

# Green Infrastructure Element

Sumter has a rich abundance of natural resources and environmental features. This broad category, when combined with heritage and active and passive open spaces, forms our “Green Infrastructure” or related system of natural resources. This “Green Infrastructure” includes but is not limited to:

- Watersheds - Streams, Rivers, Lakes, Ponds, and Drainage Corridors
- Flood Plains
- Wetlands
- Soils
- Agricultural Lands
- Forest Land and Tree Cover
- Wildlife & Natural Habitat
- Groundwater
- Mineral Resources
- Parks, Trails, & Open Space

These elements are tangible assets for the overall community and make Sumter a unique place to live. The interconnectedness of our green infrastructure and the built environment adds value to the character of the community.



Photo: Boardwalk at Swan Lake Iris Gardens

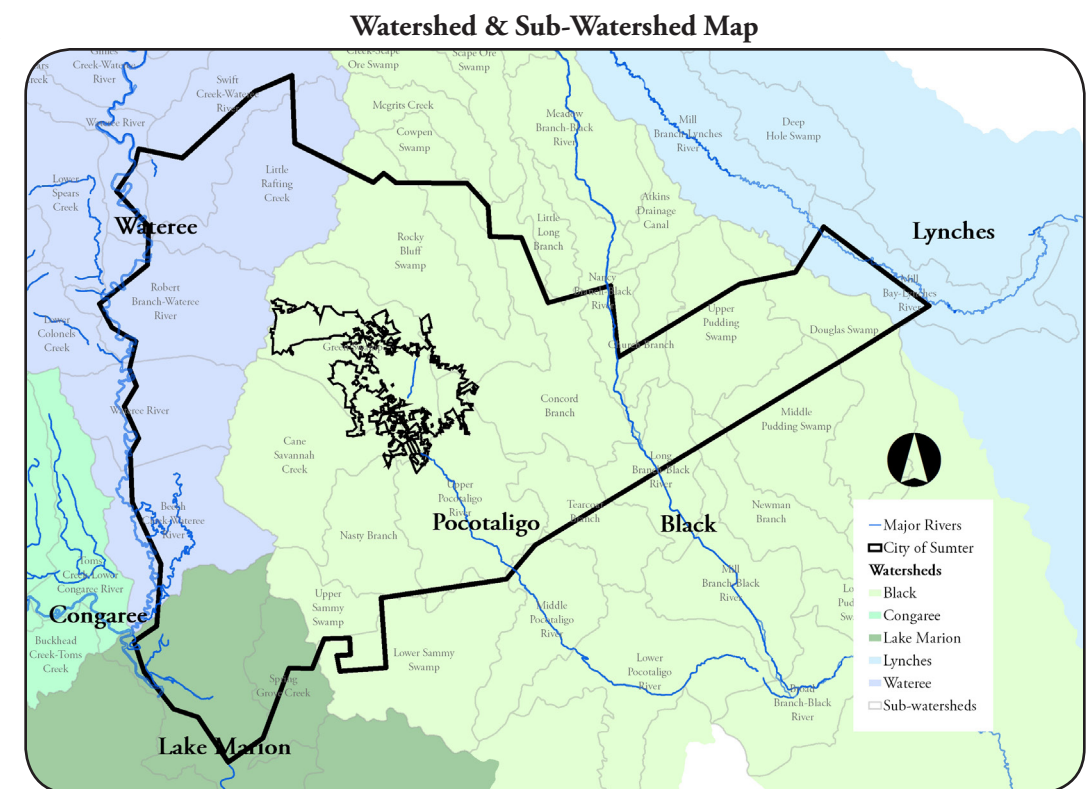
## Watershed Approach

Traditionally, natural resource management issues, such as storm water and tree protection, have been limited to site level approaches. However, the impact of any given development impacts our community on a more regional scale. The “watershed approach” to planning storm water management, non-point source pollution abatement, and other environmental issues can be more economical than working in a “piece meal” fashion. A watershed approach takes into consideration all the problems and solutions in a watershed, all land use categories and soil types, landowners’ objectives, and downstream user needs.

## Surface Water (Streams, Lakes, Rivers, etc.)

A watershed is all of any geographical area that drains through a common point. There are four major watersheds in Sumter County. Each of these watersheds can be subdivided into smaller “sub” watersheds. Sumter County has abundant surface waters, wetlands and associated floodplains such as: the Wateree River, Black River, Lynches River, Pocotaligo River, Pocalla Swamp, Scape Ore Swamp, Rocky Bluff Swamp, and Santee River. There are numerous perennial and intermittent streams, which also have associated flood plains and wetlands.

Map GI-1



Source: FEMA Watershed Data

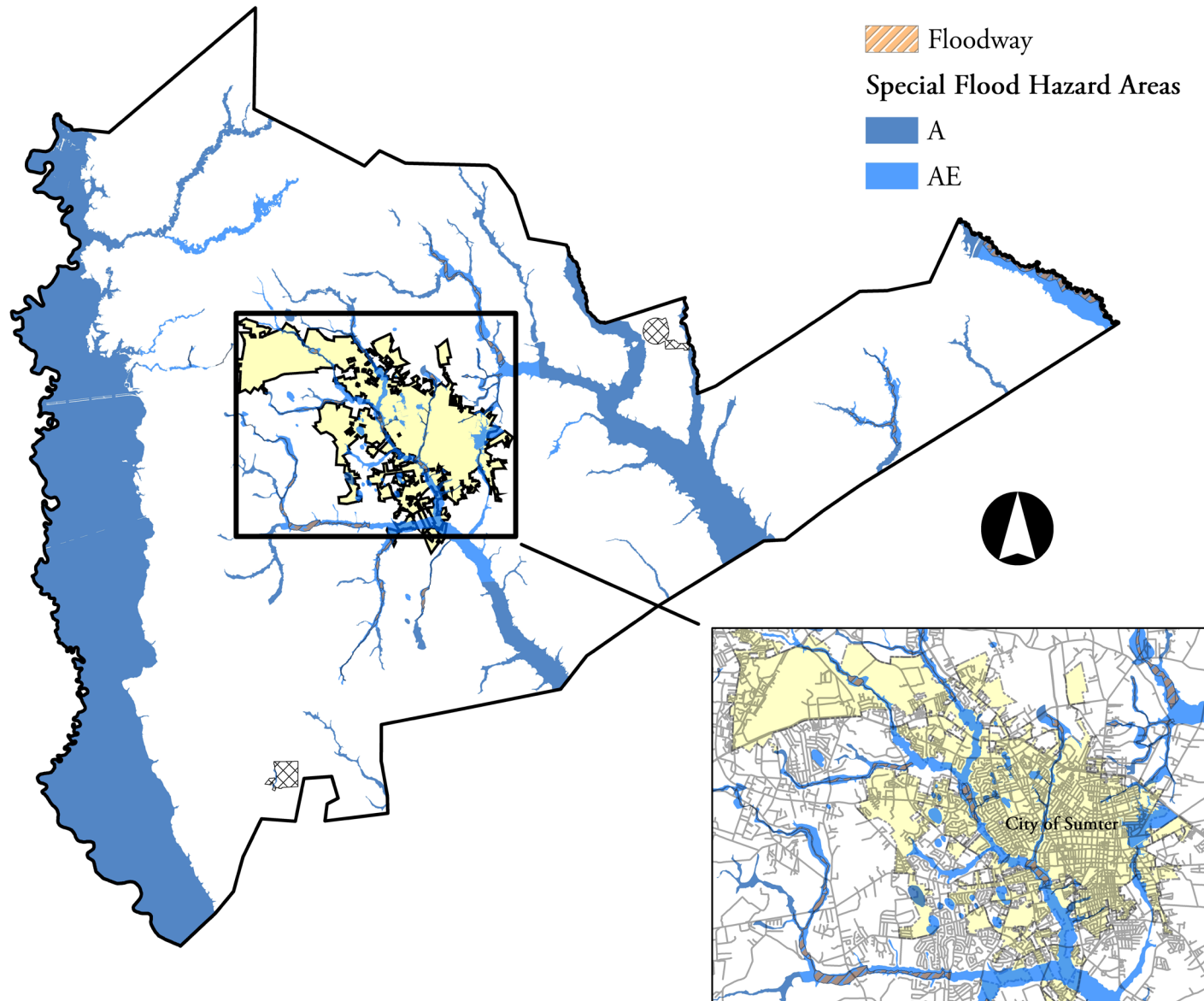


### Special Flood Hazard Areas (Floodplains)

A Special Flood Hazard Area (SFHA) is an area identified by the United States Federal Emergency Management Agency (FEMA) as an area with a special flood or mud-flow, and/or flood related erosion hazards, as shown on a flood hazard boundary map or flood insurance rate map. In the City and the County these areas are indicated as being in either an A zone, AE zone, or floodway on such maps. Development within the A zone and AE zone areas are required to have flood insurance and must meet the standards of the City or County Flood Damage Prevention Ordinance. Development in floodway areas (the actual river or stream channel) is prohibited in most instances.

Map GI-2

Special Flood Hazard Areas in Sumter County



Source: FEMA Floodplain Maps

### 2015 & 2016 Flooding Events

Historic flooding events directly impacted the City and County in 2015 and 2016. In October 2015, a stalled front offshore combined with deep tropical moisture streaming northwest, led to historic rainfall totals. Flash flooding was prevalent and resulted in significant property and infrastructure damage. Additionally, the flooding required a significant amount of emergency rescues. In early October 2016, the Sumter County area was hit again with significant rainfall as a result of Hurricane Matthew. These rainfall events, and the recovery from them, focused the Sumter community's awareness of flood hazards and development within flood prone areas.



Photo Flooding in the City of Sumter



Photo: Flood Damaged Road in Sumter County

### Recovery Efforts

Recovery from these flood events takes coordinated action from multiple agencies across all levels of government, as well as participation from the private and non-profit sectors.

As soon as the floodwaters subsided, FEMA established response centers to assist those eligible for FEMA disaster aid. Also, government agencies at all levels conducted damage assessments. Non-profits, private businesses, religious organizations, government agencies, and private citizens all contributed time, money, and needed supplies to help those impacted by the floods. In the months after the flooding events, the City of Sumter and Sumter County provided expedited permitting, undertook flood clean-up and damage repair activities, and worked with stakeholders on floodplain management issues. Long-term, both City and County residents benefited from the federal Community Development Block Grant Disaster Recovery (CDBG-DR) Program, which provided funding for eligible flood recovery activities. Additionally, the City of Sumter is acquiring targeted property in special flood hazard areas through funding provided through the FEMA Hazard Mitigation Grant Program (HMGP).



Photo: Sumter County Emergency Operation Center



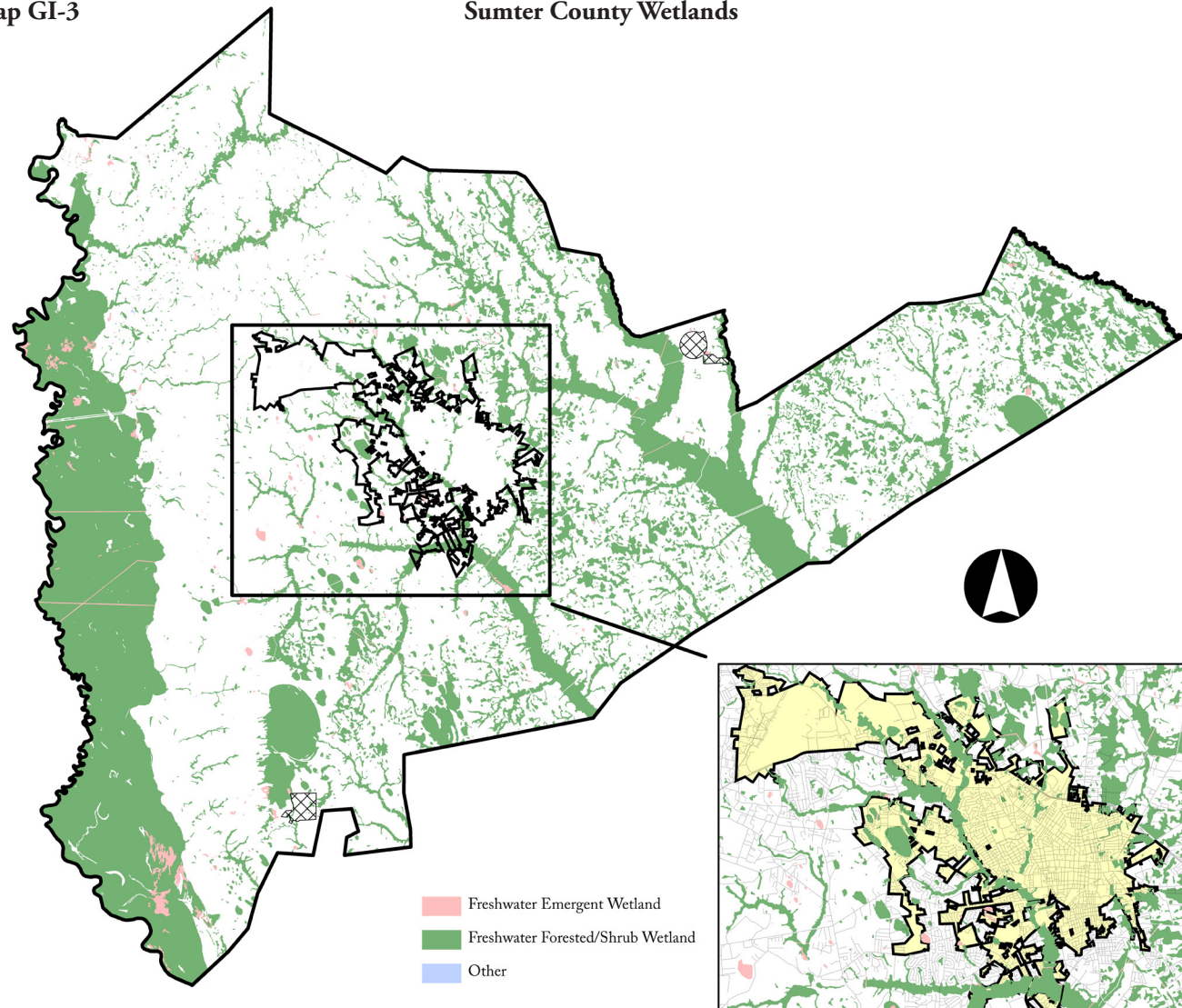
## Wetlands

Wetlands, vegetated areas where plants are rooted in water or water-saturated soil, serve many functions including, but not limited to, environment-pollutant removal, flood attenuation, groundwater recharge and discharge, stream bank protection, wildlife habitats, open space preservation, recreation, and aesthetics. They have the potential to collect, store, and filter storm water and to tolerate flooding for extensive periods of time.

Wetlands under federal jurisdiction are subject to U.S. Army Corps of Engineers regulations and are not expressly regulated by local government. Non-jurisdictional and isolated wetlands, such as Carolina Bays, may be protected locally.

Map GI-3

Sumter County Wetlands



Source: USFW Wetlands Mapper

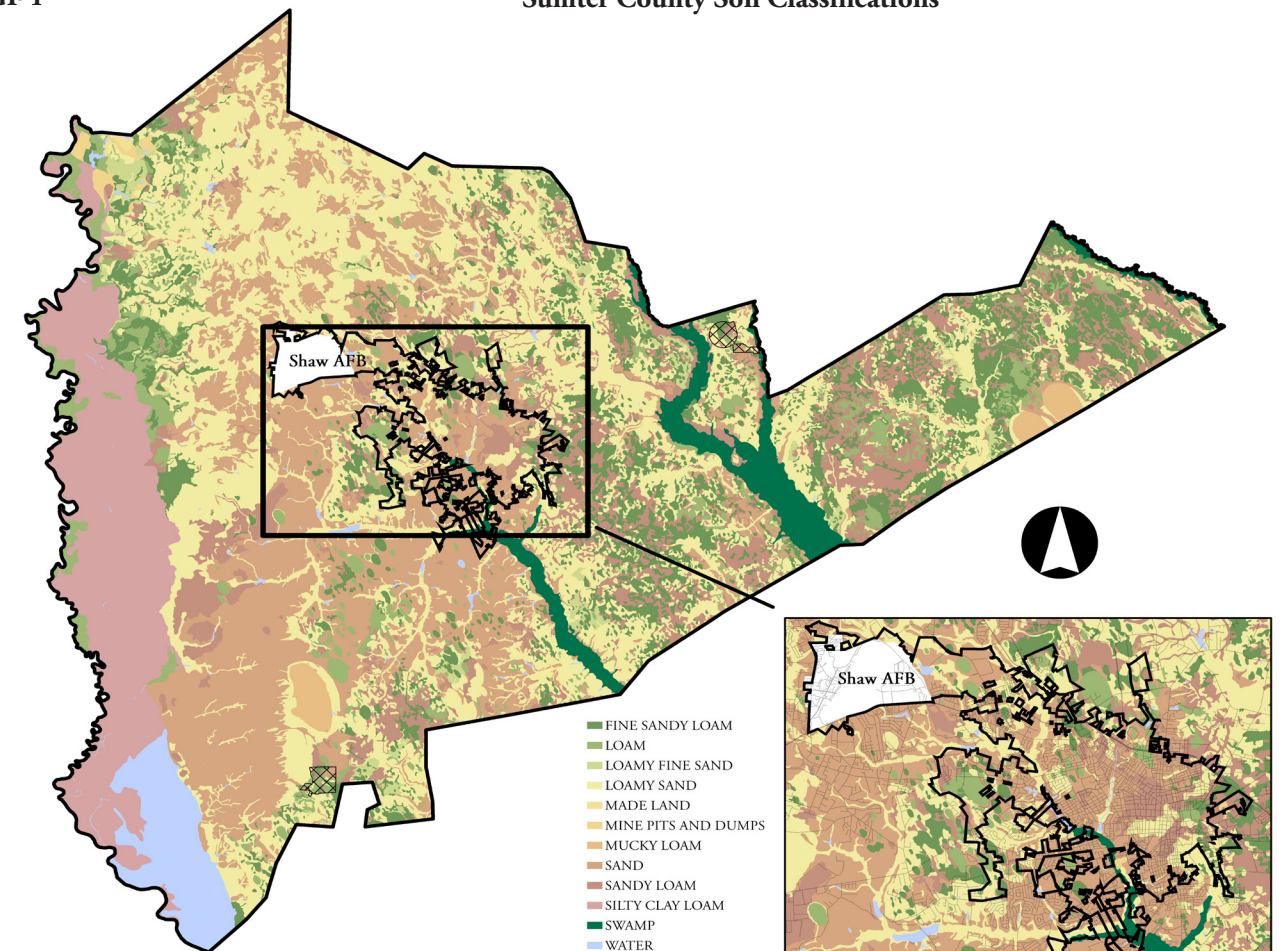
## Soils

Soil types in Sumter County occur based on the underlying geology, landform, relief, climate, and natural vegetation of a specific area. Information on soil type is important for a variety of reasons including agricultural viability, land use planning, infrastructure provision, and conservation. The primary components of soils within Sumter County consist of varying degrees of loam (mixture of sand & clay) or sand.

Specific soil classifications and taxonomy for soils in Sumter County can be found within the “Soil Survey of Sumter County, South Carolina” document, which is published and updated by the US Department of Agriculture (USDA) and the Natural Resource Conservation Service (NRCS) in conjunction with state level partners. Soil surveys, as a planning tool for developers and homeowners, should be encouraged at all levels. Problems associated with trying to use a parcel of land outside of its inherent capabilities are numerous and sometimes very costly to correct after a land use conversion has occurred. Proper planning is vital to maintain the quality of our natural resources as well as protect financial investments made by the citizens and businesses in Sumter County. The limitations of the Sumter County Soil Survey should be kept in mind during the land development planning process. The survey is an invaluable tool for large and medium size planning activities. However, specific sites should have a thorough investigation performed prior to committing to a particular use or improvement.

Map GI-4

Sumter County Soil Classifications



Source: USDA & NRCS Soil Classification Data



## Agricultural Lands

Sumter County has a surface area of approximately 436,800 acres. 12,169 acres are permanently covered with water, including: rivers, lakes, ponds, and streams. Approximately 110,000 acres of land in Sumter County are considered “Prime Farmland”. Prime farmland is land available for agricultural use that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. This land can be cropland, hay land, pasture land, or forestland, but not urban or “built up” land. In general, prime farmland has an adequate and dependable water supply from rainfall or irrigation, favorable temperatures and growing season, acceptable acidity and/or alkalinity, and few or no rocks. Prime farmland is permeable to water and air and is not excessively erodible or saturated with water for a long period of time.

Table GI-1 Suitable Soils for Agricultural Use



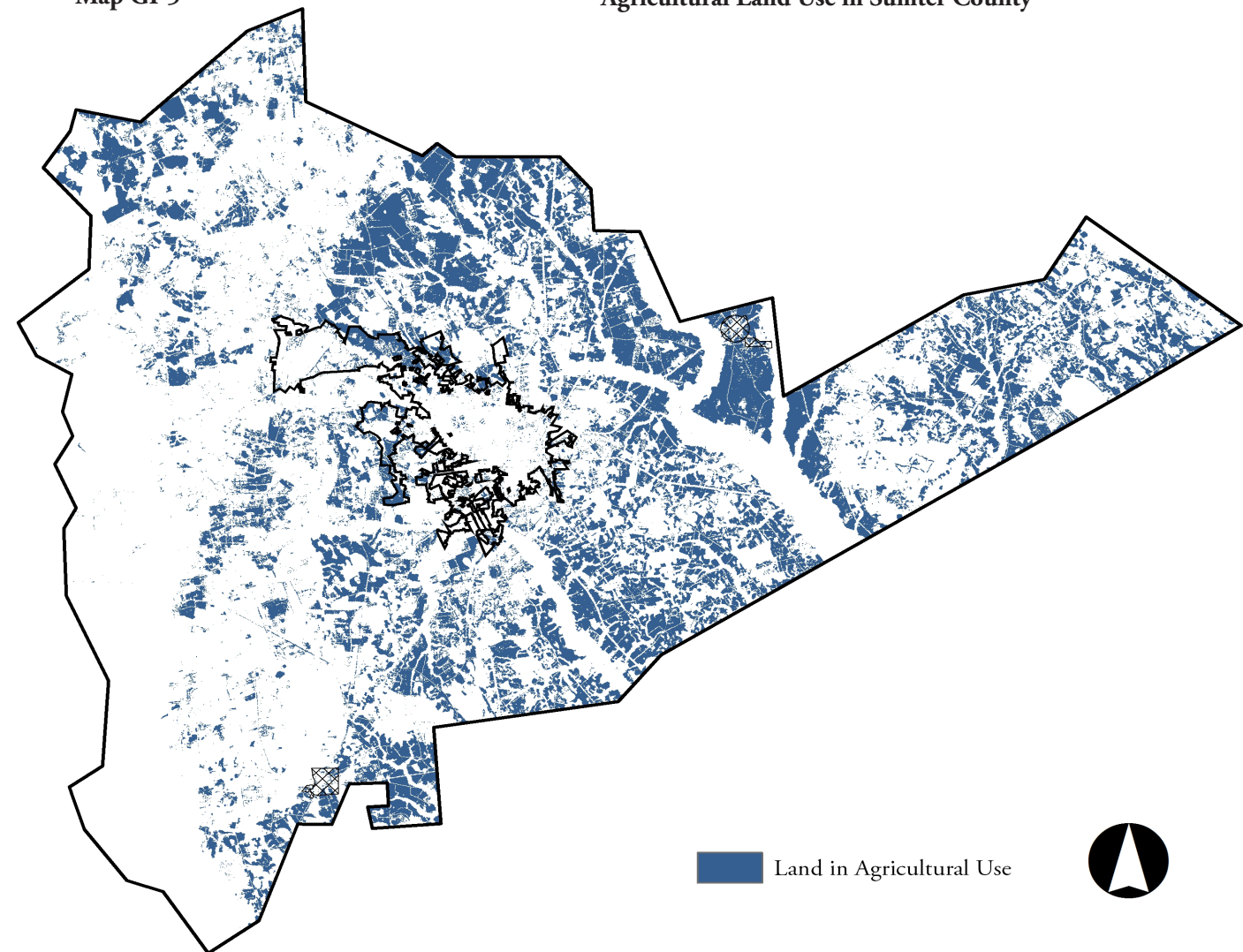
Soil Name
Autryville-Norfolk Complex
Barnwell-Fuquay Complex
Butters-Blanton Complex
Coxville-Rains Complex
Dothan-Norfolk Complex
Dothan -Norfolk Complex
Faceville Sandy Loam
Faceville-Lucy Complex
Fuquay-Dothan Complex
Goldsboro-Noboco Complex
Kalmia-Johns Complex
Lumbee-Johns Complex
Lumbee-Rutledge Complex
Lynchburg-Foreston-Butters Complex
Lynchburg-Rains Complex
Mantachie-Mimms Complex
Masada-Hornsville Complex
Meggett-Lumbee Complex
Norfolk-Butter Complex
Norfolk-Faceville-Noboco Complex
Norfolk-Noboco Complex
Norfolk-Nobboco Complex
Orangeburg Loamy Sand
Okeetee-Yemassee Complex
Rains Sandy Loam
Rains-Coxville-Lynchburg Complex
Shellbluff-Tawcaw Complex
Smithboro-Persanti Complex
Tawcaw-Duckbottom-Mullers Complex
Tawcaw-Duckbottom-Mullers Complex
Thursa Loamy Sand
Thursa Loamy Sand
Vauclose-Ailey Complex
Wagram-Norfolk-Lucknow Complex
Yemassee-Johns Complex

According to the 2017 Census of Agriculture compiled by USDA, there are a total of 524 farms with a combined total area of 167,872 acres in Sumter County. This accounts for approximately 40% of the total land area. Trends since 2000 reflect a slight decrease in the amount of total farms, but an increase in the total land area dedicated to farming. This could reflect a larger trend of increased industrial scale farming over smaller individual family oriented farming operations.

Sumter County is the the 7th largest agricultural economy in the state, with \$130,490,000 per year in value of agricultural products sold. The soil characteristics that make land suitable for agricultural also make it attractive for development. There are few if any site limitations to overcome to locate industrial, commercial, or residential projects and associated infrastructure on the site. Once a site is developed, it is nearly impossible and not economically feasible, to return it to agricultural use. At present, total land devoted to row-crop production - soybeans, corn, wheat, cotton, peanuts, and others is fairly stable. Major soil erosion is not a problem. Uncontrolled runoff from agricultural fields can carry soil particles, animal wastes, pesticides, and/or fertilizers. These contaminants can cause problems on adjacent land through erosion, flooding, or deposition and with receiving water bodies by siltation, excessive nutrient enrichment, increased water turbidity, lower dissolved oxygen content, etc. Many landowners have voluntarily applied conservation measures on their lands to prevent such occurrences.

Map GI-5

Agricultural Land Use in Sumter County



Source: SCDNR Land Cover Data

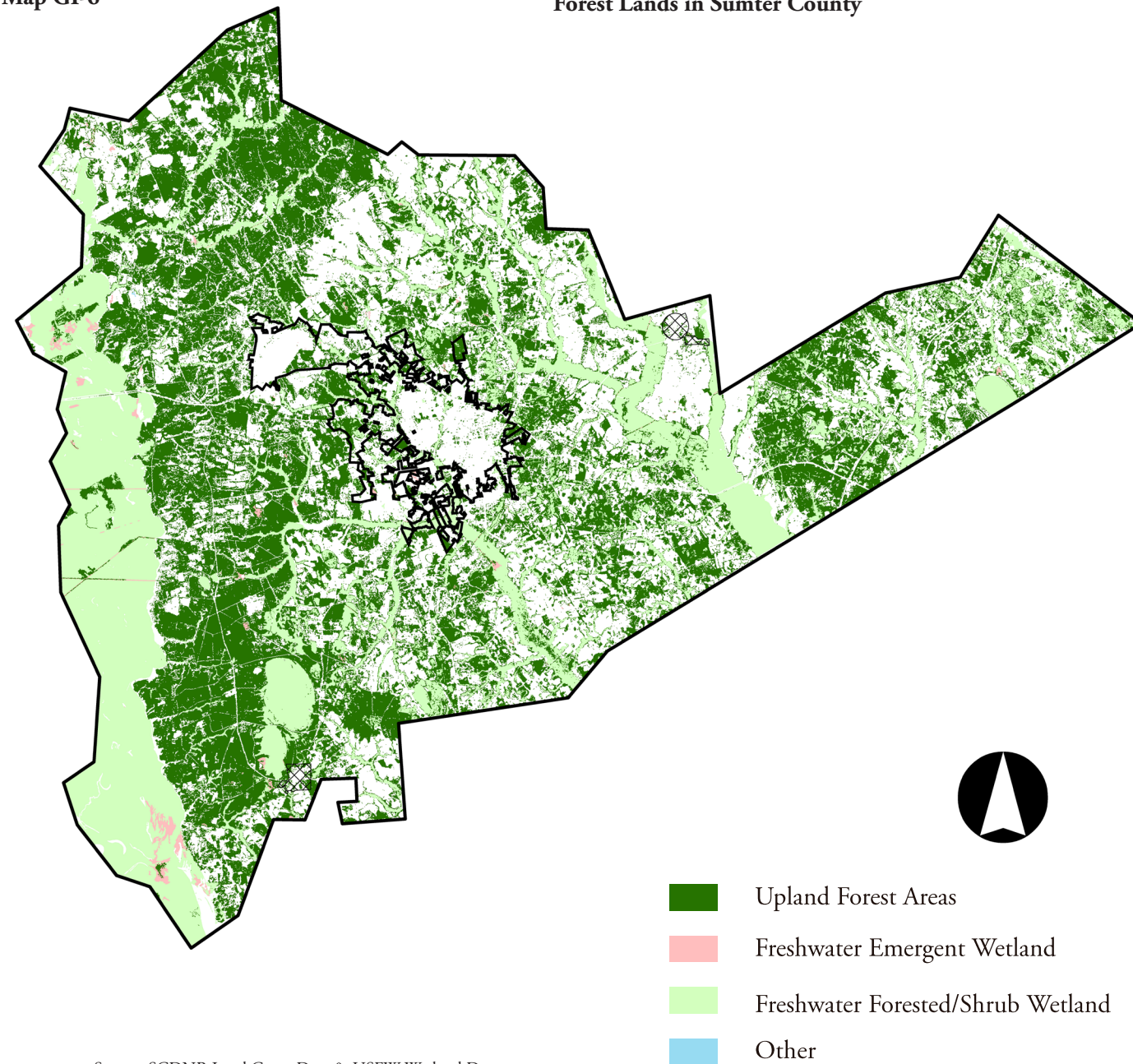


## Forest Land & Tree Cover

According to the South Carolina Forestry Commission, approximately 55% of the land area of Sumter County contains forest land. Sumter County contains both deciduous and coniferous forest areas, as well as actively managed timber land. Preserving forest areas is important for overall water quality control. Additionally, forest land provides for improved air quality, temperature moderation, and productive soils. Contiguous areas of forest land provide critical species habitat and habitat corridors. Development planning must take into account ways to preserve and protect significant and historic tree resources to the greatest extent practicable.

Map GI-6

Forest Lands in Sumter County



Source: SCDNR Land Cover Data & USFW Wetland Data

A large majority of wetland areas contain forest cover

## Previous Green Infrastructure Planning Efforts

### Santee Lynches Regional Green Infrastructure Plan

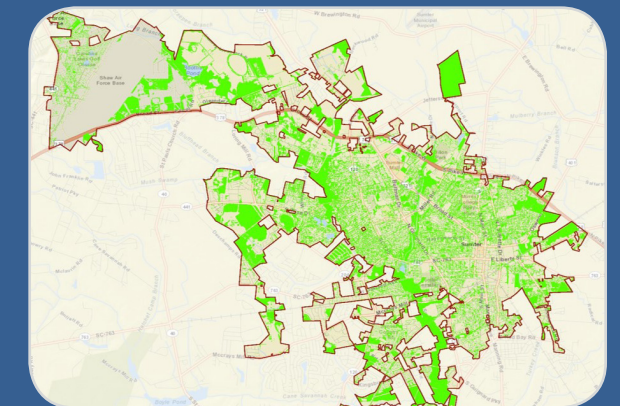
In 2017, the Santee-Lynches Council of Governments completed work on a regional green infrastructure plan that included Clarendon, Kershaw, Lee, and Sumter Counties. The plan established a regional framework through recommended strategies and actions with the identified priorities of:

1. Conserving significant contiguous habitat and enhancing habitat connectivity.
2. Protecting a network of riverine, lake, and land-based opportunities to enhance human enjoyment.
3. Improving assessment, management, protection, and/or restoration of natural assets.
4. Increasing public awareness of and support for green infrastructure.
5. Providing water quality planning that efficiently manages resources and protects human and environmental health.
6. Effectively managing natural resources that protect and provide for economic prosperity.



### City of Sumter Tree Canopy Survey

In 2013, the City of Sumter conducted an analysis of the tree canopy within the City of Sumter. The analysis was undertaken using Geographic Information System (GIS) software and aerial photography of the City for the years 2001, 2007, and 2013. Data collected revealed that the City had lost approximately 4% of its tree canopy since 2001. The findings from the Tree Canopy Survey were used to call attention to the environmental, economic, and social benefit of protecting existing tree coverage and to establish support for strengthening the City's landscape development standards - including tree protection requirements for new development.



City of Sumter Tree Canopy Map



## Wildlife & Natural Habitat

Wildlife is abundant in Sumter County. White-tailed deer, turkey, dove, quail, ducks, geese, and rabbits are the most popular species for sportsmen. There has been an increase in the number of people who also enjoy watching wildlife and not hunting. Leasing of hunting rights has become an important source of income for numerous landowners and is predicted to increase in future years as large natural tracts of land (capable of being hunted) are decreasing in number.

In addition to the natural areas and habitat associated with stream, river, and wetland ecosystems, Sumter County contains a number of protected natural recreation areas that also serve as prime wildlife habitat. Manchester State Forest, Poinsett State Park, and Woods Bay State Park are areas that are managed by the state and contain some very unusual forest types. In Poinsett for example, mountain laurel and rhododendron are common. Additionally, the Poinsett ECR and Shaw A.F.B. both contain important habitat areas. An area of Poinsett ECR near Pinewood contains a rare stand of White Cedar. The Shaw A.F.B. property has large stands of long-leaf pine forest habitat. Long-leaf pine forests are unique to the southeast region of the United States and have significantly declined over the last century.

Sumter County has 12 species of animals and 3 species of plants that are either listed at the federal or state level as endangered, threatened, or at-risk.

Table GI-2 Sumter County Endangered, Threatened, and At-Risk Species

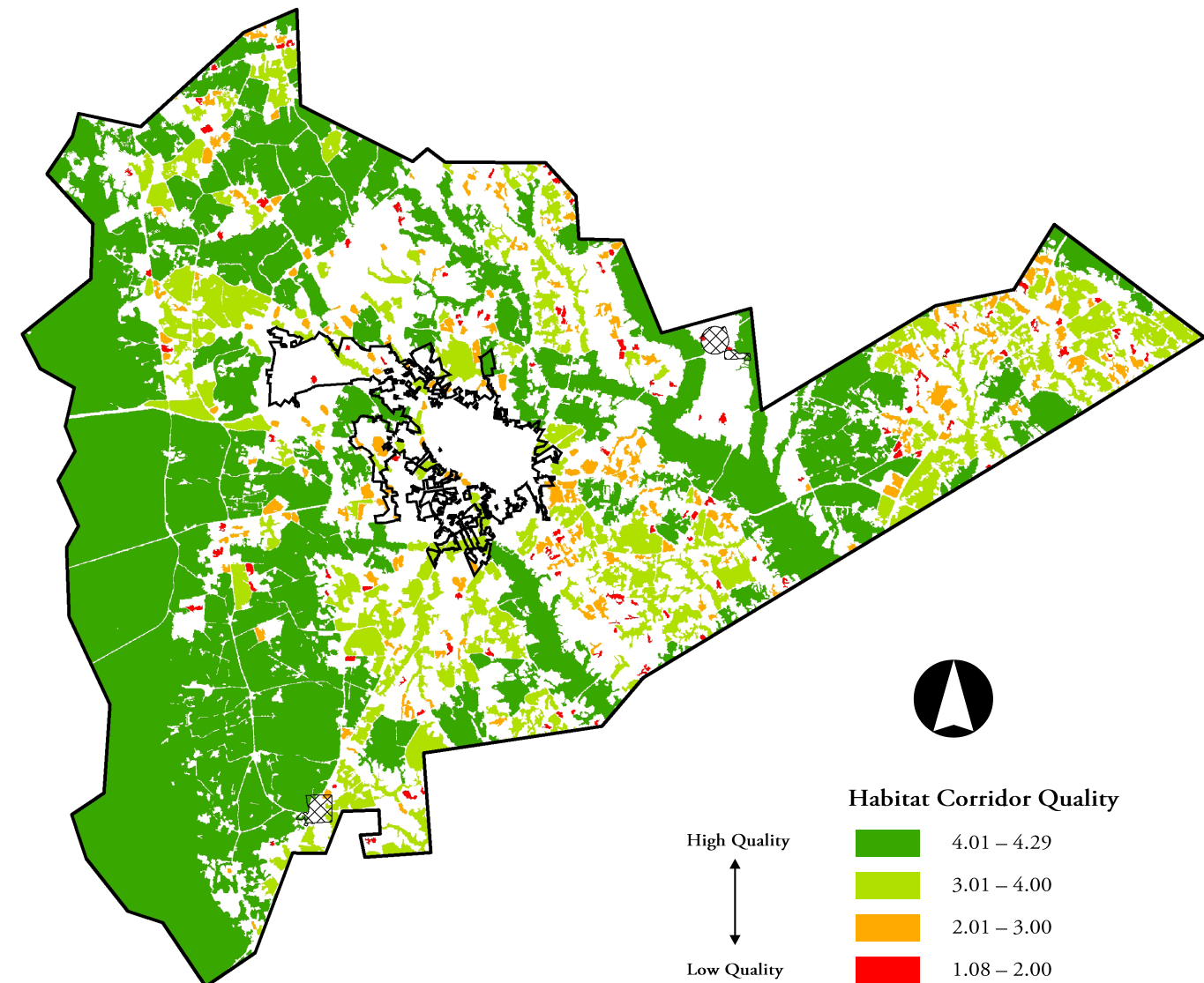
Animals			
Common Name	Federal Status	State Status	Habitat Areas
Shortnose Sturgeon	Endangered	Endangered	Santee River
American Alligator	Threatened	Threatened	Swamps, Streams, Rivers, Ponds, Lakes
Blueback Herring	At-Risk		Rivers, Lakes
Rafinesque's Big-Eared Bat		Endangered	Intact Mature Forest Areas
Monarch Butterfly	At-Risk		Varying
Chamberlain's Dwarf Salamander	At-Risk		Temperate Forests, Rivers, Freshwater Marshes
Bald Eagle	Bald & Golden Eagle Protection Act	Threatened	Wetlands, Hardwood Trees
Robust Redhorse	At-risk		Black River, Lynches River
Wood Stork	Threatened	Endangered	Wetlands
Tricolored Bat	At-Risk		Varies
Red-Cockaded Woodpecker	Endangered	Endangered	Long Leaf Pine Stands
Least Tern		Threatened	Varies
Plants			
Common Name	Federal Status	State Status	Habitat Areas
Boykin's Lobelia	At-Risk		Carolina Bays, Wetlands, Swamps
Canby's Dropwort	Endangered		Coastal Plain Areas With Limited Tree Cover
Chaffseed	Endangered		Sandy, Acidic, Seasonally Moist To Dry Soils

Source: USFW & SCDNR

Habitat corridors are areas of intact habitat that are in place between human activities or development (e.g., roads, subdivisions, commercial and industrial areas, logging operations, etc.) These areas are important because they allow for a connected wildlife habitat and guard against the negative effects of habitat fragmentation. These corridors can help with the re-establishment of wildlife populations that are endangered, threatened, or otherwise at risk.

As a part of the Santee Lynches Regional Green Infrastructure Plan, habitat corridors were identified and assigned a rating based on their degree of quality. It is important to take into account the impact on wildlife populations when evaluating future land use changes and development. Planning for habitat corridors is one more way to help mitigate negative impacts to wildlife as a result of future growth.

Map GI-7 Habitat Corridor Quality



Source: Santee Lynches Regional Green Infrastructure Plan

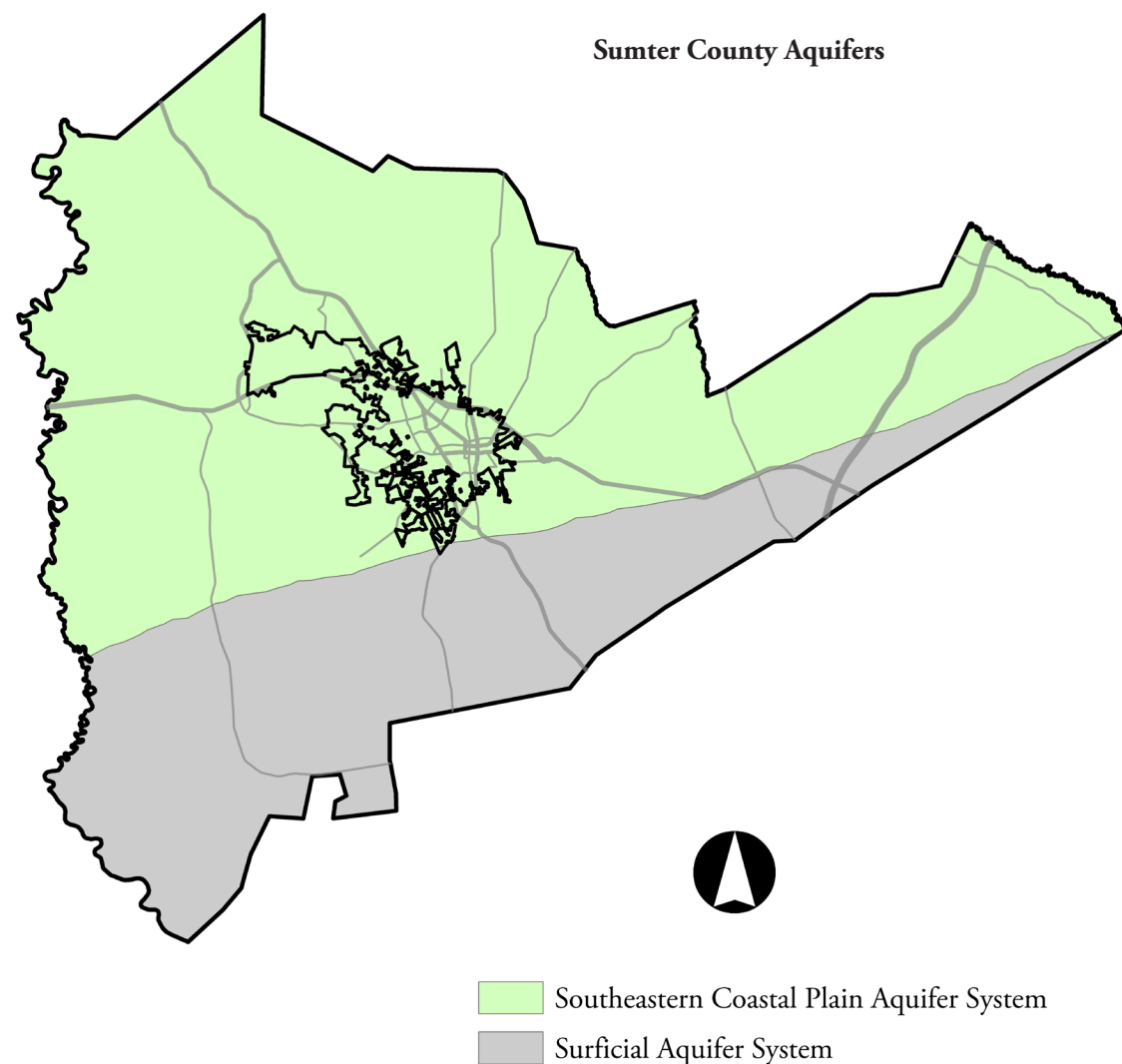


## Groundwater

All Sumter residents get their drinking water from groundwater (wells) either through individual wells or via public water providers. The City of Sumter monitors the groundwater aquifer system to ensure that adequate water is available for the systems under its control and that the aquifers are sufficient to supply the community for years to come. The South Carolina Department of Natural Resources (SCDNR) Water Resources Division updated the State Water Plan in 2009. Local officials should stay abreast of this plan and any future changes for impacts to the Sumter community.

Much of the low density development (half acre residential lots and larger) in the Sumter community is supported by private well and septic systems. In fact, recent DHEC permits have allowed septic systems on parcels less than 20,000 square feet in size. This pattern of higher density development using septic systems can potentially lead to groundwater contamination issues. Consideration should be given to higher minimum lot sizes for private well and septic systems, where appropriate.

Map GI-8



Source: USGS

## Mineral Resources

Two types of “mineral resources” are commercially mined in Sumter County. Gravel is mined in the northwestern portion of the county, and clay is mined at various locations. Fuller’s Earth, a kaolinitic type of clay, used primarily in kitty litter was commercially mined for years in the extreme southwestern part of the County. This mine site is now the location of Safety-Klean (formerly Laidlaw Environmental), a hazardous waste landfill. The location of this landfill causes some citizens and environmental groups great concern due to its proximity to the Santee Cooper Lakes System (Lake Marion). With plans to start using the Santee Cooper Lakes as a source of drinking water, concerns about this landfill continue to be expressed.

## Sustainability

The Sumter community has begun a public conversation regarding climate change, environmental stewardship, energy savings, and the broad concept of “sustainability”, especially after the devastating flooding events in 2015 and 2016. Particularly relevant to land use and development, sustainable means meeting the needs of the community today without compromising the ability of future residents to meet their own needs. Basically, the goal of a sustainable Sumter involves public and private commitments to recycling, energy reduction, resource protection, and a reduction of human impact on our natural environment.

Green infrastructure is an important component of developing a sustainable, livable community. This plan identifies existing green space, parks, trails, streams, and sidewalks along with policies and recommendations to increase linkages throughout the the City and County intended to serve the demand for both active and passive recreation, pedestrian and bicycle transportation, and to provide the community with a “necklace” of green space. Employing the principles of conservation design, comprehensive plan policies serve as a guide to preserve open space and critical ecological features, encourage development in already degraded areas, and to use land more efficiently.



Photo: Dillion Park Rain Gardens



## Parks, Trails, & Open Space

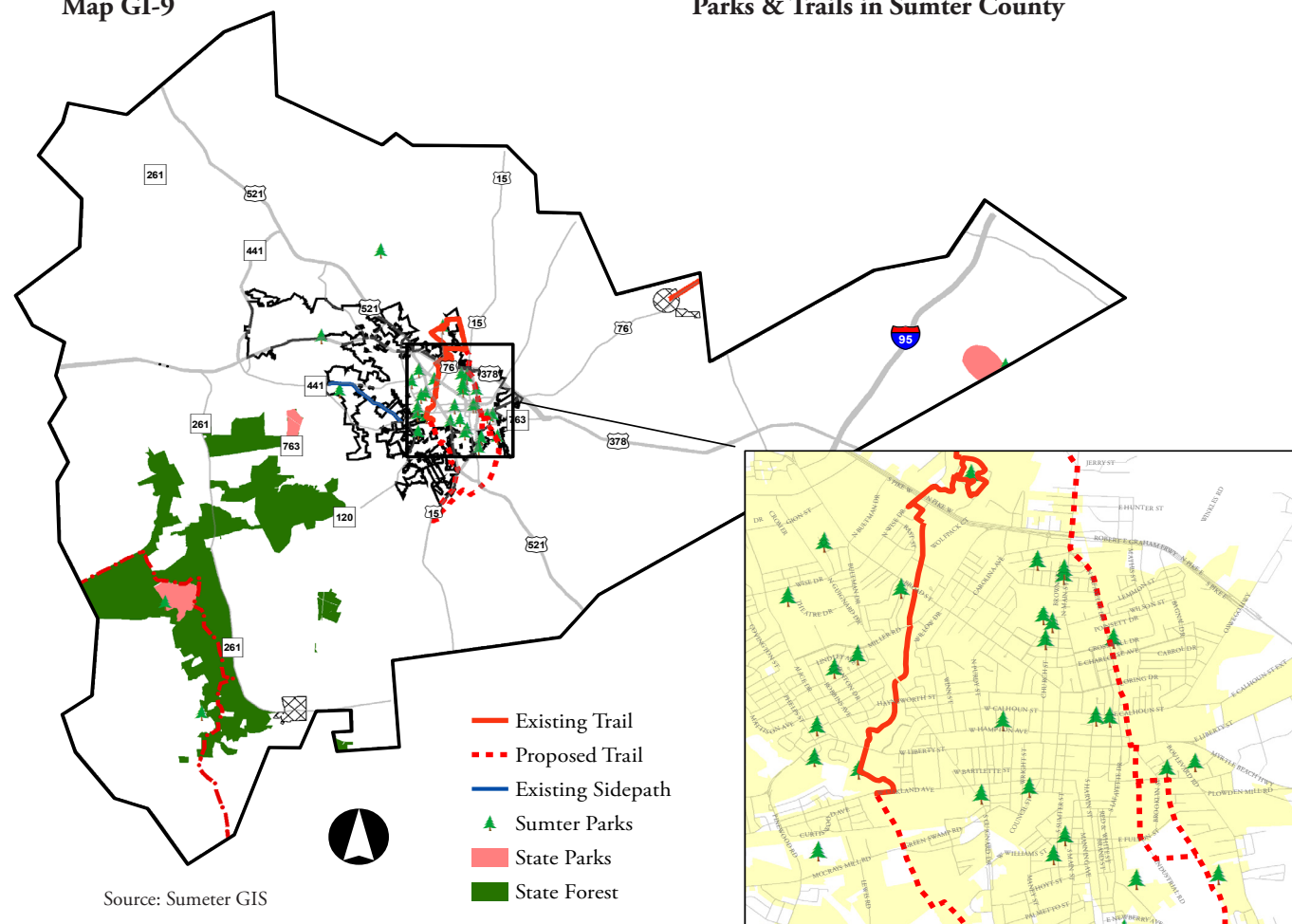
Parks, trails, and open space can provide important social, recreational, and environmental benefits. Sumter County is home to two state parks - Poinsett and Wood Bay. These lands and the green infrastructure that they contain are protected for public use and enjoyment. Additionally, Sumter County is home to Manchester State Forest. State Forest Land permits active forest management activities and allows for public recreational use of the land. The City and County own and maintain over 30 dedicated parks for public use and recreation. Sumter County also contains multiple waterways that are available for public use.

A section of the Palmetto Trail, which is a planned trail system that crosses the entire state, runs through the southern portion of the county. This trail is primarily on state owned and protected land associated with Manchester State Forest and Poinsett State Park. Also, the beginnings of a City greenway system are in place along Shot Pouch Creek with significant expansions planned in the next few years. Another planned greenway corridor along Turkey Creek is recommended.

Conservation easements are another tool available to protect important environmental features. Conservation easements are applied to private property and can permanently protect the environmental resources on the them. Several groups, including the Congaree Land Trust, work to protect land via conservation easement and acquisition in Sumter County. Areas around the Shaw A.F.B. and areas around the Wateree Basin are highly targeted.

Map GI-9

Parks & Trails in Sumter County



## Green Infrastructure Policies

**It is the stated policy of the City of Sumter and Sumter County that the following guidance shall be considered when evaluating any land development application:**

1. All land development projects shall protect environmental resources whenever possible through the use of conservation design techniques: the practice of identifying the green infrastructure, and then designing around these resources.
2. Due to the significant impacts on life and property in the Sumter community through this decade, the City and County discourages any new development in the floodplain and will consider further limitations on floodplain development, as well as a framework for removing structures from the floodplain where appropriate
3. Environmental setbacks and buffering will be strongly encouraged. Development is expected to respect sensitive environmental features by not encroaching or building directly up against those features.
4. Where logical, green infrastructure features should be left in their natural state, untouched, except for passive recreation uses such as trails.
5. Open space, including but not limited to passive areas, parks, playgrounds, ball fields, pedestrian trails, and water features shall be intentionally incorporated into all development projects. Further, connecting a City and County wide network of green infrastructure is a primary policy initiative.
6. The City and County support ongoing progress toward greater community sustainability, through improved energy savings, environmental resource protection, recycling efforts, fleet management, and the reduction of Sumter's overall environmental footprint.