CHAPTER 3: OUR ENVIRONMENT



INTRODUCTION

PROTECTING OUR ENVIRONMENT FOR FUTURE GENERATIONS

Henrico County's natural environment greatly contributes to the quality of life enjoyed by its residents and visitors. It is important to safeguard the resources and services it provides to ensure their availability for both present and future generations.

The County aims to protect, preserve, and conserve its natural resources. Protection includes implementing guidelines and strategies to help prevent their degradation and loss. Preservation focuses on safeguarding significant resources, while conservation emphasizes responsible management to maintain resource integrity over time.

Environmental considerations are important in Henrico County land use decisions. The County maintains that population growth and economic development can occur without diminishing environmental quality. This chapter highlights existing conservation efforts and identifies opportunities where the County can expand its efforts to better protect its environment and the critical services it provides.

The County values its environment and has invested substantially in its preservation and protection. Efforts include conserving land and natural resources, expanding our forests and tree coverage, and increasing the availability of non-automobile transportation options.

These investments will have long-term benefits by preserving land and natural resources for future generations, sequestering carbon dioxide through tree plantings, reducing heat island effects through re-vegetation, and protecting our residents from flooding. Improvements in active transportation (pedestrian and bicycle), transit, safety programs and rail will reduce greenhouse gas pollution and provide healthful opportunities to walk, ride a bike or use the bus.

These efforts are significant and reflect a commitment to improving Henrico County for everyone's benefit. As conditions evolve, the County will continue to adapt and respond to new challenges.

LINKAGE TO COMMUNITY VISION

Comprehensive plans are one of the most effective tools a local government can use to impact conservation efforts in the community. Because the built environment and nature exist in a delicate balance, the vision established by the community is crucial to ensuring that sensitive natural resource areas are considered when making land use decisions. This chapter focuses on understanding Henrico's key environmental assets: clean water, healthy soil, forests and open space, productive farms, and clean air, and identifying actions that will help preserve these resources for current and future residents and visitors.

ECONOMIC AND COMMUNITY HEALTH AND THE ENVIRONMENT

The environment plays an integral part in every aspect of our lives. It provides the air we breathe, the materials that build our homes and the landscape where we work, live, and play. Protecting the environment is essential to sustaining ecological functions, but also for supporting public health, community well-being, and the economic activities that depend on natural resources.

As this comprehensive plan will guide both immediate and long-term decisions, it is important to recognize the interconnected relationship between the environment, industry and public health and the impact this has on residents now and for decades to come. Henrico's environmental resource conservation efforts aim to optimize land use and enhance the quality of life for all residents and wildlife in the County.

COMMUNITY ASPIRATIONS

Henrico County residents value their natural spaces and resources and support preserving its rural areas. Among all planning topics presented during community engagement workshops, "protecting environmental quality" and "preserving open space and sensitive areas" were top priorities for 53% and 51% of respondents, respectively. Parks, recreation, and the natural environment were 44% of participants' number one aspect of the County they valued most.

Similarly, when asked to identify the biggest challenges facing Henrico today, respondents focused on environmental concerns, including litter, pollution, and rural land preservation.

When asked to identify specific sites that might be worthy of conservation, participants showed a general desire to preserve farmland, wetlands, recreational open space, and rural spaces (low-density, biodiverse areas).

Green spaces throughout Henrico are important for the community's health and local wildlife. They also hold significant value in their own right. Preserving these areas is critical for their aesthetic qualities and ecosystem services that residents of Henrico enjoy and depend on.

SUMMARY OF CHAPTER CONTENTS

This chapter contains the following plan components:

Environmental Conservation (Goal): The primary objective of this chapter.

Environmental Inventory: The inventory of Henrico County's natural assets, supported by maps showing their locations and areas identified for conservation consideration.

Resilience and Sustainability: An overview of the concepts and practices of resilience and sustainability that the County follows and employs to shape its operations.

How Henrico Helps Protect Its Environment: A list of state and local regulations and programs that support the County's environmental protection efforts.

Our Environment Policies and Strategies: Six policies that will guide Henrico's approach to conservation, each including four to ten practical implementation strategies that support achievement of the chapter goal.

ENVIRONMENTAL CONSERVATION

Henrico County's natural resources are finite. Some can be renewed or reestablished, but conservation is necessary to ensure these assets are protected for future generations. The goal statement below describes Henrico County's aspirations for our environment and natural resources.

ECOSYSTEM SERVICES

The Environmental Protection Agency (EPA) defines ecosystem services (ES) as "the benefits that humans receive from nature" and help provide a framework for how different environmental components can impact the community. These benefits are not often recognized but are the factors that sustain human livelihoods and help shape a long-term vision that supports the environment. Ecosystem services can be broken into four categories:

- **Provisioning Services** are the physical products an ecosystem provides, such as food, water, and timber.
- **Regulating Services** regulate the natural elements in ecosystem processes, including local climate, air quality, soil quality, carbon sequestration, and flood, erosion, or disease control, as well as pollination.
- **Supporting Services** maintain core ecosystem processes, such as providing plants and wildlife habitats, and preserving genetic and biological diversity.
- **Cultural Services** are the intangible benefits that ecosystems provide for human societies, including opportunities for recreation, tourism, aesthetic appreciation, artistic inspiration, and spiritual value. [1]

These services and the value they provide were key considerations in shaping the comprehensive plan. They help the County not only maintain but also enhance the natural systems, supporting a healthy, functional community that protects the environment for future generations.

[1] *United States Department of Agriculture (n.d.) Ecosystem Services, Available at https://www.climatehubs.usda.gov/ecosystem-services (accessed March 5, 2025)*

OUR ENVIRONMENT GOAL

Henrico County will actively protect its natural resources while improving the built environment's ability to coexist with nature so current and future generations may benefit from those assets.

ENVIRONMENTAL INVENTORY: LAND

The following subsections include an inventory of Henrico County's natural resources for minerals, waterways, soils, and open spaces.

PHYSIOGRAPHIC PROVINCES

Henrico County is located in the central portion of Virginia, located along the East Coast of the United States. The County exhibits distinctive characteristics of two physiographic provinces which generally fall along either side of Interstate 95: the Coastal Plain to the east and the Piedmont to the west.

The Coastal Plain features low-lying, flat or gently sloping lands adjacent to a seacoast (Atlantic Ocean) with elevations rarely exceeding a few hundred feet above sea level. It typically contains diverse ecosystems and habitats such as estuaries, wetlands, forests and woodlands. The Piedmont Province is characterized by rolling hills, river valleys, diverse wildlife and varied vegetation.

CHESAPEAKE BAY PRESERVATION AREAS

The Chesapeake Bay (the Bay) is the largest estuary in the United States and one of the most ecologically diverse. Its watershed drains an area of 64,016 square miles and is highly valued for its marine life, waterfowl, sport fishing, and recreational boating. However, the Bay faces significant threats from environmental degradation due to pollution from various human activities. [2]

In July 1988, the Virginia General Assembly enacted the Chesapeake Bay Preservation Act (the Act). The Act requires localities to protect the public interest in the Chesapeake Bay, its tributaries and other State waters, by incorporating general water quality protection measures into its comprehensive plans, zoning ordinances and subdivision ordinances. In addition, localities are also required to establish programs to (1) define and protect certain lands called Chesapeake Bay Preservation Areas, which if improperly developed, could result

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[2] U.S. Geological Survey & U.S. Department of the Interior (1998, October) Fact Sheet 102-98 The Chesapeake Bay: Geologic Product of Rising Sea Level, Available at https://pubs.usgs.gov/fs/fs102-98/

in substantial damage to the water quality of the Chesapeake Bay and its tributaries; (2) reduce non-point source pollution to State waters; and (3) promote and restore the high quality of State waters in order to provide for the health, safety and welfare of the present and future residents of the County and the Commonwealth of Virginia.

The County is bordered by two rivers – the Chickahominy to the north, and the James to the south, both of which flow into the Bay. The Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830-10 et seq.) establish criteria to protect the Bay's water and aquatic life and supporting hydrological systems. These designated areas are mapped as Chesapeake Bay Preservation Areas, which are composed of Resource Protection Areas (RPAs) and Resource Management Areas (RMAs).

Resource Protection Areas

Resource Protection Areas (RPAs) are defined by Virginia code (9VAC25-830-80) as "lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of state waters." In Henrico, RPAs include the following:

- Tidal wetlands
- Non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or waterbodies with perennial flow
- Tidal shores
- A 100-foot-wide buffer area adjacent to and landward of these RPA features and
- Other lands which the Board of Supervisors may designate by ordinance.

In an effort to protect these sensitive areas, development in RPAs is highly restricted and typically limited to water-dependent facilities, such as piers and docks, and boardwalks, trails, pathways, water wells, and public utility structures. Rebuilding existing structures may be allowed, provided redevelopment results in no further encroachment or increase in impervious surface area.

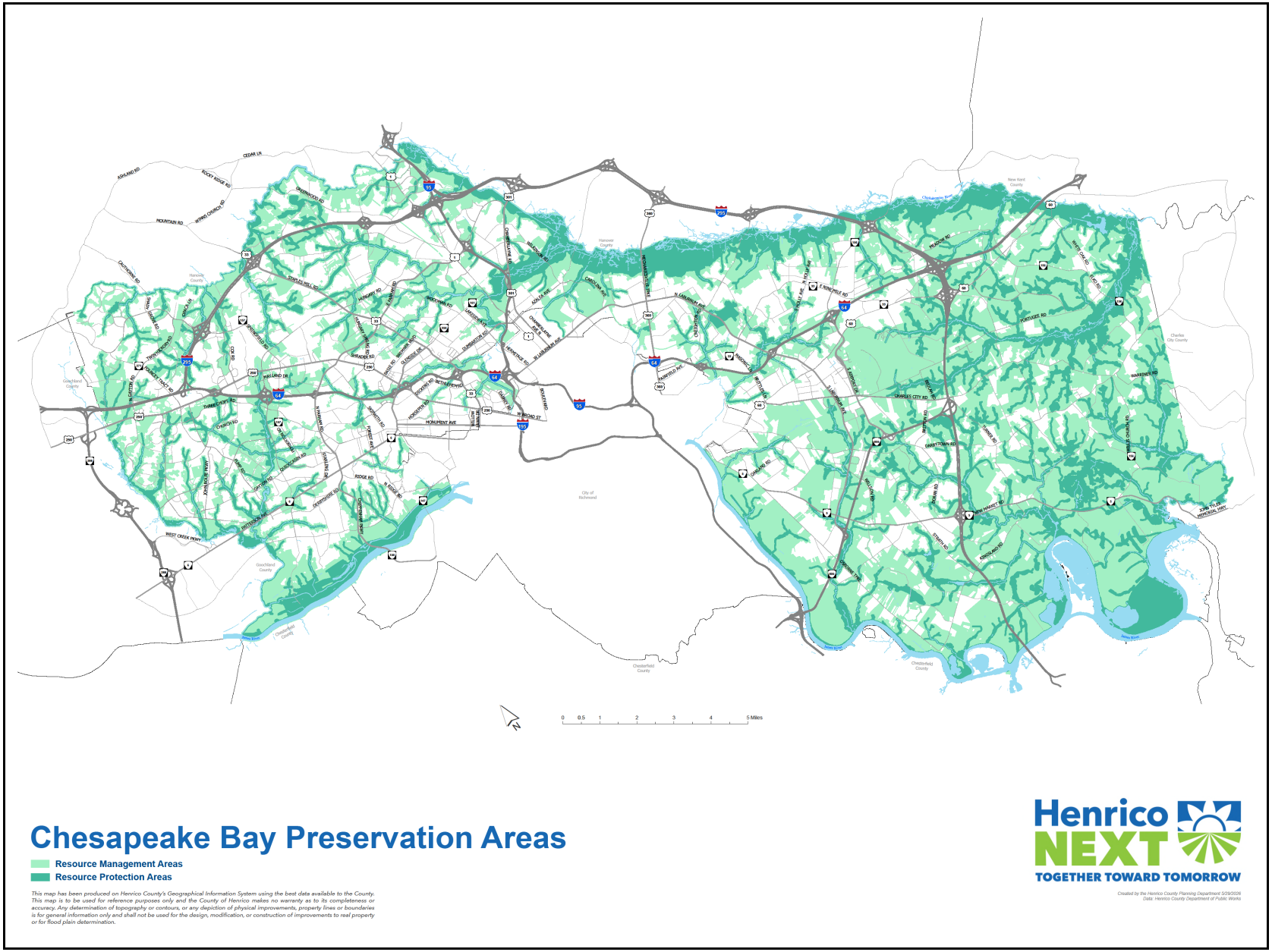
Resource Management Areas

Resource Management Areas (RMAs) are defined by Virginia code (9VAC25-830-80) as "land types, which if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the Resource Protection Areas." They include the following:

- Floodplains
- Highly erodible soils, including steep slopes
- Highly permeable soils
- Non-tidal wetlands not included in the RPA

- Where the land contiguous to the RPA is not an RMA as defined above, 100-foot areas contiguous to the RPA.

Permitted activities within RMAs include agriculture, forest management (including timber harvesting), stormwater management facilities, and noncommercial recreational facilities. Identification of the County's RPAs and RMAs can be found on the Chesapeake Bay Resource Areas Map. Other uses are permitted, contingent on meeting certain development criteria identified in the County's Zoning Ordinance.


0 0.5 1 2 3 4 5 Miles
Chesapeake Bay Preservation Areas
Resource Management Areas
Resource Protection Areas
This map has been produced on Henrico County's Geographical Information System using the best data available to the County. This map is to be used for reference purposes only and the County of Henrico makes no warranty as to its completeness or accuracy. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination.
Henrico NEXT
TOGETHER TOWARD TOMORROW
Created by the Henrico County Planning Department 5/29/2026
Data: Henrico County Department of Public Works

CONSERVED AND PROTECTED LAND

Henrico County is approximately 245 square miles, the equivalent of 156,800 acres. While the population continues to grow, the County's land area is fixed. Not all land is suitable for development, and some properties contain natural, scenic, or cultural attributes that merit protection, such as historic sites, wildlife habitats, or prime farmland. More than 15,600 acres of land in Henrico are protected and held by a mix of County, State, and federal agencies, land trusts, and private landowners. In total, approximately 10% of the County's land has protections limiting future development.

Henrico's Division of Recreation and Parks maintains over 3,600 acres of parks, specialty facilities, recreation centers, and athletic facilities. Since 2018, the County has acquired almost 3,700 acres of land to protect it from development. The Department of Public Utilities holds an additional 1,051 acres with limited development opportunities. The Commonwealth of Virginia owns 318 acres of land used for wetlands restoration/banking and access to the James River. The federal government, through the National Park Service, owns over 1,900 acres for the preservation of battlefields, encampments and cemeteries. Another 400+ acres are owned by preservation groups such as the American Battlefield Trust and Richmond Battlefield Association. Table 1 shows the entities responsible for these lands.

In addition to those lands protected by public agencies and preservation organizations, there are over 4,400 acres enrolled in conservation easements. This is a tool property owners may use to protect their land and restrict development. Owners enter into an agreement with a qualified land protection organization (such as the Virginia Outdoors Foundation or the Capital Region Land Conservancy) to hold the easement. These voluntary legal agreements typically restrict use of the land to open space, agriculture, forestry or recreation in perpetuity. The land can be passed on to heirs or sold but the restrictions apply to all future owners. See Table 2 and the Open Space map for more information.

Property owners who place their land in a conservation easement may benefit from tax incentives. Because they are giving up future development rights, they may receive federal and state tax deductions and credits. Additionally, local assessors are required by state law to recognize the restricted value of the land, which results in lower property valuations.

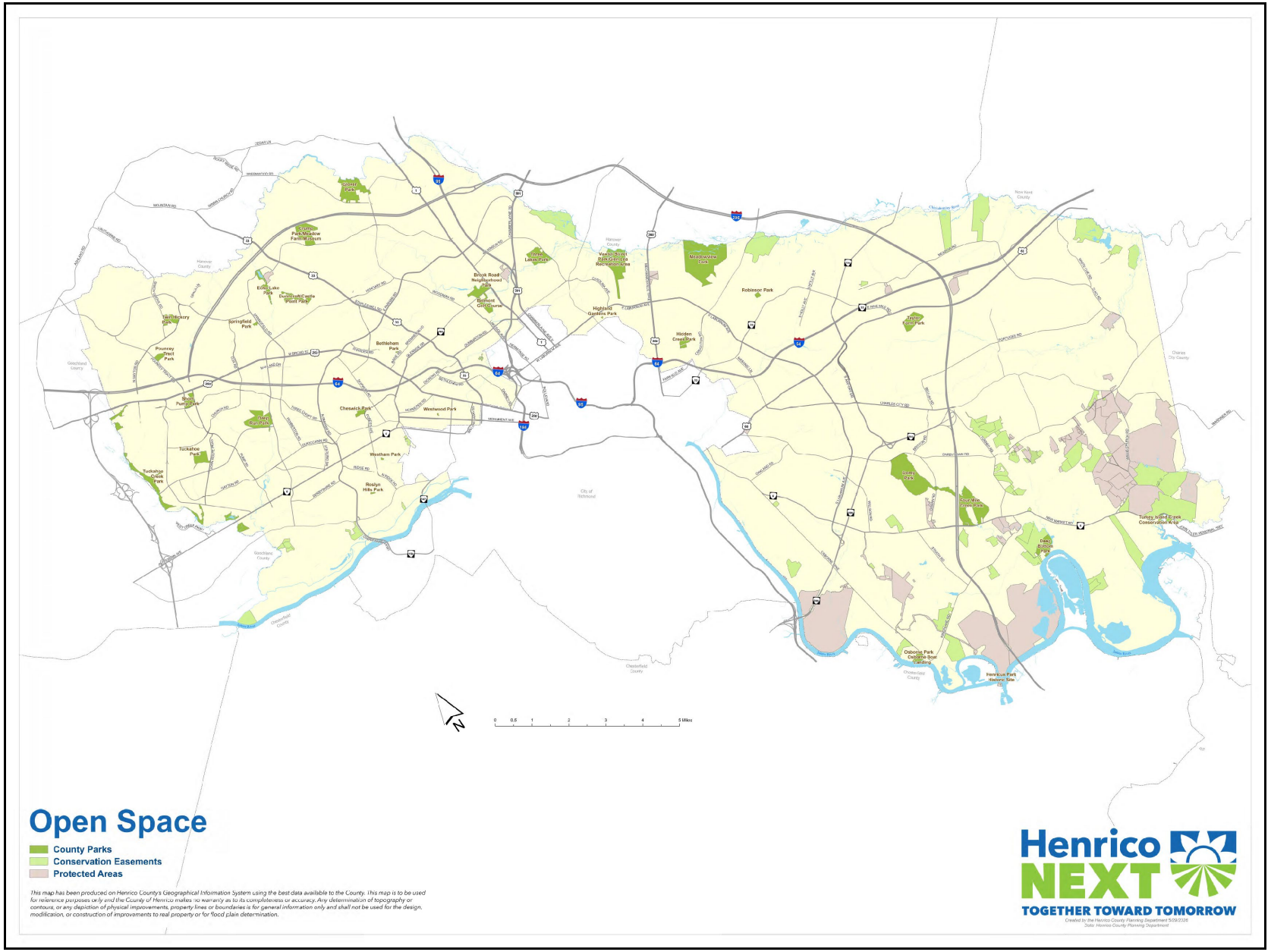
Table 1: Ownership Entities of Preserved and Protected Land in Henrico County

Management Entity	***Acres***
American Battlefield Trust/Richmond Battlefield Association/Civil War Trust	490
Capital Region Land Conservancy	204
CIM Landing LLC	44
Commonwealth of Virginia	319
Elko Game Preserve	80
Henrico County (EDA/DPU)	4,296
Henrico County (Rec/Parks)	3,603
Outdoor Preservation Foundation	63
QTS	77
USA (National Park Service)	1,914
Wilton Development Corporation	27
Total Acres Owned/Protected	**11,117**

Table 2: Land Protection Organizations Holding Conservation Easements in Henrico County

Entity	***Acres***
American Battlefield Trust	6
Broadwater Innovations	188
Capital Region Land Conservancy/Henricopolis	824
Evergreen Team	189
Friends of Bandy Field	13
Nature Conservancy	661
Virginia Department of Historic Resources	1,393
Virginia Outdoors Foundation	862
Wetlands American Trust	273
Total Acres in Easements	**4,409**

Property owners may also enroll qualifying land in the County's Land Use Valuation Program. Eligible properties used for agriculture, horticulture, forestry, or open space are taxed based on their "use value" instead of their higher "market value." Additional information about this program can be found under the Land Use section of the Managed and Sustainable Growth chapter.


Open Space
County Parks
Conservation Easements
Protected Areas
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Henrico NEXT
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ENVIRONMENTS IN HENRICO

Henrico County has a range of environmentally distinctive landscapes, including undeveloped areas, agricultural operations, and developed suburban and urban areas that provide housing, employment, and services for the community. These areas are identified on the Henrico Environments Map.

Woodlands

Henrico has many acres of woodlands and forests that support wildlife habitats and play a vital role in improving water and air quality. Trees help filter sediment, absorb pollutants, produce oxygen and capture and store carbon dioxide, making them one of the County's best tools for pollution control. Over the past several years, the County has planted approximately 17,000 native trees on public property. These efforts will continue as more areas are identified.

Woodlands also help mitigate noise and air pollution, moderate air temperatures associated with impervious surfaces and provide essential habitat connectivity for native species. Residents and visitors also enjoy the recreational and restorative benefits these environments provide. Implementing policies and regulations that preserve these resources is crucial for maintaining a high-quality environment, and Henrico has adopted various policies and ordinances that protect woodland areas.

Farmlands

Farming and other agricultural practices have deep roots in Henrico, dating back to the County's origin. Agricultural lands provide important environmental benefits including climate regulation, soil health, water purification and nutrient cycling. Although food production is no longer a central part of the County's economy, the history, character and scenic value of these working landscapes remain significant.

These lands support essential ecosystem services by preserving habitats, safeguarding biodiversity through wetland and watershed conservation, replenishing soil nutrients, filtering water, and providing sink points for excess carbon dioxide.

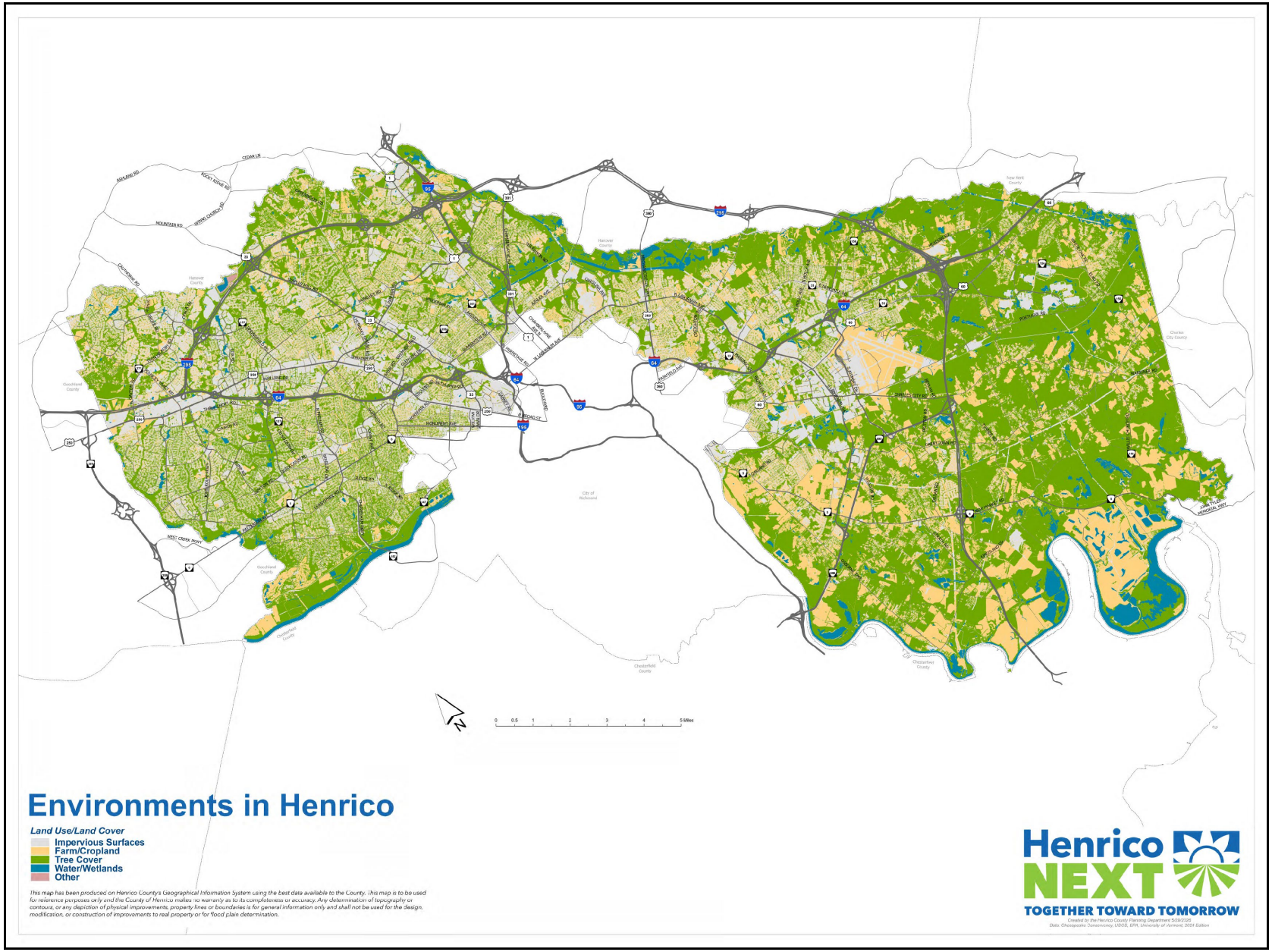
Henrico has long supported the farmers in the County by partnering with the Henricopolis Soil and Water Conservation District. Each year the district provides technical assistance, grant funding and educational services to farmers. Programs such as winter cover crops, funded in part by Henricopolis, protect agricultural land from erosion and improve soil fertility. Thousands of acres of farmland have been protected through these programs.

Henrico is also partnering with small-plot farmers to start producing crops on the County's 1,000-acre Runnymeade property in eastern Henrico. The community farm offers quarter and half acre plots with access to water and other infrastructure. In addition to preserving open space and working land, this project aims to help address food insecurity by broadening access to fresh, healthy food.

Suburban and Urban Land

As the population in Henrico County increases, there has been corresponding growth in developed land to accommodate housing, education, recreation, and employment and commercial needs. The form and intensity of this development can vary by location and era, reflecting changes in environmental regulations over time. Highly developed areas increase the amount of impervious surface, which contribute to impacts, such as urban heat island effect. This phenomenon is defined by the National Oceanic and Atmospheric Association (NOAA) as the concept "that cities tend to get much warmer than their surrounding rural landscapes, particularly during the summer." Heat-generating activities, along with heat-absorbing surfaces such as pavement and dark colored roofing, and lack of green vegetation, exacerbate this effect.

To address urban heat island impacts, the County participates in various urban forestry and tree protection efforts. This plan aims to expand these efforts to continue to provide benefits to County residents and those species that rely on this vegetation for their habitat.


Environments in Henrico
Land Use/Land Cover
Impervious Surfaces
Farm/Cropland
Tree Cover
Water/Wetlands
Other
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Henrico NEXT
TOGETHER TOWARD TOMORROW

PLANT AND ANIMAL HABITAT

The Virginia Natural Area Preserves Act defines natural heritage resources as "the habitat of rare, threatened, or endangered plant and animal species, rare or state-significant natural communities or geologic sites, and similar features of scientific interest." These resources should be considered as part of this plan, and it is helpful to understand their impact on endangered species and how different landscapes and strategies can affect them.

Endangered Species

As the pressures of development increase and factors such as climate change continue to affect habitats and other cycles of organic life, more species and organisms face endangerment. An endangered species is defined under the Endangered Species Act (ESA) as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined under the ESA as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." [3] Table 3 identifies Henrico's federal, and state endangered and threatened species and where known, how they rank in statewide occurrence.

[3] *National Oceanic and Atmospheric Association (NOAA) (n.d.) Glossary: Endangered Species Act. Available at https://www.fisheries.noaa.gov/laws-and-policies/glossary-endangered-species-act#what-does-it-mean-for-a-species-to-be-endangered-or-threatened-under-the-endangered-species-act (accessed March 5, 2025)*

Table 3: Endangered and Threatened Species in Henrico County

***Legend:**

***FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate, CC=Collective Concern**

***GX= Presumed Extinct; GH= Possibly Extinct; G1= Critically Imperiled; G2= Imperiled; G3=Vulnerable: G4=Apparently Secure; G5= Secure**

***SX= Presumed Extirpated; SH= Possibly Extirpated; S1= Critically Imperiled; S2= Imperiled: S3= Vulnerable; S4= Apparently Secure; S5= Secure**

Common Name	*Legal Status**	*Conservation Status**	*Statewide Occurrences (If known)*
Birds			
Migrant Loggerhead Shrike	ST	G4, S1	-
Northern Harrier	SE	G5, S1	15
Peregrine Falcon	ST	G4, S1	-
Mammals			
Eastern Big-Eared Bat	FE, SE	G3, S2	46
Little Brown Bat	SE	G3, S1	-
Northern Long-Eared Bat	FE, SE	G2, S1	-
Rafinesque's Eastern Big-eared Bat	SE	G3, S1	-
Tricolored Bat	FP, SE	G3, S1	-
Fish			
Atlantic Sturgeon	FE, SE	G3, S2	4
Reptiles			
Spotted Turtle	CC	G5, S3	-

Insects			
Monarch Butterfly	FP	G4	-
Laura's Clubtail (dragonfly)	-	G4, S2	11
Freshwater Mussels			
Atlantic Pigtoe	FT, SE	G1, S2	-
Dwarf Wedgemussel	FE, SE	G2, S1	-
Green Floater	FP, ST	G2, S2	-
James Spinymussel	FE, SE	G1, S1	-
Yellow Lance	FT, SE	G2, S2	-
Wildflowers / Herbaceous Plants			
Cuthbert's Turtlehead	-	G3, S2	35
Elliott's Goldenrod	-	G4, S2	17
Large Death-Camas	-	G5, S1	9
New Jersey Rush	SE	G2, G3, S2	13
Red Milkweed	-	G4, G5, S2	31
Sensitive Joint-Vetch	FT. ST	G2, S2	22
Small-leaved Meadow-Rue	-	G3, G4, S1	7
Swamp Pink	FT, SE	G3, S2	35
Trailing Loosestrife	-	G4, G5, S1	4
Virginia Least Trillium	SE	G4, S2	37
Virginia Thistle	-	G4, S2	23

Viperina	-	G5, S1	5
Walter's Paspalum	-	G4, S2	17
Velvet Sedge	-	G4, S2	12
Trees			
Dwarf Chinquapin Oak	-	G5, S1	27

Wildlife Corridors

While broad land use protections such as the preservation of open space can be an important tool for safeguarding endangered species, some plants and animals could benefit from additional efforts. One approach involves establishing wildlife corridors which consist of undeveloped land connecting two habitats, allowing wildlife to move safely between them. These corridors can serve as habitat buffers for feeding and breeding grounds that are often displaced when new development occurs. They can also support both habitat safety and ecological functionality. In Henrico County, many of the ecological benefits provided by corridors occur through the preservation of stream systems and their associated buffers. At the state level, the Commonwealth of Virginia has taken a proactive stance in protecting wildlife by developing one of the first Wildlife Corridor Action Plans in the eastern United States. This plan, created through collaboration among multiple state agencies, aims to identify and protect critical wildlife habitat corridors, reduce wildlife-vehicle collisions, and enhance biodiversity resilience. While the County follows the recommendations outlined in Virginia's Wildlife Corridor Action Plan, there are currently no designated wildlife corridors within the County. However, miles of stream restoration and reforestation efforts are adding these to the County's landscape.

Pollinator Habitat

Pollinators, such as butterflies, bees, and birds play an essential role in plant growth and ecological health. Many pollinator species are endangered due to the loss of their habitats, making the creation and protection of such areas critical. These areas supply food, shelter, and movement pathways that support pollination and sustain broader ecosystem functions.

Henrico has established small pollinator plots in every magisterial district of the County. These sites are designed to reduce mowing costs, decrease emissions, eliminate noise, increase native plant life, support local wildlife and enhance roadside attractiveness. These sites are monitored by County entomologists and environmental staff to determine their success in creating habitat. It is anticipated that additional areas will be added to the program in the future.

A notable example is the Pollinator Garden at Short Pump Park. Together, these initiatives can help protect vital pollination processes and the species that carry them out.

Invasive Species

Invasive species are non-native plants, animals, or pathogens that cause environmental impacts, economic losses or harm to humans by disrupting local organic processes. They can outcompete native plants, overtaking species, introducing diseases, or other harmful organic compounds that reduce biodiversity. Although some invasive species may appear harmless, their long-term impacts on ecosystem health can be significant and require careful management.

In Henrico, examples of invasive species include Ailanthus altissima (Tree-of-Heaven), Ligustrum sinense (Chinese privet), Lonicera japonica (Japanese honeysuckle) and Hedera helix (English ivy). For a complete list, please see the Appendix.

PHYSICAL CONSTRAINTS TO DEVELOPMENT

Some areas of the County are more suitable for development than others. Sound planning requires respecting natural constraints, which not only supports orderly growth but also helps identify opportunities for green spaces and wildlife corridors. The following features naturally limit the feasibility of development. A graphic representation of these items can be found in the Physical Constraints to Development Map.

Flood-Prone Areas

Flood-prone areas (or floodplains) are environmentally sensitive lands located along or near the shorelines of streams, rivers, and other waterways. In their natural state, floodplains protect water quality, filter pollutants, reduce the amount of stormwater runoff, prevent erosion, and perform many other important biological and ecological functions.

Floodplains also act as natural reservoirs, storing excess water during flooding events and reducing risks to life and property. Floodplains often contain substantial groundwater. When they are disturbed or vegetation is removed, natural flood control can be compromised, leading to increased erosion and degraded water quality.

The Federal Emergency Management Agency (FEMA) has identified two primary flood-prone areas in Henrico associated with the Chickahominy and James Rivers. Nearly every stream, which is a tributary to these two rivers, have floodplains associated with them.

The Chickahominy River originates as a relatively narrow stream in western Henrico County. Moving east, the channel spreads into a wide, flat, marshy area called a flood basin. Because of this terrain, even a small rise in water level can cause the river to overflow its banks for hundreds of feet on either side. The James River, a major waterway originating in western Virginia, also has floodplain capable of producing devastating inundation. Peak flooding along the James River typically occurs two to three days after the cessation of heavy rainfall in the river's drainage basin.

Approximately 24,000 acres (15% of the land mass) of the County have been identified as floodplains. There are roughly 1,500 residential and commercial structures that sit within these flood-prone areas and many experience problems with drainage. The Department of Public Works' Design Division manages the County's floodplain program which aims to

reduce flood damage to property, assist residents in participating in the National Flood Insurance Program, and support comprehensive floodplain management to enhance community resilience.

For many years, the County has acquired properties within flood-prone areas to reduce the risk of flood damage. These parcels will become conserved open space suitable for flood control, passive recreation, wildlife corridors, reforestation and pollinator habitats.

Tidal/Non-Tidal Wetlands

Wetlands are areas of continually wet soil where water is usually found on or slightly below the land's surface. They are transition areas between drier uplands and deep waters of streams, rivers, lakes and bays. A site-specific evaluation of soils, hydrology, and vegetation is required to determine the presence of wetlands on a property, with those being deemed Waters of the United States confirmed by the U.S. Army Corps of Engineers or Waters of the State confirmed by the Virginia Department of Environmental Quality.

Wetlands perform numerous ecological functions. They help purify water by filtering out nutrients, and sediment from runoff, absorb the energy of fast-moving water to reduce erosion and act as natural reservoirs that help replenish groundwater during dry seasons.

Henrico County contains several significant wetland areas, including the White Oak Swamp in the eastern portion of the County, and the wetlands contiguous to the Chickahominy River. Additional extensive wetlands are located north of Route 5 near Bailey and Sweaney Creeks, along Creighton Road and east of Laburnum Avenue near Gillies Creek and south of Greenwood Road along Holladay Branch. Wetlands are commonly found along most streams and tributaries feeding into the Chickahominy and James Rivers.

Topography/Steep Slopes

Elevations in the County range from sea level along the lower James and Chickahominy Rivers to 340 feet above sea level on the highest ridges in the western area of the County. Slopes in the County may be categorized in the following four groups:

- **Very steep (greater than 25 percent)** – If disturbed by construction or forest removal, widespread failure of the slope is highly probable. These slopes may be better used as natural areas, trails and observation points. Land in this category is the least suitable for development.
- **Steep (16-25 percent)** – If plant cover is removed, these slopes are highly susceptible to erosion and gully formation. Special design consideration is required for buildings on slopes greater than fifteen percent (15%). Development in these areas is suitable with restrictions to manage erosion.
- **Moderate (5 to 15 percent)** – These slopes will support residential and agricultural land uses; if misused, they are susceptible to serious erosion. These areas are moderately suitable for development.

- **Gentle (less than 5 percent)** – These slopes will sustain the most intensive use with the least erosion management needed; however, it is common in the flat areas of the County to encounter drainage problems where standing water can collect.

Understanding slope conditions is important for evaluating site suitability and identifying potential erosion or slope stability concerns, especially when combined with particular soil types. The Physical Constraints To Development Map depicts areas of the County with slopes over 15%, waterbodies, and floodplains, which may limit development potential.

Sensitive Soils

Soil characteristics affect the capacity of land to support structures, roads, foundations and septic systems. Soil suitability is determined based on the degrees of wetness and slope, and the size and texture of the particles in the soil. Sensitive soils include those with high erodibility, low or high permeability, high water tables or high shrink-swell potential.

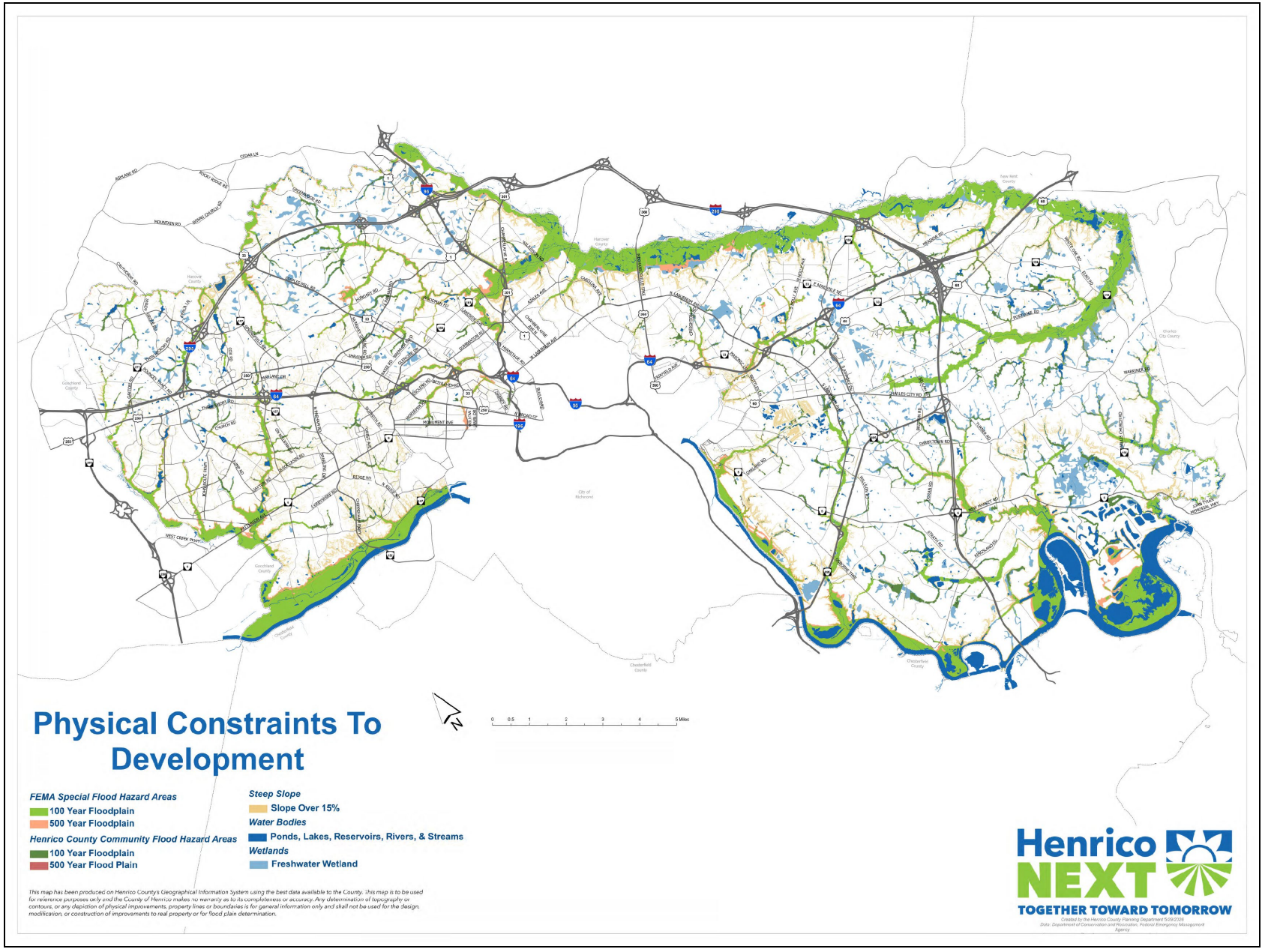
Highly erodible soils have a high potential for erosion and sedimentation due in part to excessive steepness and length of slope. Low permeability soils, usually those with high clay content, do not allow water to percolate quickly, thus resulting in soggy, potentially unstable soil. Conversely, highly permeable soils, such as sand, allow water to move too rapidly through it to properly filter or treat any contaminants present in the soil or water before the water reaches the aquifer.

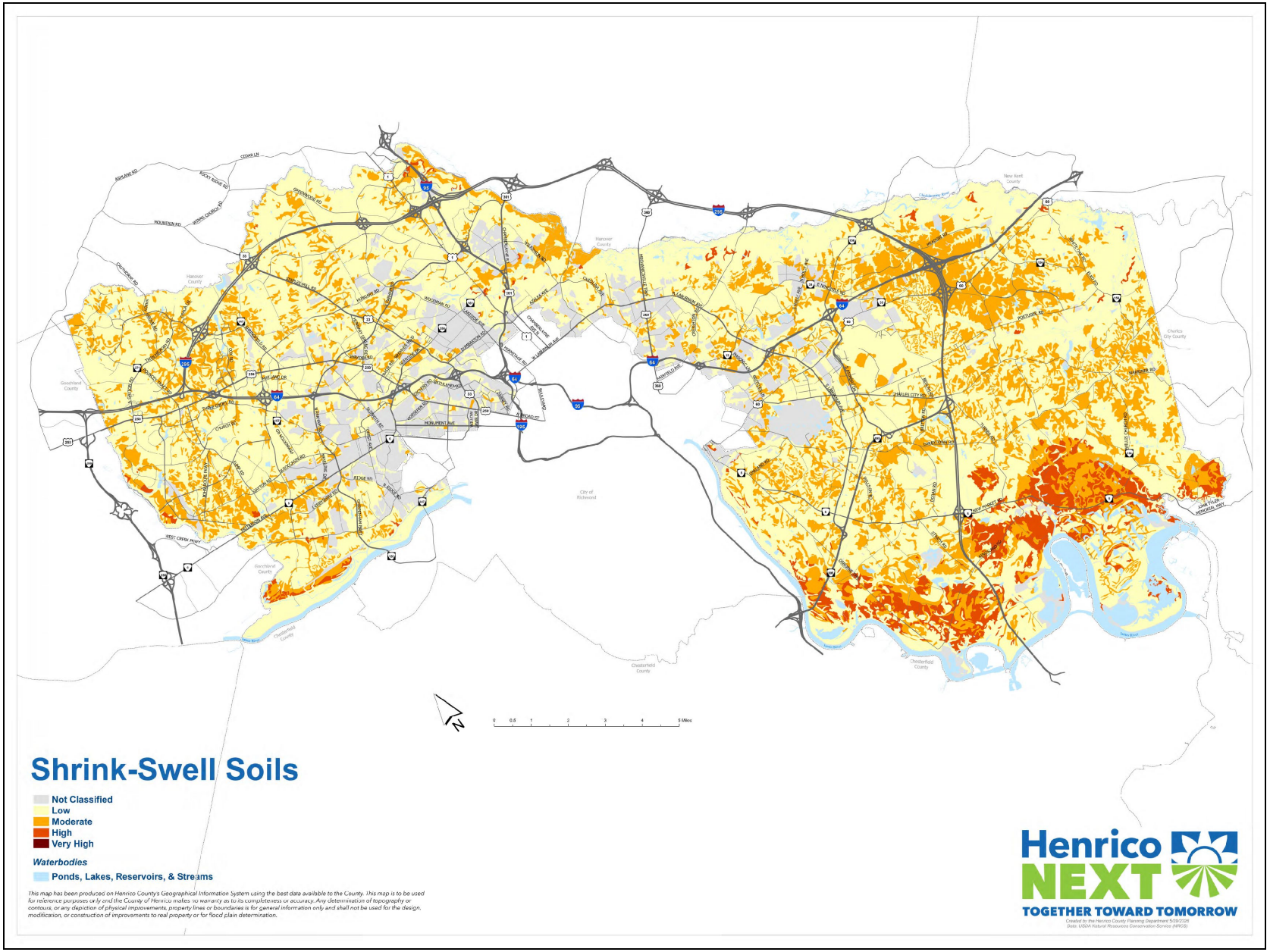
Shrink-swell soils, as shown on the Shrink-Swell Soils Map, are those containing clays that excessively shrink when dry and swell when wet. Various areas of the County have soil that may have the potential to shrink and/or swell with changes in moisture content. The County's Department of Building Inspections has detailed residential soil testing requirements used to determine the suitability of a specific site for various development activities.

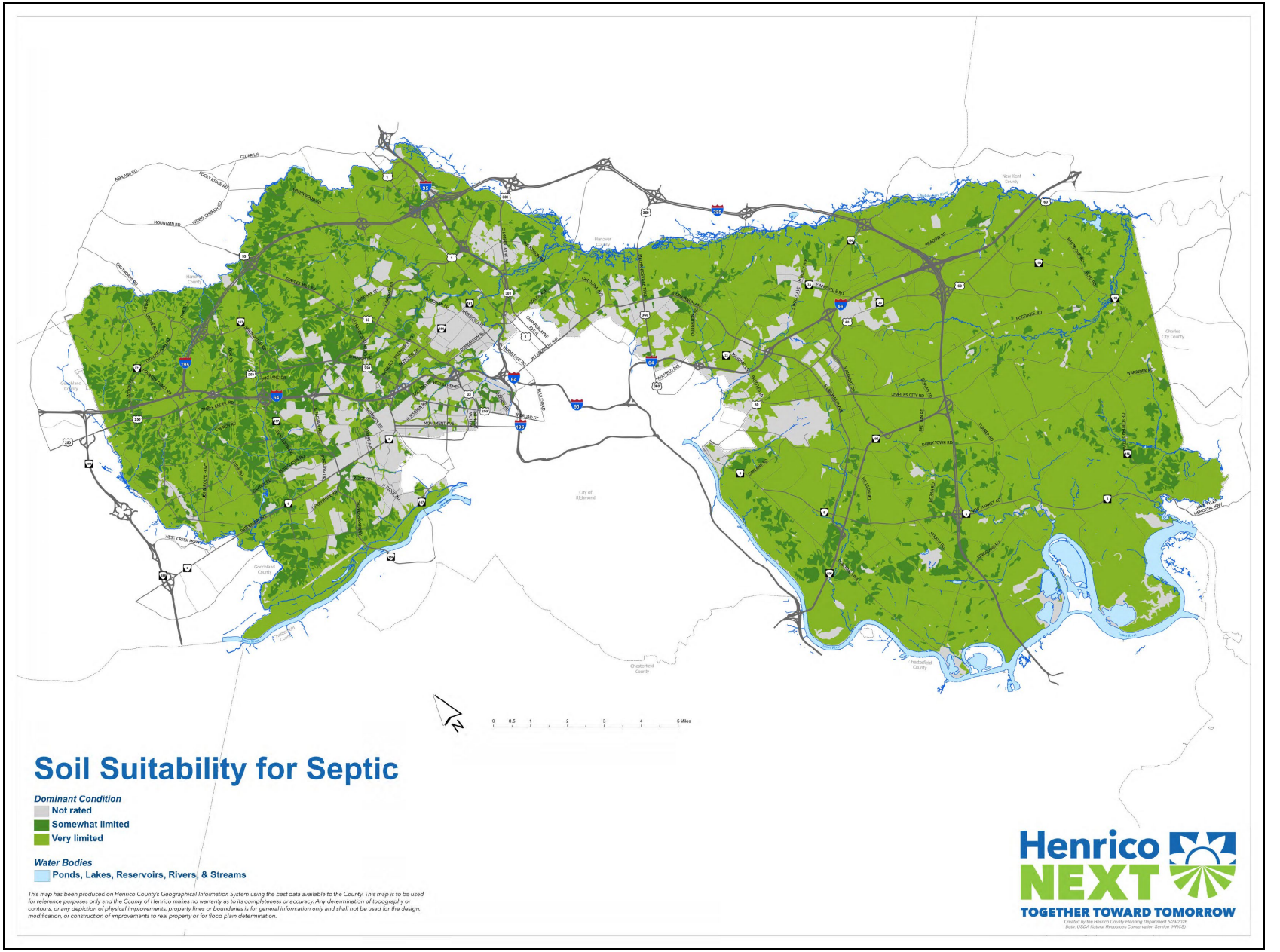
Septic Suitability

The permeability of soil also determines whether a site is suitable for a septic drain field. Highly permeable soils allow wastewater to penetrate into the aquifer before adequate filtration, potentially contaminating groundwater reserves. Impermeable (or less permeable) soils retard the infiltration of effluent and can result in septic system runoff contamination. As many properties in the more rural parts of the County use septic drain fields for wastewater discharge, guaranteeing the health of our water systems through appropriate septic procedures and rigorous soil analysis is important to the overall quality of Henrico's environment.

Soil can allow septic systems, or they can be a limiting factor in building a septic drain field. A slight limitation means that soil properties are generally favorable for infiltration, and limitations can easily be overcome. A moderate limitation means soils are less permeable and infiltration is reduced. These soils can be overcome or modified by planning, design or by special maintenance. A severe limitation means that infiltration is very limited and an "engineered" septic system is required. There are many challenges with engineered septic systems, they are costly and they require substantial maintenance. Thus, conventional systems are preferred. See the Soil Suitability map for specific locations.


Physical Constraints To Development
FEMA Special Flood Hazard Areas
100 Year Floodplain
500 Year Floodplain
Henrico County Community Flood Hazard Areas
100 Year Floodplain
500 Year Flood Plain
Steep Slope
Slope Over 15%
Water Bodies
Ponds, Lakes, Reservoirs, Rivers, & Streams
Wetlands
Freshwater Wetland
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Shrink-Swell Soils
Not Classified
Low
Moderate
High
Very High
Waterbodies
Ponds, Lakes, Reservoirs, & Streams
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Soil Suitability for Septic
Dominant Condition
Not rated
Somewhat limited
Very limited
Water Bodies
Ponds, Lakes, Reservoirs, Rivers, & Streams
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Historic Mining

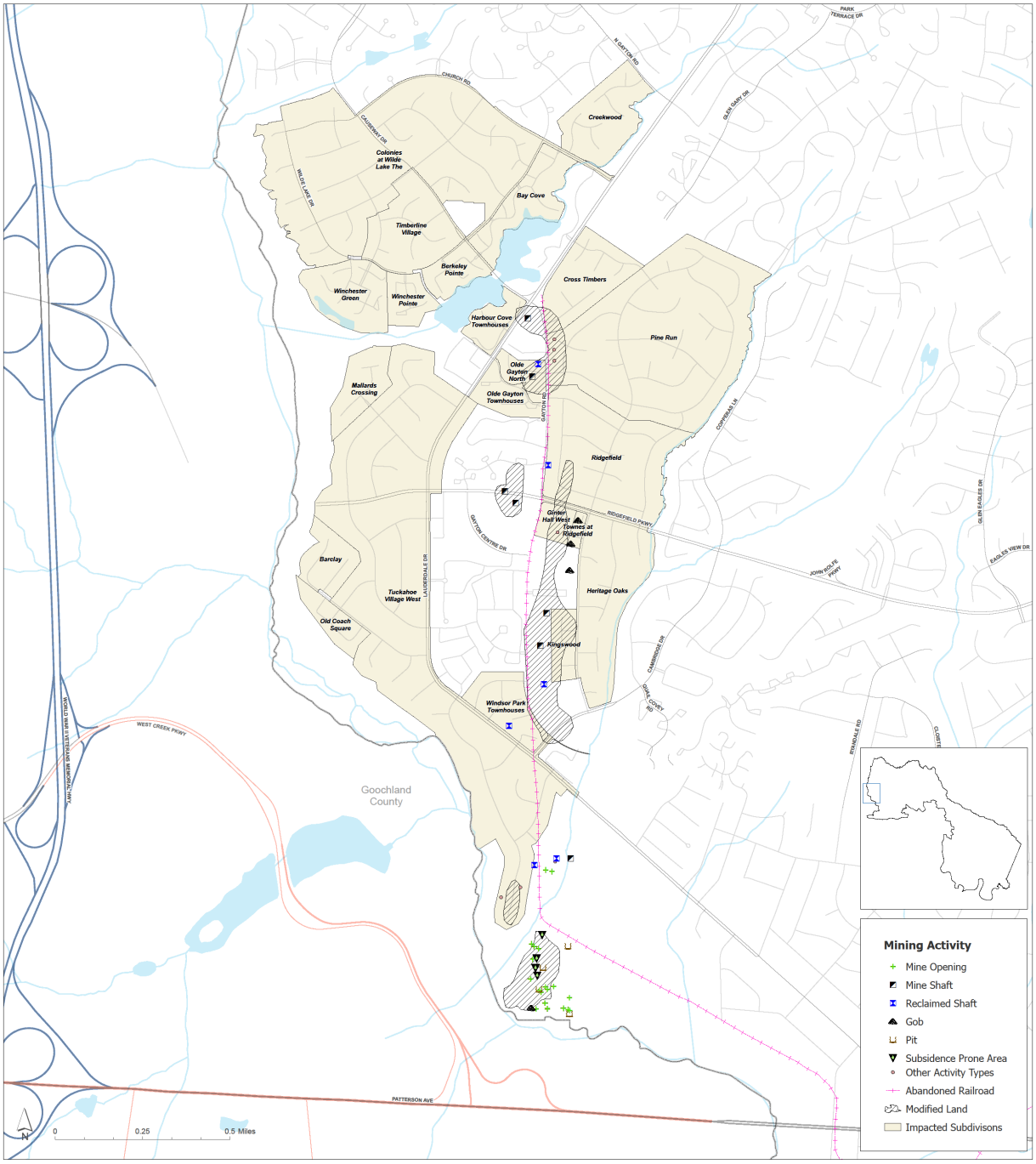
Coal and mineral extraction once played a significant role in the County's economy and shaped the region's early development. The Richmond Coal Basin, part of the Newark Supergroup, formed during the Late Triassic period when Pangea separated, creating several small coal deposits, including those in the Carbon Hill and Deep Run Districts in western Henrico.

The remnants of coal mining have caused significant environmental and geological impacts on the County. Several areas have been labeled as "Subsidence Prone Areas" or sections of land where there is sinking caused by settling of the tunnels created by the mining activity. Additional challenges arise from soil deposits and rock which can complicate site development and require specialized evaluation.

The effects of mining may be mitigated with reclamation practices or proper engineered mine capping. Identifying historic mining sites and incorporating them into the comprehensive plan process is essential. Coordination with the Virginia Department of Mines, Minerals and Energy (DMME) supports accurate mapping and appropriate guidance for future development. For more details about these historical mining sites see the chart and various accompanying mining maps.

Table 4: Richmond Coal Basin Information

Basin	***Name***	***Location***	***Geologic Impact Factors***	***Primary Mining Area***	***DMME Projects***
Richmond Coal Basin	Carbon Hill District	Western Henrico County	Gob locations and Subsidence Prone Areas	Main mining activity centered along Gayton Rd	4
	Deep Run District	Southwestern Henrico County	Trenches from old railroad grade	Main mining activity centered along RFP railroad and Springfield Rd	4

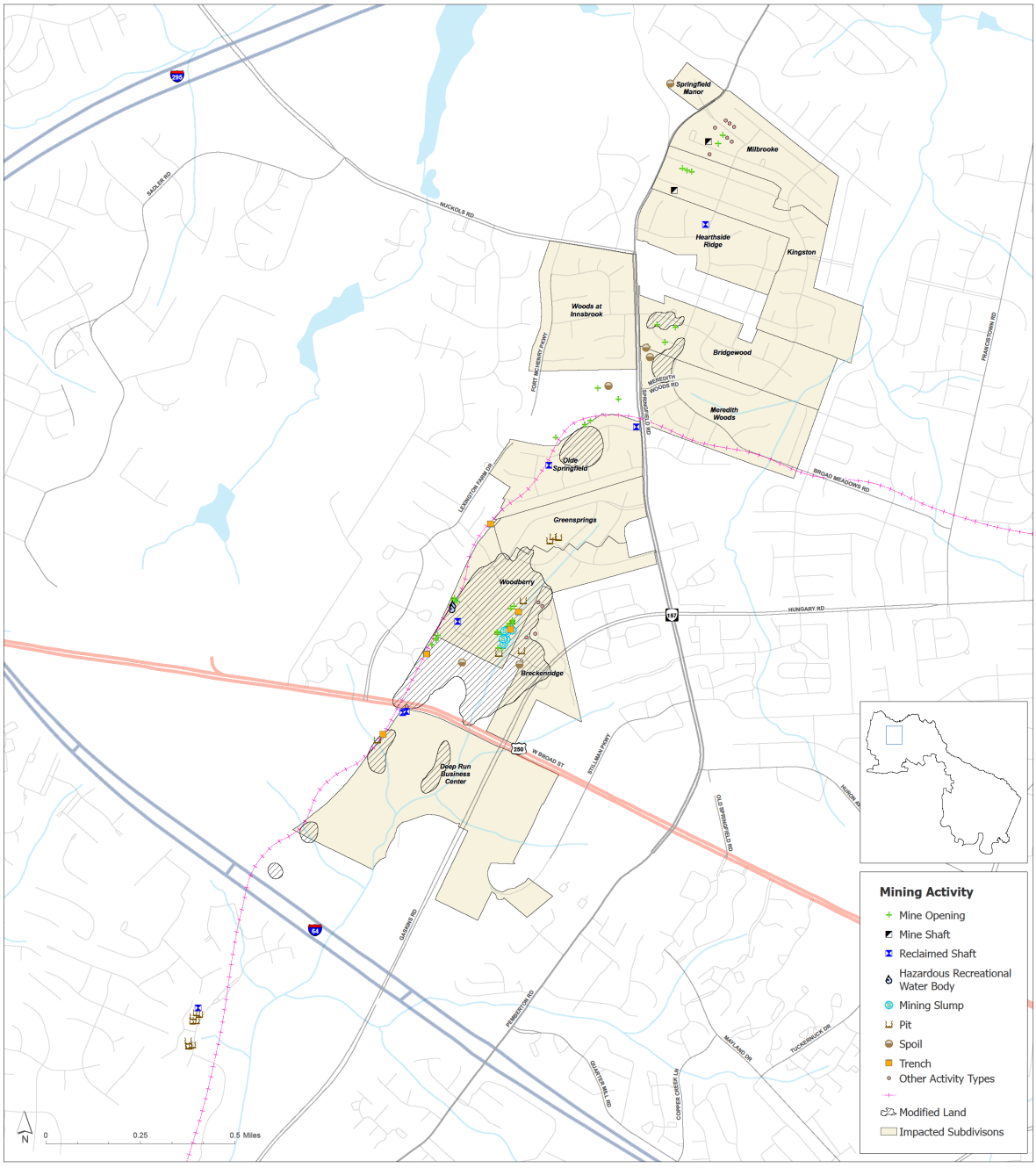


Carbon Hill Mining District

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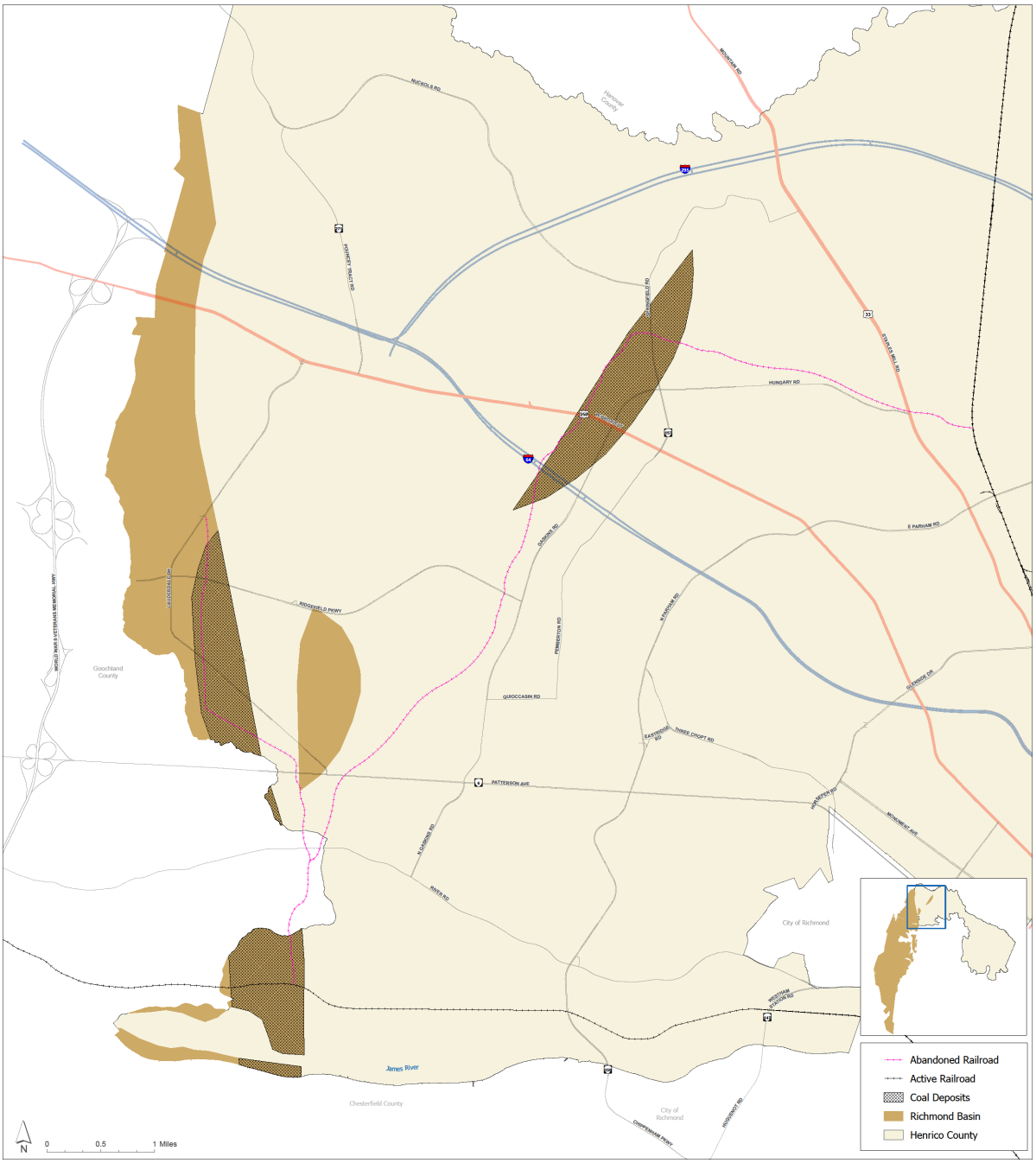


Deep Run Mining District

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Richmond Basin Coalfields

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Water

Ground, surface, and atmospheric water comprise the components of the County's water cycle. Because of the interdependence of the hydrologic cycle, activities such as water withdrawals or the introduction of pollutants have potential effects on other parts of the system. Through proper planning, the County can protect both the quantity and quality of its water resources, ensuring an adequate supply and minimizing the costs of providing drinking water. Henrico County engages in many programs designed to improve water quality and water conservation, including the adoption of local ordinances to comply with state regulations.

Surface Water

The County of Henrico is fortunate to have a diverse array of water bodies including rivers, streams, ponds, and wetlands. The James River, a tidal river known for its significant history, is the largest in Virginia, and borders Henrico's boundary to the south. The Chickahominy River, another tidal river, serves as a natural boundary between Henrico and Hanover counties. Every unabsorbed rain drop that falls in Henrico County will eventually flow into the Chickahominy or James River Watersheds, and ultimately into the Chesapeake Bay.

The James River is the source of drinking water for most of the County's residents. Henrico draws raw water from the river and then pumps it to a state-of-the-art water treatment facility where it undergoes a three-stage purification process before being released into the drinking water distribution system. More specific information on the County's drinking water is available in the Managed and Sustainable Growth chapter.

In 2025, Henrico County completed the Virgil R. Hazelett Reservoir at Cobbs Creek. This 1,000-acre reservoir will increase the County's drinking water resilience, add fish and wildlife habitat and increase the river flow in dry periods. It also offers new opportunities for passive recreation.

Groundwater

Groundwater exists underground in saturated layers called aquifers. These geological formations of permeable sand, rock, or gravel act as reservoirs. Rain and snowmelt penetrate the surface, filling the spaces between the soil or rock. Aquifers release water through springs, or they can discharge directly into streams and rivers. Groundwater is also extracted from aquifers by wells. As a source of drinking water for thousands of residents of the County, it is necessary to protect these areas from contamination.

In addition to individual household wells, two freshwater springs, located off Turner Road in the eastern portion of the County, provide commercial bottled water. Water from Camp Holly Springs and Diamond Springs is distributed to thousands of consumers daily in Virginia, North Carolina, South Carolina, Maryland, Pennsylvania, West Virginia and the District of Columbia. The Hydrologic Unit Boundaries Map provides the general location of Camp Holly Springs and Diamond Springs.

Protection of Potable Water

The protection and proper management of surface and groundwater is crucial to making sure there is enough water for residential, agricultural, industrial, and recreational purposes.

Aquifers are recharged by rainwater percolating back through the soil. If water is withdrawn at a faster rate than it is replenished, it can result in a lower water table, land subsistence, poor water quality and wells running dry. Aquifers are subject to pollution from infiltration of stormwater, surface water and contaminants that are dumped onto the ground's surface and filter down into the groundwater. Incorporating wellhead and source water protection principles into planning helps safeguard potable water sources for both public systems and private well users. As a portion of Henrico's population depends on private wells, it is critical for owners of these private systems to follow the wellhead protection principles recommended by the Virginia Department of Health's Source Water Protection Program. These practices include maintaining protective setbacks around wells, ensuring proper abandonment of unused wells, preventing spills or improper chemical storage near recharge areas, and identifying land uses that create elevated risks for aquifer contamination.

Source water protection planning also emphasizes delineating wellhead protection areas, assessing susceptibility of aquifers to pollution, and encouraging voluntary management practices that reduce opportunities for contaminants to reach groundwater. These efforts strengthen the long-term reliability of household wells and support the state's oversight of large groundwater withdrawals under the Eastern Virginia Groundwater Management Area designation in which half of the County lies.

Impaired Waters

The Virginia Department of Environmental Quality released the 2024 Virginia Water Quality Assessment Integrated Report to summarize monitoring from 2017 through 2022. This document indicates that overall quality standards are being met in most streams throughout Henrico County; however, several segments or waterbodies are impaired. The Virginia Department of Environmental Quality (DEQ) maintains a list of these "impaired waterbodies," which guide local utilities and practices to protect customers. Impaired waters are rivers, streams, lakes, and coastal areas that, due to contamination levels, will not support one or more of its designated uses. These uses include Aquatic Life, Recreation (Swimming, and Boating), Fish Consumption, Public Water Supply, Shellfishing, and Wildlife. Four waterbodies in Henrico County had Category 5 impairments, the highest level of impairment. Table 5: DEQ Impaired Waterbodies lists the waterbodies with Category 5 Impairments. The location of these waterbodies can be seen in the following Impaired Waters map.

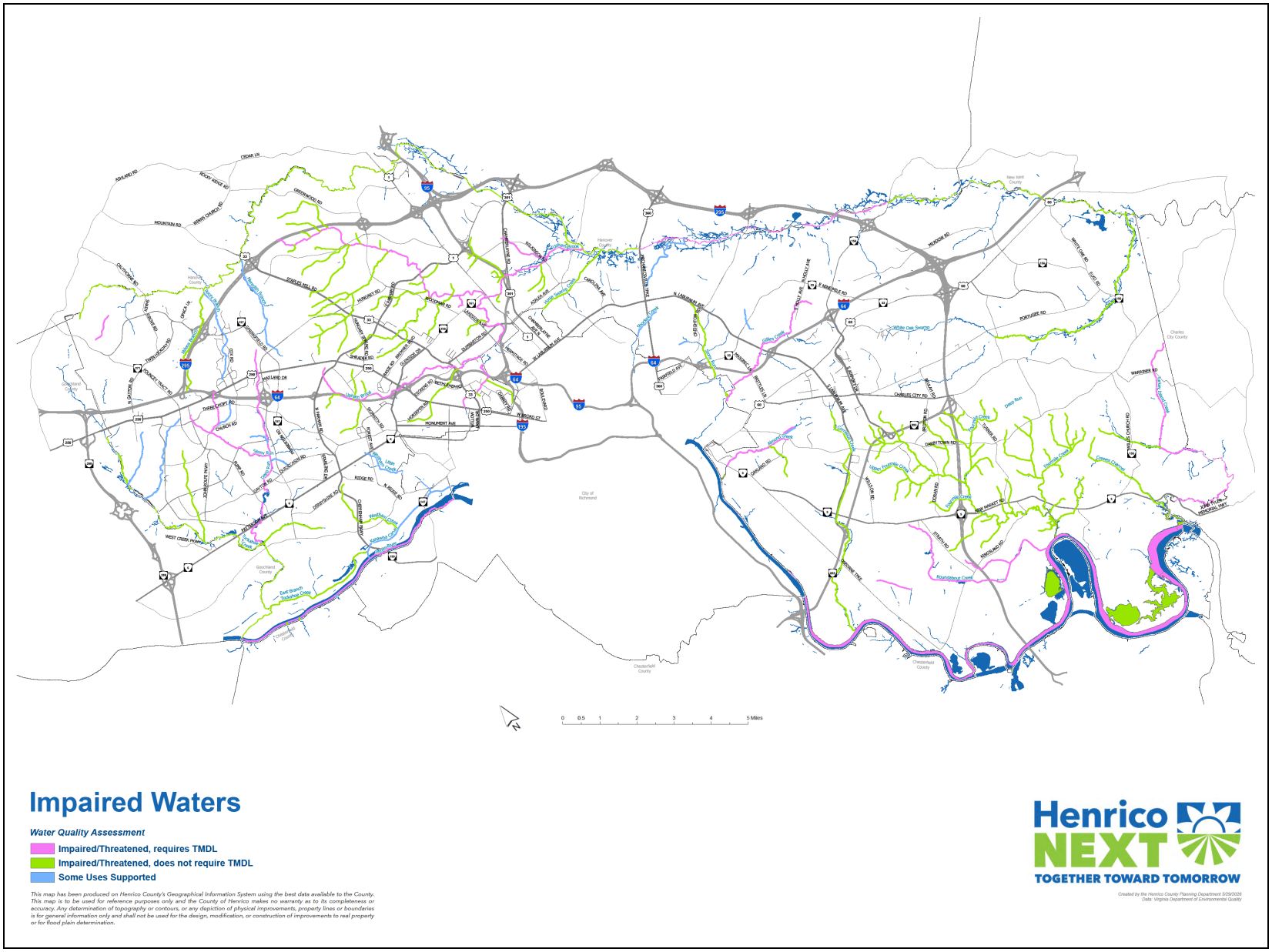
Table 5: DEQ Impaired Waterbodies

Waterbodies	***Assessment ID***	***Impaired Use***	***Impairment Cause***	***Assessment Unit Name and Location***	***Water Size (Miles)***
VAP-H39R-James River/Tuckahoe Creek/Norwood Creek	VAP-H39R_XYT01A08	Aquatic Life	Benthic Macroinvertebrates Bioassessments	XYT - Stony Run, UT: Headwaters to mouth at Stony Run	1.27
	VAP-H39R_SNJ02A04	Aquatic Life	Benthic Macroinvertebrates Bioassessments	Stony Run: Dam of pond downstream to the mouth at Deep Run	1.36
	VAP-H39R_SNJ01B22	Aquatic Life	Temperature	Stony Run - Lake Loreine: Extent of pond	0.31
	VAP-H39R_SNJ01A04	Aquatic Life	Benthic Macroinvertebrates Bioassessments	Stony Run: Headwaters to extent of backwater of pond	1.01
	VAP-H39R_DPR02A00	Aquatic Life	Dissolved Oxygen	Deep Run: From the dam at river mile 1.47 to the confluence with Tuckahoe Creek	1.5
	VAP-H39R_DPR01A00	Aquatic Life	Benthic Macroinvertebrates Bioassessments	Deep Run: From its headwaters to the pond at river mile 1.47	4.17
VAP-G05R-Upper Chickahominy	VAP-G05R_XXP01A08	Aquatic Life	Dissolved Oxygen	XXP - Upham Brook, UT: Headwaters	1.46

Waterbodies	*Assessment ID*	*Impaired Use*	*Impairment Cause*	*Assessment Unit Name and Location*	*Water Size (Miles)*
River/Upham Brook/Lickinghole Creek (G05)				to mouth at Upham Brook	
	VAP-G05R_XCJ01A16	Aquatic Life	Dissolved Oxygen and pH	XCJ - North Run, UT: Ditch from headwaters to North Run	0.42
	VAP-G05R_XBP01B22	Recreation	Harmful Algal Blooms	XBP - Chickahominy River, UT: Headwaters to the confluence with Wyndham Lake	0.8
	VAP-G05R_UPM01B08	Aquatic Life	Dissolved Oxygen and Benthic Macroinvertebrates Bioassessments	Upham Brook: Flippen Creek downstream to UT above Wilkinson Road	1.16
	VAP-G05R_UPM01A02	Aquatic Life	Benthic Macroinvertebrates Bioassessments	Upham Brook: Upham Brook from its headwaters to the mouth at the Chickahominy River, excluding Upham Brook from Flippen Creek to the UT above Wilkinson Rd.	10.99

Waterbodies	*Assessment ID*	*Impaired Use*	*Impairment Cause*	*Assessment Unit Name and Location*	*Water Size (Miles)*
	VAP-G05R_NTR02A06	Aquatic Life	Benthic Macroinvertebrates Bioassessments, pH, and Dissolved Oxygen	North Run: From its headwaters to Hungary Creek.	3.66
	VAP-G05R_NTR01A00	Aquatic Life	Benthic Macroinvertebrates Bioassessments	North Run: From Hungary Creek to its mouth at Upham Brook	4.24
	VAP-G05R_JOP01A14	Aquatic Life	Benthic Macroinvertebrates Bioassessments	Jordans Branch: Headwaters to mouth at Upham Brook	2.19
VAP-G02R,E.-James River/Turkey Island Creek/Fourmile Creek	VAP-G02R_XBE01A14	Aquatic Life	pH	XBE - Roundabout Creek, UT: Headwaters to mouth at Roundabout Creek	1.43
	VAP-G02R_ROT02A00	Aquatic Life	Dissolved Oxygen and pH	Roundabout Creek: Roundabout Creek from the tributary at river mile 2.04 to the James River	2.05
	VAP-G02R_ROT01A00	Aquatic Life	Dissolved Oxygen and pH	Roundabout Creek: Roundabout Creek from its headwaters to the tributary	3.96

Waterbodies	*Assessment ID*	*Impaired Use*	*Impairment Cause*	*Assessment Unit Name and Location*	*Water Size (Miles)*
				at river mile 2.04	
VAP-G01R,E.-James River/Almond Creek/Gillies Creek	VAP-G01R_XYI01A06	Aquatic Life	pH	XYI - Coles Run, UT: Headwaters at breastworks to mouth at Coles Run	0.94
	VAP-G01R_XVP01A08	Aquatic Life	pH	XVP - Almond Creek, UT: Headwaters to mouth at Almond Creek	0.36
	VAP-G01R_GIL01A04	Fish Consumption	Polychlorinated biphenyls (PCBs) and pH	Gillies Creek: Headwaters to mainstem	5.88
	VAP-G01R_ALM01A98	Fish Consumption	Polychlorinated biphenyls (PCBs)	Almond Creek: Creek from its headwaters to the tidal limit	2.11
	VAP-G01E_JMS02A02	Fish Consumption	Polychlorinated biphenyls (PCBs)	James River: River from river mile 108.76 to river mile 108.63	0.016

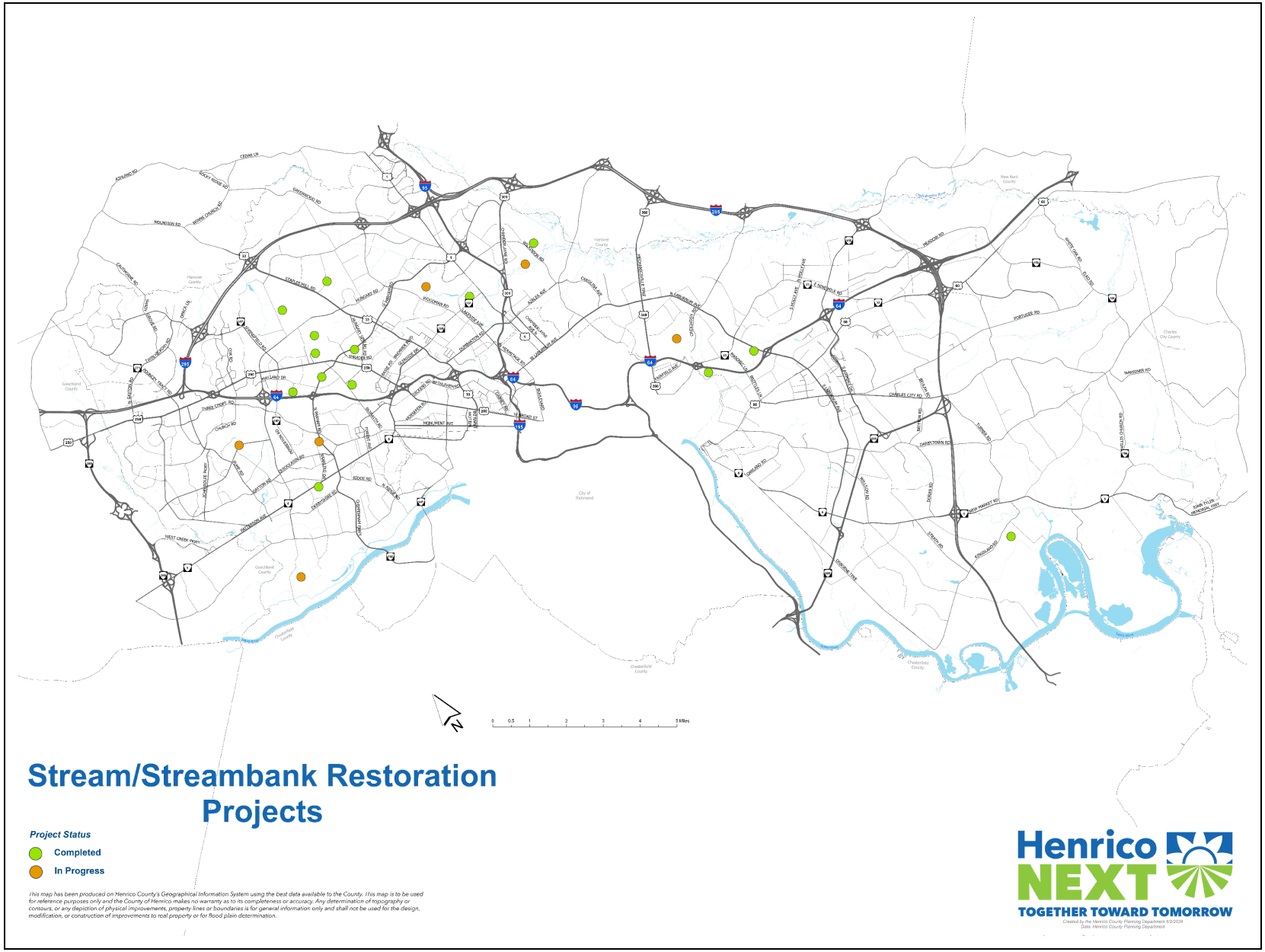

0 0.5 1 2 3 4 5 Miles
Impaired Waters
Water Quality Assessment
Impaired/Threatened, requires TMDL
Impaired/Threatened, does not require TMDL
Some Uses Supported
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Data: Virginia Department of Environmental Quality

Stormwater

Stormwater is rain or snowmelt that does not immediately infiltrate the ground. Instead, it runs off impervious surfaces like streets, roofs, and parking lots. As it flows, it accumulates pollutants such as motor oil, fertilizers, pesticides, and pet waste that often get deposited into local streams, lakes, and rivers without treatment.

Stormwater runoff increases as the amount of impervious cover increases. This increase in runoff volume and velocity creates erosion of the stream channel. Pollutants (phosphorus and nitrogen) are attached to the eroded soil particles and are carried away by these heavy flows. These pollutants have adverse effects on the water quality of our local streams, the James River, and ultimately the Chesapeake Bay and these eroded systems cannot sustain healthy vegetation or wildlife populations.

Stream and Outfall Restoration projects can help alleviate the impacts of these erosive stormflows. By restoring both the stream and the floodplain, these increased flows can spread out and reduce their energy. Utilizing Natural Stream Design techniques, we can reshape and regrade the stream corridor into a more natural functioning system. These restored systems substantially reduce the quantity of pollutants transported downstream and create new healthy environments for the local plant and animal communities. A map showing the location of completed and on-going Stream/Streambank Restoration Projects can be found below.


Stream/Streambank Restoration Projects
Project Status
Completed
In Progress
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Pollution

Protecting Henrico County's water resources includes addressing both point and non-point sources of pollution. Point sources are those which reach surface waters through a single source such as a pipe outlet. The outfall structures of sewage treatment plants and industrial plants are examples. All legal point source discharges to surface waters are regulated by the Virginia Pollution Discharge Elimination System (VPDES) permit program.

Non-point sources of pollution are those not coming from a discernable point. The Eastern Virginia Groundwater Management Advisory Committee has identified potential non-point-source [4] pollution discharges that can compromise the County's water resources:

- Underground storage tanks, which can leak chemicals (typically petroleum). DEQ makes owners liable for contamination originating from a leaky underground tank.
- Septic tanks can deposit concentrated sewage into the groundwater including fecal coliform.
- Pesticides and fertilizers can either poison or oversaturate waterbodies with nutrients, thus leading to die-offs or algal blooms and runoff from feedlots can deposit fecal coliform.
- Poorly constructed or abandoned wells, which effectively function as punctures into contained aquifers, and provide significant risks for pollution of otherwise protected, high-volume water resources.
- Boating, and to a lesser degree, swimming, can release chemicals associated with those activities (fuel, sunscreen, onboard waste) which can be potentially damaging, especially in excess.
- Landfills, which, if unmaintained, can, like compromised septic systems, leach toxins into the groundwater. Virginia strictly regulates landfill siting and upkeep to mitigate this hazard, partially by requiring installation of groundwater quality monitoring wells on landfill sites but continued effort from the County guarantees continued groundwater health.

There is only one landfill operating in the County. Located at 2001 Charles City Road, it accepts municipal solid waste, non-hazardous commercial and industrial waste and contaminated soil. In addition, there are several sites within the County that have or are undergoing remediation, as shown on the Water Pollution map. The DEQ oversees several state programs and coordinates with the US Environmental Protection Agency (EPA) on federal programs aimed at addressing hazardous substance cleanups.

- The Voluntary Remediation Program (VRP) encourages site owners or operators to voluntarily address contamination.

[4] *A non-point source is defined as groundwater contamination that does not come from a discernable source.*

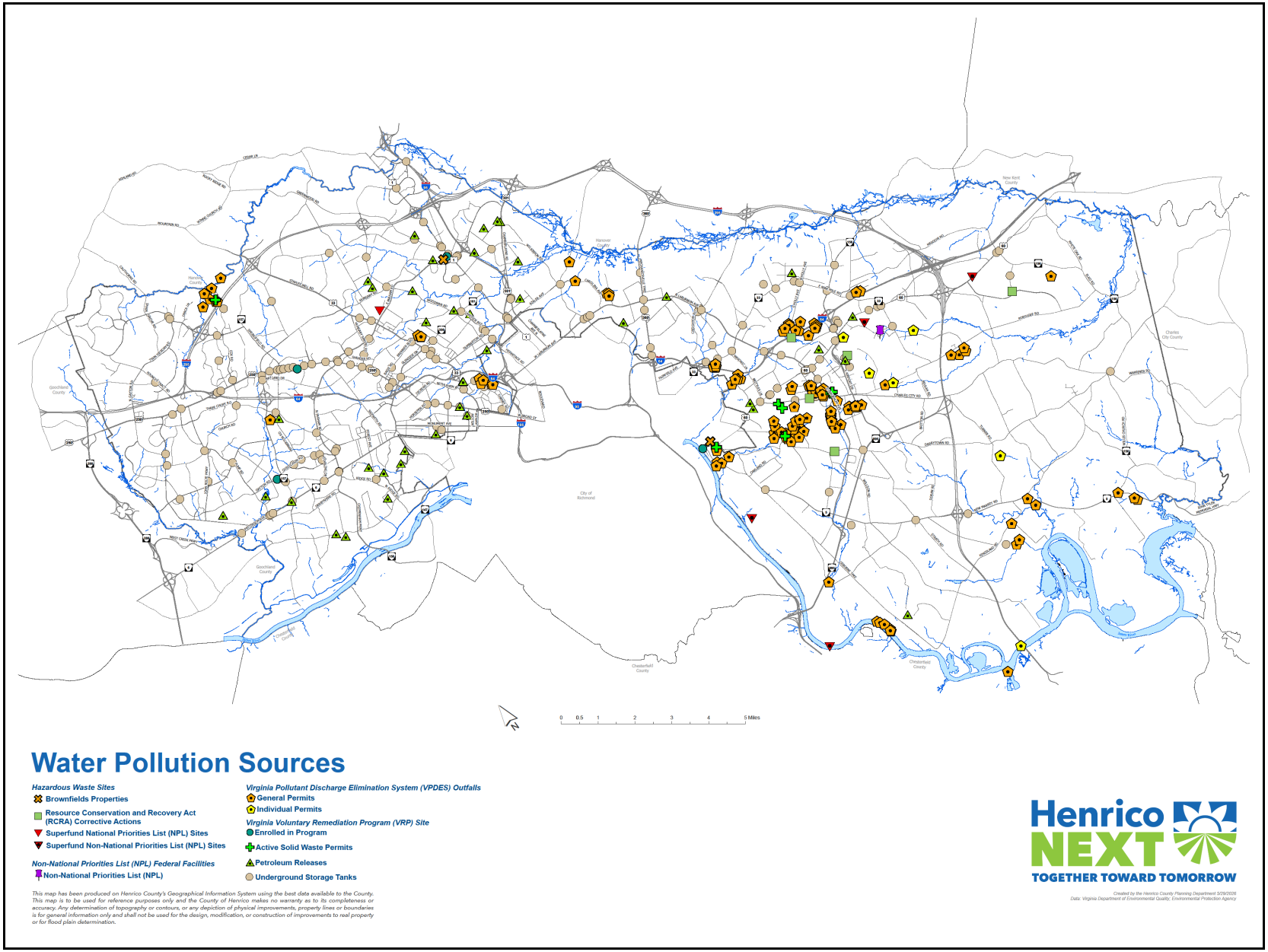
- The Brownfields Program provides technical assistance to remove barriers to brownfield investment. (A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. [5])

- The Resource Conservation and Recovery Act (RCRA) Corrective Action Program requires states to investigate and clean up hazardous chemicals that pose an unacceptable risk.

- The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as Superfund) requires the cleanup of hazardous waste sites. DEQ works with the EPA to ensure those sites identified on the National Priorities List (NPL) are addressed.

The Water Pollution Sources map below shows the location of these across the County.

[5] *Virginia DEQ. (n.d.). Brownfields. www.deq.virginia.gov. https://www.deq.virginia.gov/land-waste/remediation-programs/brownfields*


0 0.5 1 2 3 4 5 Miles
Water Pollution Sources
Hazardous Waste Sites
Brownfields Properties
Resource Conservation and Recovery Act (RCRA) Corrective Actions
Superfund National Priorities List (NPL) Sites
Superfund Non-National Priorities List (NPL) Sites
Non-National Priorities List (NPL) Federal Facilities
Non-National Priorities List (NPL)
Virginia Pollutant Discharge Elimination System (VPDES) Outfalls
General Permits
Individual Permits
Virginia Voluntary Remediation Program (VRP) Site
Enrolled in Program
Active Solid Waste Permits
Petroleum Releases
Underground Storage Tanks
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Data: Virginia Department of Environmental Quality, Environmental Protection Agency

Erosion

Shoreline and streambank erosion are caused by natural forces such as wave motion and upland runoff. Land disturbing activities such as grading and clearing can also increase stormwater runoff and erosion. This erosion can have a negative effect on water quality by contributing to the nutrients and other controllable pollutant loads entering the Chesapeake Bay each year. Increased sedimentation in the Bay is another result of shoreline erosion.

Most instances of shoreline erosion along the County's portion of the James River have been from major flooding events, boat wakes, and from currents and tidal action. Stormwater detention is one of several techniques implemented by the County to minimize shoreline/streambank erosion. Detaining stormwater on-site decreases the runoff into the stream, which minimizes erosion.

Henrico County and the Virginia Department of Environmental Quality require all development and redevelopment to provide adequate stormwater management to prevent erosion. In some watersheds, detention is also required to address downstream erosion, prevent flooding and protect the receiving channel. Stormwater quality requirements are applied throughout the County and compliance necessitates the construction of facilities known as Best Management Practices (BMPs).

Regional and on-site detention basins must be evaluated in conjunction with other measures to determine the impact on erosion control, flood control and water quality.

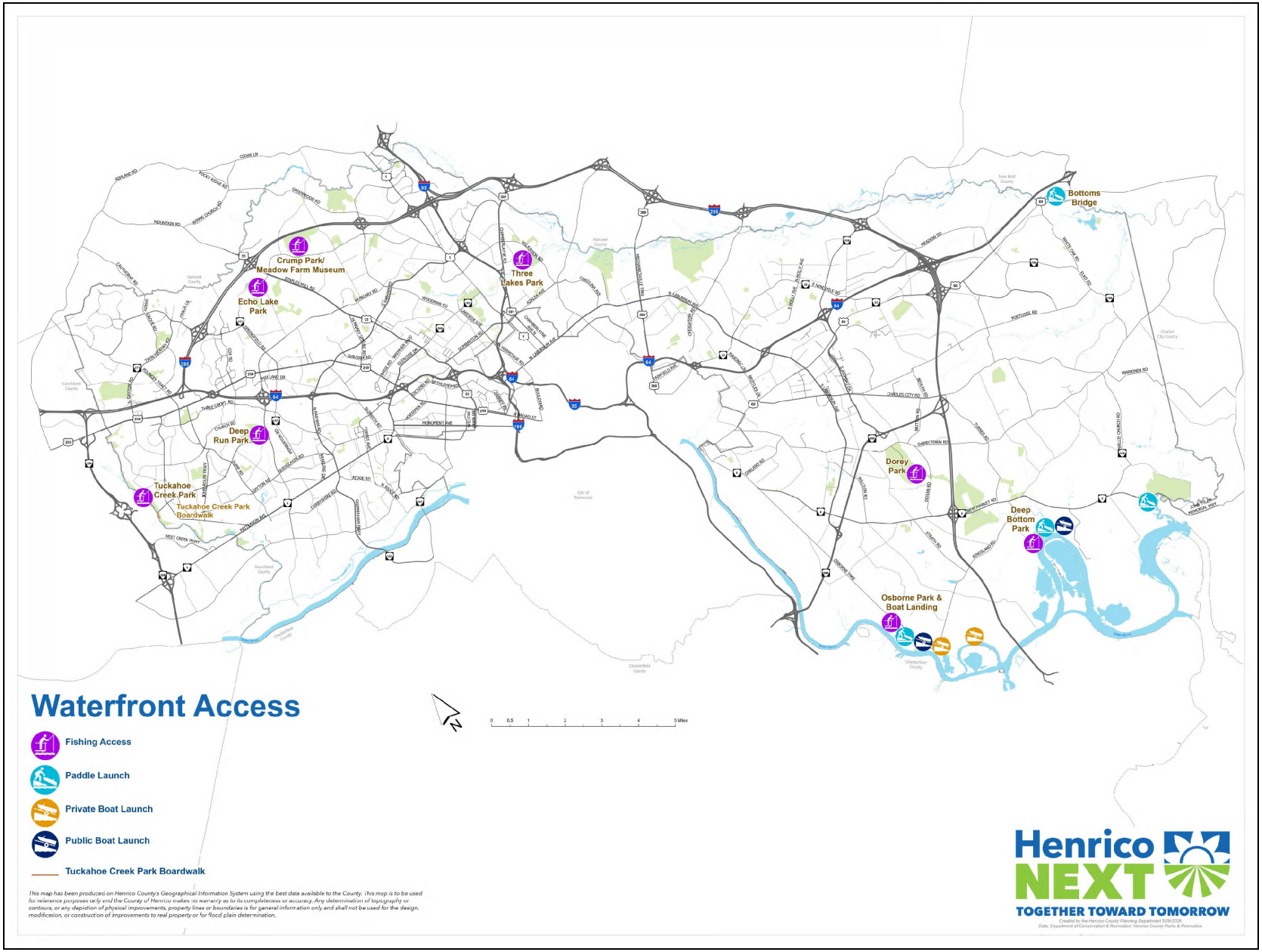
Waterfront Access

There are four main types of public and private water access in Henrico County: boating, swimming, fishing, and access to natural areas. The multiple access points are located throughout the County and displayed geographically on the Waterfront Access map below. Boat-related access is discussed in more detail because it has a greater potential impact on water quality and is usually a major element in access programs.

Water access is influenced by topography, geology, capacity to sustain the proposed use and presence of fragile environmental resources. Shoreline erosion and impacts on water quality are other important factors to consider. In areas which are predominantly natural, the County would prefer the use of community facilities over multiple individual docks to reduce the impact on the visual and ecological amenities. Numerous facilities along the shoreline diminish visual aesthetics and the environmental conditions of the river.

Boat traffic should also be monitored as a potential non-point source polluter and as a potential cause of erosion. Proper precautions regarding storage of fuel and onboard waste, as well as providing for no-wake zones in areas where streambanks might be more susceptible to wave-based erosion can dramatically decrease the effects of boating on the natural environment.

There are no commercial fisheries located in Henrico County, but there are several recreational fishing areas located at various County parks. Specific locations can be found by referencing the Waterfront Access Sites map in Chapter 6: High-Quality, Livable Places.


Waterfront Access
Fishing Access
Paddle Launch
Private Boat Launch
Public Boat Launch
Tuckahoe Creek Park Boardwalk
Crump Park/ Meadow Farm Museum
Echo Lake Park
Three Lakes Park
Deep Run Park
Tuckahoe Creek Park
Tuckahoe Creek Park Boardwalk
Bottoms Bridge
Dorey Park
Deep Bottom Park
Osborne Park & Boat Landing
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ENVIRONMENTAL INVENTORY: AIR

AIR, NOISE, AND LIGHT POLLUTION

Air

Ground level ozone is a precursor to smog and is produced when fossil fuels are burned by mobile sources such as cars and trucks, and stationary sources like industrial facilities or power plants. It is one of the pollutants monitored by the Environmental Protection Agency (EPA) to determine air quality. An ozone concentration of greater than 0.070 parts per million is the threshold for an eight-hour period to be considered unhealthy for sensitive groups. The County only exceeded the acceptable level of ozone during one eight-hour period in the last year.

The Virginia Department of Environmental Quality maintains a set of pollution monitors at the Police Athletic League facility (formerly the Mathematics and Science Center) on Hartman Street. This location is an official National Core Monitoring Network (NCore) site and a National Air Toxics Trend Site (NATTS)[6].

Monitoring for air quality is a critical tool as air pollutants can directly affect natural systems in the County. Pollutants of concern include hydrofluorocarbons (HFCs), nitrous oxide, sulfur dioxide, and fine particulate matter. Reducing these pollutants can help curb climate change effects and enhance air quality as minimizing the use of these substances significantly aids respiratory health in communities vulnerable to their exposure. [7] Henrico has good air quality and is in an Air Quality Attainment area according to the DEQ.

The Virginia Air Pollution Control Board sets standards for stationery and mobile sources of emissions. The Air Pollution map identifies location of businesses, typically industrial facilities, across the County with operating permits to release emissions. Major sources of pollution are required to have a federal operating permit. Those identified as minor sources have enforceable limits that restrict emissions to stay below major source thresholds.

Noise

On a daily basis, the greatest noise generator in Henrico County is Richmond International Airport. Aircraft prediction models have been used to assess noise levels in areas surrounding the airport. These impacts are expressed in terms of contours of equal noise

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[6] *Virginia Department of Environmental Quality (2017) Annual Ambient Air Monitoring Network Plan www.epa.gov/ Virginia Department of Environmental Quality: Retrieved from https://www.epa.gov/sites/default/files/2017-11/documents/vaplan2017.pdf*

[7] *Super pollutants. (n.d.). Climate & Clean Air Coalition. https://www.ccacoalition.org/news/super-pollutants#:~:text=Many%20super%20pollutants%20are%20short,UNEP/CCAC%20GMA%202021%5D*

exposure in the Day/Night Average Sound Level (DNL) noise metric. Decibels (dBA) are a unit used to measure the intensity of sound. For example, a whisper typically registers at approximately 25 dBA, ordinary conversations range from 60–70 dBA, and machinery such as a power mower produces higher dBA levels at an average of 107 dBA. The Day/Night Average Sound Level (DNL) represents the average sound dBA exposure over a 24-hour period, accounting for fluctuations throughout both day and night.

These contours were developed using the FAA's Aviation Environmental Design Tool (AEDT), which considers the noise exposure of all individual aircraft events, the number of times those events occur, and the period of day/night in which they occur. [8] These noise contours reflect long-term average noise conditions rather than the specific conditions on any given day, as actual noise exposure can vary daily.

The following noise exposure levels were identified for Richmond International Airport:

- 65 DNL - Noise level considered to have an adverse effect upon land use activities. Land use limitations and controls should be considered.
- 70 DNL - Noise level considered to have significant adverse effects upon land use activities. Land use limitations, easements and other compatibility controls should be considered.
- 75 DNL - Noise level considered to have the most severe adverse effect upon land use activities. Land uses other than airport related facilities should generally be excluded from this area.

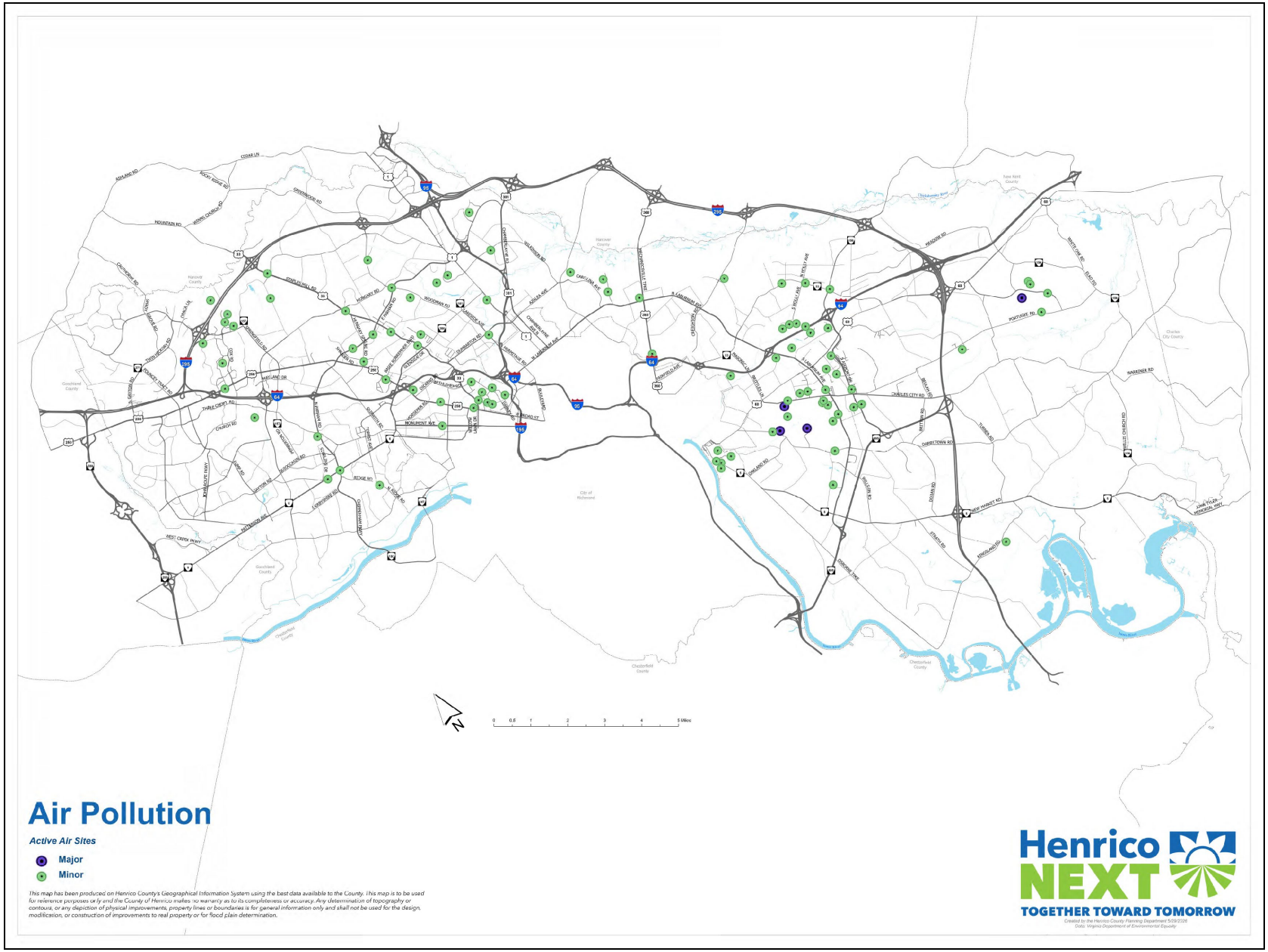
The Day/Night Average Sound Levels table below outlines land uses and their compatibility with these noise levels. The County has also adopted an Airport Safety Overlay District to assist in the management of development activities within the high DNL areas. This overlay district is illustrated on the Richmond International Airport Safety Overlay District Map. Additional locations that generate high decibels of noise for extended periods of time include interstate corridors and Richmond Raceway. Efforts should be made to mitigate the impact of noise in areas affected by these sources.

[8] *Richmond International Airport & Kutchins & Groh, LLC (2022) Richmond International Airport (RIC) Airport Master Plan revision https://flyrichmond.com/ Richmond International Airport. Retrieved from https://flyrichmond.com/wp-content/uploads/2023/03/RIC-Master-Plan-2022.pdf*

Table 6: Day/Night Average Sound Levels

Land Use	***Noise Zones***			
	Less than 65 DNL	***DNL 65-70***	***DNL 70-75***	***DNL Greater than 75 DNL***
Residential Districts (Single Family & Multifamily)				
Semi Public or Government (Places of Worship, Schools, Libraries, Etc.)				
Office Districts (Medical & Professional services)				
Commercial Districts (Offices, Retail uses, Restaurants, & Automobile sales and Repair)				
Industrial Districts (Heavy Manufacturing, Laboratories, Warehouses, & Recycling)				

	Compatible
	Conditionally Compatible
	Incompatible


Air Pollution
Active Air Sites
Major
Minor
This map has been produced on Henrico County's Geographical Information System using the best data available to the County. This map is to be used for reference purposes only and the County of Henrico makes no warranty as to its completeness or accuracy. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination.
Henrico NEXT
TOGETHER TOWARD TOMORROW


Richmond International Airport
Noise Exposure Contours
Noise Exposure Contours
65 DNL (Day-Night Average Sound Level)
70 DNL (Day-Night Average Sound Level)
75 DNL (Day-Night Average Sound Level)
This map has been produced on Henrico County's Geographical Information System using the best data available to the County. This map is to be used for reference purposes only and the County of Henrico makes no warranty as to its completeness or accuracy. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination.
Henrico NEXT
TOGETHER TOWARD TOMORROW

Light Pollution/Dark Skies

Light pollution refers to any type of excess artificial light that is produced at an inappropriate degree or location[9]. As development increases and outdoor lighting becomes more common, Henrico experiences these impacts as well. The County's lighting ordinance takes steps to minimize these impacts through requirements such as full cutoff light fixtures.

Before the use of artificial light, the natural cycles of day and night set the rhythm and routines of all living things, including humans. Today artificial light plays a central role in how humans work, travel and function but its increased use has resulted in adverse effects. Elongated exposure to artificial light, with its different color, temperature and directional source, can alter the natural cycle of plants and animals. [9] Effects on human health have also been shown over time as artificial sources have the potential to affect our own cycles of sleep and growth. Artificial lighting also increases energy usage, although an increase in more efficient lighting such as LED fixtures can help reduce these impacts. As a result, dark skies that minimize light pollution can be a method to decrease impacts on our environment. Henrico will continue to take active measures to create spaces for dark skies while balancing urban growth and the safety needs for evening lighting.

RESILIENCE AND SUSTAINABILITY

CLIMATE CHANGE

Since the last comprehensive plan was developed, the value of our natural environment and the services it provides has become a focal point of public consciousness worldwide. Henrico County reflects this trend, with the past fifteen years bringing greater awareness of climate change, its causes, and how to mitigate its effects.

Climate change involves long-term shifts in temperature, precipitation, and weather patterns over time. These shifts may occur naturally, due to changes in the sun's activity or large volcanic eruptions or may be caused by human activities. Understanding and addressing climate change is critical to providing a safe and supportive environment for our current and future residents.

Scientists believe that the burning of fossil fuels like coal, oil and gas contributes to climate change by increasing global temperatures. While these fuels produce heat and electricity, their burning also releases pollutants into the air, including carbon dioxide and nitrous oxide. In small concentrations, these gases are not directly toxic to humans; in fact, a natural level is crucial to maintain a suitable temperature for life to exist. Without them, heat emitted by the

[9] *Crown of the Continent Research Learning Center, National Park Service, & U.S. Department of the Interior (n.d.) Crown of the continent Night Skies Resource Brief. Retrieved from https://home.nps.gov/articles/upload/Night-Skies-Resource-Brief-2020-2.pdf*

Earth would "pass outward" into space, leaving the planet too cold to support life. Trapped, these gases lead to a rise in global temperature.

Climate change is already evident in rising global temperatures, melting glaciers, sea-level rise and the expansion of ocean water. Extreme weather, such as heavy rainfall, floods, hurricanes, tornadoes, heatwaves, and wildfires have become more frequent and severe, damaging property and infrastructure, the environment, and causing loss of life.

To help address the effects of climate change, Henrico County has taken several proactive steps. The County has been designing its new buildings to be more efficient, has retrofitted existing buildings to reduce energy needs and continues to install solar electrical generating facilities on its buildings. To date, there are 11 solar rooftops and two ground-mounted facilities on County properties.

HAZARD MITIGATION

Hazard mitigation refers to steps proactively taken to reduce or eliminate long-term risk to property and life. Its goals include minimizing the impacts of disasters, reducing the cost of recovery following a disaster, breaking the cycle of damage, reconstruction, and repeated damage caused by natural disasters, and creating a more resilient and disaster-resistant community.

Identifying risks and vulnerabilities and developing strategies to reduce or eliminate the impact of future disasters are hallmarks of hazard mitigation. Planning techniques such as zoning regulations and land use policies are often at the foundation of such efforts. Floodplain management strategies, including elevating structures and building floodwalls, and acquisition of flood-prone properties are ways to reduce flooding damage. Stream corridor restoration, mentioned previously, reduces flood damage, protects infrastructure, and improves water quality. Locating critical infrastructure beyond the limits of areas susceptible to flooding and erosion will decrease the risk of service disruption. Building management, including the use of cool roofing products and green roofs, can reflect sunlight and heat away from structures and provide shade. These efforts are just a few examples of strategies used to mitigate the effects of climate change.

RESILIENCE

While hazard mitigation focuses on proactive steps to reduce the potential impact of a disaster, resilience describes a community's ability to prepare, withstand, adapt and recover from such an emergency. An intense event, or acute shock, can cause significant damage and disruption within a community. Flooding, earthquakes, heatwaves, and pandemics tend to happen quickly, have a large impact, and require immediate action. They often result in damage to property, infrastructure disruption, and loss of life. The ability to respond and react swiftly to these challenges determines a community's resilience. While the immediate assumption may be that the government is solely responsible for action, it is a shared responsibility. To be a resilient community, individuals, organizations, businesses, and government must collaborate to adapt and mitigate the impacts of these events. Henrico County adopted a Resilience Plan in 2021 which is currently being updated.

SUSTAINABILITY

To ensure the long-term well-being of our community, protection of the County's finite natural resources is key. Clean air and water, soil, plants and animals, minerals and fossil fuels all require management and preservation for future generations. In addition to becoming more resilient, the County strives to be more sustainable. This may require adopting and implementing new policies and strategies to mitigate our continued growth and development. In addition, efforts should be made to ensure that new practices integrate environmental health, social equity and economic vitality.

Reducing pollution and promoting energy conservation are important components of sustainability. The County's existing ecosystem resources, such as rivers, parks, wetlands and woodlands can be enhanced by adding green infrastructure solutions such as rain gardens, green roofs and walls, bioswales, and constructed wetlands. Expanding or augmenting this green infrastructure network provides both ecological and community benefits. The use of renewable energy resources should be encouraged. While Henrico's inland location limits opportunities for ocean-based energy resources there has been limited success in the use of geothermal energy in the County. However, harnessing the sun's energy is a readily available resource and is used by the County to augment electrical power at several municipal buildings. Private citizens and local businesses have embraced the use of solar panels to provide energy to reduce electricity costs. Agrivoltaics also allows for the simultaneous maintenance of greenspace and renewable energy production through compatible uses.

Sustainable land use solutions for rural and transitional areas include implementing alternative land management practices and integrating compact design to conserve land and reduce sprawl. Prioritizing public transit, walking and biking and reducing the reliance on private vehicles will promote a more sustainable transportation network, while promoting energy efficient building practices, ensuring affordable housing options, and fostering a diverse economy will further promote a sustainable community.

HOW HENRICO PROTECTS ITS ENVIRONMENT

Henrico participates in a variety of initiatives to promote environmental stewardship and reduce energy usage and waste production. One key effort is the use of LEED (Leadership in Energy and Environmental Design) standards, a widely recognized framework for designing and constructing healthy, highly efficient, and cost-saving green buildings. LEED focuses on site design, water conservation, energy efficiency and responsible use of materials and resources. Henrico County has 25 LEED certified buildings including five library buildings, 10 firehouses, and three schools.

The County also launched a solar renewable energy program in 2019. Through this initiative, 11 buildings have been equipped with solar electricity production panels as well as two ground-mounted solar projects. These installations reduce reliance on electricity produced by fossil fuels and help lower the amount of greenhouse gas emissions.

Henrico County Public Schools is also advancing sustainability through the development of a living building as part of its Center for Environmental Studies and Sustainability. Once complete, it will be the first public school in the world certified as a "Living Building

Challenge" facility. The facility will treat water on-site using rainwater harvesting and natural filtration and all of its energy will be produced from renewable sources. The County is also partnering with Dominion Energy to help low-income residents add solar panels to their homes for free. Solar Access Henrico is available to County homeowners who have a household income at or less than 100% of the area's median income. Houses must meet certain criteria (amount of sun, condition of roof, tree coverage, etc.) to be eligible. It is anticipated that 250 homes will have solar panels on their rooftops, saving energy and reducing greenhouse gases.

Transportation improvements are also a critical component of Henrico County's environmental efforts. Henrico County intends to install eight electric vehicle charging stations at seven locations, including libraries, parks and recreation facilities and government centers to promote clean energy and reduce dependence on fossil fuels. The proposed locations include the Tuckahoe Area Library, Fairfield Area Library, Henrico County Government Center, Eastern Government Center, Eastern Henrico Recreation Center, Henrico Sports & Events Center and Short Pump Park.

Henrico County is also partnering with Henrico County Public Schools (HCPS) and the nonprofit organization Capital Trees to expand and strengthen tree canopies at the County's parks and schools. Deep Run Park, Cheswick Park, as well as a middle school and a high school in eastern Henrico with currently limited tree cover, are all included in the program. With a combined 5,000 acres of parks and school properties, the reforestation program is expected to grow gradually over time, potentially adding thousands of trees and incorporating new forestry practices that support healthy growth and regeneration of woods and forests.

Henrico County residents living in single-family homes benefit from free curbside recycling collection service through the Central Virginia Waste Management Authority (CVWMA). Through the Department of Public Utilities, our residents recycled over 40,000 tons of waste that would otherwise end up in a landfill. This reduces the production of greenhouse gases, including methane produced by decomposing waste. The County's zoning ordinance also requires new apartment buildings to provide centralized collection of recyclable materials. Organic items such as pumpkins and kitchen scraps may be dropped off at either the Springfield Road or Charles City Road public use areas for composting. Christmas trees are also accepted for recycling at both the Eastern and Western Government Centers and the two public use areas.

The Henrico Environmental Action Resource Team (H.E.A.R.T) works to reduce the environmental impact of the Henrico County General Government and Schools. Made up of representatives from multiple departments, schools, and community partners, H.E.A.R.T focuses on sustainability, natural resource conservation, community beautification, and environmental protection. The team promotes sustainable practices, works to conserve water resources, expands sustainable transportation, protects greenspace, and enhances recreational opportunities.

Henrico County strives to encourage responsible growth and development in the region while balancing environmental protection considerations. One of those considerations is the acquisition of compensatory mitigation credits for authorized impacts to stream and non-tidal wetlands for Henrico County improvement projects, as required by Federal and Virginia state

regulations. With the rapid increase of growth experienced in this region, mitigation credits have been scarce, and the shortage will remain a persistent challenge as land suitable for mitigation projects becomes increasingly hard to secure for such projects.

To address the need for mitigation credits that have not been available in the marketplace, the Henrico County Department of Public Works has been working to develop a Single-User Umbrella Mitigation Banking Instrument (UMBI) to offset wetland and stream impacts incurred in County projects. With this UMBI structure, Henrico County will have exclusive access to credits generated through this instrument and will be positioned to incorporate additional sites that would benefit from stream and/or wetland restoration to expand the County's own capacity to address ever-changing mitigation needs.

Henrico County also adheres to the following Virginia regulations, which allow for effective intergovernmental participation to guarantee our scarce resources are conserved for future generations.

Chesapeake Bay Preservation Act

Also known as the Bay Act, the Chesapeake Bay Preservation Act was enacted by the Virginia General Assembly in 1988 to protect and improve water quality in the Chesapeake Bay. The act requires local governments to implement land use management practices that protect water quality. In Henrico County, the Chesapeake Bay Preservation Program was developed to comply with the Bay Act. The Program designates three types of areas: Resource Protection Areas (RPAs), Resource Management Areas (RMAs), and Stream Protection Areas (SPAs). Most types of development are not allowed in RPAs or SPAs.

Virginia Institute of Marine Science Guidance

The Comprehensive Coastal Resource Management Guidance, prepared in 2013 by the Center for Coastal Resources Management (at the Virginia Institute of Marine Science, College of William and Mary), is intended to guide local governments in the creation of a Comprehensive Coastal Resource Management Plan. This plan is required for comprehensive plan updates in Tidewater localities. The VIMS Guidance identifies living shorelines as the preferred approach for tidal shoreline stabilization. VIMS also maintains a coastal resource management portal for Henrico County with mapping tools, shoreline and tidal marsh inventory reports, GIS data, and general guidance links.

Virginia Natural Area Preserves Act

The Virginia Natural Area Preserves Act, passed in 1989, defines natural heritage resources to include rare, threatened, or endangered plant and animal species, rare or state-significant natural and geologic sites, and similar features. Compared to other Virginia counties, Henrico has a relatively low density of natural heritage resources [10]. Still, Henrico County has 21 species identified as natural heritage resources within its borders.

[10] Virginia Department of Conservation & Recreation (2021) Element Occurrences of Virginia https://www.dcr.virginia.gov/natural-heritage/document/eodensity2021.pdf.

Virginia Department of Healthy Waterworks Regulations

The Virginia Department of Health protects public water supply through its waterworks regulations. These regulations include requirements for treatment, monitoring and reporting, backflow prevention, and more. Henrico County Public Utilities uses the James River as a water source, and it produces annual water quality reports describing the results of water quality samples.

Virginia Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) was created by the Clean Water Act in 1972 to control point source pollution of navigable waters. The Virginia Department of Environmental Quality is EPA-approved to issue NPDES permits under its Virginia Pollutant Discharge Elimination System (VPDES). Discharges requiring a permit include point source discharges, municipal separate storm sewer system discharges (MS4s), and industrial activities stormwater discharges.

Municipal Separate Storm Sewer System Permit

In 2015 and 2024, the Virginia Department of Environmental Quality issued the County new Municipal Separate Storm Sewer System (MS4) Permits which regulate all discharges of stormwater from our built environment. Henrico County is one of the largest jurisdictions in the state and accordingly received an individual permit for all discharges of stormwater from our built environment. The Chesapeake Bay Total Maximum Daily Load (TMDL) portion of the permit required significant reductions of nitrogen, phosphorous, and sediment pollution. This TMDL or "pollution diet" is intended to stop degradation of the Chesapeake Bay and improve water quality in Henrico's rivers and streams.

Since the permit was issued, the County has reached 94% of its MS4 permit's pollution diet. We have now reduced phosphorous, nitrogen, and sediment pollution by 4,900, 17,000, and 1,300,000 pounds per year, respectively. In doing this we have restored almost 18,000 linear feet (3.3 miles) of stream banks along 14 streams in Henrico County. This restoration has halted stream erosion and established healthy flood plains, riparian buffers, and wildlife corridors. Henrico County has 6 projects (5,000 linear feet) under design and planning that will meet the full pollutant reduction requirements by June 2028.

OUR ENVIROMENT POLICIES AND STRATEGIES

Henrico County will pursue the following policies and strategies to ensure that our natural assets are allowed to survive and be renewed so that, come 2045, community members will be able to continue to benefit from the natural beauty and vibrant ecosystem we have today.

Policy ENV 1: Groundwater Quality and Wetland Protection

The County will preserve and enhance its groundwater and wetland resources by adhering to environmental regulations. This includes updating policies based on state and federal legislation, protecting freshwater resources, enforcing stormwater management, and strategically placing waterfront access points to reduce environmental impact. These actions continue from previous plans in accordance with DEQ requirements.

STRATEGY ENV 1-1: COMPLIANCE WITH CHESAPEAKE BAY PRESERVATION ACT

Remain compliant with the Chesapeake Bay Preservation Act by making efforts to preserve the quality of Resource Protection Areas.

STRATEGY ENV 1-2: COMPLIANCE WITH VIRGINIA INSTITUTE OF MARINE SCIENCE GUIDANCE

Follow the Virginia Institute of Marine Science's guidance to preserve the natural environment in the Tidewater region.

STRATEGY ENV 1-3: MONITOR STATE AND FEDERAL REGULATIONS FOR CHESAPEAKE BAY

Monitor State and Federal regulations regarding the Chesapeake Bay and other natural resources and update local policies accordingly. Continue to cooperate with local, State, and Federal agencies to address related environmental issues.

STRATEGY ENV 1-4: PROTECT FRESHWATER RESOURCES

Monitor and enforce protections for the conservation of the County's freshwater resources, including aquifers and freshwater springs.

STRATEGY ENV 1-5: CONTINUE TO IMPLEMENT STORMWATER PROGRAMS

Continue to administer the five-year septic pump-out program; participate in the National Pollution Discharge Elimination System (NPDES); update the County's Stormwater Management Plan; keep local ordinances and development review practices up to date with best conservation practices; and actively seek new, financially feasible programs that improve water quality. [Complies with DEQ requirements regarding septic management and soil limitations]

STRATEGY ENV 1-6: ENFORCE STORMWATER MANAGEMENT BEST PRACTICES

Continue to enforce stormwater management best management practice (BMP) regulations for all land disturbing activities.

STRATEGY ENV 1-7: REQUIRE CONNECTION TO PUBLIC UTILITIES IN CONTAMINATED AREAS

Require connection to public water and sewer in areas of potential groundwater contamination.

STRATEGY ENV 1-8: MAINTAIN EROSION AND SEDIMENT CONTROL

Maintain the erosion and sediment control, zoning, and subdivision ordinances to responsibly manage the development of flood-prone and wetland areas in accordance with the goals and policies of this Plan.

STRATEGY ENV 1-9: ENFORCE REQUIRED MAINTENANCE OF STORMWATER FACILITIES

Continue to enforce required maintenance of stormwater best management practice facilities (BMPs) to ensure their continued function and removal of pollutants.

STRATEGY ENV 1-10: REQUIRE STORMWATER MANAGEMENT AND MAINTENANCE

Require stormwater quality management and maintenance for all new and redevelopment sites.

STRATEGY ENV 1-11: STRATEGICALLY LOCATE NEW WATERFRONT ACCESS POINTS

Locate new waterfront access points in the locations shown to have the least negative impact on water quality.

Policy ENV 2: Environmental Risk, Reduction, and Resilience

As unpredictable weather becomes more common, temperatures diverge from historical norms, and the likelihood of extreme storms and flooding increases, the County will take proactive steps to adapt to atmospheric trends and mitigate climate impacts.

STRATEGY ENV 2-1: PARTICIPATE IN THE REGIONAL CLIMATE ACTION PLAN

Participate in the initiatives of the Regional Climate Action Plan including but not restricted to strategies such as reducing County fleet emissions, decreasing government buildings' energy usage, and encouraging employee participation in environmentally friendly programs like recycling and alternative transit.

STRATEGY ENV 2-2: SUPPORT TRANSIT-ORIENTED DEVELOPMENT

Institute opportunities for Transit-Oriented Development (TOD) to reduce greenhouse gas emissions.

STRATEGY ENV 2-3: ALLOW FOR SITE-CONSCIOUS SOLAR ENERGY SYSTEMS

Revise development regulations to allow for and encourage the construction, installation, and operation of site-conscious solar energy systems (SESs).

STRATEGY ENV 2-4: MANAGE AND CONTROL ENVIRONMENTALLY HAZARDOUS USES

Manage and control environmentally hazardous uses through zoning regulations and permitting and expand the definition of "environmentally hazardous" to account for non-local environmental effects.

STRATEGY ENV 2-5: MAINTAIN PARTICIPATION IN COMMUNITY RATING SYSTEM

Maintain the County's participation in the National Flood Insurance Program (NFIP) Community Rating System (CRS). Continue to ensure floodplain data and mapping is regularly updated and maintained and use this information to assess proposed development.

STRATEGY ENV 2-6: PROMOTE TRIP REDUCTION THROUGH COUNTY OPERATIONS

Continue to promote trip reduction and congestion management methods for County operations, including but not limited to: transit use; carpooling; flex time; free transit passes vs. free parking; and alternative fuel vehicle fleets, to reduce non-point source pollutants to the air, soil, and water.

Policy ENV 3: Natural Heritage Preservation

Henrico County is home to unique plant, vertebrate, and invertebrate species that are rare, threatened, scientifically relevant, or critical to a healthy ecosystem. These endemic, vulnerable creatures make Henrico special and are worthy of protection. The County will take meaningful action to protect their habitats so these species can thrive.

STRATEGY ENV 3-1: DEVELOP/UPDATE NATURAL HERITAGE PROTECTION CRITERIA

Develop/Update Natural Heritage Protection Criteria in concert with Virginia Natural Area Preserves Act, including provisions to guide planting of native species.

STRATEGY ENV 3-2: CREATE CONTINUOUS POLLINATOR CORRIDORS

Protect pollinators by creating continuous pollinator corridors, when possible, by reducing pesticide use and implementing reduced mowing protocols on medians and other rights-of-way, in parks, and on other County property.

STRATEGY ENV 3-3: IMPROVE NATURAL RESOURCE PROTECTION

Continue to use and improve basic guidelines for natural resource protection, including proposing a method of preserving upland habitat in developing areas, stabilizing disturbed areas and slopes, maintaining shade cover over creeks and water bodies, and maintaining floodplains as natural habitat areas.

STRATEGY ENV 3-4: PROMOTE ENVIRONMENTALLY FRIENDLY DEVELOPMENT FEATURES

Continue to promote environmentally friendly development features using the development incentive system and explore adding more features, greater incentives, and potential exactions to ensure development integrates with nature, especially for areas of the County with unique value or where the effects of climate change would be particularly damaging.

STRATEGY ENV 3-5: CONTINUE AND ENHANCE TREE PROTECTION EFFORTS

Continue protecting trees through development regulations, especially culturally or aesthetically significant individual trees, canopy-providing stands in urbanized areas of the County, and carbon-capturing forests of healthy, native, or non-invasive species. Update the current data included in the Tree Inventory and Canopy Assessment and create a Master Tree Plan for the County. Explore instituting design guidelines that prioritize maintaining the existing number of trees, increasing the number of trees, and transplanting trees instead of removing them whenever possible (except in a silvicultural context).

Policy ENV 4: Protecting Beautiful and Important Spaces

As a County that is forecasted to continue to grow, further development pressure will be placed upon parcels of special importance to the County for historical, cultural, or aesthetic reasons. The County will acknowledge the value of these spaces and encourage development or preservation that maintains the historical, cultural, or aesthetic qualities of those sites.

STRATEGY ENV 4-1: REDUCE LIGHT POLLUTION

Maintain and enforce the County's exterior lighting regulations to reduce light pollution to preserve dark skies for the enjoyment of the public and for nocturnal species, especially in areas of the County with lower-density or no development.

STRATEGY ENV 4-2: PRESERVE CIVIL WAR BATTLEFIELD LANDSCAPES

Preserve Civil War battlefield landscapes when possible, and provide physical markers, other educational information, or other design-based recognition of historical events for locations where such preservation is not possible.

STRATEGY ENV 4-3: ACKNOWLEDGE THE LOCATION OF INDIGENOUS LANDS

Identify and acknowledge Indigenous lands and tell the story of these people and places through interpretive signage, educational materials, and community programs.

STRATEGY ENV 4-4: CREATE OPPORTUNITIES TO DEVELOP WILDLIFE CORRIDORS

Identify, encourage and pursue opportunities for Wildlife corridors to be provided through preserved stream corridors and corresponding buffers.

Policy ENV 5: Public-Private Partnerships for Conservation of Lands

Any conservation action requires the participation of the people who own and care about the land. Conservation requires partnerships with private landowners to protect the land that both those landowners and the greater community value. The County aims to develop these partnerships by initiating collaborative programs, exploring funding opportunities, and coordinating with local nonprofits and advocacy groups. The goal is to identify new national, regional, and local partners, as well as local landowners, who are willing to collaborate with the County in its efforts to protect important spaces.

STRATEGY ENV 5-1: PROGRAMS EDUCATE LANDOWNERS ON CONSERVATION EASEMENT

Utilize resources including state and federal agencies to develop an education program to connect landowners with local conservation-focused land trusts to expand outreach efforts for available conservation easement programs.

STRATEGY ENV 5-2: MAKE LANDOWNERS AWARE OF CONSERVATION EASEMENT CRITERIA

Using criteria included in this plan, encourage private landholders to establish conservation easements in appropriate areas throughout the County.

STRATEGY ENV 5-3: COORDINATE CONSERVATION EFFORTS WITH INFRASTRUCTURE PLANS

Discourage or disallow conservation easements along current or future infrastructure corridors or require that conservation easements along those corridors make allowances and accesses for infrastructure development.

STRATEGY ENV 5-4: ENCOURAGE THE REZONING OF FLOODPLAINS

Encourage the rezoning of properties in the 100-year floodplain to the "C-1" Conservation District to protect these environmentally sensitive areas and to minimize stormwater management problems.

STRATEGY ENV 5-5: IDENTIFY OPPORTUNITIES FOR PRESERVATION OF NATURAL RESOURCES

Identify and pursue opportunities for public acquisition, protection, and preservation of natural resources.

STRATEGY ENV 5-6: DEVELOP PROGRAM FOR INNOVATIVE ENVIRONMENTAL PROTECTION STRATEGIES

Develop and implement a program through the Henricopolis Soil & Water Conservation District to encourage private property owners to utilize innovative environmental protection strategies on private property.

Policy ENV 6: Environmental Protections Enforcement

In addition to taking steps to ensure environmental quality on County-owned land and in its own operations, the County will actively enforce governmental regulations that encourage good private stewardship of natural resources.

STRATEGY ENV 6-1: CONTINUE TO ENFORCE VPDES PERMIT PROGRAM

Continue to enforce point source discharge at those points designated by the Virginia Pollution Discharge Elimination System (VPDES) permit program.

STRATEGY ENV 6-2: ADEQUATELY ENFORCE ENVIRONMENTAL REGULATIONS

Adequately enforce environmental regulations (environmental nuisance abatement, effluent standards, zoning compliance for environmentally harmful uses, and other state and local environmental quality regulations) for non-compliant entities who damage the environment.

STRATEGY ENV 6-3: NOTIFY PROSPECTIVE LAND PURCHASERS OF HAZARDOUS SITE CONDITIONS

Require statements on all subdivision plats to alert prospective purchasers of pre-existing conditions (on-site or in proximity) which may be hazardous or affect the use and enjoyment of the property (i.e., noise, mined areas, floodplains, wetlands, and Chesapeake Bay Preservation Areas).

STRATEGY ENV 6-4: ENFORCE STORMWATER BEST MANAGEMENT PRACTICES

Continue to enforce a program to review existing stormwater Best Management Practice (BMP) facilities for such things as retrofit potential, possible illegal connections to storm sewer, oil/water separator and trash racks maintenance.

Policy ENV 7: Resilience and Sustainability Strategies

The County will endeavor to increase adaptive environmental strength in its residents and employees by focusing on promoting resilient and sustainable practices to protect natural resources and enhance community well-being.

STRATEGY ENV 7-1: RAISE PUBLIC AWARENESS ABOUT CLIMATE CHANGE AND PROMOTE MEASURES TO REDUCE GREENHOUSE GAS EMISSIONS

Increase public awareness of climate change and its impacts by supporting and providing educational resources and community programs. Implement measures to reduce greenhouse gas emissions, such as promoting renewable energy sources and energy-efficient practices.

STRATEGY ENV 7-2: CONTRIBUTE TO PLANS TO REDUCE LONG-TERM RISKS FROM NATURAL DISASTERS

Contribute to hazard mitigation planning to reduce long-term risks to property and life. This may include floodplain management, forest and vegetation management, and stream corridor restoration to minimize the impacts of natural disasters.

STRATEGY ENV 7-3: PROMOTE SUSTAINABLE PRACTICES TO PROTECT NATURAL RESOURCES AND LONG-TERM COMMUNITY WELL-BEING

Promote sustainable practices to protect natural resources and cultivate long-term community well-being. This includes efforts to reduce pollution, conserve energy, and enhance ecosystem services.

STRATEGY ENV 7-4: ENGAGE IN ACTIVITIES THAT PROMOTE ENVIRONMENTAL STEWARDSHIP

Engage in activities that promote environmental stewardship, such as LEED certification for buildings, solar renewable energy programs, and tree canopy expansion projects.