Spring Avenue and stores water in the municipal water storage tank located at an elevation of approximately 760 feet above sea level on Hinkle Road **(Map 8)**. Poestenkill has approximately 400 homes hooked up to the municipal water system (2018). The Town tests the water seven days a week as required by New York State Law.

All properties outside of the Town Water District rely on individual private wells drawing on water from aquifers as well as other groundwater stored in the cracks and fractures of bedrock.

7. SURFACE WATER RESOURCES

7.1 WATERSHEDS AND FLOODPLAINS (MAP 9)

Most of the Town of Poestenkill lies within the watershed of the Poesten Kill. A small section of the Town in its southwestern corner lies within the Wynants Kill watershed and a very small section on the southern border lies in the Kinderhook Creek watershed. Most surface waters flow in a westerly direction from the higher elevations on the Rensselaer Plateau, toward the Hudson River. The Poesten Kill watershed extends beyond the Town upstream into the towns of Berlin and Grafton.

7.1.1 Watersheds

The U.S. Environmental Protection Agency defines a watershed as "the area of land where all the water that is under it, or drains off of it, goes into the same stream, river, lake, or other waterbody." All land lies within a watershed, and large watersheds are comprised of many smaller sub watersheds or catchment areas. The Watersheds and Floodplains Map (**Map 9**) displays watershed boundaries from the 12-digit Hydrologic Unit Code watershed data set (HUC-12) delineated by DEC and the US Geological Survey (USGS) for New York State. Sub watersheds are outlined in yellow and were mapped based on digital elevation data by the New York Natural Heritage Program for the Statewide Riparian Opportunity Assessment.

All of the land in Poestenkill ultimately drains to the Hudson River Estuary via tributary streams. The Poesten Kill is the Town's most important stream and its namesake. It drains 28 square miles or 86% of the Town. The Poesten Kill enters eastern Poestenkill from Berlin and flows for about 11 miles through the center of Town before exiting at its northwestern boundary with the Town of Brunswick, eventually draining to the Hudson River Estuary in the City of Troy. Bonesteel Creek, Newfoundland Creek, and the Quacken Kill are major tributaries of the Poesten Kill in the Town. Several other unnamed tributaries contribute to the flow of the Poesten Kill as it makes its way from Dyken Pond to the Brunswick town line at Garfield Road.

*A **watershed** is the area of land where all of the water that is under it, or drains off of it, goes into the same stream, river, lake, or other waterbody.*

– U.S. Environmental Protection Agency

An additional four square miles of land in the southwest corner of Poestenkill drain to the Wynants Kill. About 0.3 square miles in the southeast corner of the Town drain via Cranberry Vly Creek to Tackawasick Creek and ultimately into the Kinderhook Creek.

Streams and waterbodies on this and most other maps in the Poestenkill NRI are from the USGS 1:24,000 National Hydrography Dataset (NHD) and were digitized from air photos. In addition, this map and the Stream Habitat Map show small streams identified as flow lines in the USGS StreamStats tool. Note the resulting maps have inherent inaccuracies and do not capture all intermittent streams, which only flow seasonally or after rain. The Water Quality Classification Map (**Map 10**) shows DEC-classified streams, generally a less precise depiction of watercourses than provided by NHD.

Although often unmapped, intermittent streams are widespread and ecologically significant, accounting for an estimated 59% of total stream length in the United States. The US Environmental Protection Agency recently compiled an extensive scientific review demonstrating their essential role in maintaining water quantity, quality, and overall watershed function or health (US EPA, 2015). Intermittent streams also play a vital role in dissipating stream energy during storms and reducing erosion and downstream flood impacts. Visiting sites and creating more accurate maps are methods to pursue to ensure that intermittent streams are identified and considered during planning processes.

> *Intermittent streams* *only flow seasonally or after rain. They can easily be overlooked when dry, but have great impact on larger downstream waters and warrant attention. Many flow directly into the Hudson and its tributaries, wetlands, and other water bodies, influencing water quantity and quality.*

7.1.2 Flood Hazard Areas

Floodplains are low-lying areas adjacent to streams and rivers that can become inundated during heavy precipitation or snow melt (**Map 9**). Undeveloped floodplains provide space streams need to expand, contract, and sometimes change course, and they promote groundwater recharge. Furthermore, they safeguard human settlement from the damaging impacts of flood events. Floodplains are determined from Federal Emergency Management Agency (FEMA) Digital Q3 Flood Data, which were developed by scanning existing hardcopy Flood Insurance Rate Maps developed in the 1981 FEMA has recently updated many flood hazard maps across the country to reflect physical changes in floodplains, new data, and improved modeling capabilities. However, as of 2019, FEMA has not yet completed digital remapping for Rensselaer County. Future updates of the FEMA flood hazard maps are expected to include consideration of ongoing changes in local climate.

Flood zones estimated by FEMA to have a 1% chance or greater probability of being inundated in any given year (referred to as the "100-year flood") include floodplains along the Poesten Kill, which are especially large downstream of Route 351 near its confluence with the Quacken Kill. Wide floodplains are also mapped along Newfoundland Creek and the Wynants Kill near Snyders Corners. Some additional floodplain areas are mapped with a 0.2% chance or greater probability of flooding in any given year (referred to as the "500-year flood"). It is important to note that the FEMA-mapped floodplains and their statistical flooding intervals are estimations based on the data and technology available at the time of mapping. Due to many variables, such as the unpredictable nature of some kinds of floods, local drainage problems, and the variable intensity of land development in watersheds, some flood-prone areas may not appear on the maps. Nonetheless, the mapped floodplains provide a starting point for proactive conservation planning. Note that Riparian Areas shown in the **Stream Habitats Map** may indicate additional flood-prone areas, but are not a substitute for FEMA flood zone data.

Insert Map 9 - Watersheds and Floodplains

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In Poestenkill, the 100-year floodplains are generally within 100 to 200 feet of either side of the shoreline of the waterways. In places where smaller tributary streams meet up with these waterways and where the waterways gently meander, curving back and forth in an "S-shaped" pattern, the floodplain often extends out farther.

The 500-year floodplains, while not numerous within the Town, are significant in size where they exist, generally extending outward from the 100-year floodplains where larger quantities of land area are covered. The most significant 500-year floodplain exists where the Newfoundland Creek and the Poesten Kill meet.

From the Hamlet of Poestenkill west to the municipal boundary and along Newfoundland Creek, the amount of land in the floodplain increases. The floodplain boundary varies in distance depending on the topography of the land. The area around Newfoundland Creek bordering the Rensselaer County Airport is extremely flat and therefore conducive to flooding. The same situation exists where the creek meets the Poesten Kill. The land is very flat for a significant distance and creates a sizable floodplain.

Another floodplain in the town of Poestenkill exists around the Wynants Kill. The floodplain extends out from each side of the creek by approximately fifty feet. The creek cuts through the southwest corner of the Town in an area with significant slopes. These slopes help keep the floodplain along the Wynants Kill to a relatively limited narrow area.

The NYS Department of Environmental Conservation Division of Lands and Waters describes flooding and causes of flooding as follows (https://www.dec.ny.gov/lands/4994.html).
A flood is a natural reoccurring event. No manmade project can stop a flood from happening. Several flood protection methods are used to reduce flood damages and risks, some involve direct human intervention into watercourses and others focus on floodplain management and regulation. Two of the most important strategies for safeguarding life from floods are improving weather predictions and flood emergency preparedness.

What Causes Floods?

- Severe rain events

- Rapid snow melt

- Hurricanes

- Debris and ice jams blocking or reducing channel flow

- Over-development

- Deforestation, and loss of wetlands

- Global climate change

- Dam or levee failures

There have been several major floods in the Town, most recently during Hurricane Irene in early August 2011. The hurricane arrived in the New York City area as a spiral of warm, wet, tropical air more than 500 miles wide. As it started to move inland, its winds reduced to tropical storm level, less than 73 miles an hour, but topography took over as the storm was forced upward over the Catskills and other mountains. The upslope flow brought it into an area of higher, colder air that made the tropical air condense, producing heavy rainfall. It is a common atmospheric effect, often seen in the Rockies. In this case, it was enhanced by westerly winds from the west side of Irene. In the Hudson Valley and Vermont, it resulted in six to eight hours of heavy rainfall. In New York, the most rainfall recorded in a 24-hour period during the storm was 8.5 inches in Delanson, west of Schenectady.

During Irene, flooding along the Poesten Kill threatened the bridge on NY Route 351 in the Hamlet after overflowing onto Plank Road in many areas upstream. The NYS Governor announced a temporary lifting of Department of Environmental Conservation restrictions (Article 15 Protection of Waters permits https://www.dec.ny.gov/permits/6329.html) on human activities that "can adversely affect, even destroy the delicate ecological balance of these important areas," so that towns could deal with flooding emergencies during the hurricane/tropical storm. The Town of Poestenkill marshalled heavy equipment to enter the stream above the bridge. Town efforts altered the flow to prevent undercutting of buildings and the bridge at that location.

Many homes upstream and downstream suffered direct damage to buildings or severe loss of land along the banks. https://www.timesunion.com/local/article/Creek-is-center-of-cleanup-2153313.php

Significant flooding during Irene in Poestenkill, NY, Rensselaer County on Sunday August 28, 2011 (Photo by: Hannah Filuta)

Significant flooding during Irene in Poestenkill, NY, Rensselaer County on Sunday August 28, 2011 (Photo by Stu Balter)

In July 2019, The Rensselaer Plateau Alliance issued a final draft plan for future flood mitigation in the Poestenkill Watershed. See the document at this link https://docs.wixstatic.com/ugd/394ce1_a79b03245a5d4812b479b5a9ced33c7b.pdf and find the forward to the plan below:

FORWARD

Tropical Storm Irene caused significant flood damage in 2011 across the 96-square mile Poesten Kill watershed. The Rensselaer Plateau Alliance (RPA) saw an opportunity and secured funding in 2018 from Hudson River Estuary Program (HREP) and New England Interstate Water Pollution Control Commission (NEIWPCC) to develop a plan with a goal to reduce the flood damage in future storms. RPA hired The Chazen Companies with subcontracted services of Interfluve P.C. to assist with the analysis. The team conducted public meetings and developed a watershed working committee to consider and advance specific stormwater opportunities.

The working committee, consisting of local residents and representatives of the towns and city governments, helped the engineers and scientists of Chazen and Interfluve understand the history and local impacts of Irene and other storms. The committee also contributed ideas for flood mitigation

strategies. In fact, an innovative strategy came out of this process: The idea to build naturally-based or lightly engineered outlet controls at certain wetlands in the watershed that meet certain conditions. While this system does not interfere with streams flowing from wetlands during normal circumstances, in the event of a 25 year or bigger flood, they would slow the flow from the wetlands down just enough to reduce the peak flooding in the watershed below. Modeling shows that this strategy could reduce downstream flooding by more than half a foot during future floods, meaning the difference between overtopping flood walls in the City of Troy and staying within the walls; reducing damage to agricultural lands and structures; and allowing continued use of existing bridges and culverts. The wetland outlet controls also "work with nature" rather than requiring big earthmoving projects and are astonishingly cost-effective to construct.

Floods previous to Hurricane Irene include one in 1949 and another in 1995. Plank Road, Garfield Road, and other areas have been flooded due to ice jams. In the late 1990s, the Town received a grant from the U.S. Department of Housing and Urban Development to improve storm drainage in the Poestenkill hamlet. The project, which was completed in 1997, relieved the flooding of ditches along NY Route 355 and on Snyders Corners Road near the elementary school.

7.1.3   National Flood Insurance Program

The Town of Poestenkill has been participating in the National Flood Insurance Program since September 1981 and relies on official Flood Insurance Rate maps (FIRMS) to minimize damage from flooding by regulating uses in flood hazard zones. The Flood Insurance Rate maps are the official maps on which the Federal Emergency Management Agency has delineated both areas of special flood hazard and the risk premium zones applicable to the community.

Communities in the Mid-Hudson Watershed have a mix of updated digital countywide FIRMs and older community based, paper FIRMs developed between 1979 and 2000. While communities in Albany, Dutchess, Greene, Schenectady, Schoharie, and Ulster Counties have updated countywide FIRMs, communities in Columbia and Rensselaer Counties would benefit from a modernized countywide FIRM in a digital format. Many community officials find the existing maps difficult to work with and the floodplains are shown inaccurately. Existing LiDAR data available for the entire watershed will make upgrading these portions of the watershed to a digital product feasible and significantly reduce the cost of developing model-based approximate A-zone studies. Rensselaer County's FIRMs date to 1981 and the Town does not know when digital format replacements will be available. https://data.femadata.com/Region2/Discovery/Mid_Hudson_Watershed/MidHudson%20Discovery_Report_Final.pdf

In compliance with the National Flood Insurance Program, the Town of Poestenkill has established Flood Damage Prevention regulations under Chapter 86 of the Town Code. The purpose of the regulations is to promote public health, safety, and welfare and to minimize public and private losses due to flooding by provisions designed to:

- regulate uses which are dangerous to health, safety and property;

- require that uses vulnerable to floods are protected against flood damage at the time of initial construction;

- control the alteration of natural floodplains, stream channels and natural protective barriers involved in the accommodation of floodwaters;

- control filling, grading, dredging and other development which could increase erosion or flood damage;

- regulate the construction of flood barriers which might increase flood hazards to other lands; and

- qualify for and maintain participation in the National Flood Insurance Program.

Under Chapter 86, construction and development in special flood hazard areas is regulated above and beyond the Town's zoning and building code enforcement procedures. The special flood hazard areas are defined as "the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year... [or] the 'one-hundred-year floodplain'" (§86-4). Builders must obtain a development permit before starting construction or development, and adhere to a list of general and specific standards for building in special flood hazard areas. The Code Enforcement Officer is responsible for administration and enforcement by granting or denying development permit applications in accordance with the provisions of the code.

Chapter 86 also designates floodways within the special flood hazard areas. These floodways are the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height, as determined by the Federal Emergency Management Agency. Because floodways can be extremely hazardous, the regulations for building in these areas are even more stringent.

7.1.4 Objectives

- Continue working with the National Flood Insurance Program so that residents can purchase flood insurance for their properties.

The Town of Poestenkill adopted its Flood Damage Prevention Local Law No. 1 in 1987, when it also adopted the Flood Insurance Rate Maps and attendant Flood Insurance Study, dated March 2, 1981. To remain in the National Flood Insurance Program, the Town must continue to fulfill its obligations under this local law.

- Work so that flooding does not increase with continued development.

Development can significantly increase the amount of water flowing into local streams, creeks and rivers. To this end, the federal Clean Water Act created requirements that new developments do not increase the amount of flooding, water pollution or erosion that will negatively affect water resources. Phase 2 of National Pollutant Discharge Elimination System (NPDES) requires all activities that disturb one or more acre, with the exception of agricultural practices following Best Management Practices (BMPs) and other exempt activities to apply for a permit from New York State, which will address erosion, sediment control and stormwater management. These permits require Stormwater Pollution Prevention Plan, Erosion & Sediment Control Plans and may also require Post-Construction Stormwater Control Plans. In addition to these requirements, Phase 2 of NPDES also requires municipalities of 50,000 or more, or municipalities within the

surrounding area with a density of 1,000 people per square mile or more, to apply for a State Pollutant Discharge Elimination System (SPDES) following six best management practices, one of which being that the municipality must also regulate activities that disturb one acre or more of ground. The Town is also required to inspect and regulate completed Stormwater Control facilities, as well as investigate and eliminate all illegal discharges to their Municipal Separate Stormwater Sewer System (MS4) within the area of density of 1,000 or more population per acre. The Town is required to have public education and outreach, and public participation and involvement, including a public comment on the Town's Annual Report. The Town is working together with Rensselaer County and its fellow MS4 communities to achieve their necessary goals.

- Reduce erosion from stream bank flooding

In natural areas, stream bank flooding is an important ecological process that can limit flooding downstream and provide numerous other benefits to both wildlife and people. Unfortunately, when flooding occurs in developed areas, erosion can eat away land until houses, roadways or other property are threatened. Although this often takes several years to occur, occasionally, rapid flooding can quickly endanger lives as well as property. Planting trees and shrubs along the stream bank, placing rip rap along the base of the eroding areas, changing stream flow through the elimination of sand and gravel bars, and the removal of snags may help alleviate and reduce stream bank flooding. The Rensselaer County Soil and Water Conservation District along with the Natural Resources Conservation Service have worked to reduce and eliminate stream bank erosion in parts of the county. They have partnered with the Rensselaer County Chapter of Trout Unlimited and other conservation groups to help maintain streams, as erosion destroys fish habitats by making streams shallower and depositing sand and gravel on fish spawning areas.

- Mitigate where necessary to eliminate sources that create flooding and scouring.

In certain areas, sand and gravel bars build up in the Poesten Kill which change the direction of flow and current of the creek and create bank erosion and flooding. Some areas identified are the Empire Drive area and sections along Plank Road (County Route 40). Working with the Rensselaer County Soil and Water Conservation District, NYS DEC and the Army Corps of Engineers, the Town can reduce or eliminate severe areas of damage while allowing the creek to remain in a natural state. Occasionally, private enterprises will work with the communities to remove these hazards for the high quality sand and gravel contents of the bars.

7.2 STREAMS AND SURFACE WATER QUALITY CLASSIFICATION (MAP 10)

7.2.1 Water Quality Classifications and NYS Trout Waters

DEC's classification of a waterbody designates the "best uses" that it should be supporting (**Map 10**). All waters of the state are provided a class and standard designation based on existing or expected best usage of each water or waterway segment. For each class, the designated best uses are defined as follows:

- The classification AA or A is assigned to waters used as a source of drinking water.
- Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water.
- Classification C is for waters supporting fisheries and suitable for non - contact activities such as boating.
- The lowest classification and standard is D.

(For more information about classifications, see DEC's webpage, Water Quality Standards and Classifications).

Waterbodies classified as A, B, or C may also have an associated standard of (T), indicating they are trout waters, or (TS), indicating they are trout-spawning waters. For more information about the best uses designated for each classification, see DEC's Classifications-Surface Waters and Groundwaters webpage. DEC recognizes that some waterbodies have an existing quality that is better than their assigned classification and uses an anti-degradation policy to protect and maintain high-quality streams. The waterbody classification does not necessarily indicate good or bad water quality, but rather, the designated "best uses" that should be supported by the waterbody. See the Stream Habitat section of this report (Map 11) for discussion of trout fisheries.

The Poesten Kill is a class C stream with a standard of C(T), except for a section with the standard of C(TS) between the hamlets of Poestenkill and East Poestenkill (**Figure 10**). The Wynants Kill is class B and has the standard of B(TS); the Quacken Kill is class C and has the standard of (TS) in the Town.

Note that not all waterbodies appear on classification maps. However, the missing waterbodies will always have a classification. Waterbodies that do not appear on classification maps and have flow all year (perennial flow) have the classification of the waterbody into which they flow. Waterbodies that do not appear on these maps and have flow seasonally (intermittent flow) have a classification of "D." Since it may be difficult to determine if a water body has perennial or intermittent flow, please contact the DEC Region 4 Office if there is any doubt. DEC has the final authority to determine if a water body has perennial or intermittent flow.

Activities allowed in and around waterbodies are regulated based on their classification and trout or trout-spawning standard. C(T), C(TS), and all types of B and A streams (as well as waterbodies under 10 acres located in the course of these streams) are collectively referred to as

"protected streams." They are subject to the stream protection provisions of the [Protection of Waters](#) regulations in Article 15. In situations where streams are unmapped in DEC databases, perennial streams share the classification of the receiving stream, while intermittent streams are classified as Class D.

7.2.2 Waterbody Quality (not mapped)

DEC monitors water quality through several [routine statewide monitoring programs](#), including the [Lake Classification and Inventory](#) (LCI) program, the [Stream Biomonitoring Unit](#), and the [Groundwater Sampling Program](#). DEC also supports citizen science to monitor lakes through the [Citizens Statewide Lake Assessment Program](#) (CSLAP) and streams through [Water Assessments by Volunteer Evaluators](#) (WAVE). Professional evaluators may also submit water quality data to DEC through the [Professional External Evaluations of Rivers and Streams](#) (PEERS) program.

The DEC Stream Biomonitoring Unit sampled the macroinvertebrate communities of the Poesten Kill at two sites in 1992: above East Poestenkill, Rensselaer County Route 40 and Barberville, County Route 79. The water quality above East Poestenkill was assessed as "slightly impacted, probably due to acid conditions." It had a pH of 5.2 and was dominated by midges and had a limited number of mayflies, which are sensitive to acidity. At Barberville, 4.5 miles downstream, the pH was 6.9 and all faunal indices were within the "non-impacted" range with healthy populations of mayflies, stoneflies and caddisflies (Bode et. al., 1993).

A biological assessment of the Poesten Kill in 2001 showed an improvement at station 1 above East Poestenkill as dominant midges were reduced from 58% in 1992 to only 7 % in 2001, but different sampling seasons and flows might be the cause for the discrepancy (DeGoosh 2002). Based on the macroinvertebrate communities, the five stations sampled along the Poesten Kill in the Town were determined to be "non-impacted." Station 1 still had acidic water with a pH of 5.0, but pH rose to a neutral level of 6.5 at the Garfield Road bridge station. Healthy populations of mayflies, stoneflies, and caddisflies were found at all stations in Poestenkill. Several stations had beetles, dobsonflies/alderflies, dragonflies/damselflies, and black flies.

The [Waterbody Inventory/Priority Waterbodies List](#) (WI/PWL) is a document that lists New York State waterbodies and information about their water quality. It is published by DEC's Division of Water. The WI/PWL tracks the status of water quality in New York State and identifies the degree to which waterbodies are meeting designated "best uses" (e.g., water supply, recreation) based on their DEC classification. The WI/PWL identifies sources of waterbody impairment for stream or waterbody segments based on DEC's monitoring and other available information, and outlines restoration and protection efforts. WI/PWL data for streams and other waterbodies in Poestenkill are available on the DEC website under the [Lower Hudson River Basin WI/PWL](#), and were last updated in 2008.

There are no known impacts according to the WI/PWL to the Poesten Kill, its minor tributaries, or to the upper Wynants Kill. Several small ponds or lakes in the Town are listed as "unassessed," including Moules Lake, Vosburg Pond, Davitt Pond (Lake), Hosford Pond, and Hicks Pond. The WI/WPL fact sheet for the [Upper Poesten Kill and Tributaries](#) (approximately upstream of Route 351) indicates generally non-impacted water quality conditions based on the

Insert Map 10 - Streams and Surface Water Quality Classification

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2001 biological assessment mentioned previously. The one exception along this reach is an assessment of slight impact at the farthest downstream site in Troy, which is below this reach. Aquatic life is considered to be fully supported in the stream, and there are no other apparent water quality impacts to designated uses. The WI/WPL fact sheet for the Lower Poesten Kill and Tributaries notes that "Local agencies have previously expressed concerns about silt and sediment impacts from streambank erosion. Steep banks along the stream are prone to erosion, particularly at higher flows. Residential construction and commercial development in the watershed are also suspected potential sources of sediment. There is some concern about failing and/or inadequate on-site septic systems along the stream as well. The county reports there are areas where illegal dumping of trash and debris has occurred, reducing aesthetics of the creek."

A detailed watershed assessment for the Poesten Kill is underway at the time of this writing, and will provide the most up-to-date water quality assessment available for the Town's principal tributary.

7.3 STREAM HABITATS (MAP 11)

Streams, their floodplains, adjacent wetlands, and other "riparian" or streamside habitats provide important ecosystem services to communities including clean water, flood management, and recreational opportunities like fishing and kayaking (**Map 11**). These riparian areas provide some of the most productive wildlife habitat in the region. The Poesten Kill is the most significant stream in the Town, draining approximately 86% of the land. Its major tributaries include Bonesteel Creek and Newfoundland Creek. Other important streams in the Town include the Wynants Kill and Cranbery Vly Creek. These resources are also discussed in the Streams and Watersheds section (**Map 9**) and Water Quality Classifications section (**Map 10**) of this report.

The headwaters of the Poesten Kill flows through Marsh Headwater Stream communities and soon becomes a Midreach Stream community with a main channel generally less than 60 feet across. On its banks in western Poestenkill, one can find characteristic trees of a Floodplain Forest community such as willows, cottonwoods and sycamores. Trees along the eastern section include ash, maple, oaks, and hemlock on cooler north-facing banks. The Poesten Kill provides habitat for aquatic wildlife such as beaver, muskrats, herons, ducks, northern water snakes and fish and is an important source of drinking water to wildlife during summer droughts. Fish likely to be found in the Poesten Kill in Town include: brown trout, brook trout, satinfin shiner, cutlips minnow, common shiner, bluntnose dace, longnose dace, creek chub, white sucker, tesselated darter and slimy sculpin.

7.3.1 Riparian Areas

Riparian areas are sensitive transition zones between land and water and are vital to stream physical processes, habitat, and water quality. The mapped riparian areas include the floodplains as well as other areas adjacent to streams, ponds, wetlands, and other waterbodies. Riparian areas help clean water by intercepting runoff and filtering sediment and nutrients. They can attenuate flooding by slowing down and absorbing floodwaters. Forested riparian buffers provide organic matter that supports the in-stream food web and shade that keeps water cool. They also support unique and diverse habitats, and serve as wildlife travel corridors.

The riparian areas on the Stream Habitat Map (**Map 11**) were mapped by the New York Natural Heritage Program for the Statewide Riparian Opportunity Assessment (Conley et. al. 2018). They are delineated around streams based on digital elevation data, known wetlands, and modeling for the 50-year flood zone, for the primary purpose of guiding streamside tree planting projects. Note that the riparian areas were developed through modeling and have not been field verified, and that wider stream buffers are in many cases recommended to adequately conserve wildlife habitat corridors and other functions of the riparian zone. Nevertheless, the mapped riparian areas can provide a starting point to inform land use and stream protection efforts, and can help predict the occurrence of flood prone areas that may not be included in FEMA's flood zones. The Hudson River Estuary Program's "Trees for Tribs" initiative offers free consultation and native trees and shrubs for qualifying streamside buffer planting projects in the Hudson River Estuary watershed.

County-important riparian complexes have been mapped along the East Poesten Kill Flats and in the Barberville corridor (see County Important Biodiversity Map - **Map 16A**).

Photo by Jim de Waal Malefyt

7.3.2 DEC Trout Waters

DEC's Water Quality Classifications and Standards identify suitability for trout (T) or trout-spawning waters (TS) along classified stream segments and suggest there is coldwater habitat suitable for trout (and stretches of trout-spawning habitat) throughout the full length of the Poesten Kill in the Town, as well as in its tributaries and in the Wynants Kill. Trout require well-shaded, cool to cold, flowing water and are sensitive to warmer temperatures.

Insert Map 11 – Stream Habitats

There is a 1993 report by DEC which discusses this important fishery entitled "Trout Management in the Poesten Kill" (McBride, 1993). The Poesten Kill is the largest public fishing resource in the Town. Presently, DEC stocks the Poesten Kill in April and May with about 3,000-4,000 brown trout, depending on the amount of unposted land along the stream. Several traditional trout stocking sites along the Poesten Kill have not been stocked with trout due to channelization of the stream between the Poestenkill fire station and East Poestenkill after tropical storm Irene in 2011. Loss of stream side trees from Irene has also raised the water temperature in the Poesten Kill, making it less favorable as a trout habitat. DEC also stocks brown trout in the lower Quacken Kill and along the Wynants Kill.

DEC stocking trout in Poesten Kill   (Photo by Jim de Waal Malefyt)

7.3.3 Known Important Areas for Coldwater Streams

These areas are important to maintaining habitat for known populations of native wild brook trout and other coldwater fishes in decline region-wide due to habitat loss, fragmentation, and degradation. Brook trout inhabit clear, cool, well-oxygenated streams and lakes and depend on clean gravel areas for spawning. They are sensitive to increases in water temperature and sedimentation of stream habitats. Other threats include the introduction of exotic species such as smallmouth bass and non-native trout, which are better adapted to warm water temperatures. Mapped areas include wild brook trout locations identified in DEC fish surveys since 1980, as well as buffers along associated stream and waterbody segments to account for lands most likely to affect the continued presence and quality of the stream habitat. The map does not account for habitat fragmentation that might be caused by local dams and culverts. The map does NOT

indicate areas with public fishing rights, and many areas are unsuitable for recreational trout fishing due to small fish populations and small fish size.

Poestenkill supports a significant coldwater stream resource for the Capital District region. A survey of brook trout in Rensselaer County (2007-2011) showed brook trout present in Bonesteel Creek and the Poesten Kill near Pineridge cross-country ski area (Pokorny, 2011). Conserving riparian stream buffers is especially important to maintaining the Town's brook trout populations.

7.3.4 Known Important Areas for American Eel

The migratory American eel (High Priority SGCN) uses stream habitat in the Poesten Kill as far upstream as East Poestenkill and occurred historically throughout the entire main stem and many tributaries, returning to the Atlantic Ocean to spawn. Though juvenile eels can bypass certain aquatic barriers on their journey up freshwater streams, the species is in decline throughout much of its range due to fragmentation of stream habitat by dams, culverts, and other aquatic barriers. Remarkably, the major waterfalls on the Poesten Kill are not a barrier to eel passage.

7.3.5 Dams and Culverts

Infrastructure in streams, such as dams and culverts, can isolate and severely limit the range of fish and other aquatic organisms that use stream corridors. Dams and culverts can present physical barriers to passage, and these structures can also become impassable by changing water quality (e.g. temperature) and quantity (e.g. high velocity). Dams can also lead to flow barriers, when the water in the impoundment behind the dam is used, consumed, or diverted for other purposes (e.g., drinking water supply), leading to lack of water downstream. In some cases, pollution and channel modifications can create the same kinds of barriers. Just as many forest-dwelling species are negatively impacted by forest fragmentation from roads and structures, stream barriers disconnect streams and decrease available habitat. Historically, as mills and road crossings were added to the streams of the Hudson Valley, dams and culverts blocked off and cut up the habitat for organisms like brook trout and American eel. Stream barriers can also have serious effects on local flooding and water quality. Streams flowing into undersized culverts can flood upstream and, in some cases, overtake and wash out a road during heavy precipitation or snowmelt. Bridges, open-bottom culverts and similar structures that completely span the waterway and associated floodplain/riparian area generally have the least potential impacts on hydrology, floodplains, and habitat.

Dams are shown from the New York State Inventory of Dams. While the DEC tries to maintain an accurate inventory, these data should not be relied upon for emergency response decision-making. DEC recommends that critical data, including dam location and hazard classification, be verified in the field. The presence or absence of a dam in this inventory does not indicate its regulatory status. Note that assessments by the DEC Hudson River Estuary Program in trial watersheds indicate that perhaps twice as many barriers exist than are recorded in the NYS Inventory of Dams.

Culvert and bridge data are provided from the North Atlantic Aquatic Connectivity Collaborative (NAACC), a network focused on improving aquatic habitat connectivity across the

Northeast region. Most road-stream crossings on public roads in Poestenkill have been assessed by DEC using NAACC protocols for passage by fish and other aquatic organisms, as well as for capacity to handle large storm events. Among assessed bridges and culverts, there are 24 known severe barriers with no passage for fish, and 32 partial barriers providing reduced fish passage. Technical assistance and grant funding are available through the Hudson River Estuary Program to prioritize known aquatic barriers for removal or mitigation.

7.3.6 Important Aquatic Networks

The Poesten Kill, with its many tributaries and wetlands, forms the most important aquatic network in the Town. The Wynants Kill forms a much smaller aquatic network in the southwestern part of the Town. The New Foundland Creek due to its length and large associated wetlands before it flows into the Poesten Kill is also an important aquatic network. The large Newfoundland wetland adjacent to the Poestenkill airport is important aquatic habitat for ducks, geese, and other wetland birds such as American bittern, swamp sparrow, and red-winged blackbird.

Poesten Kill at Legenbauer Road (Photo by Jeff Briggs)

8. WETLANDS (MAP 12)

A **wetland** is a distinct ecosystem that is saturated by water, either permanently or seasonally, where oxygen-free processes prevail, resulting in distinctive hydric soils and vegetation adapted to these conditions. There are many types of wetlands found in Poestenkill, including swamp, marsh, bog, fen, vernal pool, and peatland (**Map 12**).

Wetlands play a number of functions, including water purification, water storage, processing of carbon and other nutrients, stabilization of shorelines, and support of plants and animals. Wetlands are also considered the most biologically diverse of all ecosystems, serving as home to a wide range of plant and animal life. Wetland health and function depend in large part on the characteristics of the surrounding upland buffer area. Both diminish when a wetland is surrounded by pavement, buildings, and pollution-generating or other incompatible land uses (Environmental Law Institute 2008). Methods for rapidly assessing wetland functions, ecological health, and general wetland condition have been developed in many regions and have contributed to wetland conservation partly by raising public awareness of the functions and the ecosystem services some wetlands provide.

> *Wetlands* *are areas saturated by surface or groundwater sufficient to support distinctive vegetation adapted for life in saturated soil conditions.*

Because of the important ecological services they provide to society, activities in wetlands that can adversely affect wetland functions are regulated at both the State level (New York State Department of Environmental Conservation [DEC]), and the Federal level (US Army Corps of Engineers [USACE]). DEC regulates wetlands in New York that exceed 5 hectares in size (12.4 acres). The USACE regulations are currently undergoing revision. In general, federal protections apply to wetlands adjacent to perennial watercourses.

Knowing about local wetlands can enable the Town to proactively plan to conserve this critical part of our life support system. The Wetlands Map **(Map 12)** shows information from several existing sources that provide approximate locations and extent of wetlands. They are inherently inaccurate and not a substitute for site visits and on-the-ground delineation. Nonetheless, the Town can use these maps as a starting point for inventorying local wetlands and supplement them with more refined data as they become available.

8.1 NYS FRESHWATER WETLANDS AND NATIONAL WETLANDS INVENTORY

Mapped wetlands on **Map 12** are shown from the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) as well as DEC's Freshwater Wetlands Map, which is limited to wetlands regulated by DEC under the NYS Freshwater Wetlands Act. Open water habitats are symbolized in blue as "waterbodies." Note that NWI maps often underestimate wetland area and omit smaller and drier wetlands (Zucker and Lau, unpublished report). In particular, vernal pools, wet meadows, and swamps are often under-represented on maps. Many of DEC's wetland maps are outdated and have similar inaccuracies (Huffman and Associates 2000). DEC updated some of their wetland maps and released them in August 2014.

8.1.1 DEC Wetlands

Wetlands are widely scattered throughout the Town of Poestenkill (**Map 12**). There are 25 state-regulated wetlands mapped by DEC, listed below. The state-regulated wetlands are 12.4 acres or larger and include a protective buffer or "adjacent area" extending 100 feet landward of the wetland boundary. The first letters in the wetland code for the DEC wetlands is based on the USGS quadrangle map in which they are located: AP = Averill Park and T = Taborton.

Most of the large wetlands are shown on freshwater wetland maps prepared by the DEC. The March 26, 1986 maps (nos. 11 and 12 of Rensselaer Co.) show 25 mapped wetlands in Poestenkill. Most of these wetlands are Class II and are widely scattered about the Town, mostly along tributaries of the Poesten Kill. The highest rated wetland in Town is Class I Wetland AP-18, a large complex of wetlands of about 160 acres (Vance, 1998). This Class I wetland is located in both Poestenkill and the Town of Sand Lake and is located on both sides of Route 66 at Vosburg Pond. Two other large wetlands of about 83 acres located in Poestenkill are Class II Wetlands AP-8 and AP-11 in northwestern Poestenkill. Wetland AP-11 can be seen from Route 355 along Newfoundland Creek to the east of the Rensselaer County Airport. Most wetland cover types are "flooded deciduous trees" and "flooded shrubs," with "flooded coniferous trees" as an additional cover type in the higher elevations in eastern Poestenkill.

The extent, if any, of human disturbance to the State regulated wetlands of Poestenkill is not entirely known due to the remoteness of some wetlands. Evidence of earlier drainage projects can be seen in Wetlands AP-11 and AP-18. Wooded wetlands are probably disturbed by logging from time to time. Presently, many of the regulated wetlands appear to be relatively undisturbed.

The State regulated (DEC) wetlands in the Town of Poestenkill are mapped. These wetland maps have inherent inaccuracies. Therefore, a 500-foot "check zone" identifies adjacent areas that might also contain DEC regulatory wetlands.

Wetland Code/Class	Wetland Code/Class
AP-6/II	T-8/II
AP-8/II	T-9/II
AP-9/II	T-10/II
AP-10/II	T-11/III
AP-11/II	T-12/II
AP-12/II	T-13/III
AP-13/II	T-17/IV
AP-14/II	T-21/II
AP-16/II	T-22/IV
AP17/II	T-23/III
AP-18/I	T-49/II
AP-27/II	
AP-28/II	
AP-29/II	

Insert Map 12 - Wetlands

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8.1.2 NWI Wetlands

A more comprehensive set of wetlands, including wetlands smaller than five hectares, was mapped by the US Fish and Wildlife Service (USFWS) and can be found in the National Wetlands Inventory (NWI). The NWI mapping was conducted using aerial images and therefore the boundaries must be verified on the ground. Many smaller wetlands are not protected by Federal or State regulations. These wetlands can be more easily impacted by ditching, filling and other human disturbances. Small wetlands are often important breeding habitats for amphibians where fish are absent. Wood frogs require small isolated wetlands, often referred to as vernal pools, to breed and can often be heard calling from them in late winter and early spring. Small wetlands also provide important benefits related to water purification and flood control.

DEC and NWI wetland maps are available online through the Hudson Valley Natural Resource Mapper: https://www.dec.ny.gov/lands/112137.html. Not all wetlands within the Town are mapped by DEC or USFWS and the boundaries shown for those that are mapped should be considered "approximate".   The jurisdictional wetland boundaries on any development site should be confirmed by a certified wetland delineator and shown on the development plat.

8.2 WETLAND SOILS

County soil maps are also a good source for predicting the location of potential wetlands. Soils classified as very poorly drained or poorly drained are good indicators of probable wetland areas (and correspond to "hydric" soils in Poestenkill), and soils classified as somewhat poorly drained indicate possible wetland areas (Kiviat and Stevens 2001). The probable and possible wetland areas cover a greater area than NWI and DEC wetland layers and should always be verified in the field for the purposes of environmental review. Note that county soil units are only mapped to an approximate area of about two acres, and that soils within a unit may not be homogeneous. Digital data from NRCS for soil drainage classification are also incomplete for Rensselaer County; thus, there may be additional areas meeting these soil conditions.

8.3 VERNAL POOLS

Vernal pools are small, shallow, seasonally flooded wetlands, usually located within an upland forest. They are typically flooded in spring or after a heavy rainfall, but are usually dry during summer. Many vernal pools are filled again in autumn. These isolated, ephemeral wetlands in forested areas provide habitat for many animals, including important breeding habitat for forest amphibians. Two well-known vernal pools exist at the Poestenkill Community Forest and Geiser Preserve where spring peepers and wood frogs breed. Choruses of spring peepers can be heard at a number of vernal pools and wetlands on private property along Town roads in early spring. Hundreds of spotted salamanders, red-spotted newts, wood frogs, and spring peepers are killed on rainy spring nights as they cross these Town roads to reach breeding habitats. Volunteers of the State's Amphibian Migrations & Road Crossings Project move some of the amphibians across several Town roads to document these events and save crossing amphibians.

Vernal pools often go undetected in the forest due to their small size and seasonal drawdown and are also vulnerable due to limited regulatory protection. Specific management recommendations can be found in *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Development in the Northeastern United States* (Calhoun and

Klemens 2002) and *Maine Municipal Guide to Mapping and Conserving Vernal Pool Resources* (Morgan and Calhoun 2012). The New York Natural Heritage Program's Vernal Pool Mapping Project is beginning to map known vernal pools. For more information, visit http://nynhp.org/epa-vernal-pools.

8.4 IMPORTANT WETLAND COMPLEXES

Poestenkill is home to several examples of high-quality wetlands and wetland complexes, which are geographic assemblages of wetlands (see the **State Important Biodiversity Map [Map 13]** and **County Important Biodiversity Maps [Maps 16a and 16b]**). Some wetlands are relics of the prehistoric glacial period and contain unique flora such as leatherleaf, bog laurel, pitcher plants and sundews. The kettle-hole wetlands associated with Moules Pond and Hosford Pond are such examples. Two wetland communities of about 10 acres each associated with Hosford Pond are identified as state-significant natural communities by the New York Natural Heritage Program (see Edinger et al., 2014 and https://guides.nynhp.org/ for habitat guides). One is a "Dwarf Shrub Bog" and the other is an "Inland Poor Fen," both of which are rare to uncommon (21-100 occurrences) within New York State. Moules Lake has a number of wetland community types associated with it including: Red Maple-Hardwood Swamp (Blackgum variant), Shrub Swamp, Dwarf Shrub Bog, and Black Spruce-Tamarack Bog (Hunt, 1998).

Some coniferous wetlands more characteristic of the Adirondacks can be explored by the public at Dyken Pond Environmental Education Center and are identified as county-significant wetland complexes. Part of Dustin Swamp at the Environmental Center in the Town of Poestenkill contains a Sedge Meadow community (Hunt, 1998). Other wetland communities such as a Hemlock-Hardwood Swamp can be found in western Poestenkill, while Spruce-Fir Swamps are found scattered through eastern Poestenkill. Important mineral soil wetland complexes are also mapped along Newfoundland Creek, the Wynants Kill, and at Vosburgh Pond.

Wildlife records confirm the availability of high-quality wetland habitat in Poestenkill. American bittern, American black duck, and osprey have been documented through eBird. A Poestenkill bog is also the only known location of the rare forcipate emerald dragonfly south of the Adirondacks. Moose also rely on the Plateau's extensive wetland habitats.

Photo by Jim De Waal Malefyt

9. LAND USE AND ECOLOGICAL RESOURCES

9.1 REGIONAL ECOLOGICAL CONTEXT (MAP 13)

The Regional Context map (**Map 13**) helps illustrate the major ecological features in Poestenkill extending beyond the Town's borders. The Rensselaer Plateau forest and the Poesten Kill stream corridor are the Town's most significant ecological resources, and have been recognized at state, regional, and national levels. Cooperation with neighboring municipalities can foster the long-term management and conservation of these resources.

9.1.1 The Rensselaer Plateau

The eastern 60 percent of Poestenkill is situated on the Rensselaer Plateau, an expansive area of contiguous, high-elevation northern forests. The Plateau is bounded from adjacent lowlands by steep escarpments and is otherwise characterized by rolling topography with many swamps and lakes among the forests. DEC recognizes the Rensselaer Plateau as a Significant Biodiversity Area (SBA), an area with a high concentration of biological diversity or unique ecological features, described in the *Hudson River Estuary Wildlife and Habitat Conservation Framework* (Penhollow et al., 2006). According to the *Framework*,

"The Rensselaer Plateau contains a diverse mix of wetland and upland communities that are more common in northern New York and New England, including spruce-fir swamp, shallow emergent marsh, sedge meadow, hemlock-northern hardwood forest and spruce flats. …The ecological significance of this area relates to its large, contiguous forest and wetland habitats and the species dependent on these habitats, as well as the diversity of plants, communities, and animals unique to this region. Area-sensitive animals found in this area include a variety of forest interior songbirds as well as large mammals that occur in low densities such as moose, black bear, bobcat, fisher, and river otter."

DEC has also designated the forests of the Rensselear Plateau a "Forest Legacy Area," one of six areas statewide. This designation allows municipalities and conservation groups to leverage federal funds for the conservation of these important forests. In 2017, nearly 17,000 acres, much of it within the Rensselaer Plateau, were protected as working forest using this funding.

Grassroots efforts led by the Rensselaer Plateau Alliance to elevate public understanding of the Plateau, identify its most significant values, and lay out potential conservation and stewardship tools and actions resulted in the *Rensselaer Plateau Regional Conservation Plan* (RPA 2013). The detailed Plateau boundary developed for the *Regional Conservation Plan* is shown on the Regional Context Map (**Map 13**). The *Regional Conservation Plan* includes a detailed ecological assessment and mapping of ecological communities on the Plateau. An ecosystem service assessment was also completed. The Rensselaer Land Trust's *Land Conservation Plan* (2018) builds on and complements this work from a county-wide perspective.

The Rensselaer Plateau forest spans approximately 120,000 acres, making it one of the largest forested regions in New York State and globally significant. The Nature Conservancy and New York Natural Heritage Program have identified the central Plateau including eastern Poestenkill as a "matrix forest block," large enough to withstand major natural disturbances, maintain important ecological processes, and support populations of forest-interior wildlife and plants (Anderson and Bernstein, 2003). These attributes are discussed further in the Forest section.

9.1.2 Rensselaer Forest Tract Important Bird Area

Audubon New York has mapped a statewide Important Bird Area on the Rensselaer Plateau stretching approximately 12 miles from Grafton Lakes State Park in the north to Cherry Plain State Park and Capital District Wildlife Management Area. The Plateau's large forest, cool climate, and many wetlands support a great abundance and diversity of forest breeders, including many at-risk species. Certain criteria must be met to be listed as an IBA. The Rensselaer Forest Tract IBA supports about 20 "Species at Risk:" Cooper's hawk, northern goshawk, red-shouldered hawk, wood thrush, Canada warbler, and 15 others. It also meets the criterion for "Responsibility Species Assemblages" by being a large intact forest used by over 25 forest breeding birds considered to be of conservation concern. At least 18 species of warblers breed here, and Bicknell's Thrushes use the area during migration. The Ornithological Summary describes breeding species present. Forest birds of conservation concern documented in Poestenkill during the *2000-2005 NYS Breeding Bird Atlas* are shown in Table 8.

9.1.3 Poesten Kill Watershed

Approximately 86% of Poestenkill drains to its namesake stream, the Poesten Kill. The Poesten Kill originates from Dyken Pond in the Town of Grafton and drains through the Town of Berlin before entering Poestenkill. The stream flows 11.3 miles through the Town and continues into the Town of Brunswick before draining to the Hudson River Estuary in the City of Troy. In addition to its status as a NYS trout stream with large reaches of trout-spawning habitat, the 15-mile stretch of the Poesten Kill from Dyken Pond to Empire Road in Poestenkill is listed in the National Park Service's Nationwide Rivers Inventory based on its natural hydrology, unique geology, and recreational value to urban populations. The Inventory cites that it is one of the last remaining examples of a free-flowing, undeveloped, low-order river in the region, flowing through the unique and diverse Barberville Falls as it descends the Rensselaer Plateau escarpment. Nationwide Rivers Inventory segments are potential candidates for inclusion in the National Wild and Scenic River System.

9.1.4 Natural History

The best information about the natural communities which existed in Poestenkill during its settlement in the 1700s comes from survey notebooks for the van Rensselaer Manor (Gilbert, 1788). Job Gilbert was a surveyor for Stephen van Rensselaer, owner and patroon of the Manor of Rensselaerwyck. Western Poestenkill was largely settled by the late 1700s, but the area on the Rensselaer Plateau was not "improved." This area was divided into lots and was called

Insert Map 13 – Regional Ecological Context

Middletown. Job Gilbert described the boundaries of each lot in his survey notebook and also made "remarks" about its soil and timber and water resources.

The most common species of trees listed by Job Gilbert as timber for lots in Poestenkill were Hemlock, Beech, Maple, and "Rock, Black and White Oak." Other tree species mentioned included White Ash, Chestnut, Birch, Elm, Poplar, White Pine, Spruce and "Firr." A typical description for a lot on the Rensselaer Plateau near Perigo Hill is given for lot 91 (near Poestenkill Community Forest) as follows: "soil stony uneven Cold and poor part swamp; Timber Hemlock Spruce Firr Some Beech poorly watered. Part of lot 33, on the slopes of the escarpment with one of its boundaries "on the North Bank of Posten Kill" was described as "Soil strong and uneven and stony; Timber Black Oak Beech Maple Some Chestnut - Well Watered." Lot 33 appears to be located on the north side of the Poesten Kill just west of Barberville Falls. By contrast, lot 113 further west of the plateau near Vosburg Pond had "soil tollerably fertile and tillable," timber included "Black & White Oak," and was "well water'd."

Warren Broderick (1997) plotted the tree species from Job Gilbert's survey notebook and concluded that an "Oak/Chestnut Forest" was located in the late 1700s on the western escarpment and slopes of what we now call the Rensselaer Plateau. Chestnut blight in the early part of the 1900s has all but wiped out this tree species from our present forests. Broderick labels the other principal forest covering eastern Poestenkill in 1790 as a "Beech/ Hemlock/ Maple/ Spruce Forest." The patroons leased their land to the New World tenants who were expected to "clear" and "improve" the land and provide the patroon with a specific number of bushels of wheat each year. Some lots south of the old "Hoosuck Road" in the vicinity of Perigo Hill were conveyed to the "Glafs Factory Co." in the early 1800s, probably for timber.

It is not certain how much of the original forest in Poestenkill was actually cleared during the 1700s and 1800s. However, Norton Miller shows a steady increase in the amount of improved or cleared land in Rensselaer County into the late 1800s from state and federal census data (Miller, 1994). In 1880, 355,099 acres (84%) were "improved," while 69,506 (16%) acres were "unimproved" and assumed to be forested. Even the small remaining forested areas were heavily used to supply lumber and timber, fire and kindling wood, charcoal, tannin bark and wood pulp (Hill, 1979). Throughout the late 1800s the primary occupation reported by residents of Poestenkill in these censuses was that of a "farmer." That trend reversed itself in the early 1900s as marginal cropland and pastureland on the plateau was abandoned and replaced by successional fields and forests. Stone walls in forested hillsides today stand as a reminder of the subsistence farms of the past centuries. Many of the farms which were abandoned and reverted back to second-growth forests are again being selectively logged for timber and firewood.

As with the original forests, streams and other waterbodies did not escape the influence of human settlement and "improvement." Most have been altered to some extent and recovered to some degree. In the 1845 state census for Rensselaer County, 140 saw mills were recorded (Norton: 14). Most of these, no doubt, were located on streams which were dammed and diverted to provide water power. The Mill Pond just east of the hamlet or village of Poestenkill is a well-known example and is described in West of Perigo by Florence Hill (Hill: 46-47). Many present-day ponds and small lakes are the result of dammed tributaries of the Poesten Kill. Today, the Poesten Kill remains a free-flowing stream as it flows through the Town.

9.1.5 General Land Use and Land Cover (Map 14)

The Land Cover Map (**Map** 14) provides a bird's-eye view of general habitat types, development, and land use patterns in the Town of Poestenkill based on remote sensing analysis of Landsat satellite imagery. It displays information at a 30-meter spatial resolution from the 2016 National Land Cover Database (NLCD, http://www.mrlc.gov/). Each 30x30m square displays a land cover or land use class. Accuracy assessment has not yet been completed for the 2016 NLCD, but overall accuracy of prior 2011 NLCD data was 88%, with variations by geography and by identified class (Wickham et al. 2017). **Note that NLCD data are most reliable at regional scales and have important limitations at the municipal scale. The data are not necessarily accurate for all locations and do not distinguish many important habitat types.** Read more about the applications and limitations on the NLCD factsheet (http://pubs.usgs.gov/fs/2012/3020/). Used in an appropriate manner, the land cover/land use data can be a helpful tool to understand general patterns of land cover and land use, to identify large connected habitat areas, and to identify potential areas of concern where land uses may impact habitats or water resources. Definitions for land cover and land use classes shown on the map are as follows (https://www.mrlc.gov/nlcd11_leg.php):

Open Water- areas of open water, generally with less than 25% cover of vegetation or soil.

Developed, Open Space- areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

Developed, Low Intensity- areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.

Developed, Medium Intensity -areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

Developed High Intensity-highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.

Barren Land (Rock/Sand/Clay) - areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.

Deciduous Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.

Evergreen Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.

Insert Map 14 – General Land Use and Land Cover

Mixed Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

Shrub/Scrub- areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.

Grassland/Herbaceous- areas dominated by gramanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

Pasture/Hay-areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.

Cultivated Crops -areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.

Woody Wetlands- areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Emergent Herbaceous Wetlands- Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Table 2 summarizes the area and percent of Poestenkill represented by each land cover or land use class:

Table 2. Summary of Land Use Coverage for Town of Poestenkill (2016 NLCD data)

Poestenkill Land Cover/Use Type	Percent Cover
Mixed Forest	42.5%
Deciduous Forest	20.8%
Evergreen Forest	8.1%
Developed, Open Space	4.3%
Developed, Low Intensity	2.6%
Developed, Medium Intensity	0.9%
Developed, High Intensity	0.1%
Hay/Pasture	7.9%
Woody Wetlands	6.2%
Cultivated Crops	2.6%
Herbaceuous	1.2%
Barren Land	1.0%
Emergent Herbaceuous Wetlands	0.7%
Open Water	0.6%
Shrub/Scrub	0.4%

10. ECOLOGICAL COMMUNITIES (MAPS 15 AND 16A)

Poestenkill presently possesses a significant variety of natural ecological communities including streams, ponds, wetlands, forests and other upland communities. A natural ecological community is a set of specific interacting plant and animal species that share a common physical environment, and this set of species in this environment repeats across a landscape. The New York Natural Heritage Program has classified the natural landscape of New York into 174 natural community types (Edinger, et al, 2014). Examples of specific natural community types include hemlock-northern hardwood forest, red maple-hardwood swamp, dwarf shrub bog, deep emergent marsh, and headwater stream. (Culturally created communities such as agricultural lands, plantations and residential lands are not considered natural ecological communities.)

Most, if not all, of the forest communities are second-growth communities which replaced abandoned farms and logged-over forests of the past two centuries. Soils and climate are the two main natural factors affecting the type of vegetation which regrows on a site. Herbivore browsing has also influenced the regeneration of the forest communities and community composition. Human influence, such as logging, is constantly modifying these natural communities.

Dr. David Hunt has inventoried, assessed, and mapped natural ecological communities in his work for the Rensselaer Plateau Regional Conservation Plan (RPA 2014), the Rensselaer County Conservation plan (RLT 2018), and this Poestenkill Natural Resources Inventory (Appendix I). Dr. Hunt has identified 48 natural community types known to occur in the Town of Poestenkill; these 48 known community types are listed below in **Table 3**. Dr. Hunt also identified 22 other types potentially occurring in the Town. The number of types indicates a high level of ecological diversity within the Town, partly attributable to the Town being in two physiographic regions, the Rensselaer Plateau and the Taconic Foothills (west of the Plateau); the 48 known natural community types are more than half of the 87 types known from Rensselaer County. All ecological communities in the Rensselaer Plateau section of Poestenkill were mapped based on 2004 aerial photography (RPA 2014) and these data are available for viewing online at Data Basin.

Table 3. Ecological Communities Found in the Town of Poestenkill

Community Name*	RPc	RPe	TF	Town Rarity	Town Exemplary Site(s)
	Town Distribution				
Acidic Talus Slope Woodland Escarpment/Davitt Pond Ledges	u	mu	x?	uncommon	Western Rensselaer Plateau
					Snake Hill Poestenkill Southwest
Appalachian Oak-Hickory Forest	x	c	c	common	Snake Hill Poestenkill Western Rensselaer Plateau Escarpment
Appalachian Oak-Pine Forest Escarpment	u	a	c	common	Western Rensselaer Plateau
Aquatic Cave Community	u	x	x~	very rare	Perigo Hill Northeast
Balsam Flats Headwaters/East Poestenkill Forest	u	x	x	very rare	Poesten Kill
Beech-Maple Mesic Forest	a	c	mc?	very common	Perigo Hill Block Dyken Pond Block
Black Spruce-Tamarack Bog	u	x	u	very rare	Reicharts Lake
Bog Lake	u	x	u	very rare	Hosford Pond Bog
Calcareous Cliff Community North	x	u	u?	very rare	Snake Hill Poestenkill
Chestnut Oak Forest Escarpment/Davitt Pond Ledges	x	mc	mu?	moderately common	Western Rensselaer Plateau
Cliff Community	u	mu	u?	moderately uncommon	Snake Hill Poestenkill
Cobble Shore	x	u	mu?	uncommon	Barberville Falls
Confined River	x	u	mu	uncommon	Poesten Kill Midreach
Deep Emergent Marsh	u	u	mu	uncommon	Vosburgh Swamp
Dwarf Shrub Bog	mu	x	u	rare	Dustin Swamp Complex
Eutrophic Pond	u	x	mu	moderately uncommon	Vosburgh Pond
Floodplain Forest	u	u	mu	very rare	East Poestenkill Flats
Flow-Through Pond (variant)		u?	x	u rare	East Poestenkill Forest
Hemlock-Hardwood Swamp	mc	mu	mu~	moderately common	Pine Ridge Northwest
Hemlock-Northern Hardwood Forest variants below)	a	a	mu?	very common	(see two ecoregional
--Northern Appalachian variant					Dyken Pond Block Perigo Hill Block
--Lower New England variant Escarpment/Davitt Pond Block					Western Rensselaer Plateau
Highbush Blueberry Bog Thicket	u	x	u	rare	Poestenkill Center Bog
Inland Non-Calcareous Lakeshore	u	x	u?	very rare	Davitt Pond
Inland Poor Fen Complex/Fifty Six Road Northwest Wetlands	u	x	x~	very rare	Dustin Swamp
Intermittent Stream Northeast	cmu	c~	common		Pine Ridge Center
Maple-Basswood Rich Mesic Forest	mu	mc	mc	moderately common	Poesten Kill Barberville
Marsh Headwater Stream Headwaters/East Poestenkill Forest	c	x	c	common	Poesten Kill
Oligotrophic Dimictic Lake	u	x	x	rare	Davitt Pond
Oligotrophic Pond	mc	u	x?	moderately uncommon	Hicks Pond
Pine-Northern Hardwood Forest	u	x	x	very rare	Dustin Swamp Southwest

Community Name	RP-c	RP-e	TF	Abundance Level	Town Distribution
Pitch Pine-Oak-Heath Rocky Summit South	x	u	x~	very rare	Snake Hill Poestenkill
Red Cedar Rocky Summit North	x	u	x	very rare	Snake Hill Poestenkill
Red Maple-Hardwood Swamp --Blackgum variant	c	mu	c	common	Reicharts Lake / Moules Lake
Rocky Headwater Stream	c	mc	mc	common	Upper Poesten Kill
Sedge Meadow Headwaters/East Poestenkill Forest	c	x	c~	common	Poesten Kill
Shallow Emergent Marsh Headwaters/East Poestenkill Forest	c	u	c~	common	Poesten Kill
Shoreline Outcrop	x	u	mu?	uncommon	Barberville Falls
Shrub Swamp Headwaters/East Poestenkill Forest	c	u	c~	common	Poesten Kill
Spring	u	x	u	uncommon	Round Top South
Spruce Flats Northwest / Southwest/East Poestenkill Forest	mu	x	x	rare	Poesten Kill Headwaters / Poesten Kill Headwaters
Spruce-Fir Swamp Headwaters/East Poestenkill Forest	mc	x	x	uncommon	Poesten Kill
Spruce-Northern Hardwood Forest Northwest	mc	x	x	uncommon	Poesten Kill Headwaters
Successional Fern Meadow Crossings	u	x	u?	rare	Pine Ridge Center
Successional Northern Hardwoods	c	c	a?	very common	Dyken Pond Center
Successional Northern Sandplain Grassland	u	x	x?	very rare	Cranberry Vly Northeast
Successional Old Field Grasslands	mc	mu	c	common	Southeast Brunswick
Successional Shrubland	c	mc	mc~	common	Perigo Hill East
Successional Southern Hardwoods Poestenkill/Heather Ridge Road Forest	x	u	c	moderately common	Snake Hill
Vernal Pool	mu	u	mu?	moderately uncommon	Perigo Hill North

Legend:

Community Name.

        mostly following 2014 NYNHP state classification.

Town Distribution.

    Physiographic Region.

        RP= Rensselaer Plateau (c=Central Plateau; e=Plateau Escarpment); TF= Taconic Foothills.

    Town Abundance.

    Abundance Level.

        a = abundant, c = common, m = moderate, mc = moderately common, mu = moderately uncommon, p = present, u = uncommon, x = absent

    Modifiers.

        ? = uncertain, ~ = probably.

10.1 STATE-RECOGNIZED SIGNIFICANT NATURAL COMMUNITIES (MAP 15)

The New York Natural Heritage Program (NYNHP) tracks state-significant natural communities. Factors contributing to the significance of a natural community are large size, intact condition (i.e., little disturbance, full range of native species, few invasive species), and natural condition of surrounding landscape. NYNHP has mapped several occurrences of rare and/or high-quality natural communities in Poestenkill, including high quality forest and wetland communities of the Rensselaer Plateau. These are shown on the State Important Biodiversity Areas Map (**Map 15**), and may be viewed in greater detail on the [Hudson Valley Natural Resource Mapper](#).

Nearly 5,000 acres of hemlock-northern hardwood forest are mapped in the Town on the western Plateau escarpment and the central Plateau. These forests are noted to be in very good condition with excellent species and habitat diversity. Interspersed on the central Plateau are over 1,200 acres of mapped high-quality beech-maple mesic forest. In the headwaters of Bonesteel Creek, Hosford Pond Bog is comprised of inland poor fen and dwarf shrub bog communities. It is noted as a classic kettle hole bog with good zonation in the vegetation from minerotrophic (inland poor fen) along the pond edge to ombrotrophic (dwarf shrub bog) near the upland edge. The bog is located within an extensive, diverse, minimally disturbed wetland complex. Another extensive, diverse, minimally disturbed wetland complex is also mapped in the headwaters of the Poesten Kill on the boundary with the Town of Berlin, including examples of sedge meadow, shallow emergent marsh, and spruce-fir swamp interspersed with upland spruce flats. Additional high-quality spruce-fir swamps are mapped along the Town boundary with Berlin and at the Dyken Pond Environmental Education Center's Dustin Swamp.

The following list of mapped communities includes links to online guides with illustrated descriptions and conservation and management guidance.

- [Beech-Maple Mesic Forest](#)

- [Dwarf Shrub Bog](#)

- [Hemlock-Northern Hardwood Forest](#)

- [Inland Poor Fen](#)

- [Sedge Meadow](#)

- [Shallow Emergent Marsh](#)

- [Spruce Flats](#)

- [Spruce-Fir Swamp](#)

Insert Map 15 - State-Recognized Significant Natural Communities

10.2 COUNTY-EXEMPLARY AND SIGNIFICANT NATURAL COMMUNITIES (MAPS 16A AND 16B)

Regionally significant natural communities (significant communities for short) are occurrences of natural communities that have high biodiversity value for a given county, and thus are worthy biodiversity conservation targets. Factors contributing to the significance of a natural community are large size, intact condition (i.e., little disturbance, full range of native species, few invasive species), and natural condition of the surrounding landscape.

Dr. Hunt identified and mapped 165 occurrences of significant communities in the Town of Poestenkill, representing 47 community types (see table in Natural Communities section of Appendix 1). 143 of these significant communities, representing 45 types, are on the Rensselaer Plateau, while only 22, representing 16 types, are in the non-Plateau portion of the Town. This distribution reflects the difference in the ecological integrity of the natural landscapes in the two regions, with much of the Rensselaer Plateau part of town dominated by significant forest communities.

Dr. Hunt also identified and mapped 48 community occurrences which are the exemplary or "best" examples of their respective types in Rensselaer County. These county-exemplary natural communities are displayed on **Map 16A**, and listed in **Table 4** below.

Clusters of county-exemplary natural communities occur at a few sites in the Town of Poestenkill, most corresponding to important restricted ecosystem complexes: Poesten Kill Headwaters, Snake Hill, Dustin Swamp Complex, Western Rensselaer Plateau Escarpment, Vosburgh Swamp, and Reicherts Lake. (See Section 6.6.1 for more information on these sites.) Seven occurrences are the only exemplary examples of their type in the County (much larger and in better condition than other examples of their types); most of these sole-exemplary occurrences are associated with the Poesten Kill Headwaters site in the Spruce-Fir Zone of the Rensselaer Plateau near the east edge of town. Seventeen occurrences, many associated with Snake Hill and the Rensselaer Plateau, are co-exemplary, where there are two or more examples that can be considered the best in the County for their types.

Significant and exemplary natural communities can contain rare plant concentration areas and important animal habitats; and can be components of important ecosystem complexes, important aquatic networks, and important forest landscapes. Dr. Hunt's full assessment of natural communities in Poestenkill is in the Natural Communities section of Appendix I.

Table 4. County-Exemplary Natural Communities in Poestenkill

County-Exemplary Site*	Natural Community Type	RLT Importance	Size
Barberville Falls	Calcareous Cliff Community	Co/pot-near	0.35 acres***
Davitt Pond	Oligotrophic Dimictic Lake	Co/pot-near	22.7 acres
Davitt Pond Block	Hemlock-Northern Hardwood Forest	Co/co-ex	2962 acres
Davitt Pond Block	Beech-Maple Mesic Forest	Co/near-ex	1106 acres
Davitt Pond Ledges	Chestnut Oak Forest	Co/co-ex	55.3 acres
Davitt Pond Ledges	Acidic Talus Slope Woodland	Co/near-ex	7.16 acres
Davitt Pond Ledges	Cliff Community	Co/near-ex	~15 acres***
Dustin Swamp Complex	Dwarf Shrub Bog	Co/near-ex	21.0 acres
Dustin Swamp Complex	Shallow Emergent Marsh	Co/near-ex	17.4 acres
Dustin Swamp Complex	Spruce Flats	Co/near-ex	169.5 acres
Dustin Swamp Complex	Spruce-Fir Swamp	Co/near-ex	55.6 acres
Dustin Swamp Complex	Sedge Meadow	Co/near-ex	46.9 acres
Dustin Swamp Complex	Balsam Flats	Co/pot-near	24.7 acres
Dyken Pond Block	Beech-Maple Mesic Forest	Co/co-ex	4068 acres
Dyken Pond Block	Hemlock-Northern Hardwood Forest	Co/co-ex	4667 acres
East Poestenkill Flats	Floodplain Forest	Co/near-ex	29.6 acres
East Poestenkill Forest	Balsam Flats	Co/pot-near	11.6 acres
Fifty Six Road Northwest Wetlands	Inland Poor Fen	Co/near-ex	26.0 acres
Hicks Pond	Oligotrophic Pond	Co/pot-near	23.0 acres
Hosford Pond Bog	Bog Lake	Co/sole-ex	14.3 acres
Moules Lake	Bog Lake	Co/near-ex	14.1 acres
Perigo Hill Block	Beech-Maple Mesic Forest	Co/co-ex	2559 acres
Perigo Hill Block	Hemlock-Northern Hardwood Forest	Co/co-ex	3891 acres
Perigo Hill East	Successional Shrubland	Co/co-ex	104.9 acres
Pine Ridge Center Northeast	Intermittent Stream	Co/co-ex	1.58 miles
Poesten Kill Headwaters	Balsam Flats	Co/sole-ex	276.0 acres
Poesten Kill Headwaters	Marsh Headwater Stream	Co/sole-ex	11.41 miles
Poesten Kill Headwaters	Shallow Emergent Marsh	Co/sole-ex	75.3 acres
Poesten Kill Headwaters	Spruce-Fir Swamp	Co/sole-ex	328.7 acres
Poesten Kill Headwaters	Shrub Swamp	Co/sole-ex	102.2 acres
Poesten Kill Headwaters	Sedge Meadow	Co/sole-ex	189.6 acres
Poesten Kill Headwaters Northwest	Spruce Flats	Co/co-ex	569.7 acres
Poesten Kill Headwaters Northwest	Spruce-Northern Hardwood Forest	Co/near-ex	214.7 acres
Poesten Kill Headwaters Southwest	Spruce Flats	Co/co-ex	810.0 acres
Poesten Kill Midreach	Confined River	Co/co-ex	98.0 acres
Poestenkill Center Bog	Highbush Blueberry Bog Thicket**	Co/near-ex	9.95 acres
Reicharts Lake	Black Spruce-Tamarack Bog	Co/near-ex	3.21 acres
Reicharts Lake	Red Maple Hardwood Swamp	Co/near-ex	54.9 acres
Snake Hill Poestenkill	Appalachian Oak-Hickory Forest	Co/co-ex	519.8 acres
Snake Hill Poestenkill	Cliff Community	Co/co-ex	17.8 acres***
Snake Hill Poestenkill	Red Cedar Rocky Summit	Co/co-ex	4.5 acres
Snake Hill Poestenkill Southwest	Acidic Talus Slope Woodland	Co/near-ex	5.1 acres
Snake Hill Poestenkill North	Calcareous Cliff Community	Co/co-ex	25.8 acres***
Upper Poesten Kill	Rocky Headwater Stream	Co/co-ex	14.2 miles
Vosburgh Pond	Eutrophic Pond	Co/near-ex	7.67 acres
Vosburgh Swamp	Deep Emergent Marsh	Co/co-ex	40.5 acres
Western Rensselaer Plateau Escarpment	Appalachian Oak-Hickory Forest	Co/near-ex	235.1 acres
Western Rensselaer Plateau Escarpment	Appalachian Oak-Pine Forest	Co/near-ex	582.2 acres

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* community occurrences are arrayed alphabetically by site, then by importance, then alphabetically by occurrence code.
** reclassified in 2018 from former county near-exemplary Dwarf Shrub Bog.
Legend.
Field: RLT Importance. County Exemplary Status.
    assigned for RLT county conservation plan (2016), with one post-2016 modification for community identity change.
    values:
    CO = county, co-ex = co-exemplary, near-ex = near exemplary, pot-near = potentially near exemplary, sole-ex = sole exemplary.
Field: Size.
    acres determined precisely from GIS shapes.
    *** size (for steeply-sloping communities) calculated perpendicularly to average slope.

Insert Map 16A - County-Exemplary and Significant Natural Communities

Insert Map 16B - County-Exemplary and Significant Natural Communities

11. WILDLIFE AND BIODIVERSITY

The Town of Poestenkill possesses a typical mixture of wildlife habitats found for this region of upstate New York. Commonly observed wildlife are birds and mammals such as white-tailed deer, eastern cottontail, eastern coyotes, and gray squirrels. Gray squirrels, cottontail rabbits, woodchucks, red-tailed hawks, and crows are more commonly observed in the mixed agricultural and residential areas in the western part of Poestenkill. Flocks of Canada geese and mallard ducks are commonly observed in the fall flying between local water bodies and harvested corn fields. While similar wildlife can be seen in the eastern section of Town on the Rensselaer Plateau, additional wildlife species more typical of the Adirondacks are seen such as black bears, red squirrels, porcupines, fishers, snow-shoe hare, ravens, and coniferous nesting warblers. Other commonly heard or observed mammals in Poestenkill include the Virginia opossum, eastern coyote, red fox, gray fox, striped skunk, woodchuck and raccoon. Beaver, muskrats, and river otters are often observed in tributaries of the Poesten Kill or in large wetlands with open water.

Small mammals were studied at eight locations in Poestenkill back in 1953 by the NYS Museum and Science Service (Benton and Krug, 1956). Small mammals found in this survey in Poestenkill include: big short-tailed shrew, smoky shrew, northern flying squirrel, white-footed mouse, common deer mouse, boreal red-back vole, woodland deer mouse and eastern chipmunk. **Table 5** presents a list of all the mammals recorded or observed in Poestenkill.

During 1980-85 a breeding bird atlas was constructed for New York State. The state was surveyed according to blocks and Poestenkill was included in blocks 6072B, 6172A, 6172B, 6172C, 6172D and 6272A. Only block 6172B was totally within Poestenkill and contained 74 breeding bird species (Flood, 1998). No threatened or endangered birds were recorded in Block 6172B, but species of special concern such as the eastern bluebird and grasshopper sparrow were recorded in Poestenkill for this survey. A list of breeding birds for Poestenkill recorded in the 1980-1985 breeding bird atlas is given in **Table 6**. A list of breeding birds recorded from the Poestenkill Community Forest during 2016-2018 is presented in **Table 7**. Bird species of conservation concern recorded in the 2000-2005 breeding bird atlas for New York State are listed in **Table 8**.

Counts of winter birds in the southwestern section of Town have been made by the Hudson-Mohawk Bird Club each December since about 1966 as part of their Southern Rensselaer Christmas Bird Count (Poestenkill sector). Some winter birds commonly observed on these surveys include: European starling, cardinal, downy woodpecker, black-capped chickadee, American crow, dark-eyed junco, tree sparrow, house sparrow, house finch, tufted titmouse and white-breasted nuthatch (Feathers, 1988-93). The re-introduction of two bird species, the wild turkey and bald eagle, late in the last century, have made their way into Poestenkill. Wild turkeys became so numerous that DEC opened turkey hunting in 1981 east of Route 351 and in 1986 west of Route 351 in Poestenkill. Bald eagle sightings are also rather common now in western Poestenkill.

Surveys in Poestenkill through the DEC Amphibian and Reptile Atlas Program show the following in Poestenkill: red-spotted newt, northern redback salamander, eastern American toad, northern spring peeper, bullfrog, green frog, northern leopard frog and eastern garter snake (1998 data, p. 280).

Table 5. Mammals of Poestenkill, New York

Pouched Mammals (Marsupials)
Virginia opossum   (*Didelphis virginiana*)

Insect-eaters (Insectivores)
Shrews
Common/Masked shrew   (*Sorex cinereus*)
Smoky shrew   (*Sorex fumeus*)
Northern water shrew   (*Sorex palustris albibarbis*)
Shorttail shrew   (*Blarina brevicauda*)

Moles
Hairytail mole   (*Parascalops breweri*)
Star-nosed mole   (*Candylura cristata*)

Bats
Little brown bat   (*Myotis lucifugus*)
Northern long-eared bat   *(Myotis septentrionalis*)
Big brown bat   (*Eptesicus fuscus)*

Carnivores

Bears
Black bear   (*Ursus americanus*)

Raccoons
Raccoon   (*Procyon lotor*)

Weasels, Skunks, etc. (Mustelids)
American marten   (*Martes americana*)
Fisher   (*Martes pennanti*)
Short-tailed weasel   (*Mustela cicognai*)
Long-tailed weasel   (*Mustela frenata*)
Mink   (*Mustela vison*)
River otter   (*Lontra canadensis*)
Striped skunk   (*Mephitus mephitis nigr*a)

Doglike Mammals
Eastern coyote   (*Canis latrans*)

Cats
Bobcat   (*Lynx rufus*)
Feral Cat   (*Felis catus*

Foxes
Red fox   (*Vulpes vulpes*)
Grey fox   (*Urocyon cinereoargenteus*)

Gnawing Mammals (Rodents)

Eastern chipmunk (*Tamias striatus*)
Red squirrel (*Tamiasciurus hudsonicus*)
Eastern gray squirrel (*Sciurus carolinensis*)
Northern flying squirrel (*Glaucomys sabrinus*)
Beaver (*Castor canadensis*)
Woodchuck (*Marmota monax*)

Mice, Rats, and Voles

Common deermouse (*Peromyscus maniculatus*)
White-footed deermouse (*Peromyscus leucopus*)
Northern red-backed vole (*Clethrionomys gapperi*)
Meadow vole (*Microtus pennsylvanicus*)
Brown rat (*Rattus norvegicus*)
House mouse (*Mus musculus*)
Meadow jumping mouse (*Zapus hudsonius*)
Woodland jumping mouse (*Napaeozapus insignis*)

Other Rodents

Porcupine (*Erethizon dorsatum*)
Muskrat (*Ondatra zibethica*)

Hares and Rabbits

Varying or snowshoe hare (*Lepus americanus virginianus*)
Eastern cottontail (*Sylvilagus floridianus*)

Even-toed Hoofed Mammals

Moose (*Alces alces*)
White-tailed deer (*Odocoileus virginanus*)

Black bear taking an evening stroll on local hiking trail (Game camera)

Table 6. Breeding Birds of Poestenkill, New York (1980-1985)

Great Blue Heron	Black-capped Chickadee	Brown-headed Cowbird
Green-backed Heron	Tufted Titmouse	Scarlet Tanager
American Bittern	White-breasted Nuthatch	Northern Cardinal
Canada Goose	House Wren	Rose-breasted Grosbeak
Mallard	Northern Mockingbird	Indigo Bunting
American Black Duck	Barn Swallow	House Finch
Wood Duck	Cliff Swallow	Purple Finch
Turkey Vulture	Blue Jay	American Goldfinch
Red-tailed Hawk	American Crow	Rufous-sided Towhee
Broad-winged Hawk	Black-capped Chickadee	Dark-eyed Junco
American Kestrel	Tufted Titmouse	Field Sparrow
Ruffed Grouse	White-breasted Nuthatch	White-throated Sparrow
Ring-necked Pheasant	House Wren	Swamp Sparrow
Wild Turkey	Gray Catbird	Song Sparrow
American Woodcock	Brown Thrasher	
Killdeer	American Robin	
Spotted Sandpiper	Wood Thrush	
Rock Dove	Hermit Thrush	
Mourning Dove	Veery	
Great Horned Owl	Cedar Waxwing	
Barred Owl	European Starling	
Black-billed Cuckoo	Yellow-throated Vireo	
Chimney Swift	Solitary Vireo	
Ruby-throated Hummingbird	Red-eyed Vireo	
Belted Kingfisher	Warbling Vireo	
Northern Flicker	Black-and-White Warbler	
Pileated Woodpecker	Blue-winged Warbler	
Yellow-bellied Sapsucker	Yellow Warbler	
Hairy Woodpecker	Yellow-rumped Warbler	
Downy Woodpecker	Chestnut-sided Warbler	
Eastern Kingbird	Ovenbird	
Great Crested Flycatcher	Louisiana Waterthrush	
Eastern Phoebe	Common Yellowthroat	
Least Flycatcher	American Redstart	
Eastern Wood-Pewee	House Sparrow	
Tree Swallow	Bobolink	
Bank Swallow	Eastern Meadowlark	
Barn Swallow	Red-winged Blackbird	
Cliff Swallow	Orchard Oriole	
Blue Jay	Northern Oriole	
American Crow	Common Grackle	

Table 7. Breeding Birds of Poestenkill Community Forest 2016-2018

(Highest Number on 7 Sites)

	2016	2017	2018
Ovenbird	12	10	13
Red-eyed Vireo	6	8	6
Blue Jay	5	7	8
Hermit Thrush	4	3	4
Black-throated Green Warbler	1	7	3
Yellow-bellied Sapsucker	3	4	3
Scarlet Tanager	2	4	4
Blackburnian Warbler	3	2	4
Black-capped Chickadee	2	4	2
Black-and-White Warbler	1	3	3
Blue-headed Vireo	2	2	3
Veery	2	3	2
Hairy Woodpecker	2	1	2
Black-throated Blue Warbler	0	1	4
Eastern Wood Pewee	1	1	2
Dark-eyed Junco	1	0	3
Winter Wren	1	2	0
Magnolia Warbler	0	0	3
Raven	2	0	0
Barred Owl	0	1	2
Brown Creeper	0	1	1
Rose-breasted Grosbeak	1	0	1
Pileated Woodpecker	1	0	0
Canada Warbler	1	0	0
American Robin	1	0	0
Northern Waterthrush	1	0	0
Purple Finch	0	1	0
Cedar Waxwing	0	1	0
White-breasted Nuthatch	0	1	0
Amercan Redstart	0	0	1
Black-billed Cuckoo	0	0	1
Ruby-throated Hummingbird	0	0	1
Jim de Waal Malefyt - 6 Dec 2018			

11.1 STATE-RARE ANIMALS

Table 8 lists species of conservation concern at the state level that have been recorded in Poestenkill, NY. The information comes from the New York Natural Heritage Program (NYNHP) biodiversity databases, the *1990-1999 New York Amphibian and Reptile Atlas* (NYARA), the *2000-2005 New York State Breeding Bird Atlas* (NYBBA), eBird, and the Poestenkill Conservation Advisory Council (CAC). Species from the NYBBA are included in the table if they were documented in Atlas blocks that are more than 50% in Poestenkill. The table only includes species listed in New York as endangered (at the state (NY) and/or federal (US) level), threatened, special concern, rare, Species of Greatest Conservation Need (SGCN), NYNHP S1, or a Hudson River Valley Priority Bird species recognized by Audubon New York. Historical records are provided from the NYNHP biodiversity databases. Generalized primary habitat types are provided for each species, but for conservation and planning purposes, it's important to recognize that many species utilize more than one kind of habitat. More information on rare animals, plants, and ecological communities can be found at http://guides.nynhp.org. **Note:** Additional rare species and habitats may occur in the Town of Poestenkill. The DEC Region 4 Office in Schenectady should be contacted at (518) 357-2355 with any concerns or questions about the presence of protected species in the Town of Poestenkill.

Table 8. Animal Species of Conservation Concern in Poestenkill, New York

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	
Mammals								
moose	*Alces alces*	forest		x				CAC
northern long-eared bat	*Myotis septentrionalis*	cave, forest		xx		US NY		NYNHP
Birds								
American bittern	*Botaurus lentiginosus*	wetland	x	x	x			eBird
American black duck	*Anas rubripes*	wetland	x	xx				eBird
American goldfinch	*Spinus tristis*	young forest, shrubland	x					NYBBA
American woodcock	*Scolopax minor*	young forest, shrubland	x	x				eBird
bald eagle	*Haliaeetus leucocephalus*	lake, stream, forest	x	x		NY		NYBBA
Baltimore oriole	*Icterus galbula*	forest	x					NYBBA
belted kingfisher	*Megaceryle alcyon*	lake, stream	x					NYBBA
black-and-white warbler	*Mniotilta varia*	forest	x					eBird
black-billed cuckoo	*Coccyzus erythropthalmus*	young forest, shrubland	x	x				NYBBA
Blackburnian warbler	*Dendroica fusca*	forest	x					NYBBA

black-throated blue warbler	*Dendroica caerulescens*	forest	x	x				NYBBA
black-throated green warbler	*Dendroica virens*	forest	x					NYBBA
bobolink	*Dolichonyx oryzivorus*	grassland	x	xx				NYBBA
broad-winged hawk	*Buteo platypterus*	forest	x					NYBBA
Canada warbler	*Wilsonia canadensis*	young forest, shrubland	x	xx				NYBBA
chestnut-sided warbler	*Setophaga pensylvanica*	young forest, shrubland	x					NYBBA
chimney swift	*Chaetura pelagica*	urban	x					NYBBA
downy woodpecker	*Picoides pubescens*	forest	x					NYBBA
eastern kingbird	*Tyrannus tyrannus*	young forest, shrubland	x					NYBBA
eastern meadowlark	*Sturnella magna*	grassland	x	xx				eBird
eastern towhee	*Pipilo erythrophthalmus*	young forest, shrubland	x					NYBBA
eastern wood-pewee	*Contopus virens*	forest	x					NYBBA
field sparrow	*Spizella pusilla*	young forest, shrubland	x					eBird
horned lark	*Eremophila alpestris*	grassland	x	xx	x			eBird (winter)
least flycatcher	*Empidonax minimus*	forest	x					NYBBA
Louisiana waterthrush	*Seiurus motacilla*	forest	x	x				eBird
northern flicker	*Colaptes auratus*	forest	x					NYBBA
northern goshawk	*Accipiter gentilis*	forest	x	x	x			NYBBA
osprey	*Pandion haliaetus*	open water, wetland	x		x			eBird
prairie warbler	*Dendroica discolor*	young forest, shrubland	x	x				NYBBA
purple finch	*Carpodacus purpureus*	forest	x					NYBBA

Common name	Scientific name	Habitat						Source
red-shouldered hawk	*Buteo lineatus*	forest	x	x	x			NYBBA
rose-breasted grosbeak	*Pheucticus ludovicianus*	forest	x					NYBBA
ruffed grouse	*Bonasa umbellus*	young forest, shrubland	x	x				NYBBA
scarlet tanager	*Piranga olivacea*	forest	x	x				NYBBA
sharp-shinned hawk	*Accipter striatus*	forest	x		x			NYBBA
veery	*Catharus fuscescens*	forest	x					NYBBA
wood thrush	*Hylocichla mustelina*	forest	x	x				NYBBA
yellow-throated vireo	*Vireo flavifrons*	forest	x					NYBBA
Fish								
American eel	*Anguilla rostrata*	stream		xx				NYSDEC
brook trout	*Salvelinus fontinalis*	stream		x				NYSDEC
Insects								
forcipate emerald	*Somatochlora forcipata*	wetland, stream						NYNHP
Historical Records								
New England cottontail	*Sylvilagus transitionalis*	shrubland		xx	x			NYNHP

Seven bird species listed by NYSDEC as Species of Special Concern have found breeding or wintering habitat in Poestenkill:

American Bittern – probably nests in Newfoundland wetland in area devoid of invasive Phragmites.

Osprey – recently observed during the breeding season at ponds such as Cooper's Pond due to nesting pair in nearby North Greenbush.

Sharp-shinned Hawk – breeds in forested areas and especially seen around bird feeders.

Cooper's Hawk - breeds in forested areas and especially seen around bird feeders.

Northern Goshawk – seen in forested areas and occasionally seen preying on birds in residential areas where bird feeders exist.

Red-shouldered Hawk – found during breeding season at Poestenkill Community Forest; favors wooded wetlands.

Horned Lark – flocks found in winter in agricultural fields and roadsides in western Poestenkill.

Bald Eagle - bald eagles have been sighted in western Poestenkill along stream corridors and preying on deer carcasses during the winter. Bald eagle breeding and non-breeding populations are increasing in New York, but development pressure and its impacts on habitat remain significant threats. Nesting sites are sensitive to human disturbance.

Bald Eagle perched along the Poesten Kill (Photo by Jim de Waal Malefyt, 6 Feb 2019).

11.2 IMPORTANT STATE-RECOGNIZED AREAS FOR RARE ANIMALS (MAP 15)

NYNHP has identified important areas for sustaining populations of rare plants and rare animals in the Hudson Valley based on existing records and the species' habitat requirements. These areas include the specific locations where species have been observed, as well as areas critical to maintaining the species' habitat. Proactive planning that considers how species move across the landscape, with careful attention to maintaining connected habitat complexes, will contribute to the long-term survival and persistence of rare species. NYNHP has identified known important areas in Poestenkill for American eel, coldwater stream habitat, forcipate emerald, and northern long-eared bat. No state-rare plants have been documented by NYNHP in the Town to date. A complete list of animals of conservation concern known from Poestenkill is shown in **Table 8**.

American eel (High Priority SGCN) is a migratory fish that has been documented in the Poesten Kill both below and above Barbersville Falls, according to DEC Bureau of Fisheries data and an aquatic habitat connectivity study by NYNHP (White, et al., 2011). American eel is in decline throughout much of its range, and though eels are able to bypass certain dams, culverts, and other aquatic barriers, they rely on connected, free-flowing streams to complete their life cycle and return to the sea to spawn.

Coldwater stream habitat areas are important to maintaining native wild brook trout (SGCN) and other coldwater fishes in decline region wide due to habitat loss, fragmentation, and degradation. Brook trout inhabit clear, cool, well-oxygenated streams and lakes and depend on clean gravel areas for spawning. They are sensitive to increases in water temperature and sedimentation of stream habitats. Other threats include the introduction of exotic species such as smallmouth bass and non-native trout, which are better adapted to warm water temperatures. Mapped areas include wild brook trout locations identified in DEC fish surveys since 1980, as well as buffers along associated stream and waterbody segments to account for lands most likely to affect the continued presence and quality of the stream habitat. The map does not account for habitat fragmentation that might be caused by local dams and culverts. The map does NOT indicate areas with public fishing rights, and many areas are unsuitable for recreational trout fishing due to small fish populations and small fish size.

Forcipate emerald is a rare dragonfly found mainly in northern New York in bog habitats with some flowing water. There is a sole record of this species in Rensselaer County from a bog near Dyken Pond. Efforts to avoid siltation, hydrologic alteration, or other disturbance of bog or fen habitats should be considered to manage for this species.

Northern long-eared bat (US-Threatened, High Priority SGCN) hibernates over winter at a nearby site in the Town of Berlin and is known to use forest areas in eastern Poestenkill during the summer. Bats will forage for insects throughout wooded areas and along streams, and female bats will roost in snags and dying trees. Since 2006, the spread of white-nose syndrome (a fungal disease) has devastated bat colonies throughout the northeast, resulting in die-offs of up to 99%. Retaining forest canopy, mature trees, and minimizing fragmentation of mature forest patches may be important for local bat populations. Some regulatory and voluntary restrictions protect threatened bat species from tree-cutting, especially during the period when mothers are birthing and raising pups.

11.3 COUNTY-IMPORTANT ANIMAL HABITATS (MAP 16A)

Dr. David Hunt has assessed and mapped county-important animal habitats in Poestenkill. Important animal habitats are either 1) sites with usually two or more animal species that are rare or uncommon in Rensselaer County; in some cases sites with only one rare species were also designated 'important' when that species is rare in New York State and/or the habitat is intact or unusual enough that additional rare or uncommon animals are suspected to occur there; or 2) sites with uncommon habitats that are used by rare to uncommon animals in Rensselaer County at some point in their life cycles. (Rare animals include those rare at a global to state level as determined by the New York Natural Heritage Program, and those rare in Rensselaer County as determined by Dr. Hunt.) Animals using these important habitats can include mammals, birds, reptiles, amphibians, fish, dragonflies, mussels, and other invertebrate groups. These animals may occur in these habitats year-round, or only at certain times for breeding/spawning/nesting, overwintering/denning/hibernating, or feeding/browsing.

In the Town of Poestenkill, Dr. Hunt identified 14 important animal habitats and ranked their "county importance" or priority for conservation. Most of the highest importance animal sites in the Town are embedded within the Rensselaer Plateau forest landscape. Important animal habitats mapped off the Plateau are primarily streams and rivers. **Map 16A** displays the animal habitats of very high and high importance; all 14 habitats are displayed on the map on the next page.

Very High Importance – Tier 2
Poesten Kill Headwaters (on the Rensselaer Plateau, small portion in the Town at its
    eastern edge) -- Moose, snowshoe hare, black bear

High Importance – Tier 3
Rensselaer Plateau Forest (most of the Rensselaer Plateau in the Town)
-- forest interior birds (e.g., black and white warbler, ovenbird, scarlet tanager), black bear, bobcat, fisher, coyote, gray fox, porcupine denning
Vosburgh Swamp -- river otter, beaver, waterfowl, lake fish
Western Rensselaer Plateau Escarpment -- bobcat, black bear, porcupine denning, raven
Dustin Swamp Complex (partly on Dyken Pond Center)
-- diversity of dragonflies, including rare ones; formerly great blue heron nesting

Moderately High Importance – Tier 4
Upper Poesten Kill (upstream of its confluence with Davitt Pond Brook) and
Poesten Kill East Poestenkill (in eastern part of Town)
-- for both: clean water aquatic invertebrates (including mayflies, stoneflies,
   caddisflies), riverine fish, trout spawning
Snake Hill -- bobcat, porcupine denning
Hosford Pond Bog -- lake fish, dragonflies

Moderate Importance – Tier 5
Davitt Pond -- lake fish, freshwater mussels, large red-spotted newt population

Probable and Possible Importance – Tiers 6 and 7
Quacken Kill (small part of animal habitat in Town)

-- clean water aquatic invertebrates, trout spawning
Wynants Kill Midreach -- trout spawning, riverine fish
Newfoundland Creek -- trout spawning
Bernie Pond Brook -- trout spawning

In addition, Moules Lake and the Poesten Kill Midreach (downstream of Davitt Brook) may be important animal habitat, but more information is needed to complete an assessment.

Important animal habitats are often found in rare or uncommon natural community types, and contribute to important ecosystem complexes, important aquatic networks, and important forest landscapes. Dr. Hunt's full assessment of important animal habitats in Poestenkill is in Appendix I.

County-Important Animal Habitats
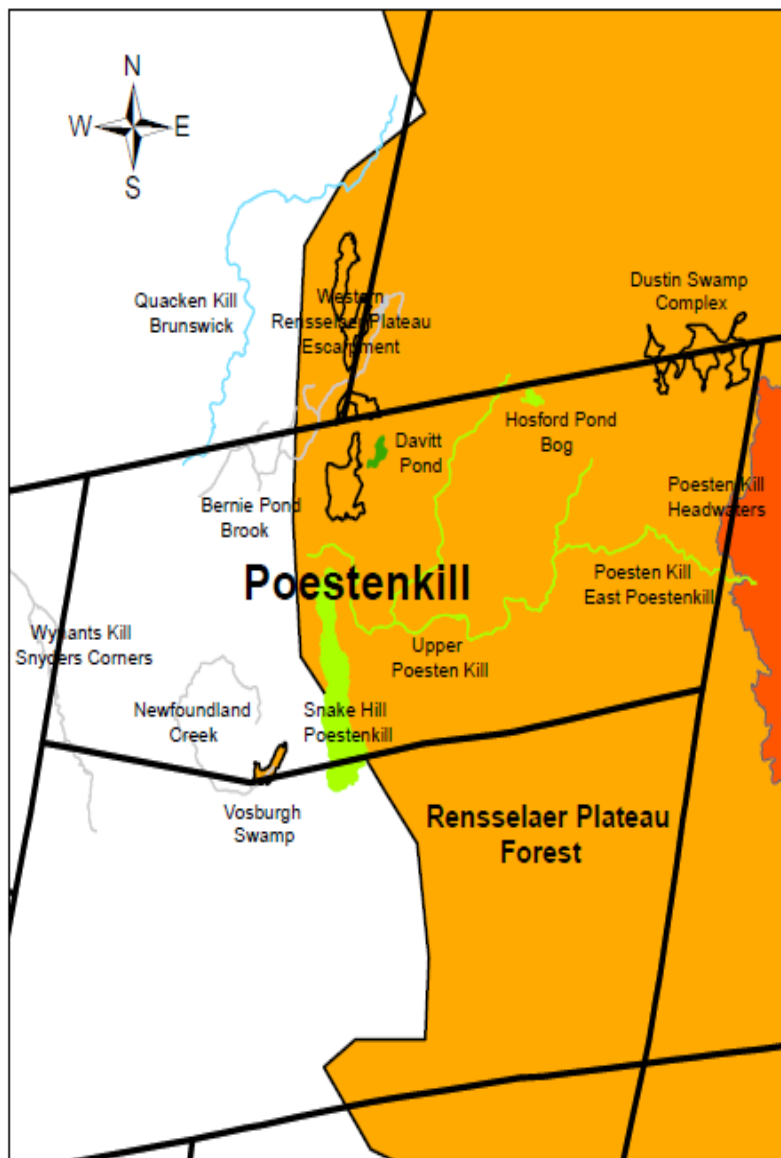
Rensselaer County Importance

Tier 2	Tier 4	Tier 6
Tier 3	Tier 5	Tier 7

11.4 COUNTY-IMPORTANT BIODIVERSITY AREAS (MAPS 16A AND 16B)

Dr. David Hunt has inventoried, assessed, and mapped ecological features in Rensselaer County that are important for biodiversity in his work for the Rensselaer Plateau Regional Conservation Plan (RPA 2014), the Rensselaer County Conservation plan (RLT 2018), and this Poestenkill Natural Resources Inventory. Appendix I of this report is Dr. Hunt's full report on eight types of ecological features. Dr. Hunt started with the smaller, or finest level, features of Rare Plant Concentration Areas, Exemplary Natural Communities, and Important Animal Habitats, based on his and others' work on the county's rare plants and animals and significant natural communities. He then aggregated these features into larger, landscape features of Important Restricted Ecosystems, Large Forests, and Important Aquatic Networks. Finally, he assessed all these features to determine priority conservation sites for biodiversity in the County.

Dr. Hunt's work for Rensselaer County as a whole is incorporated in the Rensselaer County *Land Conservation Plan* (Winter et al. 2018). In addition to Dr. Hunt's work on ecological features, that plan also includes analyses of water resources, agricultural areas, scenic areas, and areas offering climate resiliency to biodiversity. From a county-wide perspective, the *Land Conservation Plan* highlights a range of high priority resource targets and conservation priority areas for the Town of Poestenkill in Appendix D:

"The Town of Poestenkill contains high priority ecological areas and high priority scenic areas on the Rensselaer Plateau, which extends across the town's eastern half. The town has a large area of high priority agricultural areas in the northern portion near Brunswick. High priority scenic areas can be found along NYS 351 and the Plateau escarpment, and associated with public lands, including Barberville Falls. Many of the streams flowing off the Plateau contain high priority water resource areas, especially where wetlands occur along the streams, including along the Poesten Kill, Newfoundland Creek and tributaries. High priority climate resiliency areas can be found in patches along the Plateau escarpment north and south of Plank Road. Snake Hill has uncommon ridgetop habitats.**"**

The results of the plan for all these resources may be viewed in greater detail using the online story map that accompanies the Rensselaer County *Land Conservation Plan*.

The County-Important Biodiversity Maps (**Maps 16A and 16B**) display areas of the Town assessed to be important for the following ecological features from Dr. Hunt's work: Rare Plant Concentration Areas, Exemplary Natural Communities, Important Animal Habitats, Important Restricted Ecosystems, and Important Aquatic Networks. Exemplary Natural Communities are discussed in Section 6.4.2 of this NRI, Important Animal Habitats in Section 6.5.2, and Large Forests in Section 6.7. Four other ecological features are discussed below.

11.4.1 County Rare Plant Concentration Areas (Map 16A)

Rare plant concentration areas are broadly defined as sites with generally five or more plant species that are rare in Rensselaer County. Dr. Hunt defines a rare plant species as one that has 100 or fewer locations, or less than 10,000 individuals, in Rensselaer County; or a species that

has been documented in the County in the past but has not been seen since before 1980. Among these rare species, those that have 20 or fewer locations, or less than 3,000 individuals, in the County are given the highest conservation priority. (Plant species that are rare in New York State are by definition also rare in the County.)

Some rare plant concentration areas have many more than five rare species (Snake Hill has 34 and the Western Rensselaer Plateau Escarpment has 28); and some plants are rare throughout New York State (e.g., Fernald's sedge and slender knotweed). Most sites were determined from observations of rare plant species since 1990.

Rare plant concentration areas are often found in rare or uncommon natural community types, and contribute to important ecosystem complexes, aquatic networks, and forest landscapes.

In the Town of Poestenkill, Dr. Hunt identified 14 rare plant concentration areas:
High Concentration of Rare Plants (15-49 species):
    Snake Hill
    Western Rensselaer Plateau Escarpment
    Hosford Pond Bog
    Moules Lake

Concentration of Rare Plants (10-14 species)
    Poesten Kill Headwaters North
    Reicherts Lake

Moderate Concentration of Rare Plants (5-9 species)
    Legenbauer Road Wetlands (Poestenkill Community Forest)
    Davitt Pond
    Poesten Kill Bottom Land
    Dustin Swamp Complex
    Vosburgh Swamp

Probable Concentration of Rare Plants (less than 5 species known, but strongly suspected to have more than 5 species and located in a rare natural community type)
    Barberville Gorge
    Hicks Pond
    Poestenkill Center Bog

In addition, six other sites were identified with fewer than five species of rare plants:
    Newfoundland Creek Headwaters
    Poesten Kill Headwaters Northwest
    Common Farm
    Pine Ridge Center Fen
    East Poestenkill Forest
    Snake Hill West

11.4.2 Important Restricted Ecosystem Complexes (Map 16B)

Ecosystem complexes are defined and mapped as groupings of natural community types that often co-occur together in discrete repeatable patches across a landscape or region due to unique combinations of underlying physical features (hydrology, geology, topography, and soils). While large areas of Rensselaer County are covered by common forest ecosystems, more local patches of other more unusual ecosystem complexes are scattered throughout the county; these ecosystems are of "restricted" distribution. These restricted ecosystem complexes contribute to the long-term conservation of native plants and animals that are characteristic of habitat types that are not common in the county, including many county-rare to uncommon species.

Ecosystem complexes can contain important natural communities, rare plant concentration areas, and important animal habitats; and can be components of important aquatic networks and important forest landscapes. Dr. Hunt identified 18 important restricted ecosystem complexes, representing ecosystem complex types, within or partly within the Town of Poestenkill:

Mature Forest – relatively mature forest patches, may currently be or developing into old growth:
    Barberville Gorge Forest

Boreal Flats – moist upland forested flats dominated by spruce and fir:
    Poesten Kill Headwaters Northwest

Mineral Soil Basin Wetland – wetland complexes, open to forested, dominated by non-peatland soils and often in large, relatively isolated basins:
    Coopers Pond,
    Newfoundland Creek Headwaters,
    Poesten Kill Headwaters Outlet,
    Vosburgh Swamp, and
    Wynants Kill at Snyders Corners

Peatland – peat-dominated wetlands, open to forested, often in large isolated basins:
    Dustin Swamp,
    Hosford Pond Bog,
    Moules Lake,
    Poesten Kill Headwaters,
    Poesten Kill Headwaters Outlet,
    Poestenkill Center Bog, and
    Reicherts Lake

Rocky Slope-Summit – dry summit/slope area with exposed rock, steep slopes, open canopy patches, and dry forest types (e.g., with shagbark hickory and chestnut oak):
    Snake Hill and
    Western Rensselaer Plateau Escarpment

Riparian – river and associated shore, wetland, and forested flats communities:
    East Poestenkill Flats and
    Poesten Kill at Barberville

<u>Lowland Grassland</u> – open grassland habitat on lowland flats and rolling hills, often with old field, hay fields, and pastures:
    Southeast Brunswick Grasslands

11.4.3   Important Aquatic Networks (Map 16B)

Aquatic networks are defined by Dr. Hunt as stream systems with a high percentage of native aquatic plant and animal species and in good condition (especially with good water quality and unimpeded water flow), plus the most essential surrounding areas required to maintain those stream systems. Aquatic networks are made up of mainstem and tributary streams, connected lakes, mainstem and headwater wetlands, intact riparian corridors, and intact subcatchments (upland areas draining into a stretch of stream).

Important aquatic networks are those aquatic networks which contribute most effectively to the long-term conservation of native aquatic plants and animals (especially fish) that rely on contiguous, long, and relatively little-disturbed aquatic landscapes, especially riverine landscapes. These important aquatic networks also conserve aquatic natural community and ecosystem features (rivers, lakes, estuaries, and some wetlands). Roads and dams within a river corridor impair the river corridor's role as a "functional natural corridor" along which aquatic species travel and migrate. In extreme cases, stream segments within a single river corridor may no longer be considered as interacting units, but rather "isolated" sites. Important aquatic networks are those that are relatively unfragmented and act as natural aquatic corridors.

Important aquatic networks contain important ecosystems, exemplary natural communities, rare plant concentration areas, and animal habitats. They are the aquatic equivalent of "Important Intact Natural/Forest Landscapes", the latter intended to capture the terrestrial biodiversity component of larger landscapes.

Dr. Hunt ranked the important aquatic networks in Rensselaer County into Tiers 1-4, with Tier 1 being the highest priority for biodiversity conservation focus in the County. Tier 1 networks are the usually the best example of an aquatic network in a watershed in terms of size, highest water quality, lowest degree of aquatic fragmentation from dams and diversions, and highest diversity of aquatic species and habitats/natural communities.

The Town of Poestenkill includes the majority of one Tier 1 important aquatic network, the Poesten Kill Headwaters, which includes the Poesten Kill on the Rensselaer Plateau from the peatland complex south of Dyken Pond in Berlin downstream to its confluence with Davitt Pond Brook. In the Town of Poestenkill, this aquatic network is composed of the upper Poesten Kill and surrounding riparian buffer, floodplain, wetlands (such as Dustin Swamp Complex), and ponds (such as Hicks Pond), with some key forested buffer areas and intact subcatchments of feeder streams. The Poesten Kill Headwaters aquatic network contains many significant ecosystem complexes, natural communities, and county-rare plants and animal habitats.

The Town also contains smaller portions of four other Tier 1 important aquatic networks: Bonesteel Creek (including Hosford Pond), Poesten Kill Midreach (downstream of the Poesten Kill Headwaters), Tsatsawassa Creek and a very small part of the Quacken Kill aquatic network.

Tier 3 important aquatic networks are of "moderately high" conservation priority because they are smaller than Tier 1 and Tier 2 sites, more disturbed, and/or less biologically diverse. Tier 3 networks complement those in Tier 1 and Tier 2 by being located in other watersheds or physiographic regions.

The Town of Poestenkill includes most of the Tier 3 important aquatic network of Newfoundland Creek (including Vosburgh Swamp), and smaller portions of the Tier 3 Bernie Pond Outlet and Wynants Kill networks.

11.4.4 County Priority Biodiversity Conservation Areas

Dr. David Hunt inventoried and assessed six ecological and biodiversity features of Rensselaer County for the Rensselaer Land Trust's County Conservation Plan, each discussed in its own section of this report: rare plant concentration areas, important animal habitats, exemplary natural communities, important restricted ecosystem complexes, important aquatic complexes, and important forest landscapes. Dr. Hunt then consolidated his assessments of all these individual features to delineate County Priority Biodiversity Conservation Sites. These Priority Conservation Sites are the large- to moderate-scale areas in Rensselaer County that, taken together, would most effectively conserve for the long term a combination of multiple ecological features, especially a complete set of native plants and animals of the County. This set of Conservation Sites includes large areas of natural land cover in good to excellent natural condition, and areas with unique or irreplaceable ecological features for the County. The individual sites complement one another in terms of landscapes (terrestrial vs. aquatic) and of representing all the physiographic regions and all the watersheds of the County.

Dr. Hunt then ranked the County Priority Conservation Sites into Tiers 1-4, with Tier 1 being the highest priority for biodiversity conservation focus in the County. Tier 1 sites are the largest areas, in the highest ecological condition, and with the best surrounding natural landscapes, and have high concentrations of important ecological features.

The Town of Poestenkill includes part of one Tier 1 County Priority Conservation Site, the Rensselaer Plateau. The Plateau is an important conservation site for its large contiguous forest size; relatively intact forest landscape; high diversity of important examples of natural ecosystems, ecological communities, and native species; and many county-rare plants and animal habitats. The Plateau forest landscape serves as habitat for wide-ranging native animals such as black bear, bobcat, fisher, coyote, and moose that require large intact forested areas for viable populations, and for forest-interior birds.

Tier 3 and Tier 4 Priority Conservation Sites are of "moderate" conservation priority because they are smaller than Tier 1 and Tier 2 sites and are not in quite as good ecological condition or not in quite as good a landscape. While they do not contain as many important ecological features, the ones they do have are significant and complement those in Tier 1 and Tier 2 sites.

The Town of Poestenkill includes portions of two aquatic County Priority Conservation Areas: Poesten Kill Midreach Corridor (Tier 3) and Wynants Kill Corridor (Tier 4). The Poesten Kill Midreach Corridor is the Poesten Kill downstream of Barberville Falls plus its associated riparian buffer and tributaries including Newfoundland Creek. This Conservation Area is one of the largest aquatic landscape-level sites in the county with high biodiversity conservation value. The Wynants Kill Corridor includes the length of the Wynants Kill and it associated riparian buffers and wetlands, including Moules Lake. Both these Conservation Areas contain a rich diversity of aquatic, wetland, and riparian natural community types.

The Town of Poestenkill also includes a small portion of another Tier 3 County Priority Conservation Area: Sand Lake Lakes. This Conservation Area includes Burden, Crooked, Glass, Crystal, and Reicherts Lakes, and surrounding wetlands, shore areas, and upland buffers. While the lakes are in Sand Lake, the wetlands on the north side of Reicherts Lake extend into Poestenkill. These relatively large lakes provide habitat for aquatic plants and animals not commonly found elsewhere in the county, and some of the adjacent natural communities are also uncommon.

Red maple swamp   (Photo by Jeff Briggs)

12. IMPORTANT LARGE FORESTS (MAP 17)

The Large Forests Map (**Map 17**) shows forests greater than 200 acres in size, which provide numerous benefits including wildlife habitat, clean water, climate moderation, and forest products. In general, larger forests provide higher quality habitat and greater benefits than smaller ones. The Rensselaer Plateau is characterized by remarkably intact forest cover, predominantly in private ownership. There are opportunities to support and promote forest stewardship throughout the Town, and to guide future land use in ways that maintain large forest tracts and minimize impacts to interior forest habitat.

Large forest patches were identified from 2010 land cover data developed for the National Oceanic and Atmospheric Administration's Coastal Change Analysis Program. Land cover categories considered 'forest' for this analysis included deciduous forest, evergreen forest, mixed forest, and palustrine forested wetland. Roads were buffered and removed from forest patches to show results of development-related fragmentation. Interstate roads were buffered by a total of 300 feet and state and county roads by 66 feet. Forest patch size classifications are based on a literature review developed by the Nature Conservancy for the Orange County Open Space Plan (Orange County Planning Department 2004). Local forest block names are provided based on the *Rensselaer Plateau Regional Conservation Plan* (2013).

In addition to large forests, the Large Forest Map identifies important forest interior habitat areas from the Rensselaer County *Land Conservation Plan*. These large forest areas far from roads and development are the most likely places in the Town to support populations of forest-interior nesting birds and other sensitive wildlife species. All of the forest interior areas are located on the Rensselaer Plateau. The Land Cover Map (**Map 14**) shows approximate locations of forests of all sizes in the Town.

There are two "regionally significant" forest blocks mapped in eastern Poestenkill. The block north of Plank Road extends over 14,600 acres and encompasses the Ives Corner, Poesten Kill Headwaters, and Dyken Pond blocks identified in the *Rensselaer Plateau Regional Conservation Plan* (2013). The block to the south of Plank Road spans over 8,700 acres and is known by Perigo Hill. Forest patches greater than 6,000 acres provide habitat to many area-sensitive species and can accommodate large-scale disturbances that maintain forest health over time. Forests in this size range are able to maintain the wider range of habitats and conditions often required by forest-dependent species.

Two "locally significant" forest blocks lie just to the west: the 5,000-acre Davitt Pond block west of Blue Factory Road, and the 3,200-acre Snake Hill block west of Oak Hill and Mosher roads. These forests support county-important rocky slope and summit complexes associated with the Plateau's escarpment (see **County-Important Biodiversity Areas Map 16B**). "Locally

> *Forest fragmentation* occurs as large patches of forest are divided into smaller areas, often by clearing for new roads or development. Fragmentation decreases forest habitat quality and health, disrupts wildlife movement, and facilitates the spread of invasive species. These impacts are greatest at forest edges but can extend for hundreds of feet into forest patches, often displacing sensitive species that depend on interior forest.

significant" forest blocks represent the lower size limit of viable habitat for forest-dependent birds, which often require 2,500 to 7,500 acres of intact interior forest habitat. They can also provide important travel corridors between larger forest blocks.

Several additional "stepping stone" forest patches are mapped along the Poesten Kill and in lower-lying areas of the Town west of the Plateau, ranging from 200 to 800 acres in size, the largest being the forests in the vicinity of Coopers Pond (where the Town of Poestenkill owns several parcels). Forests as small as 200 acres will support some forest-interior bird species, but several may be missing, and species that prefer "edge" habitats with higher disturbance levels will dominate. Smaller forests are more vulnerable to the spread of invasive species and less viable for timber management, among other values. Nevertheless, they may provide valuable corridors for wildlife movement and plant dispersal, allowing a large array of species to move safely from one habitat to another.

Three forest communities dominate these large forests in Poestenkill – Hemlock-Northern Hardwood Forest (7,425 acres), Beech-Maple Mesic Forest (3,052 acres), and Successional Northern Hardwoods (1,354 acres) (RPA 2014). Appalachian Oak-Pine Forest (838) acres), Appalachian Oak-Hickory Forest (404 acres), Maple-Basswood Rich Mesic (383 acres), Spruce Flats (359 acres), and Hemlock-Hardwood Swamp (261 acres) are the other large forest communities in the Town on the Rensselaer Plateau. The Appalachian Oak-Pine/Hickory Forests are found on the western slopes or western escarpment of the Rensselaer Plateau just north and south of the hamlet of Poestenkill.

Large forested interior areas provide habitat for wide-ranging mammals like moose, bobcat, fisher, and black bear and breeding habitats for birds such as northern goshawk, broad-winged hawk, scarlet tanagers, Blackburnian warbler, and blue-headed vireo. The Poestenkill Headwaters is particularly unique in this region of New York State as it contains red spruce and balsam fir and provides breeding habitat for a number of warbler species more typical of the Adirondacks (Canada, Magnolia, Nashville, Yellow-rumped, and Mourning warblers). Forest and forested stream corridors of eastern Poestenkill also support foraging habitat for NY- and US-Threatened northern long-eared bat and likely other bats, as well.

The Poestenkill Community Forest is part of a large forest area (Perigo Hill Forest Block) covered with mostly Hemlock-Northern Hardwoods and Beech-Maple Mesic forest types. A list of the breeding birds and numbers recorded at the Poestenkill Community Forest can be seen in **Table 7**. Characteristic birds of these communities include ovenbird, red-eyed vireo, yellow-bellied sapsucker, hermit thrush, scarlet tanager, black-throated green warbler, hairy woodpecker, and black-capped chickadee. Commonly observed wildlife include white-tailed deer, red and gray squirrels, eastern chipmunks, and porcupines. Red efts, the terrestrial stage of the red-spotted newt, are also commonly seen on the forest floor.

Insert Map 17 – Large Forests

12.1 FOREST HEALTH

One of the greatest threats to forests in Poestenkill today is the introduction of tree diseases, forest pests, and other invasive species inadvertently brought in by people through landscaping and international commerce. Hemlock woolly adelgid and emerald ash borer have already done much damage in nearby towns, and are expected to eventually kill most large trees of these common species in the region. Also, oak wilt, a fungal disease which can quickly kill oak trees, is in nearby Schenectady County. The DEC Division of Lands and Forests has further information about Forest Health Issues and preventative measures to reduce the spread of pests, such as using locally-sourced firewood. The Capital/Mohawk Partnership for Regional Invasive Species Management (PRISM) works to promote education, prevention, early detection and control of invasive species and is helping communities to prepare for and respond to this threat. Guiding future development to minimize forest fragmentation and loss will help minimize the spread of invasive species into interior forests and conserve important habitats in the Town.

12.2 FOREST LEGACY AREA

The eastern two-thirds of the Town of Poestenkill on the Rensselaer Plateau was designated in 2010 as a Forest Legacy area by the NYS DEC under the USDA's Forest Legacy Program (FLP). The FLP is a federal grant program designated to protect forest lands from conversion to non-forest uses and is administered by the DEC. About 12 landowners, including some in Poestenkill, applied in FY 2014, which was subsequently approved. Final conservation easements for these properties are currently being worked on by DEC.

13. GRASSLANDS, SHRUBLANDS, AND YOUNG FORESTS (SEE AERIAL VIEW AND LAND COVER MAPS) (MAPS 2 AND 14)

Recently disturbed sites, such as hayfields, abandoned farm fields, or forest clearings, can provide important habitat for species that require grasslands, shrublands, and young forests. These successional habitat types are transitional and relatively short-lived, and typically require periodic maintenance to avoid becoming more densely vegetated, eventually developing a canopy and becoming forest. We can infer from the Aerial View **(Map 2)** and Land Cover **(Map 14)** maps and breeding bird records that valuable grasslands, shrublands, and young forests occur in Poestenkill. A county-important lowland grassland complex in an agricultural area that spans the Town boundary with Brunswick is shown on the County Important Biodiversity Map **(Map 16B)**.

Grassland or meadow habitat can support a variety of life, including rare plants, butterflies, reptiles, and birds, in addition to providing agricultural uses and scenic values. The quantity and quality of grasslands for wildlife have rapidly decreased in the Northeast during the last century due to increased human population, changes in agricultural technology, and forestation due to the abandonment of family farms. This continuing trend threatens populations of grassland birds that have adapted to the agricultural landscape. Poestenkill is largely forested today, but the **Land Cover Map 14** indicates that approximately 11.7% of the Town is in herbaceous land cover (hay, pasture, or cropland). The *2000-2005 NYS Breeding Bird Atlas* documented breeding by high priority grassland bird SGCN in the Poestenkill area, including eastern meadowlark, bobolink, and horned lark (see **Table 8**). Audubon New York offers guidance on managing habitat for grassland birds.

Shrublands and young forests are transitional habitats characterized by few or no mature trees, with a diverse mix of shrubs and/or tree saplings, along with openings where grasses and wildflowers grow. They can occur in recently cleared areas and abandoned farmland and are sometimes maintained along utility corridors by cutting or herbicides. These habitats are important for many wildlife species declining throughout the region because former agricultural areas have grown into forests, and natural forest disturbances that trigger young forest growth, such as fires, have been suppressed. Records from the *NYS Breeding Bird Atlas* support the presence of 10 species of conservation concern in Poestenkill that prefer young forest and shrubland habitat, including American woodcock, ruffed grouse, and Canada warbler (see Table 8). For more information, see the DEC Young Forest Initiative and Audubon New York's guidance on managing habitat for shrubland and young forest birds.

14. CLIMATE RESILIENCY (MAP 18)

Valuable ecosystem services provided by Poestenkill's landscapes include harvested products (food, timber, biomass, maple syrup), clean water and flood control, soil conservation and carbon sequestration, biodiversity support and genetic resources, recreation, and preservation of wild places and heritage sites. Ecosystems recharge groundwater supplies and reduce soil erosion by creating catchments that enhance rainwater infiltration into soils as opposed to allowing rapid runoff of storm water into streams. The healthy vegetation of landscapes helps to stabilize and conserve soils, and also sequesters carbon above ground in the standing biomass of trees and perennial plants and below ground in the form of roots and soil organic matter. The diverse flora and fauna supported by Poestenkill landscapes play a role in maintaining Earth's biological heritage, and the complex interactions among species benefit society in many ways, such as natural control of insect pests and disease. Genetic diversity will be essential for the natural adaptation of our ecosystems to environmental stresses such as high temperatures and drought that will be exacerbated by climate change. In addition, genetic diversity has potential economic value for new pharmaceuticals, or for organisms or compounds with biotechnology applications.

In the face of climate change the (See Section 5) Poestenkill CAC recommends that the town encourages residents and conservation groups to protect land that provides plant and animal habitat amidst changing temperatures, rainfall patterns, and major weather events. Because climate resiliency and elevation are linked, areas near the plateau escarpment and other places with higher elevation should be considered for habitat conservation and forest land uses with development encouraged in areas less important for conservation of biodiversity.

Climate resilient land conservation planning includes climate change as a threat to the natural resources otherwise valued. **Map 18** shows climate resilience values for biodiversity in Poestenkill from the Nature Conservancy's Resilient Sites for Terrestrial Conservation project. Modeling for climate resilience was based on three primary attributes: geodiversity (diversity of physical environments), topographic complexity, and landscape connectedness. Sites that have both complex topography and connected land cover are places where conservation action is most likely to succeed in the long term.

Geodiversity reflects unique combinations of geology, elevation, and landforms. Ecosystem and species diversity relate strongly to their associated geophysical settings. Conserving a range of physical environments will in turn protect a diversity of plants and animals under both current and future climates.

Complex topography and elevation gradients are important too because they affect temperature and moisture levels, creating microclimates. In addition to slope, factors that create microclimates include the amount of shade, proximity to a body of water such as streams and springs, and slope direction. For example, here in the northern hemisphere, south-facing slopes are usually warmer and drier than north-facing slopes because they receive more heat from the sun. Amidst changing climatic conditions, microclimates create opportunities for species to move to more favorable nearby habitats, such as the cooler north side of a mountain or hill, or to a valley floor, or to a moister, shaded area. Alternatively, dry rock outcroppings and rounded bluffs, tend to be warmer and have less vegetation providing glade and cliff habitat for species adapted to drier, warmer conditions.

Connected landscapes are places that allow species to move and disperse, and processes like water movement can occur unimpeded. Keeping the diversity of physical environments and microclimates of Rensselaer County naturally connected is critical for the survival of native species. Year-round wildlife residents need connectivity for daily activities such as finding food and water, resting places, and breeding sites while migratory species need connectivity to travel to and from the habitats they favor. And as the climate changes, connectivity becomes increasingly important for both local species relocating to nearby microclimates, and more widespread species movement in Rensselaer County. Land that enables species to move through the landscape without barriers is important to maintain future biodiversity. These barriers include both natural impediments, such as mountains, rivers, and lakes, and man-made ones like roads, buildings, and fences.

Map 18 shows climate resiliency values for biodiversity in Poestenkill. The map shows areas that offer the greatest potential for species to adapt as the climate changes. A dark green color indicates that the area has high estimated resilience. Brown indicates areas vulnerable to climate change. Above-average resilient sites in the Town include much of the Rensselaer Plateau, especially the escarpment, Barberville Falls gorge, and Perigo Hill. Additional above-average resilient sites include areas surrounding wetlands and waterbodies such as Coopers and Vosburgh ponds.

Insert Map 18 – Climate Resiliency for Biodiversity

15. RECREATION AND SCENIC RESOURCES (MAP 19)

15.1 CONSERVATION LANDS

There are a number of conserved lands in Poestenkill under different ownerships (**Map 19**). One of the largest conservation acquisitions in the Town was recently made by the Conservation Fund, which purchased the former Cowee Forest lands in southeastern Poestenkill (468 acres) and has plans to transfer these to New York State as forest lands. This area also contains the Geiser Preserve (95 acres) owned by the Rensselaer Land Trust (RLT). Also nearby is the Poestenkill Community Forest (435 acres) owned by another land trust organization, the Rensselaer Plateau Alliance.

The RLT holds a number of conservation easements on lands not open to the public in Poestenkill including the following: Common Farms (130 acres), Sluyter (105 acres), Colehamer (62 acres), and Plateau Escarpment (56 acres). The Agricultural Stewardship Association recently purchased the development rights on the 300-acre Wagner dairy farm which straddles the boundary between Poestenkill and Brunswick. The Natural Resource Conservation Service holds an easement on approximately 48 acres on Columbia Hill Road under the NRCS wetland reserve program, which restores wetlands after they have been drained for agriculture or otherwise disturbed.

15.1.1 Barberville Falls Preserve

The 135-acre Barberville Falls Preserve in the center of Poestenkill was conserved by The Eastern New York Chapter of The Nature Conservancy and is now owned by the Rensselaer Plateau Alliance. The area was farmed during the 1800s and around 1900 construction was begun on a community-financed hydroelectric plant at the top of the falls which was never completed. The preserve is next to the hamlet of Barberville. Here the Poesten Kill flows 90 feet off the Rensselaer Plateau into a deep pool. The main rock formation on the falls is Rensselaer graywacke. There are three trails in the preserve which takes one through the Hemlock-Northern Hardwood Forest. Along the Ridge and Creek Trails in the gorge one can see a variety of wildflowers including: starflower, Canada mayflower, Indian cucumber root, jack-in-the-pulpit, painted trillium, trout lily, dwarf ginseng, wild sarsaparilla, early meadow rue, Solomon's seal, false Solomon's seal, wood anemone, wake robin, partridge berry, fringed polygala, blue-bead lily, bishop's cap, foam flower, blue cohosh, wild geranium, and cardinal flower. There are mosses, lichens, horsetails and ferns as well. The forest along the stream is a mixture of coniferous hemlock and hardwoods such as red and sugar maple, yellow birch and white ash. Davitt Pond Brook flows into the Poesten Kill on the east side of the gorge. The Creek Trail is an old logging trail on the west bank of the Poesten Kill. Cliff communities of liverworts, mosses and ferns have formed on the moist, exposed vertical rocks along the falls and on the eastern side of the gorge.

Barberville Falls (Photo by Jim de Waal Malefyt, Aug 2018).

15.1.2 Poestenkill Community Forest

The Poestenkill Community Forest (PCF) is a 436-acre forested parcel located on Legenbauer Road in Poestenkill, on the east-central part of the Rensselaer Plateau. It is open to the public and provides for recreational trails for Plateau residents and visitors, serves as a demonstration area of best management practices for forest stewardship, and is a venue for a variety of other educational programs for adults and children. Additionally, the area is vitally important for watershed protection and wildlife habitat.

The PCF property is a beautiful and ecologically important piece of the Rensselaer Plateau, consisting of a diverse tapestry of northern hardwood, hemlock, and mixed hardwood/softwood stands. Prevalent species include red maple, hemlock, beech, black cherry, sugar maple, yellow, paper, and black birch, red oak, big tooth and quaking aspen, and to a lesser extent white pine, red spruce, and balsam fir. The property is primarily mature, closed canopy forest, especially north of Legenbauer Road, but also includes a small open meadow, and open areas with early successional growth south of Legenbauer Road around the gravel pits. Terrain is variable, from level, to gently rolling, to moderately, and in places, steeply sloping. Over 38 acres of open and forested freshwater wetlands, one perennial headwater stream, and three intermittent headwater streams of the Poesten Kill are the water features on the property, enhancing it with habitat diversity as well as scenic beauty. The interesting diversity of habitats relates to the diversity of topography left by the retreating glacier about 13,000 years ago.

Forest landowner education programs are offered on site through RPA's Working Forest Initiative, as well as New York State logger training through a partnership with New York Logger Training, Inc. Partnerships with the Dyken Pond Environmental Education Center and local schools promote service learning and citizen science projects.

The PCF also includes an extensive network of hiking trails, several specialty mountain bike trails, remnants of the colonial era Albany-Boston Post Road, the ruins of a mid-twentieth century sap house, and numerous stone walls that defined pastures and fields from a bygone era of subsistence farming.

Game of Logging- chainsaw training at Poestenkill Community Forest

15.1.3 Geiser Preserve

The Geiser Preserve contains 95 acres of forest around the highest point in Poestenkill - Perigo Hill. The preserve was a gift to the Rensselaer-Taconic Land Conservancy (now Rensselaer Land Trust) from Ruth Nevin, a Taborton teacher, who purchase the land in 1932. The elevations range from 1600 to 1891 feet. The forest is a mixture of eastern hemlock, sugar maple and American beech. The understory contains witch hobble, striped maple, and a carpet of ferns including royal, interrupted, lady, wood, marginal shield, Christmas, maidenhair, hay-scented, bracken and grape. Logging roads from Linderman Road lead to the preserve from the south which is crossed by the old abandoned Eastern Turnpike which went from Albany to Boston. There is also trail access to the Geiser Preserve from the Poestenkill Community Forest. There is an impressive view from the peak when the leaves have fallen off the trees.

15.1.4 Dyken Pond Environmental Education Center

Dyken Pond Environmental Education Center is owned by Rensselaer County and is located in the Towns of Poestenkill and Grafton. One small land parcel of about 30 acres south of Dyken Pond Road and west of Dustin Swamp lies in the Town of Poestenkill in its northeastern corner. The Center is located in the "Core Tract" of the Rensselaer Plateau. The Center is between 1600 and 1800 ft elevation and offers a mixture of forest habitats, wetlands, small streams, and a sizable lake - Dyken Pond. According to the "Natural Areas of Rensselaer County, New York," the area is rich in animal life, including coyote, bobcat, black bear, porcupine, otter and mink. Birds include great blue heron, common raven, barred owl, and wildlife usually associated with more remote regions of the state. In 1998 the Rensselaer-Taconic Land Conservancy (now Rensselaer Land Trust) published the "Botanical Resources of Dyken Pond Environmental Education Center." A number of plant specimens mapped in the botanical survey are from the parcel in Poestenkill.

The Poestenkill section of the Center was created in 1990 with the 10-acre Eischen parcel and added to in 1991 with 19 acres of the Mulson parcel. The Poestenkill section is crossed by the Long Trail and a loop trail. The trail crosses a western finger of Dustin Swamp which is now a Sedge Meadow with a boardwalk. Dead red spruce snags now stand as lonely sentinels in this wetland which is periodically flooded by beaver dams. The Poestenkill section also includes part of a Spruce-Fir Swamp and upland communities of Pine-Northern Hardwood Forest, Beech-Maple Mesic Forest and Hemlock-Northern Hardwood Forest.

15.2 RECREATIONAL AREAS

15.2.1 Public Fishing

A DEC-designated parking area for trout fishing exists off Garfield Road along the Quacken Kill and its confluence with the Poesten Kill (**Map 19**). Other undesignated "pull-offs" exist along the Poesten Kill mostly from Fifty Six Road and south throughout the Town.

15.2.2 Camp Rotary Scout Reservation

Camp Rotary Scout Reservation consists of over 1250 acres in the Towns of Poestenkill and Grafton owned by the Twin Rivers Council of Boy Scouts of America. The southern section of the Reservation around Davitt Pond lies in Poestenkill. The Boy Scouts have marked trails throughout the reservation, which can be used with permission. The area is covered by extensive stands of Hemlock-Northern Hardwood Forest.

15.2.3 Pineridge Crosscountry Ski Area

Pineridge Cross-country ski area on Plank Road in East Poestenkill offers 22 miles of groomed trails along the picturesque Poesten Kill and woodlands. It also offers 10 miles of trails for snowshoeing. Ski trails are located in hardwood and coniferous forests and some go up to elevation 1746 feet with views to the east of the Taconic Range in eastern Rensselaer County and Mount Greylock in Massachusetts.

15.3 SCENIC AREAS

In the first Master Plan for the Town of Poestenkill developed by Russell Bailey & Associates in 1970, Russell Bailey stated, "The community has many important assets; one of which is the scenic, rural character of the Town." The mixture of farmland, woodlots, wetlands, successional fields and rolling hills gives western Poestenkill its rural scenic quality. Behind this rural landscape is the back drop of the Rensselaer Escarpment which rises 500 feet from the valley floor of the Poesten Kill. In contrast to western Poestenkill, the eastern section on top of the Rensselaer Plateau is hilly and largely forested with hardwood and conifer forests.

The 2006 Town of Poestenkill Comprehensive Plan includes a scenic resources section with the following descriptions (pp. 18-19, Map 6):

"The western slope or escarpment of the Rensselaer Plateau in Poestenkill is an important scenic resource. The Rensselaer Escarpment is also an important regional landscape feature which can be seen from distant locations such as the Helderberg Escarpment in Albany County. Local roads and hilltops provide many open vistas of the Rensselaer Escarpment. Traveling northbound on County Route 351 provides excellent views of the escarpment, especially during the fall foliage season in October. Scenic vistas of the plateau can be seen from other roadway hilltops (e.g., Weatherwax Road) when viewing in an easterly direction.

Open panoramic views of western Poestenkill and distant views of the Catskill Mountains to the southwest and the Helderberg Hills to the west can be seen from roadways and residential properties along the western slopes of the Rensselaer Plateau. Open land such as the area south of Hinkle Road and along Snake Hill Road have been selected for residential development, in

part, because of the panoramic views and distant scenic features which can be observed from the escarpment area. Similar views can be seen from rocky outcrops along the western escarpment of the Rensselaer Plateau north of the Town center.

The Poesten Kill is another important natural scenic feature in the local landscape. The stream as it flows off the Rensselaer Plateau creates a spectacular waterfalls at the hamlet of Barberville. Property on the eastern side of Barberville Falls has been preserved for decades by the Nature Conservancy and recently transferred to The Rensselaer Plateau Alliance to protect this natural scenic resource. A trail can be taken down to the foot of the falls from Blue Factory Road. Parking is provided across from the Brookside Cemetery on Plank Road. There are roads along most of the Poesten Kill throughout Town which provide many opportunities for the public to view this stream during the seasonal changes of the year. Late winter snow melts can provide some spectacular views of this dynamic stream. The best viewing opportunities of the Poesten Kill can be seen along the corridor of Plank Road between the hamlet of Barberville and the last stream crossing near the border with the Town of Berlin. Pedestrian walkways on bridge crossings, such as New York State Route 351 near the Town Hall, also provide viewing locations of the Poesten Kill."

The 1970 Master Plan encouraged the Town to develop Plank Road as a "scenic drive" along the Poesten Kill with public picnic areas, a Town Park, and scenic overlooks and vista clearings. Although these recommendations were not carried out, they remain good recommendations which would focus public attention on this stream which runs through the middle of the Town and gives it its name. If implemented, these recommendations would also provide recreational opportunities to the Town residents and enhance the aesthetic enjoyment of this important resource.

The 2006 Comprehensive Plan (p. 19) recommends encouraging development behind ridgelines and set back from scenic resources, and to consider conservation and cluster developments to preserve scenic resources.

The "Rensselaer County Land Conservation Plan" (2018) lists five areas in Poestenkill as 'high priority scenic areas" including: Rte 351 north of town center, western escarpment of the Rensselaer Plateau east of Reichards Farm Road, Barberville Falls, Rensselaer Plateau around Perigo Hill and north and northeast, and Dyken Pond Center.

16. LAND USE RESOURCES

16.1 ZONING MAP (MAP 20)

The Town of Poestenkill has divided the Town into the following land use districts (zones):

R   Residential District
RA   Residential/Agricultural District
RR-1 Rural Residential 1 District
RR-2 Rural Residential 2 District
H   Hamlet District
CLI   Commercial/Light Industrial District
NP   Natural Products District
PD   Planned Development District

The Land Use Ordinance includes four defined Residential Districts that differ in their density and use requirements. The **Hamlet** is a unique district established to accommodate mixed uses on smaller lots within the town center. Other established districts include **Commercial/Light Industrial**, and **Natural Products**. Provisions for future **Planned Development Districts**, either new or converted from existing uses, have also been incorporated. In addition to the Land Use Ordinance, requirements for subdivisions, flood plain management, junkyards, and dumps are defined in the Poestenkill Town Code.

Residential

There are five districts permitting residential uses including **Residential (R)**; **Residential/Agriculture (RA); Rural Residential 1 (RR1); Rural Residential 2 (RR2) and Hamlet (H).** The RR2 District is located in the mountainous eastern portion of Poestenkill. The RR1 District is in the central part of the Town and the RA and R districts are in the western portion. The Hamlet District is in the Town center. The districts differ in their area and bulk regulations; for instance, the minimum lot areas are one acre in the Residential district, two acres in the RA, RR1 and RR2 Districts, and a half-acre in the Hamlet. The RA, RR1 and RR2 have the same area and bulk regulations and differ only in their allowed uses.

Each residential district contains several defined permitted and special residential, general and commercial uses. One and two family homes are permitted in all residential use districts. Multifamily homes are only permitted in the RR1, RR2, and Hamlet Districts and may not exceed six units per structure or 20 units for multiple structures. With a special permit, community residences and boarding/rooming housing are permitted within the residential districts. Community residences are not permitted in the Hamlet. Mobile homes are only permitted in the Rural Residential (RR2) district. Many of the permitted and special uses in the residential districts require site plan review -- particularly those listed under the categories of general and commercial uses.

Mixed-Use

Although the RR1 and RR2 districts allow some commercial uses by special permit, the only mixed-use district in the town of Poestenkill is the Hamlet (H) district. The district permits commercial uses as offices, retail businesses and services, and personal services by right with site plan review. Restaurants and gasoline stations are allowed with a special permit. Lot area is listed at half an acre. The Hamlet District is located in the traditional business center of the town.

Commercial/Light Industrial

The Commercial/Light Industrial District accommodates a variety of uses under the categories of general, commercial, and light industrial. Heavy industrial uses are not permitted in the town. With the exception of agricultural uses, kennels, and home occupations, most of the permitted special uses in the Commercial/Light Industrial District require a site plan review and sketch plan. Two Commercial/Light Industrial Districts exist within the town; both are located on NY Route 355 west of the Poestenkill hamlet. The minimum lot size for any use in the Commercial/Light Industrial Districts is two acres.

Natural Products

The Natural Products Districts are reserved for commercial excavation, including extractive operations and soil mining. A special use permit is required for all mining operations in these Districts except for grading, which only requires a grading permit. Other than mining, only some agricultural uses are permitted in these districts

The New York State Department of Environmental Conservation regulates all extractive activities, including requirements for the reclamation of mined-out acreage, through the Mined Land Reclamation Law (MLRL). The state's mining jurisdiction covers any person who mines or proposes to mine from each mine site more than 1,000 tons or 750 cubic yards, whichever is less, within twelve successive calendar months.

According to §102-66 of the Town Code, the NP zone is intended to be the land use zoning classification for mining operations only during the period of time when active mining is underway. After completion of mining operations, including reclamation, or nonuse for a one-year period, the district must revert back to the pre-application land use classification.

Planned Development District

A Planned Development District (PDD) may be authorized with the use of performance criteria to set standards for site specific Planned Developments. Planned Developments may provide flexibility within standard zoning and subdivision requirements. A Planned Development may be established in any location if recommended by the Planning Board and approved by the Town Board; however, there must be a minimum of five contiguous acres of residential land or general use land, or ten contiguous acres for commercial or light industrial uses. Permitted uses and the intensity of uses are determined on a plan-by-plan basis.

Insert Map 20 - Zoning

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16.2 EXISTING LAND USES (MAP 21)

The Existing Land Use Map shows current land use patterns in Town as reflected by tax assessment property use data. This report includes an alternative map of current land use information, the National Land Cover Dataset (NLCD), which is gathered from remote sensing. For more information, see the Land Cover and Land Use section.

Existing Land Use Patterns

As shown on the map, the predominant uses in Town by land area are residential and agricultural. There are a mix of large and small residential uses, with the larger residential uses found primarily west of State Road 351. Much of the residential land in the Town is forested. Agricultural uses are found in nearly all portions of the Town with major agricultural use in the northwest corner of Town.

Commercial and industrial uses are found primarily along Routes 355 west of the Hamlet. Community Services uses are found throughout the Town. This is a broad category that includes education, religious, healthcare, government, and cultural and recreational uses.

A Note About Property Type Classification Codes.

Property Type Classification Codes were originally developed for use by assessors to describe the primary use of each parcel of real property on a taxing entity's assessment roll. A single code intended to be the best description for the overall use of the property is assigned to each parcel. These codes form a uniform classification system which is in use by all New York State municipalities, including the Town.

The system of classification consists of numeric codes in nine categories. Each category is composed of divisions, indicated by the second digit, and subdivisions (where required), indicated by a third digit. This classification system is designed for a specific purpose and should be distinguished from other land use classification systems in the NRI, such as the zoning map and NLCD. Certain characteristics of these data may affect the accuracy of the resulting depiction of land use, depending upon the community. For example, it is not updated for non-taxed parcels (i.e., not-for-profit), and it is often incorrect in the type of agriculture. Parcels having more than one use (e.g., residential with agriculture) are often shown to be the highest taxable use.

Discussion

Examining the Existing Land Use map in relation to other maps of the Natural Resources Inventory can provide insight into the types of activities occurring on land in the Town and their locations. It can help suggest areas where certain types of resources, such as agriculture and open space, can be found. Examining land uses over time can provide insight into changes in the use of land and development patterns.

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Insert Map 21 – Existing Land Uses

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16.3 AGRICULTURAL RESOURCES (MAP 22).

Agricultural lands contribute to the open space and rural character of Poestenkill's landscape. The majority of agricultural lands lie in the western one-third of the Town, west of the Rensselaer Plateau at the lower elevations. Rensselaer County GIS maps show that most "prime farmland" or "farmland of statewide importance" lies in western Poestenkill. The most productive agricultural lands and largest farms are situated in or near the floodplain of the Poesten Kill in the northwest section of Town. There was 2,154 acres in agricultural land in Poestenkill in 1980 (Buono, 1998).

16.4 PRIME FARMLAND SOILS

"Prime" farmland soils have been identified by the U.S. Department of Agriculture as soils that are best suited for producing food, feed, forage, fiber and oilseed crops. Prime farmland soils produce high yields with minimal inputs of energy and economic resources and minimal impact to the environment. The following are "prime farmland soils" listed by the USDA Soil Conservation Service which can be found in eastern Poestenkill. Large areas of Hamlin and Teel silt loams can be found on either side of Garfield Road and the Poesten Kill. Prime soil units and symbols are:

BeB   Bernardson gravelly silt loam, 3 to 8 percent slopes
CbA   Castile gravelly silt loam, 0 to 5 percent slopes
ChB   Chenango very gravelly loam, 3 to 8 percent slopes
CkB   Chenango gravelly loam, fan, 3 to 8 percent slopes
FrA   Fredon silt loam , 0 to 4 percent slopes (where drained)
HaA   Hamlin silt loam, 0 to 3 percent slopes
PtBPittstown gravelly silt loam, 3 to 8 percent slopes
RaA   Raynham silt loam, 0 to 5 percent slopes (where drained)
TeA   Teel silt loam, 0 to 3 percent slopes

16.4.1 Agricultural Districts

Agricultural land located in state agricultural districts is afforded some degree of protection by state law. The Agricultural Districts Law was passed in 1971, in part, to "conserve and protect agricultural lands as valued natural and ecological resources which provide needed open space for clean air sheds, as well as for aesthetic purposes." Most active agricultural lands in Poestenkill are presently in an agricultural district and, therefore, under the protection of the agricultural district law. In Poestenkill, some 24 landowners have about 1,800 acres located in Rensselaer County Agricultural District No. 2.

In 1998 only three full-time dairy farms had the center of their operations located in Poestenkill - the Hammond, Moody and Dzembo farms. None of these three dairy farms exist as of 2019. The Wagner dairy farm just across the Town border in Brunswick is the only dairy farm presently operating in the area. The Dzembo and Wagner farms both grow corn, silage, and alfalfa hay crops on fields in Poestenkill. Several landowners cut hay for profit or just to maintain open fields.

Since the late 1800s, there has been a steady decline in farming in Poestenkill. In 1949 there were 6,923 acres (33%) in farms (Stout, 1958). In 1980 that acreage was down to 2,154 acres (10%) of the Town's 21,058 acres (Buono, 1988). Less productive fields are continually being abandoned and many former agricultural fields have become residential developments. Few people are willing to be full-time farmers or are able to buy sufficient acreage to establish a viable farm. This trend is likely to continue into the 21st century. The demise of farming and the absence of periodic cutting of open fields will change the rural character of Poestenkill and decrease the open scenic views of the landscape. The history of farming in Poestenkill can be found in the publication "Farming in Poestenkill," by the Poestenkill Historical Society (1997).

In addition to open space, agricultural lands can provide wildlife habitat. The largest farms are dairy farms on which rotational crops of corn and alfalfa are grown. White-tailed deer forage extensively in alfalfa and hay fields and harvested corn fields. Many smaller fields scattered in eastern Poestenkill are used for cutting hay. These fields, if cut for the first time in July or August, can be productive breeding habitat for grassland songbirds such as the meadowlark, bobolink, and grasshopper sparrow and important foraging habitat for swallows and young turkeys.

RLT in their county-wide conservation plan (RLT 2018) listed the area east and west of Garfield Road in northwestern Poestenkill as a "high priority agricultural area." These areas belong to the Wagner and Dzembo farms.

Insert Map 22 – Agricultural Resources

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Appendices

Appendix I.

Ecological Site Descriptions

Appendix II.

Inventory and Assessment of Ecological Features of Poestenkill, New York

Prepared by David Hunt, Ph.D.

Ecological Intuition & Medicine

Rensselaer County Biodiversity Greenprint Project