Please note: This draft Master Plan is available for public comment until September 26, 2021.

Please visit
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to share your feedback.

ANNE ARUNDEL COUNTY

Green Infrastructure Master Plan

DRAFT

August 12, 2021

Prepared by the Office of Planning and Zoning, Long Range Planning section

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Anne Arundel County Agricultural Preservation Advisory Board
Anne Arundel County Association of Realtors
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Anne Arundel County Citizens Environmental Commission
Anne Arundel County Partnership for Children, Youth, and Families
Anne Arundel County Recreation Advisory Board
Anne Arundel County Transportation Commission
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Special thanks to all of the residents and stakeholders who participated in meetings, completed surveys, and provided the County with input to create this plan.

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EXECUTIVE SUMMARY

The Green Infrastructure Master Plan (Plan) is a guide to conserving an interconnected network of the most significant remaining natural lands in Anne Arundel County. The lands identified in the Green Infrastructure Network (Network) help protect water quality and air quality, provide habitat for plants and wildlife, create opportunities for recreation, and support mitigation of, and adaptation to, climate change.

Conservation of the Green Infrastructure Network supports the land use policies of the County's General Development Plan (GDP) by prioritizing areas for natural resource conservation, providing open space, and maintaining rural character. The Network includes publicly owned parks, trails, and historical sites. The majority of the Network is privately owned land. This includes land conserved through agricultural and conservation easements, as well as through the development review process as open space and floodplains and forest conservation easements. This also includes privately owned, undeveloped land that has the potential to be conserved.

The Green Infrastructure Network consists of "hubs" of natural lands that are at least 250 acres in size. The hubs are connected to each other by "corridors," or linear features that are generally 200 feet wide, or narrower in more developed parts of the County. At the regional scale, "green infrastructure" refers to the entire Network of connected lands. At the local scale, "green infrastructure" can refer to small parks, street trees, stormwater features, and community gardens. These smaller green spaces are just as important for neighborhood health, and the Green Infrastructure Master Plan aims to improve both our regional Network, and our neighborhood-scale green spaces.

BENEFITS OF GREEN INFRASTRUCTURE

The Green Infrastructure Network provides a broad range of benefits including:

Economic

- Supports wildlife viewing, hunting, and fishing—a $1.3 billion industry in Maryland.[1]
- Increases tourism and expenditures on dining, lodging, and other services.

1 U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation-Maryland.

- Increases nearby property values by 10-20%.[2] [3]
- Protects farmland for agricultural jobs, agritourism, and local food production.
- Supports clean streams and rivers which in turn support the maritime industry.
- Reduces costs and impacts of flooding.

Environmental
- Protects the quality of streams and groundwater.
- Retains and filters stormwater runoff.
- Provides for plant and animal habitat and migration corridors.
- Helps mitigate impacts of climate change such as flooding and heat islands, and captures and stores atmospheric carbon.

Social
- Creates an enjoyable sense of place by protecting natural features and scenic vistas.
- Provides space to walk, jog, hike, bike, ride horses, paddle, picnic, fish, hunt, and birdwatch, among other outdoor activities.
- Opportunity for outdoor exercise creates potential medical cost savings of approximately $1,100 per person per year.[4]
- Supports protection of cultural and historic resources.

GREENWAYS TO GREEN INFRASTRUCTURE

The Green Infrastructure Master Plan is an update to the Greenways Master Plan, adopted by the County Council in 2002. The 2002 Greenways Plan established the County's Greenways Network and a series of goals and action items. It integrated the planning efforts of State, County, and private stakeholders to conserve a connected network of natural lands as envisioned in Maryland's Green Infrastructure Assessment, the County's GDP, Small Area Plans, and the Land Preservation, Parks, and Recreation Plan (LPPRP). Since the adoption of the 2002 Greenways Master Plan, the County, land trusts, and private landowners have conserved approximately 9,300 acres of land through acquisition and agricultural and conservation easements.

The Green Infrastructure Master Plan builds on this previous work . The Green Infrastructure Master Plan uses higher quality data and more sophisticated technology than was available in 2002 to more accurately identify the Network. The Green Infrastructure Plan recognizes and addresses inequity in environmental conditions and access to green spaces in different parts of the County. This Plan uses the term "green infrastructure" rather than "greenway," to take a more expansive approach to conserving and restoring green spaces throughout the County.

The Office of Planning and Zoning (OPZ) and Department of Recreation and Parks (DRP) used the 2002 Greenways Network as a starting reference for this plan. The OPZ and DRP project team removed developed areas and areas outside of the County boundary that had previously been included in the Network due to technology limitations and mapping inaccuracies. The team then identified the remaining natural areas adjacent to the 2002 Greenways Network and categorized them as either "conserved" lands or lands with a "conservation potential." The Network also now includes more agricultural lands, trail networks, and passive/active recreational facilities. The resulting analysis yielded the new Green Infrastructure Network (see Maps 1 and 2). The Network includes approximately 113,000 acres. Approximately 65% of the Network is already conserved through public ownership, conservation easements, or Open Space zoning.

IMPLEMENTATION

Strategies and actions highlighted by the Green Infrastructure Master Plan serve as the basis for the management approach of the Green Infrastructure Network. This Plan establishes a goal of conserving an additional 5,000 acres of land in the Network by 2030 (using 2020 as a baseline) representing 30% of the County land area. In comparison, approximately 5,075 acres of land in the Green Infrastructure Network were conserved through public acquisition and voluntary conservation easements from 2010-2020. As the County develops and land prices increase, it will become more challenging over time to protect natural lands at that scale.

2 The Trust for Public Land. 2007. The Economic Benefits of Land Conservation.
3 Delaware Valley Regional Planning Commission. Return on the Environment: the economic value of protected open space in Southeastern Pennsylvania. 2011.
4 Land Trust Alliance and U.S. Fish and Wildlife Service. Investing in Nature.

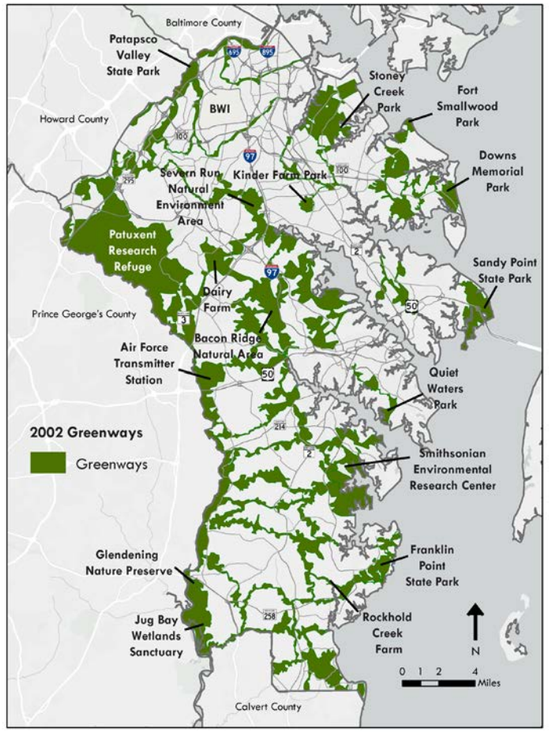
The Plan includes five broad strategies for establishing and managing the Network:

- **Organization and Outreach.** Aligning County resources and engaging with private landowners and partner organizations to promote land conservation.
- **Planning and Stewardship.** Creating and implementing plans to manage the County's conserved areas.
- **Land Conservation.** Engaging with private landowners to establish conservation easements or acquire land.
- **Financing.** Dedicating County funds for land conservation, leveraging State and Federal grants, and exploring innovative financial tools.
- **Beyond the Network.** Supporting efforts by the County, private sector, and nonprofit organizations to conserve and enhance environmental quality in areas outside the Network.

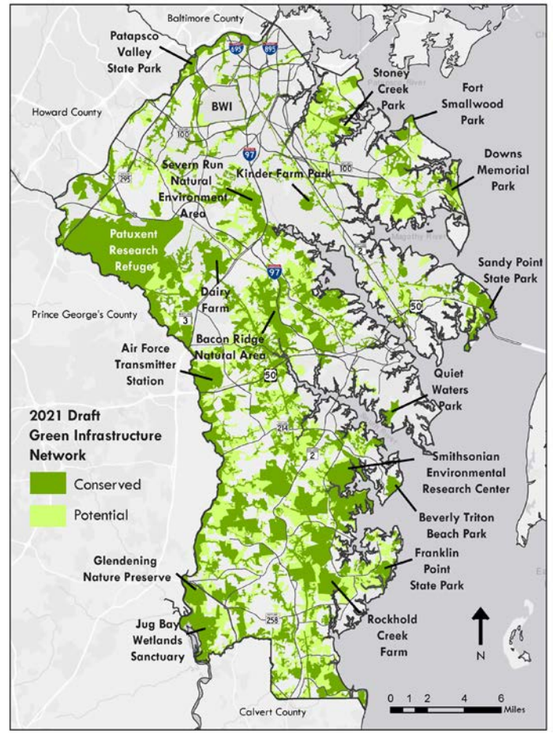
Key actions designed to support the strategies include:

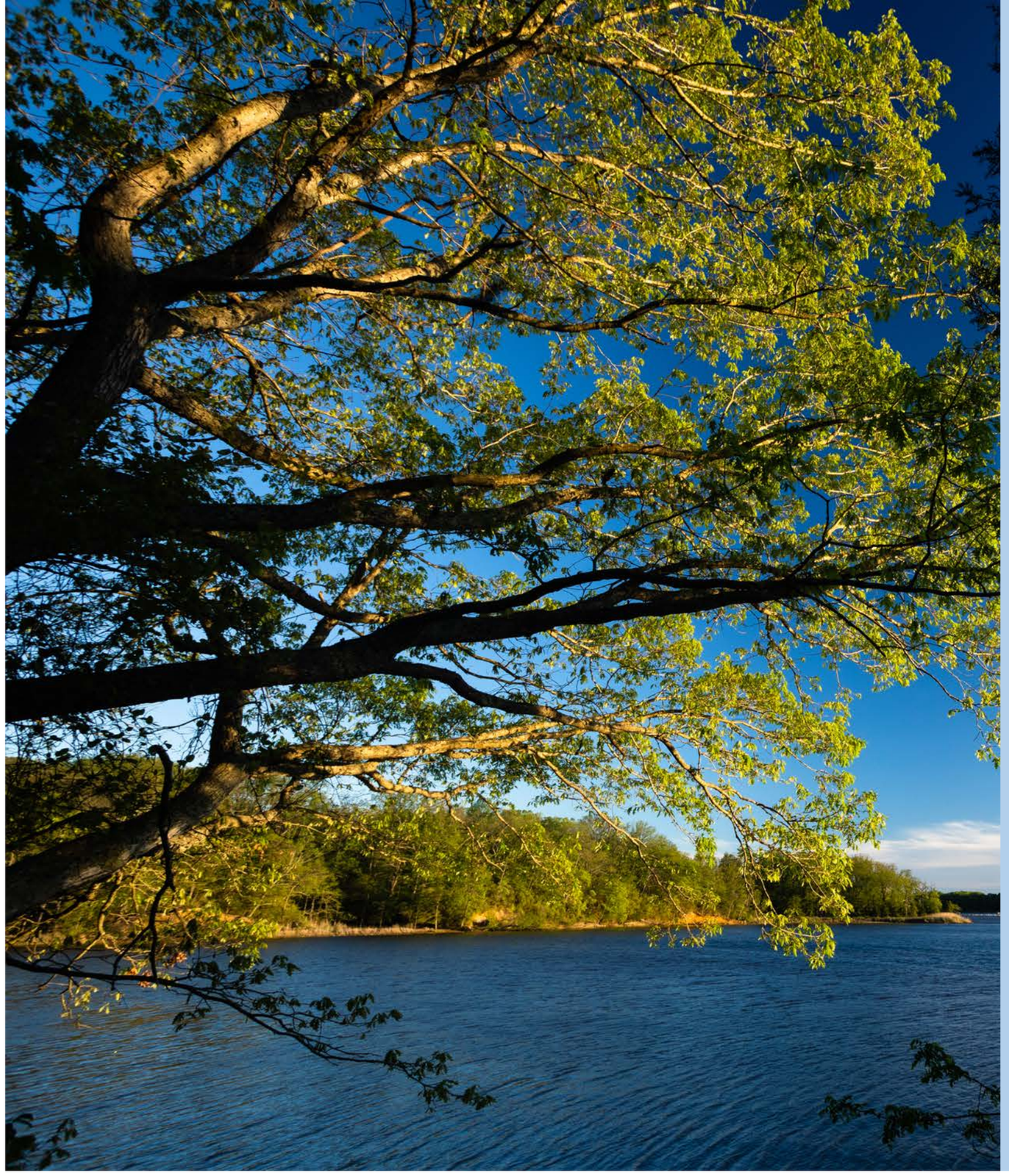
- Establishing an interagency Green Infrastructure Network Program.
- Creating a strong public education and engagement program.
- Developing and implementing management plans as needed.
- Integrating the Green Infrastructure Master Plan into County planning, capital programming, and development review processes.
- Creating dedicated Green Infrastructure funding and incentive mechanisms.
- Increasing tree canopy and green spaces in more developed parts of the County that are not included in the Network.

MAP 1. 2002 GREENWAYS



MAP 2. 2021 GREEN INFRASTRUCTURE NETWORK





INTRODUCTION

In surveys and community meetings, residents of Anne Arundel County consistently state that they value and want to conserve natural resources, open space, and clean water. They want livable neighborhoods with trees, and access to open space and parks.

Identifying and conserving a green infrastructure network is a key strategy to meeting these community aspirations. Establishing a connected network of conserved lands gives nature the room it needs to function. It also defines the borders of our built environment, giving form and rational pattern to development, and providing access to outdoor recreational amenities. Communities across the country from Atlanta's BeltLine, to the Chicago Wilderness Alliance, to Denver's Platte River Greenway, to Seattle's Mountains to Sound Greenway have successfully invested in land conservation efforts to conserve nature, provide recreation, and create a sense of place.

Integrating green infrastructure into neighborhoods at a local scale also improves quality of life and promotes revitalization. For example, Washington, DC and Baltimore both have made significant public and private sector investments in planting street trees and turning vacant lots into pocket parks with community gardens and rain gardens to enhance neighborhoods, improve public health, and promote reinvestment.

Setting the Foundation: **What is green infrastructure, and what does the Green Infrastructure Network include?**

"Green infrastructure" is a broad term whose meaning can change at different scales and among different audiences. At the regional scale, "green infrastructure" has been defined as a multifunctional network of natural areas and open spaces. At the local and site-specific scales, it often refers to a stormwater management approach that mimics natural hydrologic processes, such as those provided by rain gardens and green roofs. In urban contexts, green infrastructure has been defined to include small natural features such as street trees, pocket parks, and community gardens.

The Anne Arundel County Green Infrastructure Master Plan includes these definitions, but focuses on identifying a connected network of natural, recreational, historic, and cultural areas. The resulting Green Infrastructure Network incorporates the County's most significant natural areas, including streams and their adjacent wetlands, floodplains, and steep slopes. The Network includes Federal, State, and County parks; public and private lands acquired for conservation, including easements related to forest conservation, agriculture, floodplains, wetlands, and open space; trails; historic and cultural resources; and land zoned Open Space.

The County's Office of Planning and Zoning has mapped the Green Infrastructure Network using the features listed in the above paragraph to identify hubs and corridors, as well as additional areas that are significant for making ecological connections. A "hub" is a natural area of at least 250 acres with a higher ratio of interior versus edge habitat. A "corridor" is at least 200 feet wide and serves as a link between hubs. The Network will also include areas of contiguous forest at least 75 acres large that are adjacent to the Network.

The Green Infrastructure Master Plan also recognizes the importance of smaller open spaces and natural areas, especially in more urbanized areas of the County. The Plan includes recommendations for the County to increase tree canopy and access to open spaces in those areas.

REGIONAL SCALE

At the countywide or regional scale, green infrastructure is the multi-functional network of large natural areas and open spaces.

LOCAL SCALE

At a smaller scale, green infrastructure may refer to stormwater management tools such as bioswales and rain gardens. In more urban contexts, green infrastructure includes small natural features such as street trees, pocket parks, and community gardens.

Setting the Foundation: **What does the Green Infrastructure Network exclude?**

The Green Infrastructure Network catalogs the County's existing natural resources when they are big enough and connected enough to be included. This research-based approach—focused on protecting hubs and the corridors between them—is grounded in conservation biology and landscape ecology best practices to protect wildlife. The approach also aligns with scientific principles to protect streams. Even when natural lands are conserved through zoning or easements, they may not be included in the Network if they do not meet the size threshhold or location criteria.

Neighborhood parks, small woodlots, and other local open spaces are important for maintaining environmental health and quality of life, even if they are not in the Green Infrastructure Network. Those spaces are addressed through other policies and programs, including subdivision requirements for open space and recreation areas, forest conservation regulations, and the Land Preservation, Parks, and Recreation Plan developed by the Anne Arundel County Department of Recreation and Parks.

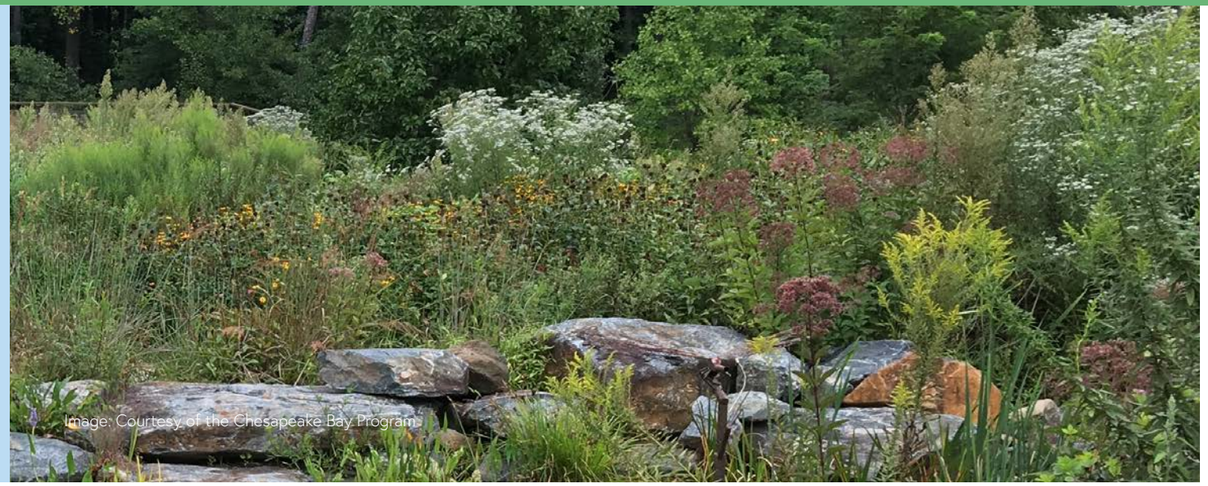


Image: Courtesy of the Chesapeake Bay Program

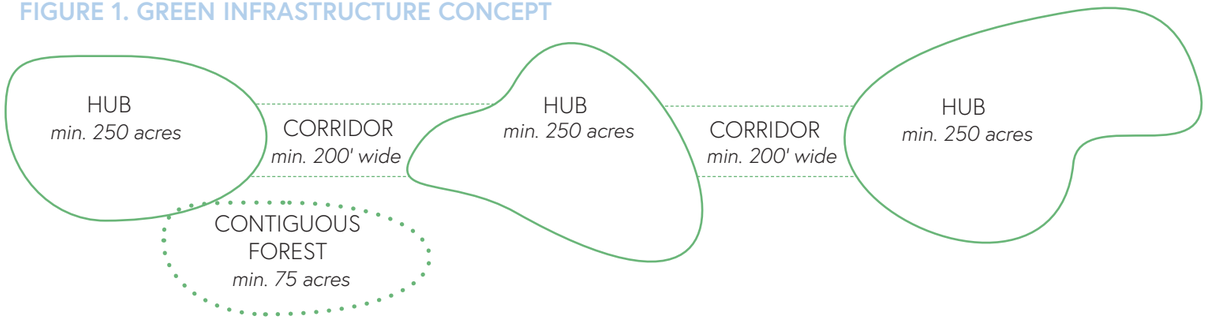
PLAN PURPOSE AND CONTEXT

The purpose of the Anne Arundel County Green Infrastructure Master Plan (Plan) is to provide an identification, decision-making, implementation, and management tool that will help conserve and enhance natural land and rural areas of the County. The Plan helps implement goals and policies of Plan2040, the County's most recent update of the GDP that was adopted in May 2021.

The overall vision is to create an interconnected system of green infrastructure (see Figure 1) that conserves plant and wildlife habitat, increases quality of life for residents, provides greater recreation and transportation options, improves water quality, enhances aesthetic quality, and reduces pollution for present and future generations. The Plan's objectives are to:

- Conserve habitat for plants and wildlife
- Protect and improve water quality and air quality
- Conserve agricultural lands and working forests
- Provide outdoor recreation opportunities
- Protect cultural and historic resources
- Increase resilience to climate change
- Support smart growth and community revitalization

FIGURE 1. GREEN INFRASTRUCTURE CONCEPT



The Plan affirms the concept of the 2002 Greenways Master Plan. It identifies and provides recommendations to conserve and connect—through voluntary measures—the largest remaining natural spaces in the County. The Plan supports efforts to conserve and restore nature at the local scale, which is accomplished by complementary plans and programs including:

- **Land Preservation, Parks and Recreation Plan (LPPRP):** Includes a needs and equity analysis and recommendations to provide accessible parks and recreation opportunities to all communities across the County.
- **Chesapeake Bay Restoration:** Includes stream and wetlands restoration projects and stormwater management retrofits to implement the County's Chesapeake Bay Watershed Implementation Plan and reduce impervious surfaces and stormwater runoff as required in the County's Municipal Separate Storm Sewer System (MS4) permit.
- **Replant Anne Arundel:** Engages community volunteers to increase tree canopy in the more developed neighborhoods across the County.
- **Environmental Regulations:** Protect forests, streams, wetlands, steep slopes and floodplains across the entire County through the development review process.
- **Agricultural and Woodland Preservation Program:** Partners with private landowners to place easements and purchase development rights to maintain farms and working forests.
- **Greenways, Parkland and Open Space projects in the County's Capital Budget and Program:** This project is primarily funded through State of Maryland Program Open Space grants, and

KEY TERM: **CONSERVATION**

Protection of natural resources of the land while allowing compatible uses such as timber harvest, trails, and agriculture. Those allowed uses are typically defined in a conservation easement or management plan for the land.

KEY TERM: **CONSERVATION EASEMENT**

Land protection agreement wherein a landowner waives their rights to develop and subdivide the land now and in the future, but still maintains ownership of the land, including the ability to use it, sell it, and pass it on to their heirs.

establishes a fund for Countywide Greenway, Parkland, and Open Space land acquisitions and related expenses.

- **Forest Conservation Fund:** Funded by payment in lieu of afforestation or reforestation requirements of the Forest Conservation Ordinance. The County applies these funds directly or through grants for reforestation or afforestation of land, or permanent conservation of lands that are already forested.

Importance of Conserving Large, Connected Natural Areas

Anne Arundel County is home to ospreys, blue crabs, terrapins, and hundreds of other species of plants and wildlife. These species all depend on intact habitat to survive. As forests, fields, and wetlands have been developed or fragmented into smaller areas, many native species have declined. Today, 177 species of plants and wildlife in Anne Arundel County are designated as rare, threatened, or endangered.

Numerous studies have demonstrated the adverse ecological effects of natural resource fragmentation in the landscape. As forest areas are divided and isolated by roads and development, the physical conditions and composition of plants and wildlife change. For example, the edges of fragmented forests are much drier, warmer, and brighter than the interior. Non-native, invasive species tend to colonize forest edges when there is increased human disturbance, and populations of species that depend on interior habitat decline. Fragmentation also has negative effects on the quality of life through the loss of landscape character and scenic beauty, the loss of open spaces for people to enjoy, loss of recreational opportunities, and impaired air and water quality. The most effective way to prevent these negative effects in a developed landscape such as Anne Arundel County is to create an interconnected network of natural areas.

HOW TO USE THIS PLAN

The Plan will inform conservation and restoration decisions through collaboration among County departments and with other partners, including non-profit land trusts, State and Federal agencies, and private landowners. The Implementation section of the Plan includes a set of strategies and actions to meet the County's goals for conserving green infrastructure. The Plan is not a regulatory document. However, many natural features that are protected by the County Code, such as streams, wetlands, steep slopes, floodplains and large, intact forests are naturally found within the Network. During the development review process, applicants and County staff identify natural features that must be protected. These regulatory protections are discussed in the Background and Plan History chapter.

PLAN PREPARATION

The Office of Planning and Zoning (OPZ) developed this Plan in partnership with the Department of Recreation and Parks (DRP), the Department of Public Works Bureau of Watershed Protection and Restoration (BWPR), and the Department of Inspections and Permits Code Compliance Forestry Division.

The planning process engaged key stakeholders and the general public. The departments conducted work on the Plan between 2017 and 2018, but paused to focus on updating the GDP. The project team relaunched work on the Green Infrastructure Plan and completed the process in 2021. The planning process involved the following major steps.

Research and Analysis

The project team used the 2002 Greenways Network as a baseline to make edits with the new and expanded list of criteria. The Network was updated to reflect areas that have been disturbed or developed and areas that have been conserved through acquisition or easements. The Network has been expanded based on the preceding definition and criteria for inclusion. Methods for identification of the Network are described in the Green Infrastructure Network Chapter.

The Green Infrastructure Network is also now organized by the County's watersheds to provide better planning, implementation, and consistency with how other County departments analyze data and environmental resources (Appendix E provides a conversion table between 2002 Greenways segment names and the 2021 Green Infrastructure Network classified by watershed). For example, the BWPR uses watersheds as the geographic basis for studies, planning, design and implementation of stream restoration and stormwater retrofit projects. Organizing the Green Infrastructure Network by watersheds is consistent with that approach.

Public Engagement

Public engagement and review of the Green Infrastructure Plan has spanned two periods of recent activity: 2017-2018 and 2021. In 2017, the OPZ held three public forums and developed an online comment form for residents to communicate their ideas and concerns about the Plan. These comments helped refine the County's approach to defining the Green Infrastructure Network.

Public engagement efforts in 2021 built on the foundation of the public involvement in 2017 and 2018 (see Appendix A). Public engagement activities in 2021 included: an online survey, a series of meetings with the Citizens Environmental Commission (CEC), a virtual public forum, and a series of virtual town halls in each County Council District. OPZ and DRP held two workshops with local, State, and Federal land conservation practitioners. The workshops focused on identifying the biggest challenges and best practices for defining, implementing, and managing the Network. The County also held meetings with representatives of the real estate industry, including representatives from the Maryland Building Industry Association, NAIOP-Maryland, and the Anne Arundel County Association of Realtors to discuss the Green Infrastructure Master Plan. County staff gave presentations at public meetings of multiple boards and commissions including the Recreation Advisory Board, Forestry Board, Agriculture Preservation Board, Transportation Commission, and Bicycle Advisory Commission.

The responses to the online survey and public questions and comments in the virtual public forum informed and shaped this Plan. Approximately 200 people completed the online survey that sought to gauge public awareness of and support for green infrastructure conservation. Questions related to acquisition of natural lands were also included in a separate survey conducted as part of the LPPRP that was completed by over 2,500 people. OPZ and DRP also hosted a virtual town hall meeting to solicit additional input and feedback from residents. Public comments received through surveys and meetings were consistent with feedback received through the extensive public engagement conducted as part of the GDP update in 2018-2021. Key themes included:

- 93% of respondents support or strongly support using public funds to protect natural areas and open space
- 80% of respondents state that it is important to protect both large natural areas and small open spaces throughout the County
- Need for integration of land protection and development planning, with a focus on promoting redevelopment of existing developed areas over clearing of forests and fields

Plan Drafting

The County departments documented the research and analysis and incorporated the public comments into the Plan document. OPZ and DRP worked with the Citizen's Environmental Commission and key stakeholders including Federal and State agencies, private land trusts, and representatives of the real estate industry to develop recommended strategies and actions to establish and manage the Network.

Review and Adoption Process

A preliminary draft of the Plan will be made available for public review. After addressing public comments, the Plan will be revised and reviewed by the Planning Advisory Board who will hold a public hearing.
Based on the Planning Advisory Board's input, a final recommended draft of the Plan will be created and introduced to the County Council for review, public testimony and adoption.

TABLE 1. GREEN INFRASTRUCTURE MASTER PLAN PROCESS

2017	2021				2022+
Phase I: Initial Planning	**Phase II: Re-Engagement**	**Phase III: Analysis**	**Phase IV: Refinement**	**Phase V: Review and Adoption**	**Implementation**
• Technical research • Public meetings • Public survey	• Technical research • Public engagement plan • Citizens Environmental Commission (CEC) meeting	• Spatial analysis • Public survey • Presentations to County Boards and Commissions • Workshops with conservation practitioners • CEC meeting • Public forum	• Public comment on draft map • Public comment on draft Plan • Stakeholder group meetings • CEC meeting	• Planning Advisory Board • County Council	• Supporting studies • Acquisition investments • Other private and capital investments • Progress tracking/ reporting

BENEFITS OF GREEN INFRASTRUCTURE

The Green Infrastructure Network emphasizes the connectedness of open space, recreational opportunities, and ecological habitats. While not all areas may be accessible to the public, each aspect of the network serves a purpose. The many benefits of green infrastructure include:

Economic
- Supports wildlife viewing, hunting, and fishing—a $1.3 billion dollar industry in Maryland.[1]
- Increases tourism and expenditures on dining, lodging, and other services.
- Increases nearby property values by 10-20%.[2]
- Protects farmland for agricultural jobs, agritourism, and local food production.
- Supports clean streams and rivers which in turn support the maritime industry.
- Reduces costs and impacts of flooding.

Environmental
- Protects the quality of streams and groundwater.
- Retains and filters stormwater runoff.
- Provides for plant and animal habitat and migration corridors.
- Helps mitigate impacts of climate change such as flooding and heat islands and captures and stores atmospheric carbon.

Social
- Creates an enjoyable sense of place by protecting natural features and scenic vistas.
- Provides space to walk, jog, hike, bike, ride horses, paddle, picnic, fish, hunt, and birdwatch, among other outdoor activities.
- Opportunity for outdoor exercise creates potential medical cost savings of approximately $1,100 per person per year.[3]
- Supports protection of cultural and historic resources.

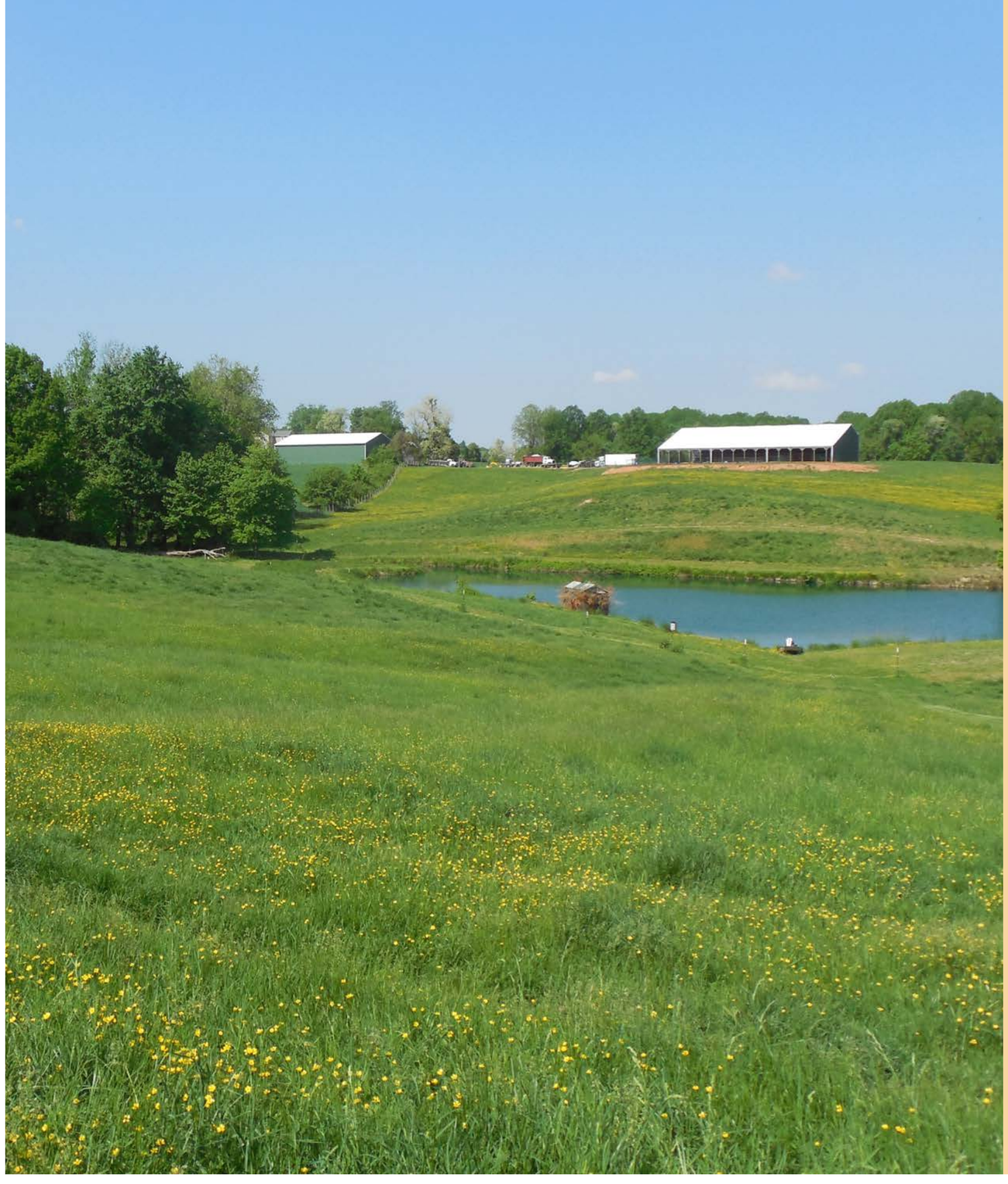
Ecosystem Service Values

Additionally, residents of Anne Arundel County benefit from what economists refer to as "ecosystem services," or the goods and services provdied by nature. These may include clean air and water, flood protection, and fertile soil for agricultural production. Ecosystem service valuation provides a way to estimate a dollar amount for the benefits provided by natural areas that are not captured in traditional markets.

Maryland's Department of Natural Resrouces estimated the economic value of ecosystem services and mapped the values across the state.[4] Seven different ecosystem services (including carbon sequestration, nitrogen removal, stormwater mitigation and flood prevention, wildlife habitat and biodiversity, air pollutant removal, groundwater recharge, and surface water protection) were quantified and mapped. The study estimated the combined economic value of those ecosystem services in Anne Arundel County to be over $300,000,000 per year.

1 U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation-Maryland.
2 The Trust for Public Land. 2007. "The Economic Benefits of Land Conservation," and Delaware Valley Regional Planning Commission. Return on the Environment: the economic value of protected open space in Southeastern Pennsylvania. 2011.
3 Land Trust Alliance and US Fish and Wildlife Service. Investing in Nature. https://www.landtrustalliance.org/topics/economic-benefits. Accessed April 29, 2021.
4 Maryland Accounting for Maryland's Ecosystem Services: Integrating the value of nature into decision making. 2017.

Image: Courtesy of the Chesapeake Bay Pro



BACKGROUND & PLAN HISTORY

This chapter provides context for the Plan, including previous County planning documents and how the Green Infrastructure Plan relates to the County's natural resource regulations and other environmental programs.

RELATED PLANS

Previous State and County plans related to land conservation and development informed the Green Infrastructure Master Plan. They include the following:

State Plans

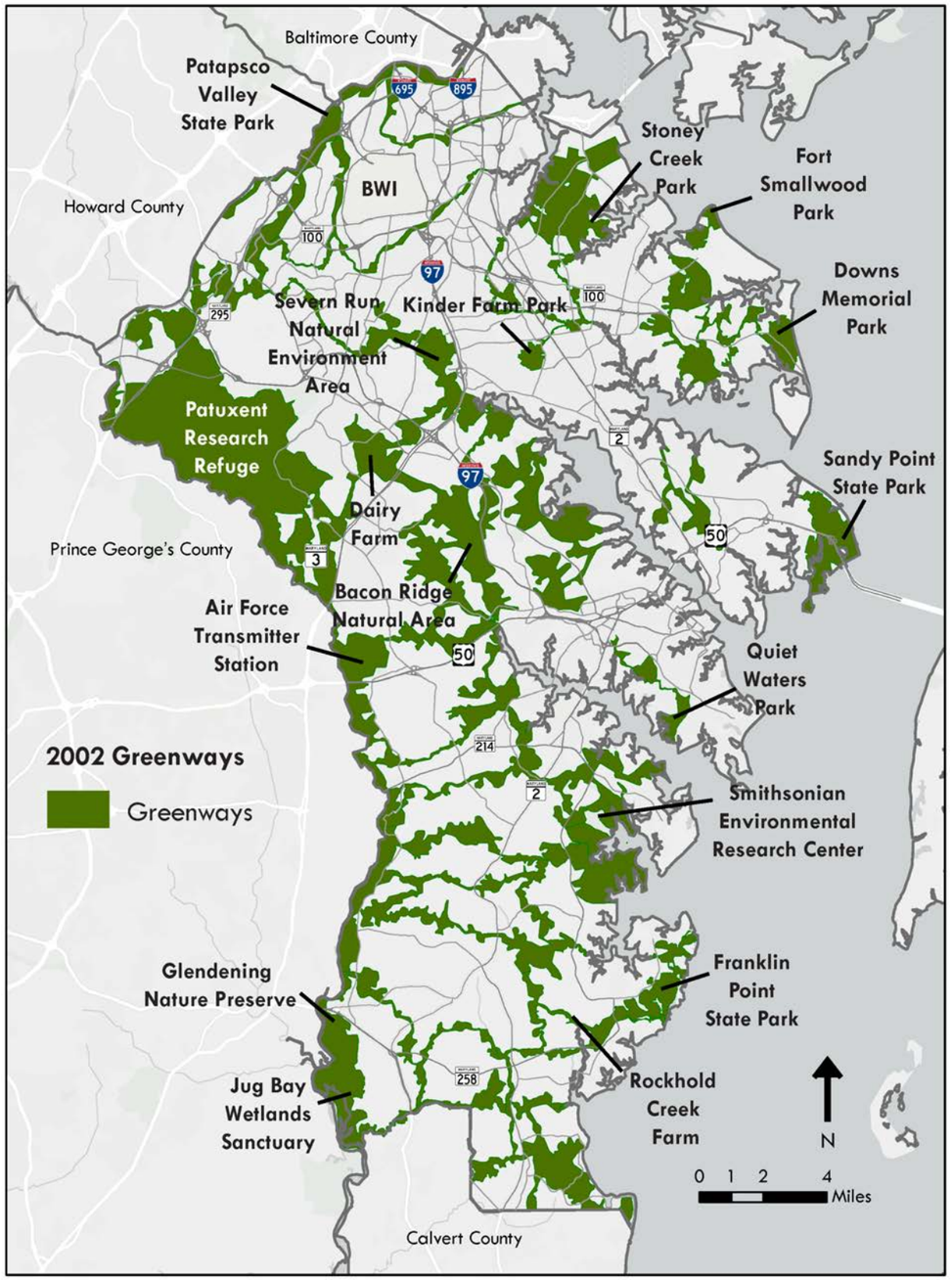
Maryland Green Infrastructure Assessment: This assessment identified the most ecologically important lands in the State and mapped a network of hubs linked together by linear corridors. The State network comprises more than 1.7 million acres in hubs and roughly 250,000 acres of corridors, totaling about 39% of the State's land area. The State network is now incorporated in the State's Program Open Space Targeting System and the Rural Legacy Grant Review System in an effort to best use the State's limited land protection funds.

County Plans

2002 Greenways Master Plan: The 2002 Greenways Master Plan was the first of its kind in Anne Arundel County. The primary reason the County undertook the initiative was due to the amount of open space lost or threatened by development. Like the State's green infrastructure initiative, the Greenways Master Plan identified a hub and corridor network. The 2002 Greenways Master Plan used a minimum 250-acre threshold for hubs and minimum 200-foot width for corridors to define the Greenways Network.

Figure 2 illustrates the 2002 Greenways Network. Approximately 27% of the County's land area was within the 2002 Greenways Network. More than 50% of the Greenways Network was identified as protected land. Appendix B describes the status of recommendations from the 2002 Greenways Master Plan.

FIGURE 2. 2002 GREENWAYS



2010 Greenways Implementation Report: The Implementation Report documented the status of recommendations in the 2002 Greenways Master Plan and updated analysis on the protected and unprotected status of land in the Greenway Network. The Implementation Report also included a set of additional recommended actions. The status of these recommendations is described in Appendix B.

General Development Plan: The GDP is the County's official policy document guiding decisions relating to future growth, development, resource management, and provision of services. Plan2040 includes the following goals and policies relevant to green infrastructure:

Goal NE1: Preserve, enhance, and restore sensitive areas, including habitats of rare, threatened, and endangered species, streams, floodplains, tidal and non-tidal wetlands, bogs, shorelines, steep slopes, and all applicable buffers.

Goal NE2: Retain existing forest cover, increase forest replanting efforts, and increase urban tree canopy.

Goal NE3: Expand, enhance and continue to protect the County's greenways, open space, rural areas, including the Priority Preservation Area (PPA).

- Policy NE3.1: Increase the amount of protected land in the County.
- Policy NE3.2: Continue expanding the network of protected corridors of woodlands and open space as set forth in the Greenways Master Plan.

Goal BE16: Increase the County's resilience to future changes in climate and reduce emissions of greenhouse gases.

Goal HC8: Provide a diverse range of accessible public recreational facilities to serve the needs of all County residents.

The 2009 GDP also included a set of recommendations related to green infrastructure. Appendix C describes the status of these recommendations.

Small Area Plans: The County prepared 16 Small Area Plans (SAPs) covering the entire County between 1998 and 2004. Development of these plans was a major recommendation of the 1997 GDP.

Since the 1997 GDP did not give detailed guidance for how the SAPs should address greenways, the SAPs responded in different ways. Some made greenways an important component of their plans while others made limited references to greenways. Many of the SAPs made recommendations for greenways as recreational trails. Some, such as the Deale/Shadyside and the South County SAPs, identified large areas for protection as open space greenways.

The 2002 Greenways Master Plan incorporated most of the recommendations of the Small Area Plans; however, four of the Small Area Plans were adopted after the Greenways Master Plan was adopted. Appendix D provides the current status of all of the 16 SAP recommendations related to greenways.

The Small Area Plans are replaced with Region Plans. Development of Region Plans is expected to occur between 2021 and 2026. The Region Plans will provide additional guidance at the community level for future updates of the Green Infrastructure Master Plan.

Land Preservation, Parks, and Recreation Plan: The LPPRP details Anne Arundel County land preservation and recreation policies, regulations, and programs. The LPPRP is updated on a five-year cycle, with the most recent plan adopted in 2017 and the next update scheduled to be adopted in 2022.

The LPPRP identifies recommendations for the development and completion of a Countywide open space network through land preservation, land acquisition and trail completion. The LPPRP incorporates the Green Infrastructure Network, which complements the recreation facilities. The LPPRP considers how recreational infrastructure, watershed protection areas, and land preservation can work together to create an open space network that benefits County residents.

Move Anne Arundel! Transportation Functional Master Plan: This plan incorporates the recommendations of Anne Arundel County's Pedestrian and Bicycle Master Plan. Recommendations include projects to expand the Washington Baltimore & Annapolis (WB&A) Trail, South Shore Trail, and the Broadneck Peninsula Trail. The Green Infrastructure Network incorporates these regional trails.

LAND CONSERVATION TOOLKIT

The County employs a number of tools to conserve natural lands. Many of these tools are also used by partners in the private sectors, including land trusts, mitigation bank owners, and private landowners and by State and Federal government agencies (Table 2). As the local land use authority, the County also has the authority to regulate the development of land and protection of natural resources (Table 3). The following chart provides a brief overview of the tools currently used by the County to protect natural lands.

TABLE 2. LAND CONSERVATION TOOLS

LAND USE	ZONING	SEWER SERVICE AREAS
Planned Land Use Map in the GDP establishes types of land use including categories for Conservation and Park and Open Space. Sets policy framework for regulations.	Regulates type, density and intensity of uses allowed on properties. Includes an Open Space zoning district that primarily applies to public and private parks, as well as recreation facilities and natural areas such as floodplains. In addition, density of development is limited through the RA and RLD zoning districts.	Limits the extent of the County served by public sewer.
LAND ACQUISITION	**FLOODPLAIN DEDICATIONS**	**OPEN SPACE DEDICATIONS**
County acquires property for parks, open space, water access, and other public benefits.	County regulations require land in the 100-year floodplain be preserved through easement or dedication to the County through the subdivision process.	County regulations require residential subdivisions to set aside a portion of land as open space.
CONSERVATION EASEMENT		
Voluntary legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. Landowners retain many of their rights, including the right to own and use the land, sell it and pass it on to their heirs. Anne Arundel County uses several types of conservation easements including those described below.		
FOREST CONSERVATION EASEMENTS	**AGRICULTURAL AND WOODLAND EASEMENTS**	
Applied under provisions of County forest conservation ordinance during subdivision or development review process to protect forest retained through development.	Voluntary program funded by the State and County to protect agricultural lands and working forests by removing development rights.	

REGULATED NATURAL FEATURES AND THE GREEN INFRASTRUCTURE PLAN

The Green Infrastructure Plan is nonregulatory. This means there are no specific Green Infrastructure Network requirements imposed on property owners who own land within the Network. County Code includes regulations on natural features including streams, wetlands, floodplains and forests that apply across the County—whether property is in the Network or not. The following table lists some, but not all, key natural features regulations.

TABLE 3. REGULATED NATURAL FEATURES

FEATURE	REGULATIONS	COUNTY CODE
Forests	Forest conservation regulations establish a process and requirements for subdivision and development projects. Requirements include, but are not limited to, forest stand delineation, thresholds for forest clearing, and protections for Priority Forest Retention Areas, including prohibition of clearing forests over 75 acres in size.	17-6-301 - 17-6-309
Nontidal Wetlands	Development prohibited in wetlands and 25-foot wide buffer.	17-6-401
Streams	Development prohibited in 100-foot wide buffer for perennial and intermittent streams.	17-6-402
Steep Slopes	Development prohibited on slopes that are 25% or greater (or 15% in Critical Area) that meet the area and height thresholds.	17-6-403
Critical Areas	Land within 1,000 feet of tidal waters regulated by Critical Area provisions in County Code and State law and regulations. Regulations vary between three designated zones (Intensive Development Area, Limited Development Area, and Resource Conservation Area). Includes limits on impervious cover, protection of 100-foot upland buffer from tidal wetlands and waterways, and habitat protection areas (including waterfowl staging and concentration areas, colonial waterbird nesting sites, threatened and endangered species, and anadromous fish spawning areas).	17-6-403 17-8 & 18-13; and Code of Maryland Regulations, Title 27
Bogs	Multiple provisions including development prohibition in bog and contributing streams. Development limitations within 100-foot buffer, 300-foot buffer (limited activity area) and the contributing drainage area.	17-9
Foodplains	Development limited, including requirements for easement or dedication of floodplain areas to the County through the subdivision process.	16-2, 17-3-701
Stormwater Management	State law and County code requires new development to implement Environmental Site Design to the Maximum Extent Practicable. This standard requires site planning and stormwater management techniques that conserve natural features and drainage patterns and minimize impervious surfaces.	16-4 and Code of Maryland Regulations 26.17.02.08

AGRICULTURE AND THE GREEN INFRASTRUCTURE PLAN

Protection of a viable agricultural economy and the rural character of South County are high priorities for Anne Arundel County. Many of the large, natural areas in the County are located on or adjacent to working farms and forests. In addition to the recommendations of this Plan, Anne Arundel County has taken three primary approaches to protecting the agricultural economy and rural character of South County: the Agricultural and Woodland Preservation Program, economic development programs, and land use and zoning.

Agriculture and Woodland Preservation Program

Anne Arundel County has established an Agricultural and Woodland Preservation Program to maintain farms and working forests as a viable and sustainable sector of the economy and as a key element of rural areas. DRP implements this program in cooperation with other County agencies, State agencies, and the Agricultural Preservation Advisory Board. Anne Arundel County has designated a Priority Preservation Area and a Rural Legacy Area to focus agriculture and woodland preservation efforts.

These two areas are similar in geography and complement each other, but are established per guidelines from two different State programs. The County uses three voluntary easement acquisition programs to purchase development rights and keep lands in agriculture and forestry use:

- **Maryland Agricultural Land Preservation Foundation (MALPF) program:** State-funded program
- **Agricultural and Woodland Preservation Program:** County-funded program
- **Rural Legacy Program:** State-funded program

In total, these programs have protected approximately 14,000 acres of agricultural lands (see Figure 3).

Arundel Ag Economic Development Program

The Anne Arundel Economic Development Corporation administers a program called Arundel Ag to meet the needs of agricultural businesses. Arundel Ag provides assistance to new and existing agriculture businesses in the County. The program assists applicants with interpreting the Code, meeting permitting requirements, and navigating licensing requirements for the County, State, and Federal health departments.

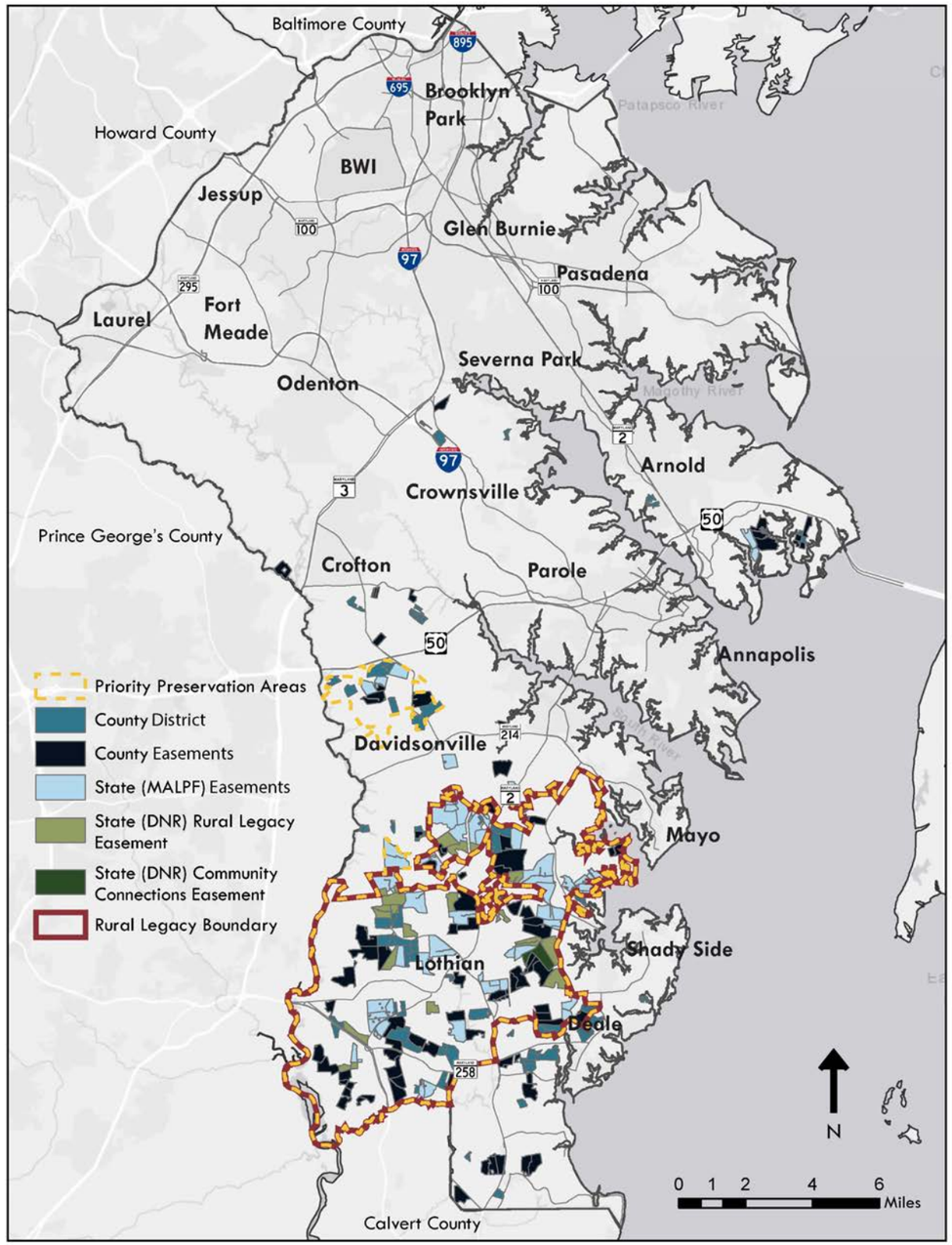
Arundel Ag has partnered with the Farm Bureau and various other agencies to support policy and legislation changes to better serve Anne Arundel County farmers. Some of the business and programmatic support provided by Arundel Ag includes:

- Marketing and support for farmers markets
- Farm equipment rental program
- Agricultural scrap tire program
- Arundel Grown marketing program to promote restaurants sourcing locally grown food
- Supporting agricultural education programs including the Curriculum for Agricultural Science Education at Southern High School and the Future Farmers of America program

Rural and Agricultural Land Use and Zoning

The County uses multiple land use policies and regulations to promote agricultural uses and limit incompatible development in rural areas. The vast majority of South County is designated as Rural on the GDP Planned Land Use Map, and zoned Rural Agriculture (RA). The RA zoning district limits residential development to 1 unit per 20 acres and restricts uses that are not compatible with agriculture. Additionally, the Growth Tiers Map and the policies of the Water and Sewer Master Plan limit extension of sewer service—which would support higher density development—into rural and agricultural areas.

FIGURE 3. AGRICULTURAL PRESERVATION AREAS



COMPLEMENTARY ENVIRONMENTAL PROGRAMS

Anne Arundel County's Green Infrastructure Network is one of many County programs focused on protecting and restoring the natural environment. The County's suite of tools helps to ensure that all residents can access and enjoy a green and healthy natural environment. The following programs serve a wide range of environmental interests across the County, such as urban tree canopy, stormwater retrofits, and outdoor recreation. An emerging priority for each of these programs is investment in underserved communities. These programs are expanding efforts to engage with and support communities of color and low-income households.

Watershed Restoration Projects

Watershed Protection and Restoration Fees (WPRF) fund projects across the County to repair stormwater management facilities and to restore streams and wetlands. Many of these projects are located in the Green Infrastructure Network, and many are in more developed areas of the County. Recent projects include:

- **Cromwell Elementary School (Patapsco Tidal Watershed):** Stormwater retrofit project including bioretention basins and a grass swale to treat runoff from an approximately 26 acre drainage area. Project design integrates an outdoor classroom and educational signage.
- **Furnace Creek (Patapsco Tidal Watershed):** Stream had been confined to a concrete channel in its upper reach and deeply incised in its lower reach. Approximately 3,700 linear feet restoration project created an integrated stream and floodplain wetland system that dramatically improves habitat and water quality functions.[1]

Altogether, the County's watershed restoration projects support our regional effort to improve the health of the Chesapeake Bay Watershed.

Community and Neighborhood Parks

The Green Infrastructure Network includes the largest parks and open spaces in the County. Yet, the County owns and operates many smaller parks outside of the Green Infrastructure Network. These community and neighborhood parks are essential contributors to public health, community well-being, and environmental health.[2]

Acquisition of Flood Prone Properties

In the fall of 2020, Anne Arundel County and the Chesapeake Bay Trust, made $500,000 available for a pilot grant program to buy properties frequently flooded by nontidal or stormwater flooding. Increasingly intense rainfall events, combined with a changing climate and historical infrastructure constraints and development patterns, have left some properties within the County at continued risk of non-tidal flooding. The grant program gives willing landowners an option to sell flood prone properties to the County. It also provides natural resource protection, stormwater storage, and mitigation of flood risk to surrounding communities.

Replant Anne Arundel

With funding and support from Anne Arundel County Department of Public Works, the Watershed Stewards Academy works with volunteers to plant and maintain trees on community and private property, including urban and suburban areas. The Replant Anne Arundel program plants trees and shrubs that are native to the Chesapeake Bay region, thereby restoring a resilient tree canopy that can withstand a changing environment. In 2020, the Replant Anne Arundel program installed nearly 5,000 trees across the County.[3]

1 Anne Arundel County Bureau of Watershed Protection and Restoration, A Land of Rivers (2020).
2 To find a park in your neighborhood, visit: https://gis.aacounty.org/mapping/index.html?viewer=AACo_ParkFinder.
3 Watershed Stewards Academy. "2020-2021 Impact Report." For more information on Plan2040 goals for the Natural Environment, see Goal NE2: Retain existing forest cover, increase forest replanting efforts and increase urban tree canopy. NE2.1: Expand the amount of forest and tree canopy cover across all watersheds. NE2.1.g: Fund a robust community-based urban tree planting effort so planting trees becomes standard practice by communities and residents across the County. Ensure the program actively addresses a lack of tree canopy in underserved communities and results in a more equitable distribution of tree canopy throughout the County.

Image: Courtesy of the Watershed Stewards Academy


Image: Furnace Creek Restoration

THE GREEN INFRASTRUCTURE NETWORK

This chapter presents the methodology for how the Green Infrastructure Network was identified. It includes key statistics and benefits of the Network that set the stage for the goals, policies, and strategies detailed in the Implementation and Recommendations Chapter..

METHODOLOGY

2002 Greenways Master Plan

Following the model of the State's Green Infrastructure Assessment, the 2002 Greenways Master Plan identified a hub and corridor network, where hubs functioned as ecologically significant natural areas that provide habitat for animal and plant species. The 2002 Greenways were identified using five primary criteria:

- Habitat value: with a focus on riparian forests
- Size: hubs (minimum 250 acres) and corridors (minimum 200 feet wide)
- Connectivity: hubs and corridors must connect
- Future potential: for restoration to expand natural areas to meet hub and corridor size criteria
- National and Countywide trails

Based on the criteria, the 2002 Greenways were mapped using aerial photography and a variety of data sources which resulted in the creation of a broad-brush network of greenways. For a full description of the methodology and data layers, please see Chapter 2 of the 2002 Greenways Master Plan.

2021 Green Infrastructure Network

The 2021 Green Infrastructure Network builds upon and refines the mapping completed for the 2002 Greenways Master Plan. Using the same hubs and corridors approach, the 2021 Green Infrastructure Network took advantage of improved data and mapping software to more closely analyze each segment of the Network at a parcel-specific scale. County staff considered multiple sources of information to evaluate areas to remove or add to the 2002 Greenways Network and to classify land as "conserved" or "potential to be conserved" (see below and Figures 4 - 11).

Plats approved through December 2020 were researched to identify protected areas such as forest conservation easements, floodplain easements, and open spaces and recreation areas. The project team also identified parcels within the Open Space zoning district and County, State, and Federal lands and categorized them as conserved. Properties were also analyzed to determine whether there was development potential based on the plat and existing zoning. Areas that have been annexed by the City of Annapolis or are outside the County boundary were removed from the Network.

METHODOLOGY SUMMARY

2002 Greenways Network

Remove deveoped areas, identified through aerial photos and plats

Add the following features if adjacent to existing Greenways Network or alone meets hub/corridor criteria:

Md. Dept. of Natural Resources Conservation Priorities:
- Targeted Ecological Areas
- BioNet
- Coastal Resiliencey Assessment

Potential FIDS Habitat

Conservation Easements

Park Acquisitions

Floodplains

Trails

Categorize conserved areas:

Public Lands

Conservation Easements

Plats (Open Space, Floodplains)

OS Zoning

2021 Green Infrastructure Network

Image: Courtesy of the Chesapeake Bay Program

The 2021 Green Infrastructure Network also expands upon the 2002 Greenways Network to include additional contiguous areas such as lands protected by agricultural easements, forested areas, passive and active recreational areas and cultural and historic resource areas. Additionally, contiguous forested areas that are larger than 75 acres were added to the Green Infrastructure Network. This addition aligns the Green Infrastructure Network with the County Code's Forest Conservation regulations requiring protection of forests that meet this size criteria to provide potential habitat for forest interior dwelling bird species.

Major regional trails were included in the 2002 Greenways Master Plan, but were not fully integrated into and considered as part of the Greenways Network map. The 2021 Green Infrastructure Network incorporates trails as well as protected land adjacent to trails. In most cases, these corridors may not meet the 200-foot wide threshold; however, the trails serve as a critical recreational and transportation connection. The Green Infrastructure Network incorporates Country trails including the B&A, WB&A, BWI, South Shore, and Broadneck trails and the Colonial Annapolis Maritime Route. It also includes national and regional trails and routes. The East Coast Greenway will ultimately connect the entire east coast along a 3,000 mile walking and biking corridor from Maine to Florida. The American Discovery Trail will run from Delaware to California. These trails use all or portions of the following trails: WB&A, B&A, BWI, Broadneck, South Shore, and the Colonial Annapolis Maritime Route.

Additionally, due to the urban characteristics of the northern part of the County, the 200-foot wide corridor dimension was relaxed in certain areas where it was imperative to the overall system to maintain a connection. Because ecosystems are not determined by municipal boundaries and the extent of publicly accessible recreational areas, such as trails, often extends past a municipal boundary, the project team also conducted an analysis of greenways in adjacent jurisdictions to find opportunities for linkages.

A comprehensive database was created for each segment of the Network that includes protection status, acreage, applicable comments to describe the level of protection, and watershed designations.

The 2021 Green Infrastructure Plan categorizes segments of the Network by watershed, rather than by stream names. Many of the environmental programs in the County are organized around watersheds to align with programs and regulations designed to protect and restore water quality in the Chesapeake Bay. The County departments agreed that shifting from the use of stream names in the 2002 Greenways Network to using watershed as an organizing framework would be more efficient and beneficial for implementation. This helps in quantifying protected and unprotected land as well as setting priorities for conservation and recreational opportunities. A key to the conversion of the 2002 Greenway Network segment name to the 2021 Green Infrastructure Network watershed name is provided in Appendix E.

FIGURE 4. STREAMS AND WETLANDS

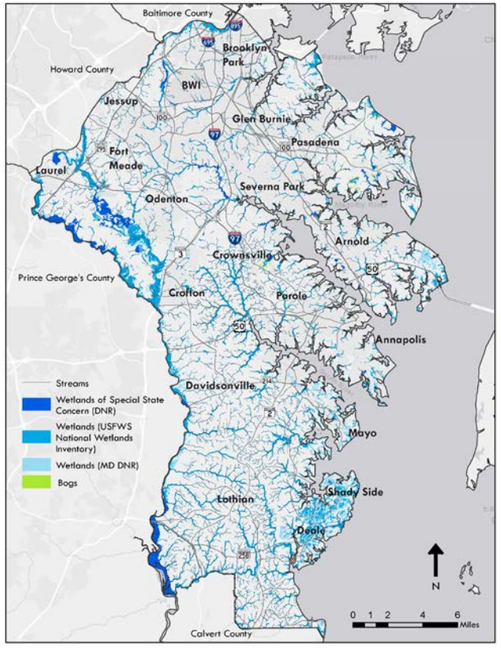


FIGURE 5. FEMA FLOOD ZONES

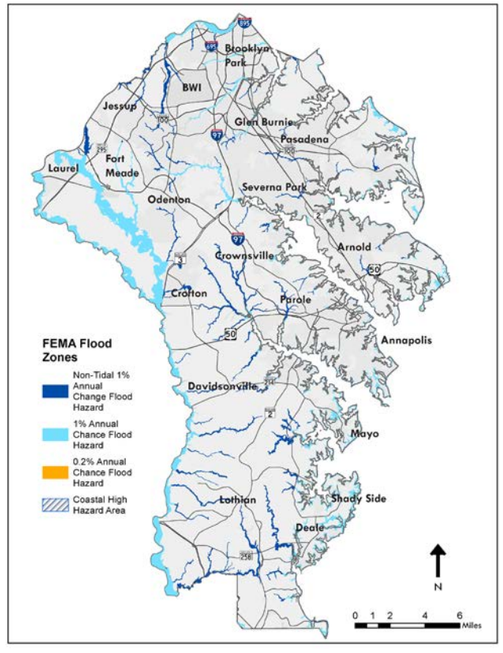


FIGURE 6. CRITICAL AREAS

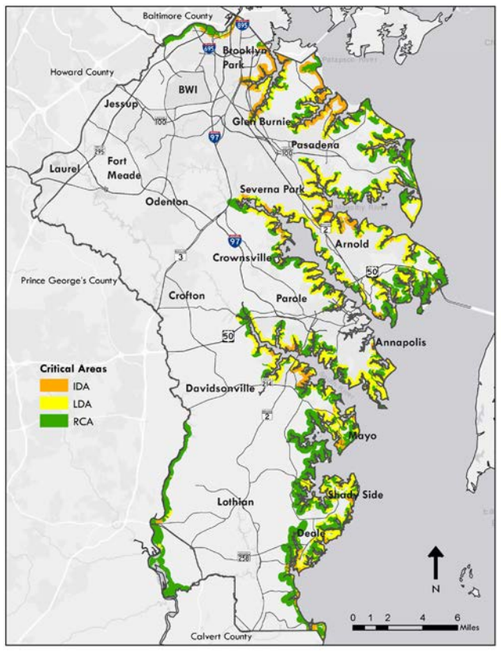


FIGURE 7. POTENTIAL FIDS HABITAT

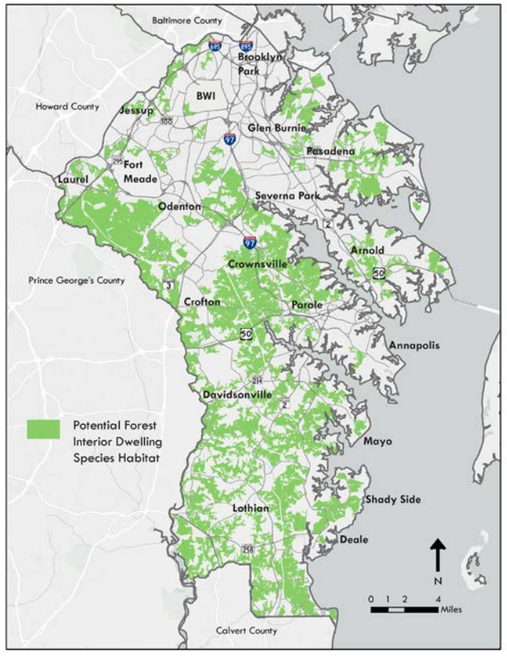


FIGURE 8. PARKS AND REC FACILITIES

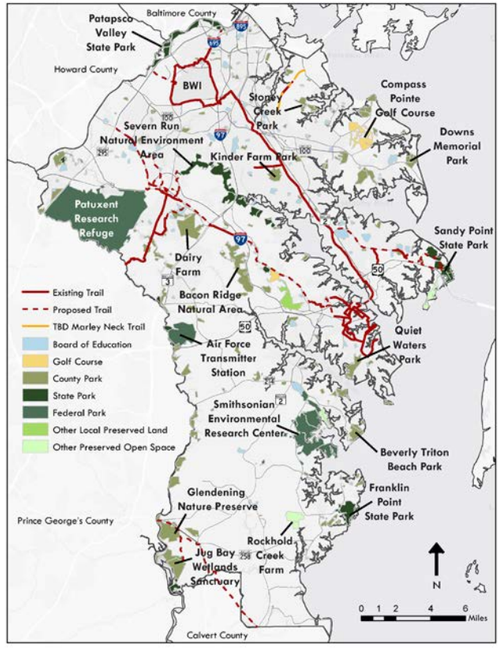


FIGURE 9. HISTORIC RESOURCES

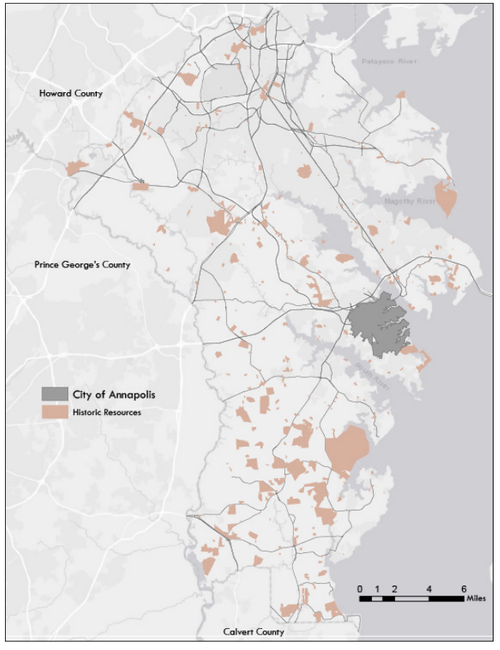


FIGURE 10. TARGETED ECOLOGICAL AREAS

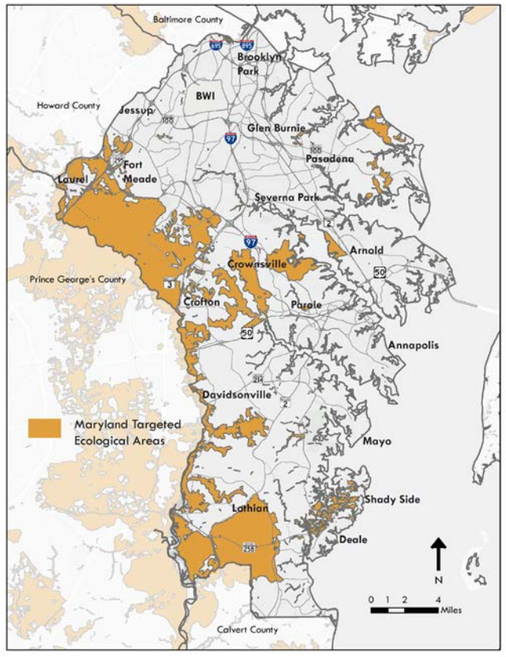


FIGURE 11. PROJECTED SEA LEVEL RISE

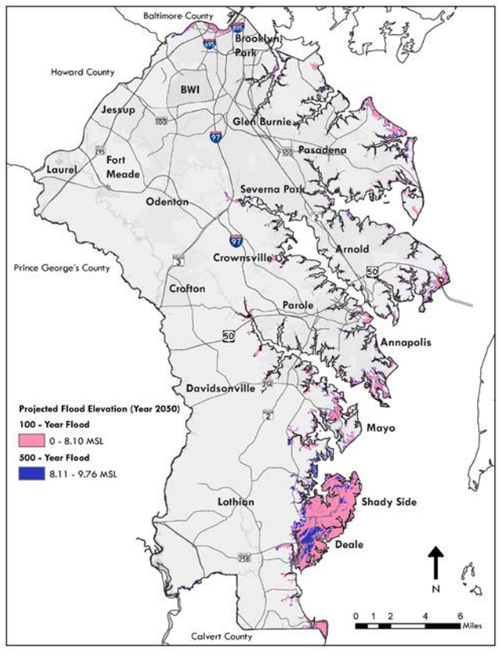
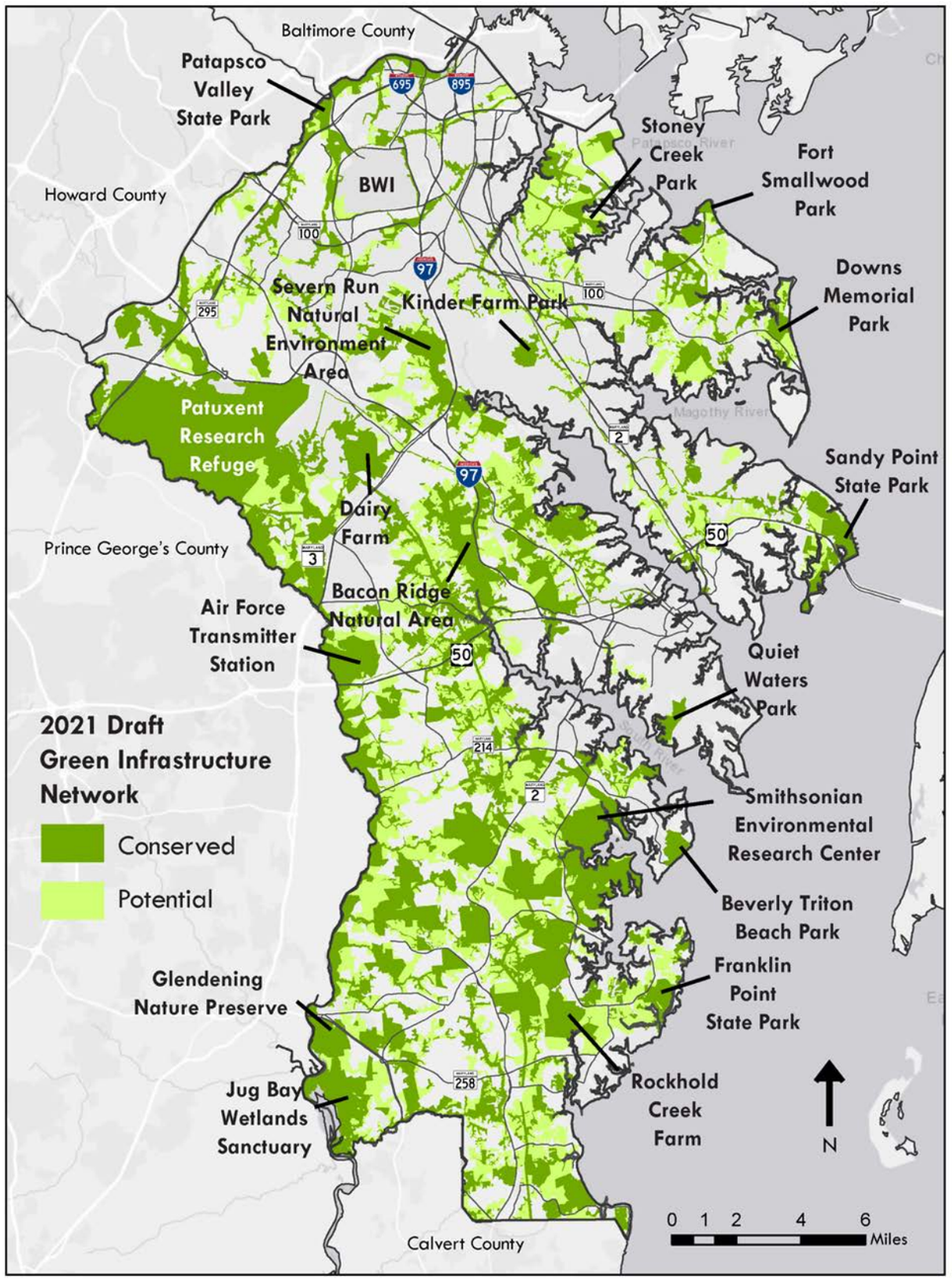


FIGURE 12. 2021 DRAFT GREEN INFRASTRCUTURE NETWORK



DESCRIPTION OF NETWORK

The Green Infrastructure Network identifies the largest natural areas in the County and connections between them. It includes protected agricultural lands, cultural and historic resources, and trails that contribute to the economy, character, and quality of life of the County. The Network does not include all natural lands in the County or even all of the parks. Only lands that meet the size and connectivity criteria are included in the Network. The criteria prioritize areas to inform how to best apply limited resources for land conservation.

Figure 12 illustrates the 2021 Green Infrastructure Network, including its connectivity with surrounding jurisdictions to illustrate the potential ecological and recreational connections outside of the County boundaries.

Table 4 summarizes the overall conserved and potential to be conserved acreages of the Network by the County's watersheds. The Network includes approximately 113,000 acres, which is about 43% of Anne Arundel County's total land area. Of the total Network, approximately 73,864 acres (65%) are designated as conserved. It should be noted that the Green Infrastructure Network does not include all conserved lands in the County, but rather conserved lands that meet the aforementioned criteria.

TABLE 4. 2021 GREEN INFRASTRUCTURE NETWORK BY WATERSHED

Watershed	Designation (acres)		Total (acres)
	Conserved	Potential	
Bodkin Creek	1,230	1,033	2,264
Herring Bay	4,917	4,707	9,624
Little Patuxent	11,420	2,369	13,789
Lower Patuxent	790	786	1,576
Magothy River	3,094	2,072	5,166
Middle Patuxent	9,896	5,016	14,912
Patapsco Non-Tidal	2,810	1,105	3,915
Patapsco Tidal	3,713	3,389	7,102
Rhode River	4,060	1,929	5,989
Severn River	7,269	4,887	12,156
South River	10,694	6,892	17,586
Upper Patuxent	10,815	3,841	14,656
West River	3,154	1,305	4,459
Total (acres)	**73,864**	**39,333**	**113,196**

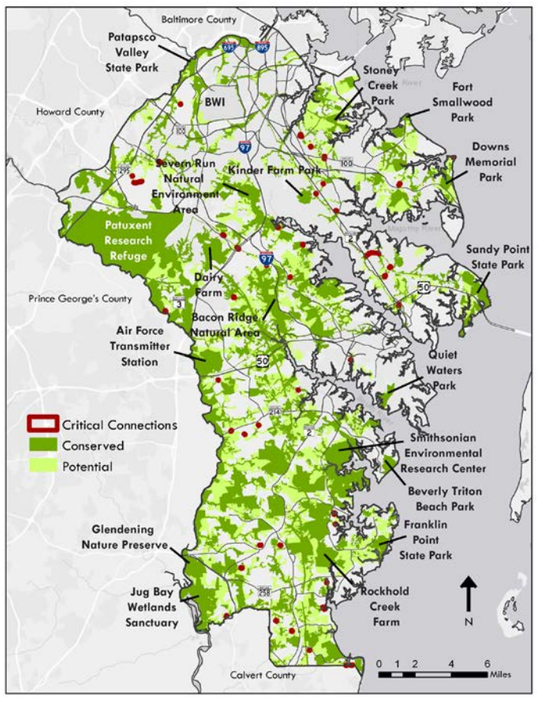
Critical Connections

"Critical connections" are areas where there is only one location where two segments of the Green Infrastructure Network can connect, and if this connection is not made, wildlife movement and the functionality of the Green Infrastructure Network will be significantly reduced. There are approximately 47 unprotected critical connections within the Green Infrastructure Network (see Figure 13).

Other critical connections occur where, for example, the Green Infrastructure Network goes through a developed area. In such cases, the Green Infrastructure Network may run through or adjoin the "backyard" of a residential or business area. How these backyards are used and managed can be critical to the viability of the Green Infrastructure Network.

In some critical locations, potential alternative corridors have been identified so that if one critical connection proves not to be viable, another can be considered.

FIGURE 13. CRITICAL CONNECTIONS



The recommended implementation/management plans may identify other potential connections.

Climate Change Considerations

The impacts of climate change are becoming more apparent in Anne Arundel County. In particular, we experience:

- Tidal flooding caused by sea level rise
- Coastal flooding exacerbated by sea level rise and subsidence
- Increased extreme precipitation events
- Increased flooding as a result of more frequent and intense storms
- Longer heat waves, including more days above 90 degrees throughout the year

The Green Infrastructure Master Plan takes these issues into consideration by including forests, floodplains, and coastal areas that meet criteria for inclusion in the Network.

Green Infrastructure plays an important role in mitigating and adapting to the effects of climate change. Forests and wetlands capture and store carbon, acting as a sink for greenhouse gases. Shading from tree canopy reduces heat at a local scale.

This is especially important in more developed areas of the County where high amounts of concrete and asphalt reflect heat from the sun. Floodplains, wetlands, and low lying natural areas also provide storage of stormwater runoff and floodwater, reducing impacts to developed areas. Protection of natural shorelines also can reduce risk of inundation from sea level rise.

A broader set of policies to address climate change are included in Plan2040 to reduce greenhouse gas emissions, promote green building design, transition to electric vehicles, and invest in resilient infrastructure.

Equity Assessment

The presence of lands that meet the criteria for inclusion in the Green Infrastructure Network varies across the County. A comparison of watersheds shows that the Patapsco Tidal and Magothy River watersheds have the lowest proportion of land in the Network (see Figure 14). Based on analysis conducted by the non-profit organization, American Forests, the areas

with the lowest "tree equity scores" in Anne Arundel County are in Brooklyn Park, Glen Burnie, and Parole (see Figure 15).[1] Tree Equity Score is a composite indicator based on existing tree canopy, population density, poverty rate, unemployment rate, urban heat island effect, racial composition, age demographics, and public health statistics. These areas have low numbers of trees and high proportions of low-income households and people of color. These areas experience elevated summer temperatures and worse health outcomes than the rest of the County.

Watersheds in South County have the highest proportion of land included in the Network. Similarly, studies show that the tidal portions of the Patapsco River and its watershed in North County are the most degraded in the County. The large majority of the subwatersheds ranked as highest priority for restoration are in North County and around Parole. An equity analysis related to recreation and parks facilities conducted for the 2017 LPPRP shows a similar pattern that communities in Ferndale/Brooklyn Park, north of Fort Meade, Glen Burnie, Laurel/Maryland City, Waugh Chapel, and Parole are underserved. Additional analysis of the demographics of the County indicate that the areas with the most degraded environmental conditions are disproportionately African American or Latino, and have lower median incomes.

The Green Infrastructure Network map reflects these disparities. The focus on including large natural areas leads the Network to illustrate the reality that those areas are mostly in the southern half of the County. The Green Infrastructure Master Plan can lead to improving environmental conditions in the more developed parts of the County by supporting environmental protection and enhancement in urban as well as rural areas. Strategy 5: Beyond the Network in the Implementation Chapter offers recommendations to invest in areas lacking green infrastructure in the County.

FIGURE 14. % WATERSHED IN NETWORK

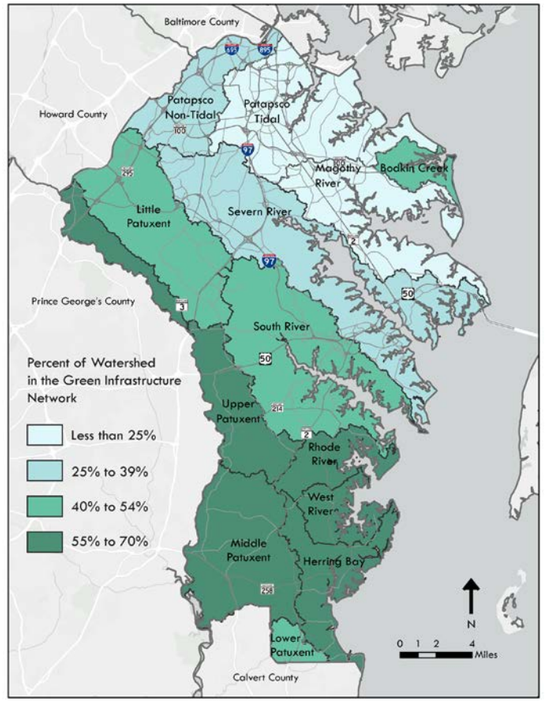
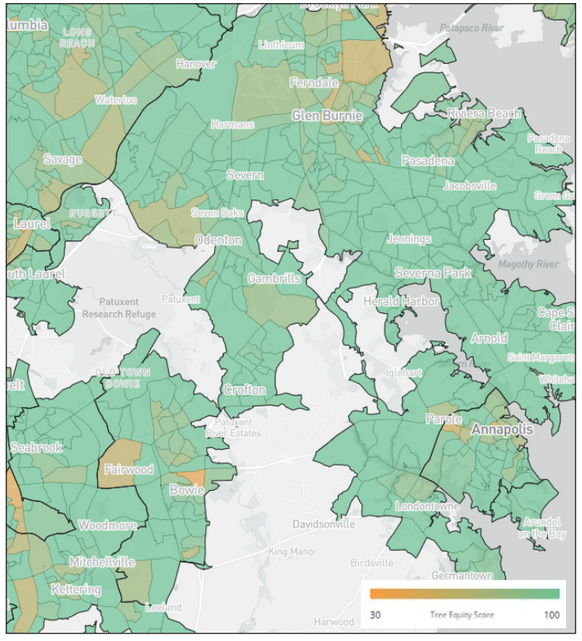


FIGURE 15. TREE EQUITY SCORE



1. Source: American Forests, Tree Equity Score. https://treeequityscore.org/reports/place/anne-arundel-county-md. Accessed: July 22, 2021. Color indicates Tree Equity Score with darker orange signifying lower equity. Gray areas were not included in the analysis.

FIGURE 16. PERCENT POVERTY

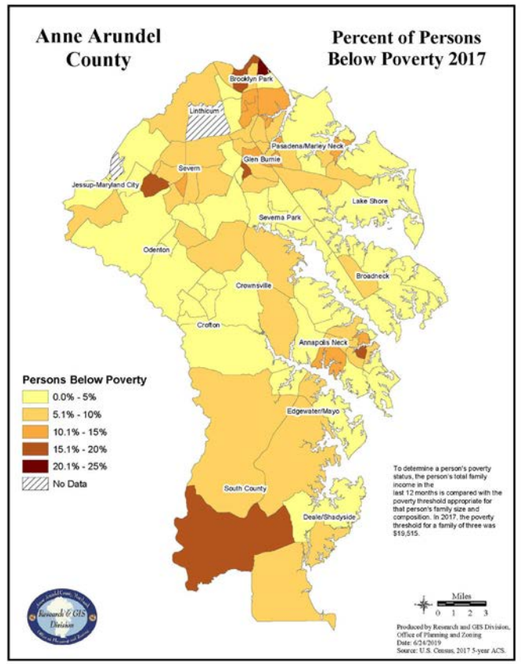


FIGURE 17. PERCENT RACIAL MINORITY

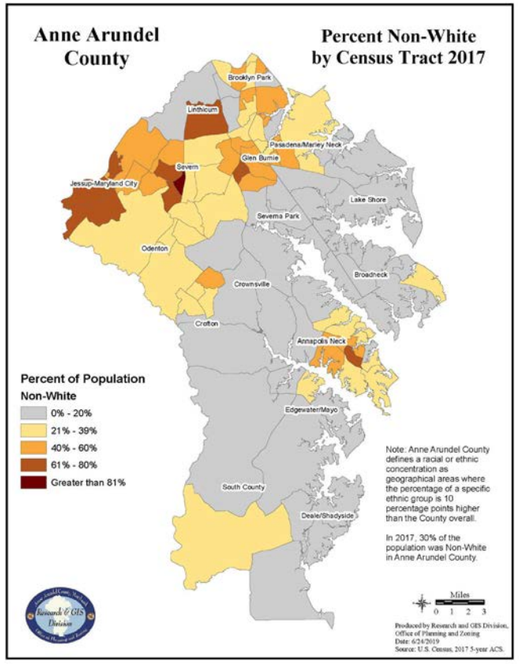
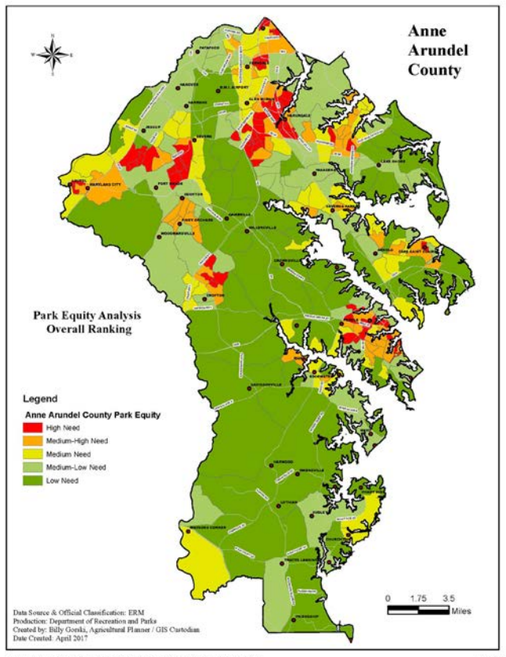
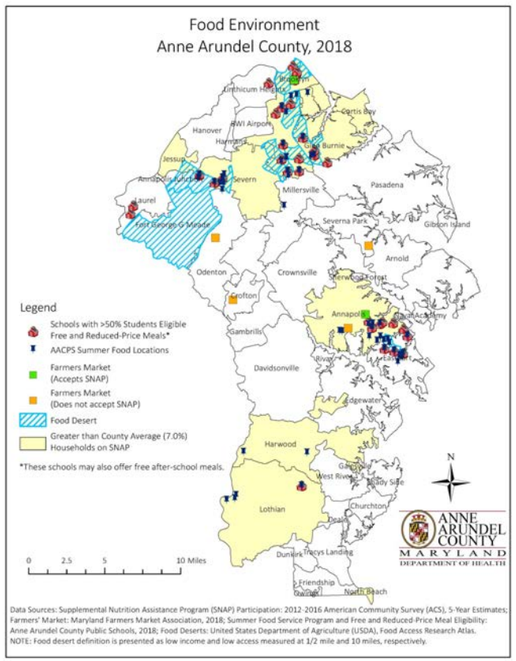


FIGURE 18. PARKS EQUITY ANALYSIS

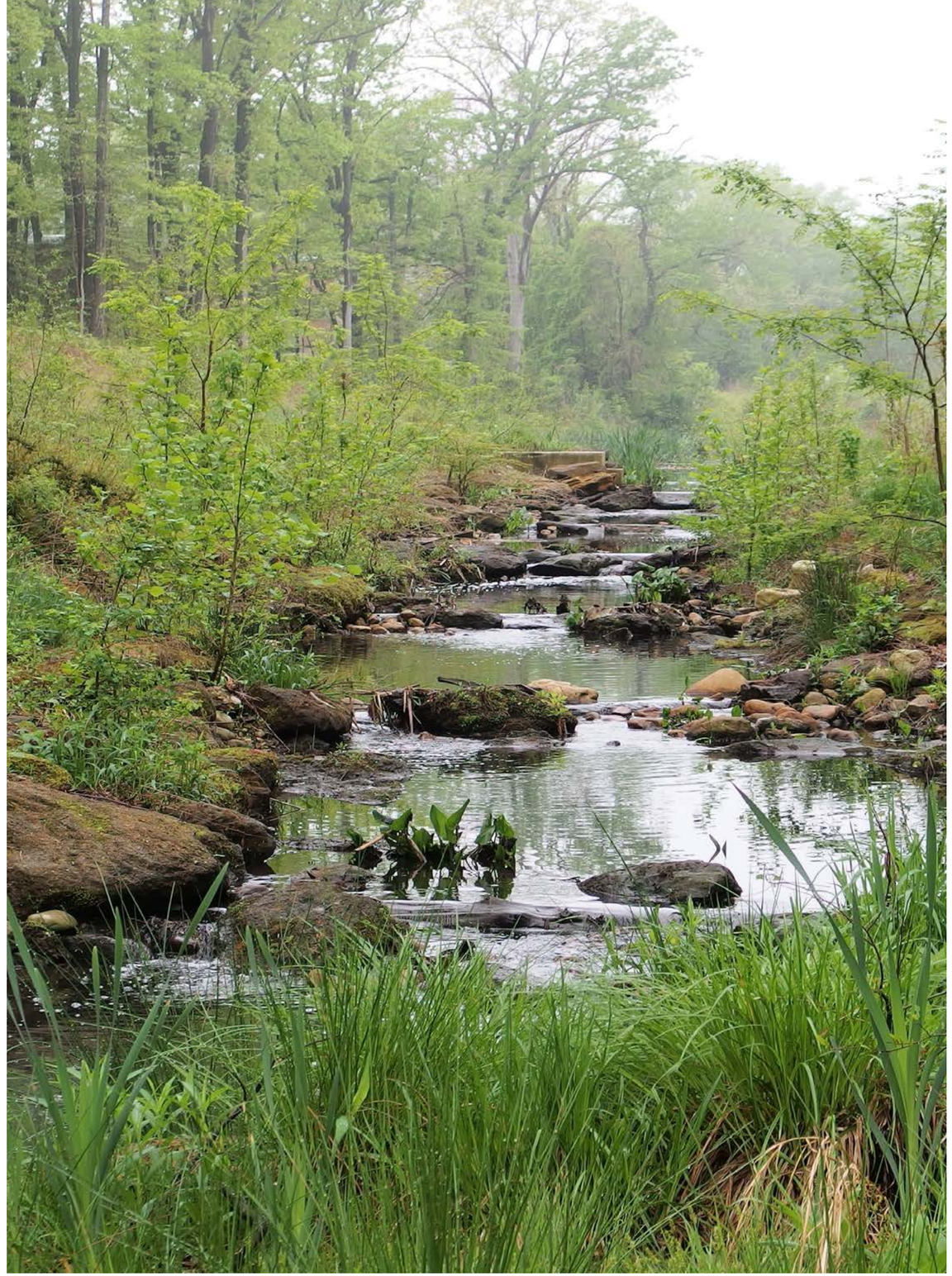


Anne Arundel County Land Preservation, Parks & Recreation Plan III-39

FIGURE 19. FOOD ENVIRONMENT



Data Sources: Supplemental Nutrition Assistance Program (SNAP) Participation: 2012-2016 American Community Survey (ACS), 5-Year Estimates; Farmers' Market: Maryland Farmers Market Association, 2018; Summer Food Service Program and Free and Reduced-Price Meal Eligibility: Anne Arundel County Public Schools, 2018; Food Deserts: United States Department of Agriculture (USDA), Food Access Research Atlas.
NOTE: Food desert definition is presented as low income and low access measured at 1/2 mile and 10 miles, respectively.



LAND USE ASSESSMENT

The Green Infrastructure Master Plan plays an important role in the growth management program of the County. The overall objectives of growth management in the County are to:

- Guide the majority of development to targeted areas where there is existing infrastructure and a mix of employment, residential, commercial, and recreation opportunities. This creates opportunities to live, work, and play in close proximity and reduce travel demand.
- Provide adequate infrastructure to support demand created by development.
- Protect environmentally sensitive areas.
- Preserve the rural and agricultural character of South County.
- Maintain the stability of existing residential neighborhoods.

This Plan identifies priority areas for land preservation to support the growth management objectives. The Plan does not create any additional regulatory requirements for properties identified in the Network. Review of subdivision and site development applications does consider whether a property is located in the Network and the County will encourage and collaborate with the applicant to adjust site design to avoid and minimize impacts to the Network.

To understand the potential implications of the Green Infrastructure Network on land use in the County, the Network was compared to zoning districts. Figure 20 shows the acres of land in the Green Infrastructure Network per zoning district, while Figure 21 illustrates the the percentage of land in the Network relative to the entire area of that zoning district in the County.

The large majority of land in the Network is zoned Open Space (OS) and Rural Agricultural (RA) (72%), followed by Residential Low Density (RLD) (7%) and R1 residential (11%). The Network includes approximately 88% of all OS zoned land in the County and 60% of all RA zoned land in the County (see Figures 20 and 21).

Commercial (C1-C4), Mixed Use (MXD), and Industrial (W1-W3) zoned properties are also included in the Network. While properties in these zoning districts are generally intended for development, the Network recognizes dedication of floodplains and open space areas, forest conservation easements, and other easements or restrictions placed on a property through the development review process or other agreements. It also recognizes regulated natural features such as streams and forests that are on these properties. In some locations, Commercial, Mixed Use, and Industrial properties are included in the Network to make connections and to minimize small holes in the Network.

The Network includes approximately 316 acres of Commercially zoned land, 186 acres of Mixed Use zoned land, and 1,698 acres of Industrially zoned land that has the "potential to be conserved." The potential to be conserved status means that the land is not already conserved through easement, dedication, or similar mechanism.

The Green Infrastructure Network includes approximately 8% of all Commercially Zoned land in the County (4% already in conserved status, 4% potential to be conserved), 34% of all MXD zoned land (22% conserved, 12% potential to be conserved), and 20% of all Industrially zoned land (7% conserved, 13% potential to be conserved).

There is an inherent land use policy tension between the need to provide adequate land for economic and community development and to conserve natural areas. The Green Infrastructure Network identifies natural features on the landscape. The appropriate zoning of these lands will be reviewed through Comprehensive Rezoning that will occur with the development of each Region Plan as outlined in Plan2040.

FIGURE 20. ACRES OF GREEN INFRASTRUCTURE NETWORK BY ZONING DISTRICT

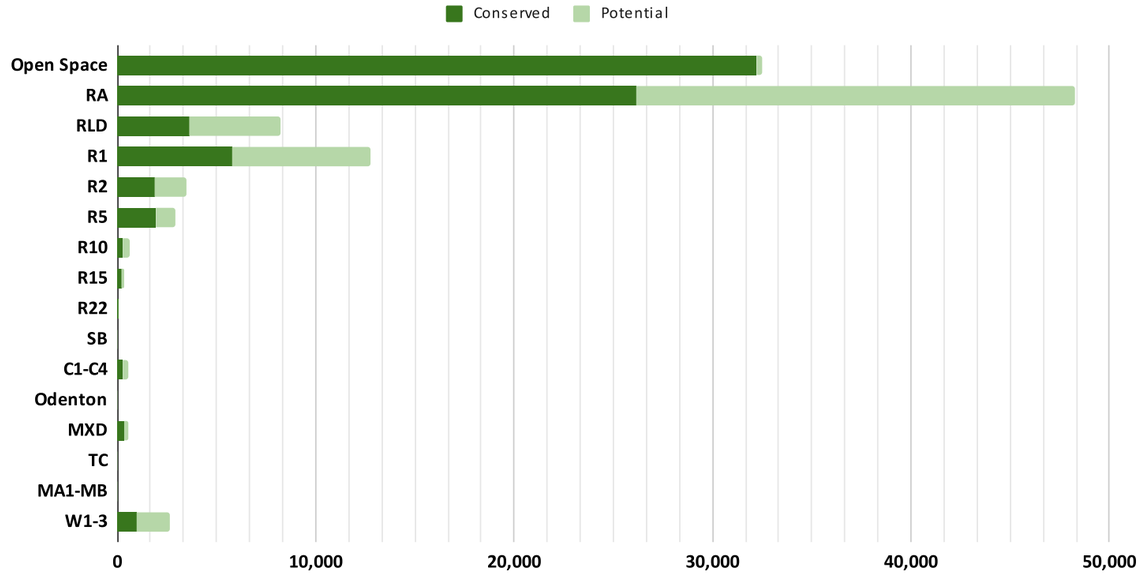
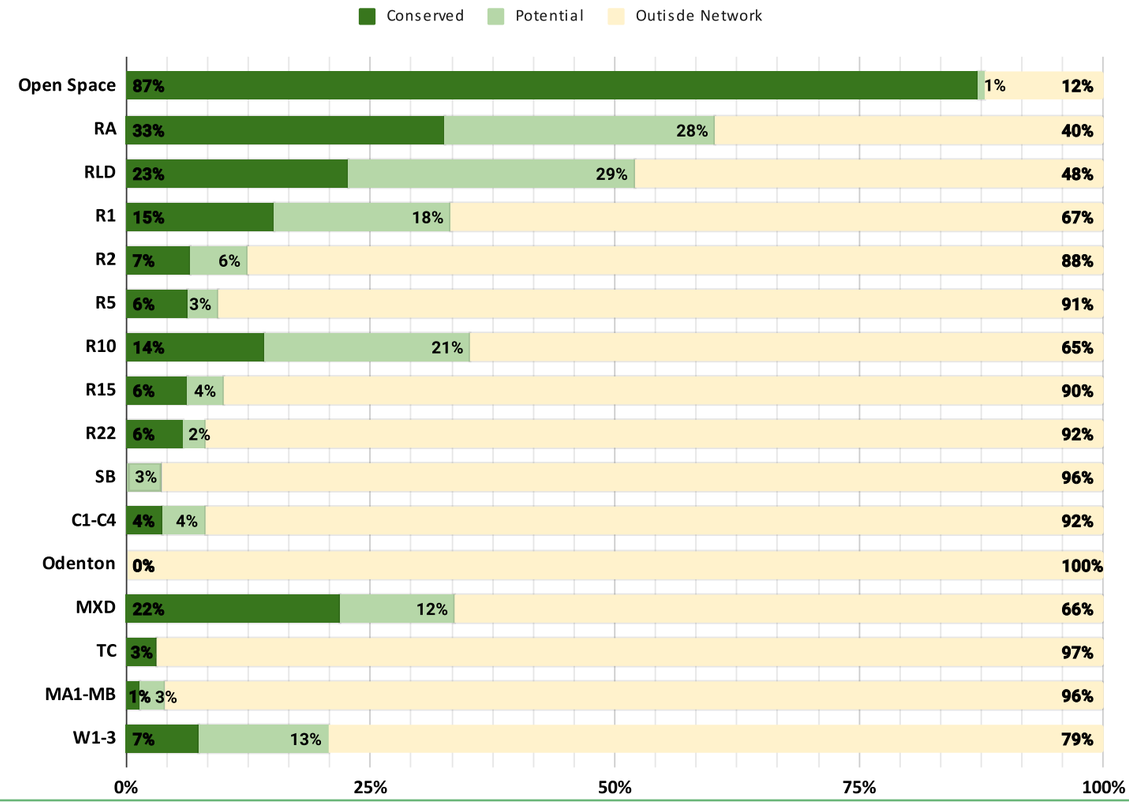


FIGURE 21. NETWORK AS A PERCENTAGE OF TOTAL LAND IN COUNTY BY ZONING DISTRICT



Progress on Land Conservation Within the Network

The County and other partners in land conservation have made significant progress in protecting land in the Network. Both the total area of the Green Infrastructure Network and percentage of protected land in the Network increased since the 2002 Greenways Plan (see Table 5). The County has protected approximately 1,800 acres of land in the Network through fee simple acquisition from 2010 through 2020. With financial support from State and Federal grants, over $40 million were invested to acquire those lands.

Private property owners have entered into conservation easements to protect land in the Network as well. From 2010 to 2020, the County's Agricultural and Woodland Preservation program has entered into conservation easements with property owners to keep approximately 2,409 acres of land in agricultural and forestry use. In the same time period, private land trusts including the Scenic Rivers Land Trust, Magothy River Land Trust, and Crownsville Conservancy worked with property owners to protect approximately 1,496 acres of land with conservation easements.

County development regulations are also considered in the assessment of protected land, including the forest conservation regulations, floodplain regulations, open space and recreation requirements for subdivisions, and open space zoning.

Under the County's forest conservation regulations (Article 17-6-301 of the County Code), properties over 40,000 square feet must take measures to protect forests during the development process. One of the measures is placing forest conservation easements on portions of the property. Approximately 12,081 acres of forest in the Network are protected through forest conservation easements.

The Zoning Code, subdivision regulations, and floodplain regulations work together to protect land in the Network as well. The County's subdivision regulations require that land proposed for residential development set aside land for open space and recreation purposes. The floodplain regulations require that land in the 100-year floodplain be protected by easement or dedication to the County. The County Zoning Code includes an Open Space district that includes many of these areas set aside for open space, recreation, and floodplains in the development review process. The Open Space district limits development primarily to recreational and agricultural uses.

Acquisitions and Easements

Tables 6 - 8 identify the properties or easements acquired in the Green Infrastructure Network since 2010. Figure 22 presents a summary of the conserved land in the Network by the different types of conservation tools. It is noteworthy that approximately half of the conserved land is privately owned.

TABLE 5. 2002, 2010 & 2021 GREENWAYS NETWORK COMPARISON

	2002		2010		2021	
	ACRES	% OF GREENWAYS NETWORK	ACRES	% OF GREENWAYS NETWORK	ACRES	% OF GREENWAYS NETWORK
Conserved	37,245	51%	45,224	62%	73,864	65%
Potential	35,222	49%	27,242	38%	39,333	35%
Total	72,467	100%	72,466	100%	113,196	100%

TABLE 6. PARKLAND ACQUISITIONS (2010-2020)

PROPERTY NAME	SIZE (ACRES)	WATERSHED
Bacon Ridge Natural Area	815.6	South River
Brewer Pond Natural Area	0.3	Severn River
Broadneck Peninsula Trail	9.1	Magothy River
Crofton Fields at MAC Church	8.9	South River
Crownsville Area Park	11.2	South River
Deep Cove Natural Area	191.3	Herring Bay
Discovery Village	6.8	West River
Eisenhower Golf Course	200.1	South River
Grays Creek Bog Natural Area	19.4	Magothy River
Gresham Historic House	5.0	Rhode River
Hot Sox Field at Wilson Park	26.5	West River
Jonas & Anne Catharine Green Park	5.7	Severn River
Marley Creek Park	71.8	Patapsco Tidal
Odenton Trails	1.2	Little Patuxent
Patuxent River Greenway: Little Patuxent South	17.0	Little Patuxent
Patuxent River Greenway: Wildlife Refuge	6.0	Little Patuxent
Quiet Waters Park	19.4	Seven River
Riva Area Park	36.3	South River
Shepherd Property on Greenock Road	140.1	Middle Patuxent
South River Farm Park	0.1	Severn River
South Shore Trail	42.8	Severn River/South River
Southgate Old Mill Park	2.6	Patapsco Tidal
Spriggs Farm Park on the Magothy	56.9	Magothy River
Stoney Creek Park	56.7	Patapsco Tidal
Valentine Creek Park	28.3	Severn River
WB&A Trail	5.9	Little Patuxent/Upper Patuxent
West County Park	15.3	Severn River
Total	**1,800.3 acres**	**-**

TABLE 7. AGRICULTURAL AND WOODLAND PRESERVATION EASEMENTS (2010-2020)

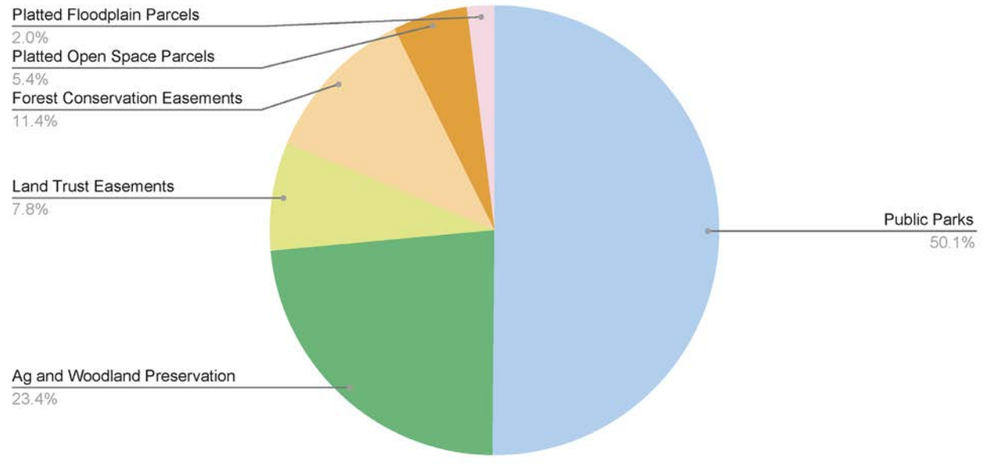
LOCATION	PROGRAM NAME	SIZE (ACRES)	WATERSHED
Harwood	Rural Legacy	117	Middle Patuxent
Lothian	Rural Legacy	101	Middle Patuxent
Sudley	Rural Legacy	47	Herring Bay/West River
West River	Rural Legacy	81	West River
Lothian	Rural Legacy	104	Middle Patuxent
West River	Rural Legacy	104	Rhode River
West River	Rural Legacy	184	West River
West River	Community Connections	200	West River
Lothian	MALPF	92	Middle Patuxent
West River	MALPF	147	West River
Edgewater	MALPF	134	Rhode River
Harwood	MALPF	156	Middle Patuxent
Harwood	MALPF	123	Upper Patuxent
Harwood	MALPF	177	Middle Patuxent
Owings	County Program	90	Lower Patuxent
Odenton	County Program	93	Upper Patuxent
Lothian	County Program	54	Middle Patuxent
Edgewater	County Program	131	South River
Harwood	County Program	67	Rhode River
Deale	County Program	63	Herring Bay
Deale	County Program	63	Herring Bay
Deale	County Program	61	Herring Bay
Total	**-**	**2,409 acres**	**-**

TABLE 8. LOCAL LAND TRUST ACQUISITIONS AND CONSERVATION EASEMENTS (2010-2020)

PROPERTY NAME	LAND TRUST	SIZE (ACRES)	WATERSHED
Patuxent River	Scenic Rivers	96	Upper Patuxent
Melville	Scenic Rivers	53	Middle Patuxent
Oak Hill	Scenic Rivers	250	Little Patuxent
Meyers Station	Scenic Rivers	111	Little Patuxent
Eagle Hill Bog	Magothy River Land Trust/ Scenic Rivers	6	Magothy River
Epping Forest	Crownsville Conservancy	3	Severn River
Palisades	Scenic Rivers	12	Severn River
Cranberry Woods	Scenic Rivers	93	Severn River
Bacon Ridge Natural Area	Scenic Rivers	630	South River
North River/Caldwell	Scenic Rivers	81	South River
Fairhaven	Scenic Rivers	94	Herring Bay
Hidden Valley	Scenic Rivers	67	Herring Bay
Total	**-**	**1,496 acres**	**-**

Note: Bacon Ridge Natural Area is listed in Tables 4 and 6. Anne Arundel County acquired the property, and a conservation easement was placed on it.

FIGURE 22. CONSERVED LANDS IN GREEN INFRASTRUCTURE NETWORK BY TYPE



Note: Conservation land types include some overlap. For example, Forest Conservation Easement can overlap with Platted Open Space.

IMPLEMENTATION AND RECOMMENDATIONS

This chapter presents the recommended strategies and actions to protect and manage the Green Infrastructure Network. The recommendations are informed by the collective experience and input of practitioners working on land conservation in the County, representatives of the real estate industry, and the public. Five major strategy groups guide the reommendations: organization and outreach, stewardship and planning, land conservation and enhancement, financing, and connections beyond the Green Infrastructure Network.

Image: Courtesy of the Watershed Stewards Academy

CHALLENGES TO CONSERVATION OF GREEN INFRASTRUCTURE

Anne Arundel County has had nearly 20 years of experience implementing the Greenways Master Plan. The project team engaged County staff and partners in land conservation from non-profit organizations and Federal and State agencies, as well as with representatives of the real estate development industry and agricultural community to understand the challenges and lessons learned from implementation of the Greenways Master Plan. These stakeholders identified the following key challenges:

- **Organizational Capacity and Coordination:** While there are multiple organizations proactively working with landowners to conserve property, each has limited staffing and resources. There is a need for better coordination of resources to match the right conservation funding and programs with the right properties.
- **Landowner Outreach:** It takes time and dedicated staff resources to build relationships and trust with landowners. It is challenging to identify those owners that are willing to put land into conservation. Owners' perspective on their property also changes over time and over their lives.
- **Funding:** The amount of funding and the flexibility in use of funds is a critical limiting factor to acquiring land and executing conservation easements. The timing of funding availability is also a challenge, since all real estate deals have a limited window of opportunity.
- **Cost of Land:** The cost of land is rising in Anne Arundel County. It is higher relative to the Eastern Shore and Western Maryland. This limits how far land conservation funds can go, and can be a challenge in competing for State and Federal grants on a dollars per acre basis.
- **Alignment of Various Public Policies and Goals:** Organizations and programs have different areas of focus, such as wildlife habitat, agricultural preservation, and historic preservation. It can be challenging to align priorities to bring together the resources needed to complete a conservation deal.
- **Public Support:** There is a need for tremendous public support when it comes to dedicating public funds for land conservation.
- **Diligence in Implementation:** While a significant amount of land has been conserved in the Network since adoption of the 2002 Greenways Plan, there are also large areas that have been developed. There are mixed views on how diligently the County has implemented the Greenways Plan.

These challenges informed discussions with stakeholders on recommendations for the Green Infrastructure Master Plan.

MEASURABLE LAND CONSERVATION GOAL

With the collective work of the County, non-profit organizations, and private landowners, this plan sets a goal of conserving an additional 5,000 acres to reach 30% of the County's land area being conserved in the Network by the end of 2030. This goal will be met through the combined efforts of public land acquisition and placement of easements on "unprotected" property in the Network with willing, voluntary landowners, as well as the land dedications and easements required as part of the development review process. Approximately 5,075 acres of land in the Green Infrastructure Network was conserved through public acquisition and voluntary conservation easements from 2010 to 2020. As the County develops and land prices increase, it will become more challenging over time to protect natural lands at that scale. Further, the nature of land transactions and fluctuations in funding levels, and the amount of land protected in any given year, can vary greatly. Therefore, this plan includes a ten-year goal (from January 1, 2021 to December 31, 2030) rather than an annual goal.

GREEN INFRASTRUCTURE MASTER PLAN RECOMMENDATIONS

The Plan outlines five key strategies for implementing the Green Infrastructure Network. Each strategy involves a number of activities that collectively form a comprehensive green infrastructure program. This program envisions a strong public-private partnership that will take advantage of a wide variety of implementation strategies. Therefore, the actions recommended are not limited to activities of the public sector, but include a variety of recommendations for non-profit organizations as well.

Strategy 1: Organization and Outreach

Action 1.1 Actively engage the public and private landowners. The green infrastructure program relies on strong public involvement from land trusts and other non-profit environmental organizations, property owners, developers, and citizens. Public involvement will both educate the public and engage citizens in conservation efforts. Public engagement activities will include maintaining a green infrastructure web page, participation in existing boards and committees engaged in land conservation, and supporting public outreach events.

Action 1.2 Continue partnerships with non-profit organizations and State and Federal agencies. Many of the conservation successes in the County have been achieved through partnerships with land trusts and other non-profit organizations, and State and Federal agencies. This has allowed for more efficient use of limited County staff resources and promotes greater sharing and coordination of information among the various organizations active in land preservation in the County.

Action 1.3 Establish a process for regular coordination with County departments, local land trusts and conservation groups for outreach and data-sharing. Information sharing among the different organizations involved in land conservation is fundamental to efficiently and effectively protecting land. The DRP works closely with local land trusts to share information as necessary. With this update, the Network has been organized by watersheds making it easier to collaborate on conservation and restoration initiatives with the County's Bureau of Watershed Protection and Restoration.

Action 1.4 Prepare annual implementation reports on the Green Infrastructure program. Implementation reports can serve as a reference for the public as well as an internal benchmark for the County and other stakeholders involved. It provides an assessment of the current Green Infrastructure Network in terms of additional acreage protected since its creation. Additionally, the implementation report identifies areas or actions where future efforts toward conservation and management should be directed or changed if necessary. The report does not amend the Master Plan, but rather provides an informative resource for public and private interests. The implementation report should include information on investments made beyond the Network, such as tree plantings, community gardens, and open space in underserved areas.

Strategy 2: Stewardship and Planning

Action 2.1 Develop and implement management plans. Stewardship of protected areas in the Green Infrastructure Network should be coordinated through management plans. These management plans may be crafted as "Parks Master Plans" or "Management Plans" for natural resource areas, or similar documents. The plans should generally include provisions for public access and activities on the property that meet recreation needs while also protecting natural resources. The plans should also align with countywide DRP policies for integrated pest management, invasive species control and deer management. Examples of recent management plans include; Bacon Ridge Natural Area Forest Management Plan, Mayo Peninsula Parks Master Plan, Fort Smallwood Park/Harry & Jeanette Weinberg Park Master Plan, and the Jug Bay Wetlands Sanctuary Management Plan.

Action 2.2 Maintain a map and database of protected lands. The County will continue to maintain a database that includes current records of Federal, State, County, and land trust property ownership and conservation easements. The database also tracks Forest Conservation Easements and parcels dedicated for open space, recreation, and floodplain management

through the subdivision process.

Action 2.4 Develop a comprehensive Countywide trails master plan. The County's 2003 Pedestrian and Bicycle Master Plan and its update in 2013 analyze pedestrian and bicycle facilities in coordination with the Office of Transportation and the Anne Arundel County Bicycle Advisory Commission while the LPPRP provides an inventory of off-road trails. The Office of Transportation is beginning the process of updating the Pedestrian and Bicycle Master Plan. Plan2040 recommends that a Countywide comprehensive trails master plan be developed that could improve accessibility and mobility while identifying opportunities for financial savings. The trails master plan will complement and be coordinated with the Pedestrian and Bicycle Master Plan.

Action 2.5 Incorporate Green Infrastructure in Region Plans. The Region Plan process should include review of the Green Infrastructure Network within the respective regions for further conservation and enhancement. The Region Plans should contain a section describing how they will further the goals of the Green Infrastructure Master Plan. This may include identification of potential areas for community parks, increased tree canopy, and other green infrastructure features at the neighborhood scale.

Strategy 3: Land Conservation and Enhancement

Action 3.1 Invest in conservation priorities consistent with the GDP, Region Plans, LPPRP and the Watershed Restoration Program. The Green Infrastructure Network intersects with priorities to invest in land protection and stream restoration identified in the LPPRP and the Bureau of Watershed Protection and Restoration's watershed assessments and work program. Investments in land protection in the Green Infrastructure Network should align with the priorities of those programs to maximize benefits and most efficiently use public funds.

The 2017 LPPRP priorities for land acquisition includes a goal of 1,065 acres with 750 acres needed to address local or State greenways objectives by 2027. The LPPRP also identifies a need for recreational lands in the County's northern and southern quadrants. The exact locations of these parcels have not been identified and may or may not be in the Green Infrastructure Network. As noted previously, the Bureau of Watershed Protection and Restoration has established a pilot program to acquire flood-prone properties.

DRP evaluates potential land acquisitions based on recreational and preservation benefits. The evaluation considers proximity to other County recreational opportunities, ability to develop, and proximity to protected areas. The following criteria will be used for land acquisitions within the Network or conservation areas:

1. Ecological sensitivity
2. Passive or active recreational benefit
3. Connectivity to protected greenways or other conservation lands
4. Consistency with the GDP, Region Plans, Green Infrastructure Master Plan, and LPPRP (including findings of proximity and equity analysis)
5. Size of the property
6. Community interest
7. Purchase price
8. Ecosystem service value
9. Other subjective benefits

Action 3.2 Integrate the Green Infrastructure Network into County planning programs and procedures.
Integration with GDP and LPPRP: Recommendations for implementing the Green Infrastructure Network have been included in Plan2040 and the LPPRP.

Development Plan Review Process: All subdivision and site development plans, as well as commercial development plans, must undergo an inter-agency review as part of the development plan approval process. The Green Infrastructure Network is taken into consideration in this process when development proposals include properties located in the Network. In those cases, the County advises the developer and works with them to achieve a site layout that will minimize impact on the Network. While location of a property within the Network does not negate the owner's right to develop the property, the County may encourage and promote the most environmentally sensitive site design feasible for properties within the Network. The development review process enables the County to track potential changes to the Network and to educate the public on ways to avoid, minimize, and mitigate impacts to the Network.

Additionally, conservation is promoted during the development review process. For example, developers of properties that are exempt from Forest Conservation regulations are nevertheless encouraged to establish forest conservation easements where possible as this can result in a property tax reduction.

Capital Improvement Program: Funding for acquisition of land in the Green Infrastructure Network is identified in the annual Capital Budget and Program.

Action 3.3 Encourage private landowners to conserve lands through conservation easements and tax incentives. The combined efforts of private landowners, the County, State, and local land trusts and non-profit organizations have protected a significant amount of land in the County through conservation easements. The County will continue to reach out to private landowners to explore interest in conserving properties and to collaborate with partners by coordinating efforts, sharing information, and matching the right programs with the right properties.

Action 3.4. Invest in conservation of Green Infrastructure across all watersheds in the County. To provide the many benefits of Green Infrastructure to all residents across the County, investments should be made to acquire land in each watershed. Investments in more highly developed areas of the County will likely involve smaller properties and a higher cost per acre, but should be a priority along with protection of larger properties in more rural areas.

Action 3.5 Document County properties providing high levels of ecosystem services. Inventory County-owned properties and identify those providing ecosystem services (stormwater management, Forest Interior Dwelling Species habitat, etc.). Maintain these properties in County ownership and document ecosystem services and other values for future reference.

Action 3.6 Explore the potential for voluntary transfer of development rights. The Office of Planning and Zoning should explore opportunities to reallocate zoning density from the Green Infrastructure Network to Targeted Development, Redevelopment and Revitalization Areas as identified in the GDP.

Strategy 4: Financing the Green Infrastructure Network

Action 4.1 Continue to allocate funds for Greenways, Parkland and Open Space projects in the County's Capital Budget and Program. This project is primarily funded through State of Maryland Program Open Space grants, and establishes a fund for Countywide Greenway, Parkland, and Open Space land acquisitions and related expenses. This project is used to acquire land, which satisfies one or more of the following objectives: addresses local or State Greenway objectives; protects sensitive natural resources; acquisition of right of way for new trails identified in the LPPRP, or new trails proposed by the Bicycle Commission and endorsed by the County Executive and County Council; provides an addition to an existing park/trail and/or satisfies County park; recreation and preservation needs as identified in the LPPRP, the Greenway Master Plan, the GDP, or the Region Plans. Following adoption of this plan, the name of the Capital Improvement project should be revised to include the term green infrastructure.

Action 4.2 Continue to allocate funds for the Advanced Land Protection Revolving Fund. The County's Capital Budget and Program includes an Advance Land Acquisition Capital Project. While not specifically dedicated to Green Infrastructure Network acquisitions, the funds in this project are used to provide a revolving fund for land acquisition for capital projects planned within the next five years. The funds cover up front costs such as appraisals, environmental assessments, and engineering studies. The County will continue to allocate funds to the Greenways, Parkland and Open Space capital project for major land acquisitions in the Green Infrastructure Network.

Action 4.3 Maximize use of related Federal, State, and local funding programs. The following fund sources have been and will continue to be utilized to acquire properties in the Green Infrastructure Network:

- State Program Open Space - Local Share
- State Program Open Space - State Share
- Maryland Agricultural Land Preservation Foundation (Easements Only)
- Maryland DNR Rural Legacy Program (Easements Only)
- Federal Land and Water Conservation Funds
- Federal Coastal Estuarine Land Conservation Program
- Federal Readiness and Environmental Protection Integration Program
- Chesapeake Bay Trust
- County Forest Conservation Fee in Lieu Funds
- County Open Space Fee in Lieu Funds
- County Agricultural and Woodland Preservation Program (Easements Only)
- County General Obligation Bonds
- County Pay as You Go (PAYGO) Funds

In addition to the public sector fund, various private sector land trusts and environmental entities utilize private donations and grants to sustain their programs. The County and local land trusts continue to collaborate on available properties and the various funding mechanisms to accomplish their goals.

The County should prepare and maintain a list of funding sources for land conservation that includes key information including eligibility criteria and application deadlines. The County should regularly contact and coordinate with funding agencies and partners in land conservation to position projects for funding.

Action 4.4 Explore innovative conservation financing mechanisms. The County will collaborate with outside partners to explore new or utilize existing innovative mechanisms to finance land conservation. These may include carbon credit markets, water quality credit markets, and other financing tools that monetize ecosystem services.

Strategy 5: Making Connections Beyond the Network

Action 5.1. Increase tree canopy in more urbanized watersheds. In partnership with the Watershed Stewards Academy and other organizations, the County should plant trees in urban areas to increase tree canopy, reduce urban heat island effects, and reduce stormwater runoff. Efforts should especially be made in communities with little existing tree canopy or other Green Infrastructure Network. The Department of Public Works should prepare an urban street tree plan that targets plantings within more urbanized communities.

Action 5.2. Reforest natural stream corridors in more urbanized watersheds. In coordination with the Bureau of Watershed Protection and Restoration, the Watershed Stewards Academy and other partners, continue supporting stream corridor tree planting and stream restoration projects in urban areas. Provide native plant and stormwater fee incentives and educational opportunities to property owners that agree to replant urban stream corridors.

Action 5.3. Support redevelopment projects that increase green space. Redevelopment projects provide opportunities for both economic development and environmental improvements through environmental site design. The County should review the Zoning Code and the Subdivision and Development Code to identify reforms to support redevelopment projects and encourage creative use of environmental site design.

Action 5.4. Support community efforts to conserve open spaces of local significance. Conservation of natural lands outside of the Green Infrastructure network are often very important to local communities. As described in the Background Chapter, there are many tools to support land conservation. The County should prepare a guidebook for local communities to help empower them to conserve properties of local significance.

Action 5.5. Support community efforts to incorporate, maintain, and provide access to green space in more urbanized watersheds. In partnership with local community groups, explore opportunities to convert vacant or underutilized lands into community parks, community gardens, or other green spaces. These projects can provide environmental, public health, and community revitalization benefits. Work with communities to maintain the green spaces once established.

Image courtesy of Baltimore City Department of Planning. A pocket park integrates stormwater management features within the landscape of an urban neighborhood.

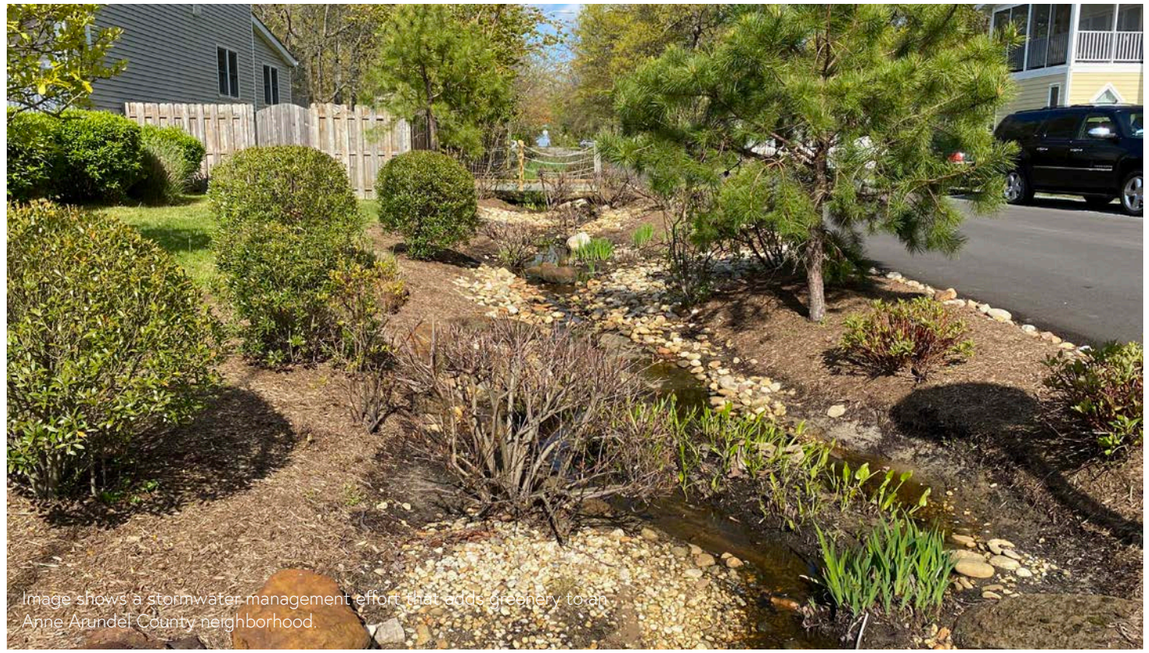


Image shows a stormwater management effort that adds greenery to an Anne Arundel County neighborhood.

Image shows street trees and a stormwater management intervention adding greenery to a developed landscape. Image courtesy of Chesapeake Bay Program.

ACTIONS IN FOCUS

Urban Restoration Projects

With its focus on improving the health of watersheds and water quality, the majority of the Bureau of Watershed Protection and Restoration (BWPR) projects are located in the more developed watersheds in the County. The BWPR takes a multiple-benefits approach so that in addition to protecting and improving watershed functions such as providing clean water and habitat, these projects promote improved public safety, economic vitality, and community stewardship.

The majority of the County's stormwater-related work is funded through the Watershed Protection and Restoration Fee (WPRF), an impervious surface-based fee on properties throughout the County.

Furnace Creek in Glen Burnie is an example of an urban stream restoration project with many benefits combined into one project. A long concrete channel that was built in the 1960's to help control flooding in downtown Glen Burnie has been transformed into a stream, wetland, floodplain complex (see below). The project reduces flood risk while also improving water quality and habitat.

Furnace Creek Before Restoration

Furnace Creek After Restoration

Green Space in Redevelopment Projects

Redevelopment and revitalization of developed areas creates opportunity for both economic development and environmental enhancement. Modern stormwater regulations require that new projects meet much higher standards than in the past. Many redevelopment projects incorporate environmental site design features such as rain gardens that both treat stormwater runoff and add green space. Plazas, parks, and open spaces can be key elements of place making that create lasting value for redevelopment projects.

The Flats 170 project in Odenton is an example of a redevelopment project that created community, economic and environmental uplift. Flats 170 is located on a former industrial site that once supported maintenance facilities for the Washington, Baltimore and Annapolis rail line and later the Nevamar manufacturing plant that made a variety of plastic products. The Flats 170 project is a LEED certified multi-family development of 360 units. Redevelopment of the site has set aside adjacent floodplain for conservation and implemented modern stormwater management, including bioswales, on a site that was almost entirely covered in impervious surfaces.

Before redevelopment of Flats 170 at Odenton

After redevelopment of Flats 170 at Odenton

Flats 170 at Odenton

CONSERVING LAND OUTSIDE THE GREEN INFRASTRUCTURE NETWORK

While the Green Infrastructure Master Plan focuses on protection of the largest remaining natural areas and connections between them, it is also important to conserve smaller open spaces across the County. The LPPRP includes an analysis of the need for additional parks and recreation facilities across the County. The LPPRP is being updated concurrently with the Green Infrastructure Master Plan.

In addition to the County's land conservation efforts, local communities have successfully organized to protect important properties. The Crownsville Conservancy and the Crofton Civic Association provide two great examples.

The Crownsville Conservancy has protected approximately 300 lots within Herald Harbor through land donations and purchase of tax sale properties. Herald Harbor developed in the 1920's as a summer vacation and second home community. This created a large number of small lots, many 25 feet by 100 feet. The Herald Harbor Citizens Association, and neighbors from Arden on the Severn and Valentine Creek communities established the Crownsville Conservancy to preserve green space and wildlife habitat in and around the Herald Harbor and Arden area of Crownsville, MD. They have worked directly with property owners to acquire properties through donation or tax sale. They have also partnered with the County to acquire approximately 27 acres along Valentine Creek for open space and habitat protection.

The Crofton Civic Association (CCA) has taken extraordinary efforts to conserve an approximately seven-acre property at the main entrance to the Crofton development. The CCA opposed a proposed development on the property and eventually made the decision to purchase the property. The CCA asked residents if they would support an increase in their annual property taxes to support acquisition of the property. By spreading the cost among all the property owners and over a 15 year loan, the CCA was able to afford the negotiated purchase price, even for a property with commercial zoning and highway frontage.

- END -